AN ASSESSMENT OF PRACTITIONERS' OPINIONS ON THE PRINCIPLE OF SPATIAL RESILIENCE

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INSPIRATION AND PURPOSE

"It always seems impossible until it is done."

Nelson Mandela

"We cannot solve our problems with the same thinking we used when we created them."

Albert Einstein

"Insanity: Doing the same thing over and over again and expecting different results."

Albert Einstein

"We shape our dwellings, and afterwards our dwellings shape us."

Winston Churchill

DEDICATION

This Dissertation is dedicated to:

Thomas Peter Barnes

My father, who has passed on to be with the Lord. He was not a learned man but he was a wise man, a resilient man.

Peggy Jean Barnes

My mother, who is still with us. Thank you for being the caring mother I needed.

Priscilla Doorasamy-Barnes, Kayla Jerusha Barnes and Tatum Jenna Barnes

My beloved family, thank you for being my inspiration.

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ABSTRACT

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Colonial and apartheid planning left a legacy of rigid, control-oriented, top-down spatial planning and land use management and fragmented and inequitable settlements. Despite many policies and the interim Development Facilitation Act of 1995, it was only in 2013 that a new Spatial Planning and Land Use Management Act (SPLUMA) was enacted creating a single national framework of for spatial planning and land use management in South Africa. This statute heralds a move from a rule-based approach to a normative, principle based approach to spatial planning and land use management.

SPLUMA lays down five development principles which form the foundation of the new national spatial planning, land development and land use management system. Spatial Resilience – a new South African construct - is one of the five development principles. Spatial resilience does not enjoy a theoretical foundation of its own; rather it is intimately associated with the theory of resilience and both the broad concept of resilience and the narrower concept of urban resilience.

With increased uncertainty and unpredictability of what the future holds, the concept of resilience, and resilience thinking, is a potential tool to deal with constant change, uncertainty and unpredictability providing a way of thinking about managing socio-ecological systems such as urban systems. Urban settlements, towns and cities are complex socio-ecological constructs, thus demanding an evolutionary or socio-ecological approach to resilience in building their adaptive capacity and resilience. Spatial resilience within the broader context of SPLUMA should thus be seen as an important contributor to achieving urban resilience and broader societal resilience. It is a way of thinking about how the spatial planning and land use management system can deal with change by adapting, innovating and transforming, where needed, into more desirable configurations.

This study employed a cross-sectional survey methodology, to assess the opinions of professionals and practitioners within the spatial planning and land use management and development planning sector in the Western Cape on their understanding of spatial resilience and its implementation. Of the one hundred and twenty-three (123) questionnaires emailed to potential respondents based on purposive sampling, fifty (50) responses were returned. The questionnaire was a self-completing survey

questionnaire with twenty-one (21) questions of which just on half were open-ended and the remainder were structured yes or no questions.

The findings indicate that while there is no clear consensus amongst respondents on what the concept or principle of spatial resilience is or what it entails, there is agreement that spatial resilience is generally not well understood in South African society as a whole and particularly within the broader spatial and development planning sector, that South African settlements on the overall, even though there are pockets of excellence, are not resilient. Furthermore, there are concerns with regard to the knowledge, skill, expertise and will of both the politicians and professional planners to implement a spatial resilience approach and the will of all three spheres of government to the implementation of a spatial resilience approach. The study concludes by making a variety of recommendations to address the various conclusions.

Key Words or Terms:

Spatial Planning; Land use Management; Spatial resilience; Resilience; Professional

Practitioner; Opinions; Survey; Development principles; Policy; Urban Resilience; South Africa.

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SPLUMA	-	Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)
DFA	-	Development Facilitation Act, 1995 (Act 67 of 1995)
NEMA	-	National Environmental Management Act, 1998 (Act 107 of 1998)
NDP	-	National Development Plan, 2012
NPC	-	National Planning Commission

RTPI	-	Royal Town Planning Institute
SDFs	-	Spatial Development Frameworks
IDPs	-	Integrated Development Plans
UNISDR	-	United Nations office for Disaster Risk Reduction
NDPC	-	National Development and Planning Commission
ANC	-	African National Congress
MSA	-	Local Government: Municipal Systems Act, 2000 (Act 2 of 2000)
UNCED	-	United Nations World Commission on Environment and Development
IUDF	-	Draft Integrated Urban Development Framework, 2015
SAPI	-	South African Planning Institute
SACPLAN	-	South African Council for Planners
SAACPP	-	South African Association of Consulting Professional Planners
NMT	-	Non-motorised transport
LED	-	Local Economic Development
ITPs	-	Integrated Transport Plans
SALGA	-	South African Local Government Association

Chapter 1 Introduction

1.1 Introduction

This chapter sets the scene for this research endeavour and outlines the thinking that led to the decision to undertake the research. It starts by giving a brief background to the current challenges facing South Africa, with a specific emphasis on the spatial planning and land use management context, it then moves on to discuss the purpose and the importance of this research endeavour. Following on from this, it briefly discusses the specific research questions and objectives and details some of the important definitions of relevance. It further highlights the assumptions and limitations of this endeavour. Lastly, it briefly discusses the research methodology employed and the chapter layout of this dissertation.

1.2 Overview of South Africa and its current challenges

South Africa emerged from the bondage of Apartheid more than twenty years ago to experience what many consider to be a miraculously stable negotiated transition to democracy (Harrison *et al.* 2008: viii; and Turok 2014: 749).

In 1994, apartheid was given a royal send-off and democracy was installed as the new dispensation. This was indeed a time of great hope and optimism. Pieterse (2009: 11) indicates that the time was characterised by "heady optimism" with the new transition from apartheid to democracy holding the promise that "everything could be reimagined, redefined and remade". However, this new "sheriff in town" was faced with an uphill battle (South Africa NDPC 1999: ii & 7; South Africa DoLA 2001: 8-9; Harrison *et al.* 2008: 8; Turok 2014: 753; and South Africa CoGTA 2015: 5 & 10). In short, the key challenges inherited from the apartheid era, that needed to be addressed by the new democratic dispensation, included massive structural and endemic social inequality, poverty and unemployment (Oranje and Merrifield 2010: 35; South Africa NPC 2012: 24 & 61 and Turok 2014: 753-758). As it would, this

mainly affected the majority of the previously disadvantaged South African population.

Unfortunately, for the new democratic regime, these local challenges have, over the years, been compounded by other emerging local challenges, such as increased demand for local service delivery and an accompanying increased social discontent and unrest; and the slow pace of local social and economic transformation (South Africa NPC 2012: 27; Van Niekerk 2013: 3; Turok 2014: 749), and numerous global risks and hazards, which had come to the fore at that point in time. These global risks and hazards included: climate change and its related impacts; the increase in frequency and intensity of storms and natural disasters; globalisation and increased global competitiveness; international financial crises and market collapses; terrorism and increased conflict; urbanisation and the associated demographic change; and resource path dependency and inefficiencies (South Africa NPC 2012: 30 & 90-93; Davoudi 2012: 299; Jabareen 2013: 220; Van Niekerk 2013: 1-2; Coaffee 2013: 325; Desouza and Flanery 2013: 89 and Vale 2014: 194).

The incumbent political leadership of the new democratic era were acutely aware that they were faced with a minefield through which they would have to steer the country if they wanted to realise the dreams and aspirations of the new democratic nation state and its citizens (African National Congress 1992: 2-3).

With regard to the above, Mabin and Smit (1997: 193-216); South Africa NDPC (1999: 5-7); South Africa DoLA (2001: 8-10); South Africa NPC (2012: 24-61); Coetzee (2012: 11); Oranje & Merrifield (2010: 33-35); Berrisford (2011: 247-249); Van Wyk and Oranje (2014: 350 & 354-356); and Harrison *et al.* (2008: 6) to a large extent support that:

- many of the locally engineered challenges were largely the bequest of the pre-1994 colonial and apartheid political regimes as a result of their policies of racially-based separate development and market and opportunity exclusion.

- many of these local challenges arose due to the purposed morphological and functional inefficiencies and ineffectiveness of South African settlements, which were a product of the racially based policies of development and market and opportunity exclusion, and which had been master-minded by the well-oiled and extremely bureaucratic and control-oriented spatial planning and land use management state machinery of the day.

The pre-1994 spatial planning and land use management contribution to this legacy of challenges can clearly be seen from the writings of several authors who support the fact that space and place, through the South African spatial planning and land use management system state mechanics, was influenced by various political and ideological factors (Mabin and Smit 1997: 193-216; Harrison and Todes 2001: 66; and Harrison *et al.* 2008: 9-10).

This, together with the spatial planning and land use management systems' inherent characteristics of being non-uniform, complicated, and overtly control-oriented with a major emphasis on the separation of land uses, played a major role in contributing to the current disabled settlement morphology and functionality and has been a major driving force behind the majority of poor black South Africans remaining impoverished, trapped in unsafe, uncompromising urban settlements that are still plagued by spatial inequality and with inadequate access to basic services and opportunities for improving their livelihoods due to their peripheral location which is generally away from urban amenities and opportunities (South Africa NDPC 1999:5-7; Harrison and Todes 2001: 66; Harrison 2008: 12; Coetzee 2012: 11; and Oranje and Merrifield 2010: 33-35). Support for this view has been further posited by Mabin and Smit (1997: 193) who eloquently indicated that "It would not be difficult to find prominent people to support the view that urban planning has crippled the ability of South Africa's cities to offer a decent urban life to the majority of their citizens." In this manner the minority ruling government manipulated space and place to effectively promote its ideological goals and create the makings of a potentially perfect storm.

The post-1994 political leadership realised that key to tackling the inherited settlement inefficiency and ineffectiveness challenges was the needed re-organisation of urban settlements through the creation of metropolitan municipalities, which was seen as a potential panacea for solving many of these challenges (Turok 2014: 749; African National Congress 1992: 12-14; South Africa NDPC 1999: 7) and the revision of the national spatial planning and land use management system.

The weight of expectation placed on the shoulders of the large metropolitan municipalities was because they were seen as important instruments for re-distributing municipal and other resources more fairly to the majority of the population. They were also viewed as vehicles for re-shaping the existing inefficient urban form through improved strategic planning and coordination of investment in infrastructure, which would lead to improved delivery of basic services, improved economic competitiveness of urban areas and the restructuring of the colonial and apartheid created settlements (Turok 2014: 749).

Sadly, more than twenty years after the new democratic dispensation was installed, and despite much public investment, sustained service delivery, and the initial revision of the national spatial planning and land use management system, little has changed with respect to the inefficiencies of the urban form and functionality of South African settlements (Pieterse 2009: 1; South Africa NPC 2011: 6-7, 19-20, 22-24 & 26; 2012: 260; South Africa CoGTA 2015: 10-11; Harrison 2002: 10; Harrison *et al.* 2008: 11-12; Berrisford 2011: 247; Oranje and Van Huyssteen 2011: 14; Coetzee 2012: 14, Oranje 2014: 7; and Van Wyk and Oranje 2014: 364-366).

With respect to the failure of the spatial planning and land use management sector to grasp the opportunities that the 1994 transition had provided, Harrison (2002: 1) writes that: "The cheerful optimism and post-election expectancy of 1994 has given way, in part, to disappointment and even to a sense of failure."

Presently, although much progress has been achieved since democracy, South Africa continues to face major challenges with regard to urban sprawl, the erosion of infrastructure and services, growing social exclusion, increasing crime and dwindling ecosystem services (Harrison *et al.* 2008: 11). This has had knock-on effects which have led to a widening of the gap between the rich and the poor and contributed to increased unemployment and poverty with a concomitant impact on all aspects of the quality of life for the majority of South Africans (Turok 2014: 754; Coetzee 2012: 11; Oranje 2010: 66; Oranje and Van Huyssteen 2011: 6-7; South Africa NPC 2012: 260; South Africa CoGTA 2015: 11; and Van Niekerk 2013: 3).

From a spatial planning and land use management perspective, Van Niekerk (2013: 3) indicates that a major contributor to the problem, post-1994, has been due to the underlying approach adopted in South Africa, which has been characterised by:

- Issues of development taking precedence over issues of sustainability, environmental management, resilience and disaster reduction. These issues are seen as distinct from urban planning and delivery and as such are viewed as insignificant when compared to the many other developmental backlogs in South Africa.
- Related to the above, the servicing of settlements has generally been given priority over the potential opportunities to transform spaces and places through progressive post-apartheid planning (Oranje and Van Huyssteen 2011: 6), with very little focus on evaluation and learning in order to secure the developmental path of towns and cities (Coetzee 2012: 12, 14 & 18).

This has all happened despite the best efforts, post-1994, to rectify the situation from a spatial planning and land use management perspective. These efforts include:

- The coming into operation of the new democratic Constitution of the Republic of South Africa, 1996 ('the Constitution') (South Africa 1996), which laid down the foundation for a new policy, legislative, administrative and service delivery regime in South Africa.

  The Constitution placed a specific emphasis on co-operative governance, the promotion of social and economic rights, public participation and accountability for decision-making, which all have a profound effect on how the new spatial planning and land use management system should be shaped.

  Interventions spawned by the Constitution include the: re-organisation of the relationships and the legal framework within government, moving away from the hierarchical and vertical three tiers of government system to a more horizontal, interrelated and interdependent three spheres of government; the creation of large metropolitan municipalities; the publication of the Green Paper on Development and Planning (Green Paper) (South Africa NDPC 1999), the White Paper on Spatial Planning and Land Use Management (White Paper) (South Africa DoLA 2001).

- The promulgation of the Development Facilitation Act (DFA) (South Africa 1995) and the resultant shift in government policy on spatial planning and land use management, from a control orientation to a more normative orientation within the sector. At the heart of this system shift was the introduction of a set of development principles that would assist in creating a shared vision of how South Africa should use and develop its land (South Africa NDPC 1999: 8).

  From a spatial planning and land use management perspective, the DFA was the first post-apartheid national law on spatial planning and land use management. It was promulgated as an interim measure to bridge the divide between the pre- and post-1994 era and ushered in the new spatial planning and land use management system that would

essentially promote the needs and priorities of the new democratic dispensation. The introduction of the DFA was important because it signified that future spatial planning and land use management policy and legislation would need to embrace substantive principles or norms that would essentially guide land use, land development and decision-making related to this (South Africa NDPC 1999: ii, 8 & 23-25).

- The promulgation of the Local Government: Municipal Systems Act (MSA) (South Africa 2000) which was responsible for creating the requirement for all municipalities to develop Integrated Development Plans (IDPs) (Harrison 2006: 187), and a litany of other progressive laws, policies and programmes, including the National Environmental Management Act (1998); the National Water Act (1998); the National Water Services Act (1997); the Housing Act; and the Reconstruction and Development Programme (1994).

From a spatial planning and land use management perspective the situation has not been helped, with both global and local challenges intensifying and increasing in number, in the intervening years (Turok 2014: 765-766).

However, even though the spatial planning and land use management sector has played its part in creating the present disabled settlement morphology and functionality it can certainly also play its role in being part of a future settlement solution. In this regard, there has been optimism, both locally and internationally, about the potential positive role that spatial planning and land use management can and must play in being part of the settlement solution.

In South African academic circles optimism for the potential positive role that urban planning or spatial planning or spatial planning and land use management can play in the South African urban settlement solution has been inspiring. Mabin and Smit (1997: 193) indicate that, despite the role that urban planning has played in creating the morphologically disabled and functionally inept urban settlements "as moves develop to overcome the legacy of the apartheid years, urban planning again finds advocates who value its promise of

a new 'city tomorrow'." Harrison and Todes (2001: 65) aver that "In South Africa, as in a number of other countries, there has been a resurgence of interest in sub-national regional development planning."

Further to the above, Todes (2012a: 158) writes about how a new approach to strategic spatial planning in the City of Johannesburg based on a much more intimate relationship between spatial planning and infrastructure development through the use of a growth management strategy has had some success in addressing the deformed spatial pattern within the sprawling city. Harrison *et al.* (2008: 13-14) indicate, in terms of their South African post-1994 experience in the spatial planning and land use management sector, that "methods of planning have become critical to the very concept of developmental government, so the discourse of planning has begun to permeate the work of a range of professionals and political representatives". They write further that "the diffusion of planning across disciplines is making it more effective."

Part of this optimism has also been due to the development and publication of the South Africa's first National Development Plan (NDP) (South Africa NPC 2012) and the promulgation of the new national Spatial Planning and Land Use Management Act (SPLUMA) (South Africa 2013).

The NDP is arguably one of the more important policy documents in post-1994 South Africa. It creates a national plan for development which binds all spheres of government and all of society with an implementation horizon up to the year 2030 (South Africa NPC 2012: 26-27 & 57-61). Every sphere of government, government department, state-owned enterprise and organ of state are duty bound to focus their organisational efforts, plans, strategies, actions and finances to achieve the objectives of the NDP (South Africa NPC 2012: 26-27 & 57-61). Importantly, the NDP was developed by the independent National Planning Commission (NPC) and released in 2012 (South Africa NPC 2012: 25). In essence it speaks to coherence, cohesion and integration of planning, budgeting, implementation and review to tackle the most pressing issues, which it has highlighted.

The NDP realises the important role and value-add that spatial planning and land use management can play in being part of the urban settlement solution (South Africa NPC 2012: 258-293). A quick word search on the four hundred and eighty-nine page NDP document (South Africa NPC 2012) indicates that the word "spatial" is used two hundred and thirty-three (233) times and the word "planning" is used two hundred and twenty-nine (229) times, while the term "spatial planning", itself, is referred to thirty (30) times. Besides this, the NDP devotes an entire chapter, Chapter 8, to the issue of "Transforming Human Settlements and the national space economy".

The importance, relevance and expectation placed on spatial planning and land use management, in the South African context, is given further relevance in the NDP through its specific references. In this regard the NDP (South Africa NPC 2012: 65) directly calls for a strong and efficient spatial planning system which is well integrated across the spheres of government. The NDP recognises:

- the impact good spatial planning can have on lowering living costs and improving living standards (South Africa NPC 2012: 119);
- the role spatial planning and land use management can play in energy planning (South Africa NPC 2012: 174);
- the role spatial planning and land use management can play in bringing work opportunities closer to where people live (South Africa NPC 2012: 184);
- the role spatial planning and land use management must play in aligning the various government infrastructure investments (South Africa NPC 2012: 189).

Furthermore, the NDP (South Africa NPC 2012: 275) indicates that spatial planning should ensure that spatial development is shaped by the long-term public interest. Lastly, the NDP (South Africa NPC 2012: 277) highlights the overarching principles for spatial development in South Africa, of which spatial resilience is one.

Internationally, there has also been optimism around the role that spatial planning and land use management should be playing in terms of being part of the urban solution. In this regard, the Royal Town Planning Institute (RTPI) (2014: 7) indicates that "policy and decision-makers can learn much from the theory and practice of 'spatial planning' (or 'integrated planning'). This goes beyond traditional land use planning to seek to integrate policies for the development and use of land with other policies and programmes, which influence the nature of places and how they function. In the twenty-first century, in the face of the kinds of challenges noted in this paper, we need to develop a new 'spatial policy' – a science of policy which incorporates place and space, and produces policy which is much more integrated, strategic and sensitive to place."

In terms of SPLUMA, it was only after many years on the local policy battle field, that South Africa finally promulgated the new national Spatial Planning and Land Use Management Act (SPLUMA) (South Africa 2013) which was assented to on 2 August 2013 with its date of implementation being 1 July 2015 (Van Wyk and Oranje 2014: 356). The importance of SPLUMA is that it replaced the DFA, which was always intended to be an interim spatial planning and land use management solution to speed up the reconstruction and development programme devised post-1994 (Harrison *et al.* 2008: 61-61; Berrisford 2011: 251 and Van Wyk and Oranje 2014: 356).

As such, for the first time in democratic South Africa there is now an all-encompassing national spatial planning and land use management statute. This is significant because it cements the shift in policy, within the spatial planning and land use management sector, to a new era of normative or principle-based spatial planning and land use management (Van Wyk and Oranje 2014: 357-358). In terms of this policy shift future spatial planning and land use management policy and legislation would need to embrace substantive principles or norms that would essentially guide related land use, land development and decision-making.

This shift to a more normative approach within the spatial planning and land use management system post-1994 requires municipal political decision-makers, informed by the principles and norms, to set up spatial plans or policy plans, in conjunction with the integrated development planning process legislated in terms of the MSA (South Africa NDPC 1999: 23-25; South Africa DoLA 2001: 22-26; and Van Wyk and Oranje 2014: 357-358). In terms of this new dispensation the municipal spatial development framework(s) (SDFs), should contain the politically endorsed delivery objectives and targets for the development for an area, based on the spatial and development imperatives of the area. The content of the SDFs should then be responded to by the relevant empowered land use and land development decision-makers. This should provide the direction and drive for changing the form of settlements and enable politicians to drive the process of policy setting (South Africa NDPC 1999: 25).

Essentially the normative approach creates the imperative for municipal politicians to translate the national development principles into contextually-specific local proposals subsequent to the necessary engagements with the public. Another important element of the normative approach is that it, to a large extent, introduces the separation of decision-making with regard to policies and plans, which must be taken by the politicians, and decision-making with regard to actual land use and land development applications, which must be taken by technical experts, but be informed by the policies and plans approved by the politicians (South Africa NDPC 1999: 66). As such, land use management and land development management is seen as a function that must be performed within the context of politically approved policies and plans. Given the aforementioned, the importance of the principles and norms, and a broad understanding of what they are and mean, should be apparent (South Africa NDPC 1999: 8, 25, 56-57, 60 & 66-67; South Africa DoLA 2001: 10-18 & 26).

Importantly, SPLUMA embraces this more normative approach to spatial planning and land use management, and in Section 7 of Chapter 2, sets out the

five development principles, which include the principle of spatial justice, the principle of spatial sustainability, the principle of efficiency, the principle of good governance and importantly, from the point of view of this dissertation, the principle of spatial resilience (South Africa 2013: 18 & 20). The importance of these development principles cannot be emphasised more, with the principle of spatial resilience being the key focus of this dissertation.

1.3 Purpose and Significance of this Research Endeavour

According to the Green Paper (South Africa NDPC 1999: ii), and the White Paper (South Africa DoLA 2001: 8) the coming into power of the first democratic government in South Africa in 1994, was accompanied by an existing spatial planning and land use management system that was fragmented, unequal, complicated and incoherent. This inherited spatial planning and land use management system had resulted in a dysfunctional South African space economy. This dysfunctional South African space economy, however, still prevails today (Harrison and Todes 2001: 70-71; Oranje 2010: 66; and Coetzee 2012: 11). Herein lays the impact of the perverse resilience of Apartheid planning on South African settlements.

In this regard, it may be argued that, where one lives in South Africa has and continues to be the yardstick for an individual's potential future progress and development (South Africa NPC 2012: 260) and Oranje and Van Huyssteen (2011: 7). The dysfunctional space economy is a contributor to our challenges of poverty, unemployment and inequality, which continues to pose the biggest threat to national social cohesion with the clear signs of public dissatisfaction being displayed by the increase in so-called service delivery protests across the nation (Turok 2014: 749 & 763).

Importantly, Chapter 2 of SPLUMA specifically sets out the development principles which apply to all organs of state and other authorities responsible for the implementation of legislation regulating the use and development of

land. As such, Chapter 2 lays down the foundation for the shift in policy from a control orientation to a more normative orientation with regard to spatial planning and land use management (South Africa 2013: 16, 18 & 20).

According to SPLUMA the specific function of the development principles are to guide the preparation, adoption and implementation of any spatial development framework, policy or local municipal by-law concerning spatial planning and the development or use of land; the compilation, implementation and administration of any local municipal land use scheme (zoning scheme) or other regulatory mechanism for the management of the use of land; the sustainable use and development of land; the consideration by a competent authority of any application that impacts or may impact upon the use and development of land; the performance of any function in terms of SPLUMA or any other law regulating spatial planning and land use management (South Africa 2013: 16).

SPLUMA further states that the principles contained in Chapter 2 apply to all aspects of spatial development planning, land development and land use management, and specifically that the spatial development frameworks must give effect to the principles (South Africa 2013: 16). As mentioned above, Chapter 2 of SPLUMA lists the five development principles. Most of these development principles are common sense and reasonably well understood, as they emanate directly from the intentions of our Constitution (South Africa 1996), and have featured in other related South African legislation, post 1994.

The one principle that does have the potential to cause some confusion, especially within the spatial planning and land use management context within South Africa, is the principle of spatial resilience. Spatial resilience, to a large extent appears to be less well understood. At the time of writing this dissertation, few locally published academic literatures had explored the broader concept of resilience and the more specific concept or principle of spatial resilience, from a spatial planning and land use management perspective. SPLUMA does not provide a precise definition for spatial resilience but does provide a description of what it conceives spatial resilience to be.

Specifically, it states that spatial resilience refers to the accommodation of flexibility in spatial plans, policies and land use management systems in order to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks (South Africa 2013: 18).

Although much academic literature exists on the topics of spatial planning and the broader concept of resilience and urban resilience, very little has been published on the concept of spatial resilience in the context of spatial planning. It is interesting to note that neither the Green Paper (South Africa NDPC 1999), nor the White Paper (South Africa DoLA 2001), which were the precursors to SPLUMA, made any mention or reference to the principle of spatial resilience.

The question that therefore beckons is: What is Spatial Resilience and how useful is it in the South African spatial planning and land use management context? How do we, in South Africa, in the context of the SPLUMA description of spatial resilience, make spatial plans, spatial policies and land use management systems more flexible so as to ensure the sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks?

Further questions that come to mind in this regard are:

- Where does this principle or concept of spatial resilience come from?
- Are the professionals and politicians who are the primaries responsible for implementing the principle of spatial resilience familiar with this concept?
- Do they understand what is required of them in terms of this principle?
- Does the general public understand this principle or concept of spatial resilience and how it impacts on them?
- Can the adoption of a spatial resilience approach contribute to improving settlement functionality and assist in dealing with poverty, unemployment and inequality in the South African context?

Given the lack of academic literature on the concept or principle of spatial resilience in the context of spatial planning and land use management, and, as it is a relatively new concept within the South African policy and legislative vocabulary, it is considered prudent to investigate it further by initiating the debate on spatial resilience and thereby contribute to an improved understanding of the principle of spatial resilience by unpacking what it could practically translate into within the broader South African context. In this regard, it must be noted that context is especially important, because both spatial planning and urban resilience are very context specific areas of focus, with the context determining the realistically achievable societal vision, in relation to the status quo, and, therefore, indicating what the transition should be (Seeliger and Turok 2013: 2114; Harrison *et al.* 2014: 4 & 17 & 21; and Vale 2014: 198). The same, it is suggested, applies to the very slippery concept or principle of spatial resilience.

With the aforementioned in mind, and because of the relatively recent introduction of the principle or concept of spatial resilience, in South Africa, and the highly complex and technical nature of the debate, it was considered useful and appropriate to initiate the debate and inquiry by firstly gaining the insight and opinions of the professionals practicing in the spatial planning and land use management milieu or those professionals or administrators or decision-makers, who through their day-to-day work impact significantly on the spatial planning and land use management of settlements. Doing this would then enable us to initiate the debate and raise the general awareness with regard to the principle or concept of spatial resilience and to potentially contribute to an improved understanding and possible practical recommendations as to how the principle of spatial resilience could be implemented through the spatial development frameworks and land use management systems.

As such, the primary purpose of this research endeavour is to obtain a better understanding and insight into the concept or principle of spatial resilience based on the opinions of the professionals and practitioners active within the

spatial planning and land use management and development planning sectors in the Western Cape Province. The Western Cape Province was specifically chosen because of the financial, time and logistical constraints involved with obtaining such information from professionals throughout the entire South Africa. Map 1 depicts the Republic of South Africa, highlighting the physical position and the extent of the Western Cape Province.

The significance of this research is that the move from control oriented to normative oriented policy and legislation, in the spatial planning and land use management sector, as is the case with SPLUMA, calls for a proactive planning system that places the emphasis on considered judgments and the discretion of decision-makers, as opposed to the application of standardised rules and regulations (South Africa NDPC 1999: 8). This normative orientation specifically focuses on spatial and procedural outcomes, outcomes that must be different from those in the past. However, for such a system to work, the considered judgments and discretionary decision-making must take place within a framework which is better understood. In this regard, the development principles along with the long-title, preamble, application and objects of SPLUMA and other norms and standards provide this framework within which the considered judgments and discretionary decision-making need to be effected.

Given the above, it is imperative that for the new spatial planning and land use management system to succeed with its progressive spatial agenda, there needs to be consensus and common understanding around those aspects which constitute the framework created by SPLUMA. The importance and significance of the development principles is further highlighted by the Green Paper (South Africa NDPC 1999: 45) and the White Paper (South Africa DoLA 2001: 4) which indicated that the development principles are central to the new spatial planning and land use management system because they create the shared vision for how South Africa should develop and use its land. It further highlighted the lessons learned from the implementation of the DFA

and indicated that one of the reasons why the DFA was not as successful as hoped was because of the lack of knowledge of and the difficulties associated with the interpretation of the development principles (South Africa NDPC 1999: 12-13). Hence the need for research endeavours such as this which is an attempt to contribute to the debate on better understanding this framework, in this instance, by focusing on the development principle of spatial resilience. The failure to engage in research endeavours such as this and to not contribute to such debate could potentially result in the perpetuation of a spatial planning and land use management system that continues to be fragmented, unequal, complex and incoherent with the resulting impact being the furtherance of dysfunctional settlements.

1.4 Research Questions

The primary research question to be addressed by this research endeavour is:

- What are the opinions of the professionals and practitioners currently active in the spatial planning and land use management and development planning sectors on the concept or principle of spatial resilience?

This primary question is considered to be particularly relevant given the newness of the concept of spatial resilience within the South African spatial planning and land use management lexicon and the associated newness of the SPLUMA requirement of spatial resilience.

The following underlying secondary questions better inform the primary question:

- What are the opinions of the professionals and practitioners currently active in the spatial planning and land use management and

development planning sector on the general understanding of the principle of spatial resilience?

- What are the opinions of the professionals and practitioners currently active in the spatial planning and land use management and development planning sector on how the principle of spatial resilience could be practically implemented?
- What are the opinions of the professionals and practitioners currently active in the spatial planning and land use management and development planning sector on the potential merits for settlement functionality of adopting a spatial resilience approach?

- What are the opinions of the professionals and practitioners currently active in the spatial planning and land use management and development planning sector on the readiness of the relevant institutions and important role-players for the implementation of the principle of spatial resilience?

This study will thus analyse the opinions of a range of professionals and practitioners' active in the field of spatial planning and land use management and development planning.

1.5 Research Objectives

The study has several specific objectives. These objectives are interrelated and speak to the issue of using spatial planning and land use management practice to contribute to improving settlement functionality within the South African context. These objectives include the following:

- To contribute to the broader debate around how the development principles contained in SPLUMA should be interpreted and implemented

and the role they should play in the new spatial planning and land use management system in South Africa.

- To contribute to the more specific debate around the concept or principle of spatial resilience, within the context created by SPLUMA.
- To contribute to the broader body of knowledge on spatial planning and land use management practice in South Africa.
- To contribute to the further policy debate on spatial planning and land use management from a practitioner's perspective.
- To emphasise the importance of practitioner based / focused research within the spatial planning and land use management sector.

1.6 Definitions, Assumptions, Ethics and Limitations of the Research

1.6.1 Definitions

One of the major issues identified by both the South African National Development and Planning Commission in 1999 as it set out on drafting the Green Paper (South Africa NDPC 1999: 21-22) and the White Paper (South Africa DoLA 2001: 6), was the terminological confusion which existed within the South African spatial planning and land use management sector and the need to standardise the terminological approach. Both these documents indicated that this had arisen as a direct result of the apartheid legacy which had spawned a fragmented set of legal systems for spatial planning and land use management, the lack of coordination and cooperation between spheres of government, between government departments and non-governmental stakeholders.

Resilience

Neither SPLUMA nor the preceding Green Paper (South Africa NDPC 1999) nor the White Paper (South Africa DoLA 2001), nor the MSA (South Africa 2000)

define the concept of resilience. In contrast, all these documents are strangely silent on the precise definition of concept of resilience.

According to the Cambridge Dictionaries Online (2016) the word resilience is defined as "the quality of being able to return quickly to a previous good condition after problems".

Davoudi (2012: 300) indicates that "Although resilience is a recent addition to planner's discursive repertoire, it is by no means a new concept. Coming from the Latin root resi-lire, meaning to spring back, resilience was first used by physical scientist to denote the characteristics of a spring and to describe the stability of materials and their resistance to external shocks." She goes on to discuss three different interpretations of resilience, viz., engineering resilience; ecological resilience and evolutionary resilience. These three interpretations of resilience have found application in various sectors, including spatial planning and land use management and will be discussed further in Chapter 2 of this dissertation.

Spatial Planning

Strangely, SPLUMA itself does not define the concept or practice of spatial planning.

However, the Green Paper (South Africa NDPC 1999: 22), which preceded the White Paper (South Africa DoLA 2001) and the eventual development of SPLUMA, defines spatial planning as referring to the general organisation of space. It indicates further that spatial planning is a public sector activity which creates a public investment and regulatory framework within which private sectors decision-making and investment occurs.

The White Paper (South Africa DoLA 2001: 6), proposes that the term spatial planning be used judiciously to describe the planning process at a higher level, which tends to be inherently integrative and strategic in nature, and that takes into account a wide range of factors and concerns and addresses the unique spatial aspects of the specific context. Further to this, it indicates that spatial

planning also refers to the forward planning or desired aspects of the development of a place. Furthermore, spatial planning can be realized in a variety of different ways which include: capital expenditure programmes; the way in which different social and economic programmes are implemented; as well as the management and regulation of land use change and land development. It is this wide meaning / broad description of spatial planning that will be employed in this research endeavour.

The Royal Town Planning Institute (RTPI) in their "Thinking Spatially" document (RTPI 2014: 7) equates spatial planning to integrated planning and indicates that:

> "This goes beyond traditional land use planning to seek to integrate policies for the development and use of land with other policies and programmes which influence the nature of places and how they function, for example sectoral policies such as transport, regional policy, flood risk management and agriculture, to avoid unnecessary or unintended spatial impacts and encourage mutually beneficial ones. Effective strategic planning reduces costs, promotes efficiency and reduces conflict, while protecting the environment and promoting development in the right places, providing a context within which local government can agree on issues such as housing, waste and minerals."

Land Use Management

SPLUMA itself does not define the concept or practice of land use management. SPLUMA (South Africa 2013: 9) does, however, define the terms "land use" and "land use management systems". In this regard SPLUMA defines "land use" as "means the purpose for which land is or may be used lawfully, in terms of a land use scheme, existing scheme or in terms of any other authorisation, permit or consent issued by a competent authority, and includes any conditions related to such land use purposes". SPLUMA (South Africa 2013: 9) further defines "land use management system" as "means the

system of regulating and managing land use and conferring land use rights through the use of schemes and land development procedures"

According to the White Paper (South Africa DoLA 2001: 20) the term land use management refers to more than just development control. It lists the following activities as being part of "land use management": the regulation of land use changes, such as the rezoning of a property; the regulation of green fields land development; the regulation of subdivision and consolidation of land parcels; the regulation of the regularization and upgrading of informal settlements, neglected city centres and other areas requiring such processes; the facilitation of land development through the more active participation of the municipality in the land development process, especially through public-private partnerships. On the other hand the Green Paper (South Africa NDPC 1999: 63) refers to land use management as the "management of land at the level of individual erven by local authorities"

Spatial Resilience

SPLUMA itself does not define the concept of spatial resilience. SPLUMA does, however, describe the principle of spatial resilience as "whereby flexibility in spatial plans, policies and land use management systems are accommodated to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks" (South Africa 2013: 18). This research endeavour will use this description of spatial resilience as the definition for spatial resilience in this instance.

Urban Resilience

Harrison *et al.* (2014: 1) indicates that there is essentially no single truth about urban resilience. According to them, definitions, especially with regard to urban resilience, are created and changed over time, thereby reflecting the evolving understanding.

They do, however, believe that the idea of urban resilience is a very useful way of thinking about the ability of urban settlements and the many actors and structures that constitute them to respond to the constant reality of change.

Nevertheless, Harrison *et al.* (2014: 2) have attempted to define urban resilience, and as such have posited the following:

> "the capability of individuals, social groups, or socio-ecological systems including towns and cities not only to live with changes, disturbances, adversities or disasters but also to adapt, innovate and transform into new more desirable configurations."

Harrison *et al.* (2014: 4) are of the opinion that urban resilience concerns the building of the adaptive capacity of urban settlements so that they are able to develop and implement meaningful institutional and societal responses and actions to the specific circumstances of each urban settlement.

Nel and Nel (2012: 2) define urban resilience as the ability of cities, to adapt to changes or prevent or recover from a setback. They indicate that resilience emerges in cities, towns and settlements because they are socio-ecological systems and as such they are complex adaptive systems.

1.6.2 Assumptions and Ethics

Reasonable assumptions made in the execution of this research endeavour include the following:

- The study population would be restricted to professionals active in the spatial planning and land use management and development planning sectors, in the Western Cape Province only, due to time and logistical constraints faced by the researcher.
- As the study population are all professionals they were all assumed to be highly literate, with access to computers and electronic mail. In this regard, it was confirmed that all one hundred and twenty three (123)

potential study participants had access to computers and electronic mail.

- As SPLUMA is a highly complex and technical legislative instrument and very specific to the spatial planning and land use management and development planning sectors of South Africa it was assumed that professionals active within these sectors would have at some stage have been exposed to SPLUMA and its contents, including the development principle of spatial resilience.

- Given that SPLUMA was assented to by President Zuma on 2 August 2013 and came into operation on 1 July 2015 (South Africa, 2015b: 3), the timing of this research endeavour and its primary research data collection effort, which covered the period of August 2015 – November 2015, is extremely relevant.

- Spatial Planning and Land Use Management is transversal in nature and is essential and centrally relevant to the investigating the concept of resilience and the principle of spatial resilience as contained in SPLUMA.

- Local Municipalities are the primary loci for urban governance within the South African legislative context with spatial governance forming an integral part of urban governance.

- Settlements, whether urban or rural in nature, are examples of complex socio-ecological systems as defined by Davoudi (2012: 304). Here her understanding of settlements, towns and cities are "places not units of analysis or neutral containers, but are, complex, interconnected socio-spatial systems with extensive and unpredictable feedback processes which operate at multiple scales and timeframes."

- The practice of spatial planning and land use management, although legally required and prescribed in South Africa, is context dependent.

- As with the previous assumption the practice and implementation of the broad concept of resilience and the specific concept or principle of spatial resilience would be context dependent.

In terms of research ethics, all the potential study participants were requested to participate in writing, and were provided with a short background document to inform them of the research endeavour including what the aims and objectives of the endeavour were. All potential participants had the right to refuse to participate. Those who chose to participate were asked to complete an informed consent form and to submit the completed informed consent form along with their completed questionnaires. The background document and the informed consent form sent to the potential participants is attached along with the spatial resilience research survey questionnaire as Annexure 1.

1.6.3 Research Limitations

As discussed in Chapter 3, the research method employed to generate the primary research data was a cross-sectional survey of the study population. In this regard there are several limitations to this research endeavour which need to be highlighted, at the outset. Furthermore, the findings, conclusions and recommendations emanating from this study must be viewed within the context of these limitations, which include the following:

- As the method employed to collect primary data for this research endeavour was in the form of a cross-sectional survey of the study population it must be understood that a cross-sectional survey serves to obtain the data, within a study population, at a specific point in time (Cohen *et al.* 2011: 266). As such, it provides us with a snapshot of what is happening in a particular study population at that particular point in time.

- The study population for this research endeavour was limited to professionals and practitioners currently active in the spatial planning

and land use management and development planning sectors in the Western Cape Province only. The study population was restricted to professionals and practitioners who have an operational footprint in the Western Cape because of time and logistical constraints. As such, the study population cannot be seen as being entirely representative of all professionals and practitioners' within the spatial planning and land use management and development planning sector in South Africa nor can it be seen as representative of the entire South African population.

- As the study population is not seen as being representative of all the professionals active within the entire spatial planning and land use management and development planning sector of South Africa nor can it be seen as being representative of the entire South African population, the results, conclusions and recommendations emanating from this research endeavour must be seen within this context.

1.7 Research Methodology

The research methodology refers to the choices that have been made to inform the structure of the proposed research; the data and information that needs to be gathered; the manner of the analysis of data and information that has been gathered; the particular theoretical stance adopted; and the issues that will condition the research. It informs the reader of the approach that has been used to design, implement the research and the approach to the analysis and explanation of the data and information to be gathered.

The research methodology employed in this research endeavour is primarily qualitative in nature, but is augmented by the quantitative analysis of some of the qualitative data generated in the study. The primary aim being to assess the respondents' opinions on the concept or principle of spatial resilience. In order to build a plausible conceptual / theoretical framework for understanding spatial resilience within the South African context and to attempt to answer the

questions posed in this research endeavour, this research endeavour therefore utilizes combination of literature analysis with qualitative research methods. The qualitative research data generated then being analysed, in some instances, with simple quantitative descriptive statistics.

In terms of primary data collection for this research endeavour it was decided that the best method to use in this qualitative research endeavour was to employ a cross-sectional survey approach (Cohen *et al.* 2011: 266). As mentioned previously, cross-sectional surveys are surveys that are carried out at a specific point in time and provides a snapshot of what is happening in a particular study population at that particular point in time. Surveys, in general, are a very traditional way of conducting research and are accepted and particularly useful for non-experimental descriptive designs that seek to describe reality and are frequently used to collect information on attitudes and behaviour (Lincoln and Guba 1985: 39-43; Dixon-Woods *et al.* 2001: 131; and Cohen *et al.* 2011: 28-30, 219-227, 256-257 & 266-273).

In terms of the collection of research data in this research endeavour the research relied heavily on two sources of data.

Firstly, the reviewing a large amount of literature related to the broad areas of relevance to this research endeavour. The literature review has been used to develop a conceptual / theoretical framework which informed the development of the spatial resilience research survey questionnaire which was the only instrument utilised in this research endeavour to obtain the primary data and information from the study population.

Secondly, the primary research data was obtained from the study population through the application of a structured, self-completed research survey questionnaire.

Questionnaires are simple tools for collecting and recording information about a particular issue of interest (Cohen *et al.* 2011: 377). In this instance, the structured, self-completed research survey questionnaire was designed based

on the theoretical framework developed and had a definite purpose which related directly to the principle of spatial resilience and to the aims of this research endeavour. As far as the actual Spatial Resilience research survey questionnaire is concerned, it was made up of twenty-one questions. Eleven (11) of the twenty-one (21) questions were closed questions with simple "Yes" or "No" answers required. Ten (10) of the twenty-one (21) questions were open questions.

In terms of the study population for this research endeavour, it is important to note that the study population was limited to professionals currently active in the spatial planning and land use management and development planning sectors in the Western Cape Province. Map 1 indicates the geographic location and extent of the Western Cape Province in comparison to the rest of South Africa.

In terms of administering the spatial resilience research survey questionnaire it is important to note that the structured, self-completed research survey questionnaire were sent to the potential participants in electronic format via electronic mail with the request to complete electronically and to re-submit it electronically to the researcher.

The spatial resilience questionnaire was accompanied by an introductory electronic mail message and an informed consent form. If they decided to participate they were then requested to complete the informed consent form and the spatial resilience research survey questionnaire electronically and to re-submit it to the researcher, via electronic mail, within 4 weeks of receipt.

In terms of the analysis of the data received via the spatial resilience research survey questionnaire, the results were analysed as follows:

- The results of the responses to the closed questions would be analysed with a simple statistical analysis. .
- The results of the responses to the open questions were analysed based on the thematic coding for each of the open questions. Based on the

themes identified for the responses to each of the open questions the researcher would perform a simple statistical analysis of the percentage of responses per theme in terms of the total study population.

1.8 Dissertation Chapter Overview

The write-up of this research endeavour follows the classical model of dissertation structure (Hofstee 2006: 35). It is structured into five chapters that have been arranged in an order so as to give this dissertation a logical flow and chain of reasoning. The aim of the structure as set out is to provide the reader with a coherent piece of work that is clear from the outset and has a logical build up to its eventual research conclusions.

Chapter 1 outlines the specific problem statement and links it to the purpose of this research endeavour and the specific questions that the research endeavour will attempt to address. This chapter further provides the justification for the research and briefly highlights the methodology employed in the inquiry of the research questions.

Chapter 2 provides an overview of the published literature, policy and legislation relevant to the research topic. In this instance it will look at the published literature, policy and legislation relevant to the specific issues of: resilience; spatial planning; urban resilience; and spatial resilience. Specifically this chapter will set out to create a theoretical framework and understanding of the aforementioned concepts with specific reference to the South African context. This theoretical framework will then serve as the basis for the further inquiry into the understanding of the concept or principle of spatial resilience as set out in SPLUMA and as envisioned in this research endeavour.

Chapter 3 focuses on outlining the research methodology employed in this research endeavour to obtain the research findings in order to address the research questions and objectives highlighted earlier in Chapter 1.

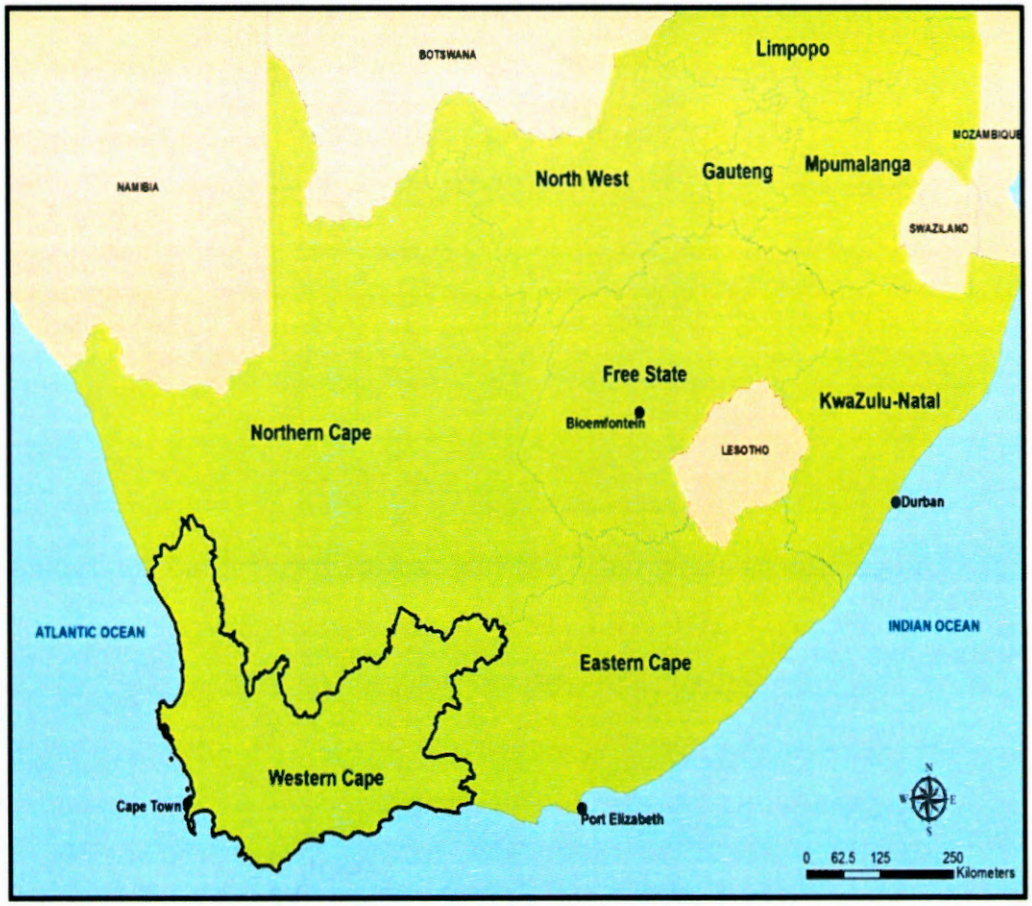
Chapter 4 focuses on the presentation of the research findings as obtained from the survey of the study population.

Chapter 5 focuses on providing the reader with the overall conclusions of the research endeavour and links the research findings, discussed in Chapter 4, to the research questions and objectives highlighted in Chapter 1. Chapter 5 closes with the recommendations which emanate from this research endeavour and which are informed by the research findings and the discussion of the research findings.

1.9 Conclusion

The reasoning presented in this chapter indicates that there is a compelling and urgent need to initiate the debate on the relatively new concept or principle of spatial resilience given the recent coming into operation of SPLUMA and the importance of its five development principles on the future practice and decision-making within the spatial planning and land use management sector in South Africa.

Map 1: Map of South Africa highlighting the geographic location and extent of the Western Cape Province



(Map source: Map prepared by Dalene Stapelberg (GIS Technician, Sub-Directorate Spatial Information Management, Department of Environmental Affairs and Development Planning, Western Cape Government, using centrally stored spatial datasets originating from Demarcation Board)

Chapter 2 Literature Review and Theoretical Framework

2.1 Introduction

This chapter provides an overview of the published literature and the most relevant South African policy and legislation on the broad concept of resilience in order to develop a theoretical base that will assist in understanding how resilience or a resilience thinking approach could be employed as a theoretical and analytical framework for advancing governance in general and urban and spatial governance in particular. It also provides a brief historical overview of spatial planning and land use management in South Africa which should further contribute to understanding the need for adopting a resilience thinking approach, particularly in the spatial planning and land use management sector. Lastly, and given the aforementioned, this chapter focuses in on: the concepts of urban and spatial resilience, within a spatial planning and land use management context; proposes how these concepts could be interpreted, within the broader theoretical understanding of resilience; and discusses how it could potentially be advanced through the adoption of appropriate management approaches.

2.2 The Context

Walker and Salt (2006: 2); Coaffee *et al.* (2008: 1); Todes (2011: 115-116); Walker and Cooper (2011: 2); Davoudi (2012: 299; 2014: 360-361); Shaw (2012: 308); Amin (2013: 140); Desouza and Flanery (2013: 89); Jabareen (2013: 220); Van Niekerk (2013: 1); World Bank (2012a: 4; 2012b: 7; 2013: 2-19); UNISDR (2013: 5); Cartalis (2014: 259); Goldstein *et al.* (2014: 1); Vale (2014: 192); and Sellberg *et al.* (2015: 1) are all of the opinion that the world is currently experiencing unprecedented challenges, with increased uncertainty and constant reminders of the unpredictability that the future may hold, be it the potential impacts of climate change, financial crises, acts of terror, social

unrest, high levels unemployment, increasing social inequality, widespread poverty, the effects of globalisation or the increased global economic competitiveness.

This further complicates the already challenging objective of urban governments, all over the world, which is to provide the basic essentials for their inhabitants (Seeliger and Turok, 2013: 2113). For professional planners, operating within the spatial planning and land use management sector, this is further complicated by constant change, the political nature of the issues the profession is faced with and the ever present attacks on the value of their professional contributions to society (Harrison *et al.* 2008: vii; Coetzee 2012: 17 & 18; Davoudi 2012: 299; Porter and Davoudi 2012: 333, and Todes 2012b: 400).

In the South African context the new democratic dispensation in 1994 was greeted with the reality of massive inherited societal problems (Harrison *et al.* 2008: vii – viii & 6 – 8; Coetzee 2012: 11; South Africa NDPC 1999: ii-iii & 4-7; South Africa DoLA 2001: 3 & 5 & 6 & 8-10; South Africa NPC 2011: 6-29 and Turok 2014: 749). These have been complicated in the intervening years by an array of further challenges, many of them which are of a global nature (South Africa NPC 2012: 30-33; and Turok 2014: 750). These further challenges include, but are not limited to issues associated with South Africa's re-entry into the global market which has become much more competitive; higher than normal urbanisation due to the removal of influx controls after the fall of apartheid and the search by individuals for improved quality of lives; persistence of the influence of vested interests in the local land and property markets; exposure to the effects of global financial and economic crises; the real and potential impacts of climate change and more extreme weather patterns; persistent and increasing poverty, inequality and unemployment; and issues associated with food and energy security.

As mentioned previously, many of these challenges are not unique to South Africa with Seeliger and Turok (2013: 2108) communicating that many urban

settlements, across the world, at all levels of development, have at some stage or the other been exposed to heightened economic, social and environmental pressures due to challenges such as globalization, urbanization, climate change, resource depletion, increased unemployment, widespread inequality and poverty and social unrest. They indicate further that the problems with many of these challenges are that they are almost impossible to predict and once they occur, they may interact with each other in ways that may potentially worsen outcomes. They aver further, that in the aftermath of the 2007-2008 global financial crises, the situation seems to have worsened, in the South African context, due to the ushering in of an era of extreme public financial austerity. This, they posit, has heightened the risks for many South African urbanites and urban governments, and has increased the complexity in dealing with many of the aforementioned challenges.

The question that is then naturally posed is: how do governments deal with such situations? In this regard, Davoudi (2012: 299); Davoudi *et al.* (2013: 307); Seeliger and Turok (2013: 2109); Goldstein *et al.* (2014: 1); and Turok (2014: 750), have advised that the broad concept of resilience has the potential to be a possible remedy for dealing with this constant change, uncertainty and unpredictability. In support of this Coaffee *et al.* (2008: 1; 2013: 323); Walker and Cooper (2011: 2); UNISDR (2013: 3); Shaw (2012: 308); De Weijer (2013:p. iii & 1); Vale (2014: 192); Bene *et al.* (2014: 598); and White and O'Hare (2014: 934) have all indicated that the term resilience has recently become a specific area of global focus in policy discussions on urban planning and management. This they indicate has mainly been so due to the variety of problems faced by urban citizens, and their governments, and the need to find a way of rationally dealing with it.

Folke (2006: 253-256); Pelling (2011: 84); Davoudi (2012: 306); De Weijer (2013: 10); Seeliger and Turok (2013: 2109); and Turok (2014: 750) all aver that the attractiveness of the term resilience lies in its ability to provide a means of reasoning about how complex systems, such as large urban settlements, towns and cities can resist and adapt to change but still be able to continue

functioning and thrive in the face of these modern societal conundrums. Davoudi (2012: 305); De Weijer (2013: 14); and White and O'Hare (2014: 934) add further that resilience is attractive because of the general feel good factor associated with it and its common-sense meaning, which speaks to the ability to resist threats, recover from crises and adapt to on-going pressures. This, they posit, seems to find positive traction with society in general and with those who lead them. Allied to this, when the term is used in a social context it inherently implies a high degree of self-organisation, learning and flexibility in anticipating and responding to difficulties. The attractiveness of the term resilience is further enhanced by its ability seemingly to cut across sectoral and professional boundaries and thereby assist in understanding how complex natural and social systems cope with the adversity and instability that arise from various origins (Brand and Jax 2007: 8 & 9; Davoudi 2012: 306; and Turok 2014: 751).

However, despite the obvious recent hype around the concept of resilience, Brand and Jax (2007: 1); Davoudi (2012: 299); Shaw (2012: 310); Porter and Davoudi (2012: 329) and Vale (2014: 198) indicate that many are not clear on what this term resilience actually means, beyond the understanding that it is good to be resilient, with some warning that the broad use of the term runs the risk of losing its value. As a result of this Davoudi (2012: 306) and Porter and Davoudi (2012: 329), argue that the use and the application of the word, resilience, especially within a social context, must be done with circumspection.

2.3 Overview of Spatial Planning and Land Use Management in South Africa

Before delving deeper into the inner core of the broad concept of resilience and the more specific concepts of urban and spatial resilience, a brief introduction into the history of the spatial planning and land use management sector in South Africa, will firstly be provided. This will hopefully provide a context which should further inform the need for a resilience thinking approach in the spatial planning and land use management sector in South Africa.

In South Africa, as would be the case internationally, the broad concept of resilience and the more specific concepts of urban and spatial resilience have particular relevance to and have a conjoined relationship with the spatial planning and land use management sector. This relevance is firstly due to the South Africa's unfortunate political history, which has endowed the nation with its spatial monuments as a constant reminder of its legacy (Harrison *et al.* 2008: 9-10; Mabin and Smit 1997: 207-213; South Africa NDPC 1999: 7; Berrisford 2011: 248-249; Todes 2012a: 158; and Coetzee 2012: 11) and secondly due to the fact that resilience, in the form of spatial resilience, has been legislated through the enactment of the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) (SPLUMA) (South Africa 2013).

In this regard this section attempts to provide a brief discussion of the spatial planning and land use management system in South Africa pre-1994, highlighting what the problems were with the system pre-1994, and then it proceeds to discuss the evolution of the spatial planning and land use management system post-1994 and details the problems and concerns associated with the post-1994 system.

2.3.1 The pre-1994 Spatial Planning and Land Use Management system

Pre-1994 the South African spatial planning and land use management system was to a large extent influenced by the modernist approach to spatial planning and land use management. This modernist approach was characterised by having a specific focus on land use control, zoning and blueprint type structure planning (South Africa NDPC 1999: 4-6; Todes 2011: 117 and Coetzee 2012: 10).

It is important to note that this modernist approach to spatial planning and land use management was the system of choice, in South Africa, from the early 1900s until the late 1990s. This system was adopted and implemented as its extremely rigid, structured and autocratic nature complemented the incumbent colonial and apartheid government style and endeared itself to achieving their goals of separate development and influx control, thereby

serving the needs of the ruling minority (Mabin and Smit 1997: 207-213; South Africa NDPC 1999: 7; South Africa DoLA 2001: 8-9; Coetzee 2012: 11; and Van Wyk and Oranje 2014: 351).

2.3.2 Issues with the pre-1994 Spatial Planning and Land Use Management system

Although the pre-1994 spatial planning and land use management system faithfully and successfully served its colonial and apartheid masters, it resulted in a variety of perverted spatial and social outcomes which were bequeathed to the post-1994 democratic era. These perverted outcomes included the creation of a generally fragmented spatial pattern characterised by racial, socio-economic and land use segregation with dysfunctional human settlements, especially so for the formerly disenfranchised sections of the population (Harrison *et al.* 2008: 9-10; Mabin and Smit 1997: 207-213; South Africa NDPC 1999: 7; Berrisford 2011: 248-249; Todes 2012a: 158; and Coetzee 2012: 11).

Here low income urban residential areas were typically situated at the periphery of cities and towns, far away from work opportunities, with little or no amenities and poor quality living environments. They were further compromised by a spatial planning and land use management system that only served the needs of the minority and as such was incapable of competently dealing with the broader issues of integrated urban and rural development, nor with responding to the growing social and economic needs of the majority of the disenfranchised population. Furthermore the pre-1994 system was extremely complicated and uncoordinated from a legal and procedural perspective and very control oriented, rooted in the blueprint type planning ideology with little regard for democratic processes and the needs of the majority of the citizenry (South Africa NDPC 1999: 5-6; Oranje 2014: 3-4; and Coetzee 2012: 11 & 14).

2.3.3 The post-1994 Spatial Planning and Land Use Management system

The realisation of the requirement for a more inclusive, liberal and dynamic spatial planning and land use management system arose prior to the onset of the democratic dispensation in 1994 (ANC 1992: 1-23; 1994: 5-10). This realisation was directly as a result of the visible and tangible impacts that the contrived modernist colonial and apartheid planning system had had on South African settlement morphology and functionality and the social and economic hardship it had caused for the majority of the population. The need for this new system was amplified by the realisation that a whole set of additional challenges would accompany the ushering in of the new democratic dispensation.

Several authors, (ANC 1994: 28-140; Harrison *et al.* 1997: 43; Harrison *et al.* 2008: 6-9; South Africa NDPC 1999: 7-11; South Africa DoLA 2001: 1-19; Coetzee 2010: 21; 2012: 11; Berrisford 2011: 249-253; and Todes 2012b: 401) have indicated that there was consensus, at that time, that the foundations of the new post-1994 democratic spatial planning and land use management system had to be based on several accepted and trending influences from the international spatial planning and land use management milieu.

These trending influences included the need for community involvement and participation in spatial planning and land use management processes and practices; the need to focus on social planning and the needs of communities; the need for a much more developmental approach to development planning through the shifting of focus from land use control and blueprint type planning to strategic planning with a focus on flexible spatial plans, spatial policies and land use management systems.

Other trending influences that were considered desirable included the need to have a closer relationship between environmental management and spatial planning and land use management in order to ensure sustainability; the need for urban planning and urban management to move closer together in order to

facilitate improved and integrated planning, budgeting, and delivery and the need to shift the focus from planning, or the plan, to actual delivery. Lastly, was the need for spatial planning and land use management to focus on local economic development in order to address the reality of local socio-economic challenges and the need to adopt a more facilitative approach to the governance aspects of spatial planning and land use management.

The aforementioned trending influences were all subsequently taken up in the post-1994 spatial planning and land use management system, firstly through the development and enactment of the DFA; and then through the development and enactment of the MSA.

The aim of the DFA was firstly to serve as a vehicle for the implementation of the post-1994 reconstruction and development programme and secondly as an interim spatial planning and land use management legislative solution and to usher in a new era of normative or principle-based spatial planning and land use management system that was to be more democratic, strategic and developmental in nature and that would be able to facilitate and speed up development in all sectors (Coetzee 2012: 14; and Van Wyk and Oranje 2014: 356).

The aim of the MSA, on the other hand, was to introduce a new integrated form of development planning to the local municipal sphere and to introduce a new approach to spatial planning and land use management through the creation of municipal spatial development frameworks (MSDFs) linked to the municipal integrated development plans (IDPs) and the introduction of more flexible land use management systems that were linked to the spatial development frameworks and the integrated development plans (Coetzee 2012: 14).

In terms of the MSA each municipality is required to have a new integrated development plan (IDP) every five years with annual performance based

reviews which enable update or amendment thereof. In terms of this dispensation the MSDF was intrinsically linked to the IDP as one of its informing sector plans (South Africa DoLA 2001: 19-21 & 34; Berrisford, 2011: 261; and Coetzee, 2012: 15).

2.3.4 Issues with post-1994 Spatial Planning and Land Use Management system

Although there was a great momentum in the late 1990s to shift the South African spatial planning and land use management system away from the excessively bureaucratic, rigid, control-oriented type of planning towards a more democratic, strategic, developmental and delivery-oriented type of planning system, in reality this has not really fully materialised (Harrison 2002: 10; Harrison *et al.* 2008: 11-12; South Africa NPC 2011: 6-7 & 19-26; Berrisford 2011: 247; Oranje 2014: 7; and Van Wyk and Oranje 2014: 364-366). Coetzee (2012: 14) avers that despite several advances, much confusion and contradiction remains.

In fact, the South African national government only recently managed to promulgate SPLUMA with the date of implementation or effect of SPLUMA being as recent as 1 July 2015 (South Africa 2015b: 3). This new spatial planning and land use management law, which replaced the DFA and which has the unenviable task of transforming the South African spatial planning and land use management system, is still very much in its infancy, and cannot at this stage of its implementation be expected to have realised any real successes except for the fact that it is now on the South African statute books after what can probably be considered to be one of the longest running policy development sagas in our young democracy (Coetzee 2012: 15; and Van Wyk and Oranje 2014: 356).

Current issues with the South African spatial planning and land use management system have been documented by a number of authors (Coetzee 2010: 21; 2012: 13; Coetzee and Oranje 2006: 8-10; Pieterse 2009: 1-8; Berrisford 2011: 248; South Africa DoLA 2001: 3 & 6-8; South Africa NPC 2011:

5 & 19-20; 2012: 259-293; South Africa CoGTA 2015: 10; Oranje 2014: 3-7; Van Wyk and Oranje 2014: 354-356).

Although several spatial planning and land use management related policy and legislative strides have been made since 1994, such as the promulgation and implementation of the DFA in 1995, the publication of the Green Paper on Planning and Development in 1999 (Green Paper) (South Africa NDPC 1999), the publication of the White Paper on Spatial Planning and Land Use Management in 2001 (White Paper) (South Africa DoLA 2001), the promulgation of the MSA in 2000 and the resultant creation of the IDP process and the promulgation of SPLUMA in 2013, a number of anomalies still exist. Several authors (De Visser 2009: 14-19; South Africa NPC 2011: 5-8 & 16-28; 2012: 259-293; South Africa CoGTA 2015: 7-8 & 58-59; Coetzee 2012: 12-17; Oranje 2014: 3-6; Du Plessis 2013: 5 & 10; Van Wyk and Oranje 2014: 360-363; Todes 2011: 125; Coetzee and Oranje 2006: 6-7 & 10-11; have all posited on this aspect. Some of these anomalies include:

- too great a focus on sectoral policy development that infringes on spatial planning and land use management and creates confusion, incoherence and a lack of coordination;
- the inability of the local municipal sphere of government, arguably the most important player in the spatial planning and land use management sector, to perform as it should, with the slow progress being blamed on issues such as poor governance, lack of leadership, institutional inadequacies and lack of capacity and skills;
- the palpable inability to lead and champion implementation of spatial plans and spatial strategies; with some indicating that the negative disposition, attitude and lack of commitment of some planners, managers and politicians, towards making things work, from a spatial planning and land use management perspective, having had a big influence on the current state of affairs;

- an unwillingness to embrace the performance aspect of the management which has resulted from a spatial planning and land use management perspective, to the continuation of dysfunctional settlements with very little appetite for doing things differently and no semblance of real accountability;
- a reluctant, hesitant or cautionary approach to embracing meaningful public participation and to promote true urban democracy. As a result, many of the plans and strategies do not speak to the real needs of the people nor do they speak to the real strategic issues facing the specific areas under discussion;
- the continued rigidity of the post-1994 spatial planning and land use management system and blueprint nature of planning which continues to have a major influence in stymying innovation and the need for flexibility;
- the continued impact of vested interests, whose stubbornness knows no bounds;
- a lack of focus on implementation and delivery with blame being placed on the inability to form a strategic link between strategic plans, budgets and actual projects, and the inability to prioritise and properly sequence such projects;
- the ultimate goal of sustainability still seems to be sorely misunderstood within the spatial planning and land use management sector with the policy documents eloquently speaking to this goal but lacking the strategy to implement and achieve it. In many respects the spatial planning and land use management sector are still of the belief that sustainability is a green agenda and not a built environment agenda;
- a misunderstanding about the link between spatial planning and land use management and actual municipal or urban management, with municipal spatial planning and land use management institutions relegated to a compliance driven side shows and not receiving the necessary financial or human resource capacity nor the institutional

recognition for their role, value and contribution in improving overall municipal management;

- with specific respect to the planning profession, the requirement for planners to re-skill themselves in order to deliver on the new post-1994 spatial planning and land use management system is seemingly still unresolved along with the skill levels of other technocrats and politicians involved in the spatial planning and land use management milieu. Related to this is the lack of a concerted approach and willingness by practicing planners, both in the public and private sectors, to remain abreast of best practice and to participate in rigorous professional and academic debate with the sharing of ideas and experience remaining a problem. This is further aggravated by a lack of constructive communication both within the planning profession and between the planning profession and other relevant professions and stakeholders;
- the spatial planning and land use management sector continues to be hamstrung by a lack of integration of approach and the realisation of the importance of strategic partnership formation, with many professional planners and spatial planning and land use management institutions remaining isolated for a variety of reasons;
- there seems to be a lack of understanding of the role and function and importance of spatial planning and land use management within the broader governance framework which seems not only to be a problem across-sectors but also within the spatial planning and land use management sector.

In this regard, it is important to note that the Royal Town Planning Institute (RTPI) (2014: 7 & 33); Coetzee 2012: 17; and Harrison *et al.* (2014: 42) advise that the spatial planning and land use management sector needs to become more strategic and facilitative in nature and that the role of the sector should be to have a distinct focus on harmonising the plans and actions of other sectors. The RTPI refers to

this as getting sectoral policy and plans to respond better to "space and place" (2014: 5).

The argument behind this need for an "integrative" role to be played by the spatial planning and land use management sector is because many sectoral policies, plans and decisions that are generally outside of the control of the planning profession, occur in and impact on space and as such have major implications on the way we use land and the consequences of this for different places. Because everything occurs in space, space is considered to be a good medium for facilitating integration. As such, this integrative role for the spatial planning and land use management sector places the requirement on the sector to facilitate the process of highlighting the spatial implications of sectoral policies, plans and decisions, and to capacitate the people who make them in this regard. Lastly, the tension between politics and spatial planning and land use management continues to be a thorn in the side of progress with many planners battling to perform their day-to-day functions professionally and responsibly as a result (Coetzee 2012: 17; and Coetzee and Oranje 2006: 6-7).

What is most disconcerting is that fact that many of the issues highlighted above were highlighted by the Green Paper (South Africa NDPC 1999: 1-11), however, it seems that there has not been enough time to address them in the intervening years because most of the issues still persist today (South Africa NPC 2011: 5 & 7-8; 2012: 24-25; South Africa CoGTA 2015: 4, & 10; Coetzee 2012: 18; and Van Wyk and Oranje 2014: 366).

The section on the historical overview of the South African spatial planning and land use management sector has been included in this chapter dealing with the literature review and theoretical understanding of resilience, specifically, because understanding the issues associated with the past and present South African spatial planning and land use management system along with an

understanding of the theoretical basis of a resilience approach is needed to understand the common sense requirement for adopting and mainstreaming a resilience thinking approach into the spatial planning and land use management sector (Harrison *et al.* 2014: 10). This will assist in providing the clarity of thought that could lead to potential interventions that could and should assist with addressing many of the South African societal issues raised above.

2.4 The Sustainability - Resilience nexus

With respect to sustainability and resilience, Davoudi (2012: 299) indicates that "It appears that resilience is replacing sustainability in everyday discourses". This, along with the previously mentioned lack of clarity of what resilience means, requires an attempt to provide some insight into the difference between resilience and sustainability in the process of developing a theoretical framework for understanding resilience.

Harrison *et al.* (2014: 15) indicate that the idea of "sustainable development" has been widely used globally in development thinking and policy since the early 1970s. They indicate that the concept of sustainable development has become somewhat of a refrain for most development policy. In terms of understanding sustainable development there are probably as many definitions for sustainable development as there are authors who write on the subject. The most well-known and widely used definition of sustainable development seems to be the one that was provided by the United Nations World Commission on Environment and Development (the so-called Brundtland Commission) who in its 1987 report titled "Our Common Future" defined sustainable development as:

"development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UNCED 1987: 39)

One of the most important contributions that this report on sustainable development made was to concretise and popularise the idea that the economy and society exists within the confines of limited space and limited natural resources and as such are very much dependent on the natural environment for present and future existence. This led to the adoption of the nested model of sustainability. A further important contribution made by this report was to highlight that the needs of both the present and future generations cannot be guaranteed if we do not find a sobering balance between the economic, social and environmental concerns.

In terms of resilience, it is important to note that the theories surrounding resilience go back to the 1970s as well. However, their use in policy and urban planning circles has only become a much more recent phenomenon (Davoudi 2012: 299; Shaw 2012: 308; Wilkinson 2012b: 319; Porter and Davoudi 2012: 329; Seeliger and Turok 2013: 2109; Turok 2014: 750; and Harrison *et al.* 2014: 15).

In this regard, Harrison *et al.* (2014: 15) indicates that one of the more common misunderstandings made about resilience is that it replaces sustainability or that resilience and sustainability are essentially the same. They are of the opinion that although resilience and sustainability are conceptually linked, they do not have the same meaning and propose that the relationship between resilience and sustainability should be clarified. With respect to this they indicate that sustainability should be seen as an essential goal of development and resilience as a way of thinking and acting that would lead us towards achieving sustainability. In support of this view, Martin-Breen and Anderies (2011: 14) note that sustainability is a broader concept than resilience while Walker and Salt (2006: 37) write that "resilience is key to sustainability". Lastly, Harrison *et al.* (2014: 16) propose that a system is deemed to be sustainable, even in the face of unpredictable change, only when they have achieved a high level of resilience or adaptive capacity.

2.5 Overview of relevant South African Policy and Legislation

South Africa has been extremely active in terms of legislative and policy development across all sectors since 1994 (South Africa NDPC 1999: 11-19; Steytler 2008: 518; Berrisford 2011: 248; and Coetzee 2012: 13). This has resulted in a plethora of policy and legislation, which has made our young democracy a complex place to live in. The Green Paper (South Africa NDPC 1999: 30-31) refers specifically to the complexity caused by the sectoral policy and legislative thrusts post-1994, which had in particular, encroached on the functional area of spatial planning and land use management, and which was evident at a very early stage of our democracy. This, along with the failure of cooperative governance, has contributed significantly to policy incoherence and to a lack of coordination and cemented sectoral interest which has worked against the principle of integrated and joint planning and delivery (South Africa NPC 2012: 258-292).

In this section a brief overview will be provided of the most relevant national South African policy and legislation, which have a direct or indirect reference to the need for a sustainable development or resilience approach. The idea behind this section is to understand the legislative and policy basis for adopting a resilience thinking approach. I will not attempt to cover each and every law and policy currently in force in South Africa, but will merely hone in on those that, in my opinion, are the most important from a spatial planning and land use management and resilience perspective.

2.5.1 Overview of relevant South African Legislation

Constitution of the Republic of South Africa, 1996 (South Africa 1996)

The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996) (Constitution) is the supreme law of the land. No other statute or government action can supersede or circumvent the intent and provisions of the Constitution.

Although the Constitution does not specifically refer to the broader concept of resilience, or the more specific concepts of urban resilience or spatial resilience it does establish the constitutional requirement of sustainable development or sustainability.

In this regard, Chapter 2 of the Constitution creates the Bill of Rights. The Bill of Rights applies to all law, and binds the legislature, the executive, the judiciary and all organs of state. This Bill of Rights is the cornerstone of democracy in South Africa. It enshrines the fundamental human rights of all people in our country and affirms the democratic values of human dignity, equality and freedom.

Section 24 of the Bill of Rights details the Environmental Right. It states that

"everyone has the right

a. to an environment that is not harmful to their health or well-being; and

b. to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that

i. prevent pollution and ecological degradation;

ii. promote conservation; and

secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

In section 2.4 of this chapter sustainability is discussed in the context of resilience. Without regurgitating that discussion it suffices to say that, at this point in time, the theoretical position adopted in this dissertation is that sustainability should be seen as an essential goal of development and resilience as a way of thinking and acting that would lead us towards achieving

sustainability. As such, it is my opinion that the constitutional imperative of sustainable development indirectly calls for the need for a resilience thinking approach.

Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) (SPLUMA) (South Africa 2013)

SPLUMA is the national spatial planning and land use management statute currently applicable in South Africa. As mentioned previously, it was assented to by President Zuma on 2 August 2013 and came into effect on 1 July 2015 (South Africa 2015b: 3).

It is important to note that the purpose of SPLUMA, amongst others, is to provide a framework for spatial planning and land use management sector in South Africa and to specify the relationship between the spatial planning and the land use management system and other kinds of planning and to provide for the inclusive, developmental, equitable and efficient spatial planning at the different spheres of government.

The purpose of SPLUMA is further to provide a framework for the monitoring, coordination and review of the spatial planning and land use management system and to provide a framework for policies, principles, norms and standards for spatial development planning and land use management, to address past spatial and regulatory imbalances, and to promote greater consistency and uniformity in the application procedures and decision-making by authorities responsible for land use and development decisions.

Chapter 2 of SPLUMA introduces the concept of development principles. The introduction of the concept of development principles entrenches the policy shift towards a normatively based spatial planning and land use management system in South Africa. The five development principles listed in Chapter 2 include the principle of spatial justice, the principle of spatial sustainability, the principle of spatial resilience, the principle of efficiency and the principle of

good administration. All of these development principles apply to all organs of state and other authorities responsible for the implementation of legislation regulating the use and development of land, and guides the preparation, adoption and implementation of any SDF, policy or by-law concerning spatial planning and the development or use of land. Furthermore, these five development principles must guide the compilation, implementation and administration of any land use scheme or other regulatory mechanism for the management of the use of land.

SPLUMA further prescribes that the development principles must guide the sustainable use and development of land, the consideration by a competent authority of any application that impacts or may impact upon the use and development of land and the performance of any function in terms of SPLUMA or any other law regulating spatial planning and land use management.

Importantly, SPLUMA further indicates that all the development principles contained in SPLUMA apply to all aspects of spatial development planning, land development and land use management.

The above mentioned prescripts bind any and all other sectoral policy and legislation that impact on any aspects of spatial development planning, land development and land use management to take into consideration the five development principles introduced by SPLUMA. This is both a common sense and a very powerful requirement, because if it were not in place, then other sectoral interest such as human settlements, infrastructure, and so forth would not be bound to take these development principles into consideration and secondly, it would not enable us to address some of the pre-1994 concerns such as redressing the ills of past and restructuring our settlements and improving their functionality.

For our specific purposes, Section 7 (d) of SPLUMA introduces and describes the principle of spatial resilience. It states that:

"the principle of spatial resilience, whereby flexibility in spatial plans, policies and land use management systems are accommodated to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks".

As such, SPLUMA is the primary legislative instrument that gives life to this nascent concept of spatial resilience and in doing so entrenches a resilience thinking approach into all aspects of spatial development planning, land development and land use management and all sectors that potentially impact on this.

There are a variety of other important statutes which are of specific relevance to both spatial planning and land use management and resilience. The following statutes all fall into this category and as such are bound to take the development principles into account, including the principle of spatial resilience. They will now be briefly discussed.

Local Government: Municipal Systems Act, 2000 (Act 2 of 2000) (MSA) (South Africa 2000)

The purpose of this statute is to provide for the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities and ensure universal access to essential services that are affordable to all.

Its purpose is further to establish a simple and enabling framework for the core processes of planning, performance management, resource mobilisation and organisational change which underpin the notion of developmental local government.

Lastly, its purpose is to establish a framework for support, monitoring and standard setting by other spheres of government in order to progressively build local government into an efficient, frontline development agency capable of

integrating the activities of all spheres of government for the overall social and economic upliftment of communities in harmony with their local natural environment.

The importance of the MSA is that it creates the requirement for municipalities to develop Integrated Development Plans (IDPs) for their areas of jurisdictions. Furthermore, the MSA was the first post-1994 South African law that laid down the requirement for municipalities to develop SDFs for their area of jurisdiction as a sector plan that feeds into the IDP of that area.

Although this statute does not make reference to the requirement of resilience it does define development in Section 1, as:

> "'development' means sustainable development, and includes integrated social, economic, environmental, spatial, infrastructural, institutional, organisational and human resources upliftment of a community aimed at -
>
> (a) improving the quality of life of its members with specific reference to the poor and other disadvantaged sections of the community; and
>
> (b) ensuring that development serves present and future generations".

In so doing it lays down the requirement for municipalities to pursue sustainable development. With resilience being a contributing factor to achieving sustainable development, this statute indirectly requires a municipality to adopt a resilience thinking approach in the manner in which its develops, uses land, and provides services to its citizens.

Local Government: Municipal Finance Management Act, 2003 (Act 56 of 2003) (MFMA) (South Africa 2003)

The objective of this statute is to secure sound and sustainable management of the financial affairs of municipalities.

This statute does not make explicit reference to the requirement for resilience or sustainable development. It does, however, talk about the sustainable management of financial resources. The MFMA is important and has relevance to the concept of resilience because the manner in which the municipal sphere of government prioritises and spends its financial resources and invests in infrastructure has a major impact on settlement functionality, settlement resilience and settlement sustainability and as such, the general sustainability of the municipality itself.

Public Finance Management Act, 1999 (Act 1 of 1999) (PFMA) (South Africa 1999)

The objective of this statute is to regulate the financial management of national and provincial government and to ensure that all revenue, expenditure, assets and liabilities of national and provincial government are managed efficiently and effectively.

This statute does not make explicit reference to the requirement for resilience or sustainable development. It does, however, talk about the sustainable management of financial resources within provincial and national spheres of government. The PFMA is important because the manner in which the national and provincial spheres of government prioritises and spends or invests its financial resources in society, especially with regard to infrastructure and services, has a major impact on settlement functionality, settlement resilience and settlement sustainability.

Disaster Management Amendment Act, 2015 (Act16 of 2015) (South Africa 2015a)

The Disaster Management Act, 2015 (Act 16 of 2015) was first introduced in 2002 and then later amended in 2015. The objective of this statute is to create and expand on the requirement for municipalities to develop disaster management plans, perform disaster risk assessments and to map the risks relating to areas and communities that are vulnerable to disasters and to reduce the risk of disasters through the adaption to climate change and the development of early warning mechanisms.

The statute makes specific reference to the need for resilience with respect to the anticipation of future disaster risks; and the reduction of existing hazard or risk exposure. As such, this statute promotes the adoption and use of a resilience thinking approach, albeit from a disaster management perspective.

National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) (South Africa, 1998)

NEMA is the overarching framework statute for environmental management in South Africa. It gives life to the Environmental Right as contained in the Bill of Rights in Chapter 2 of the Constitution by developing a framework for integrating good environmental management into all development activities in South Africa by promoting certainty with regard to decision-making by organs of state on matters affecting the environment. It does so by establishing overarching principles for decision-making on matters affecting the environment.

NEMA specifically provides for the concept of Sustainable Development. In terms of NEMA, sustainable development requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves both present and future generations.

Chapter 1 of NEMA sets out the Environmental Management principles which apply throughout the Republic to the actions of all organs of state that may significantly affect the environment. The Environmental Management principles include, amongst others, that environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably; and development must be socially, environmentally and economically sustainable;

Although NEMA itself does not specifically refer to the broader concept of resilience or the more specific concepts of urban and spatial resilience, the constitutional imperative and NEMA endorsed legal requirement for sustainable development indirectly infers the requirement for a resilience thinking approach.

Housing Act, 1997 (Act 107 of 1997) (South Africa 1997)

The objective of this statute is to amongst others provide for the facilitation of a sustainable housing development process and for this purpose to lay down general principles applicable to housing development in all spheres of government. It is further purposed to define the functions of national, provincial and local governments and to set out the financing arrangements of national housing programmes.

This statute does not make any reference to the requirement of sustainable development, sustainability or resilience. Nevertheless, this stature is important because housing, specifically where it is provided, the type of housing and the type of settlement created is one of the major drivers of urban development and as such has a major impact on the sustainability and resilience of both the settlement and the municipality within which the settlement is located.

Infrastructure Development Act, 2014 (Act 23 of 2014) (South Africa 2014)

The objective of this statute is to amongst others provide for the facilitation and coordination of public infrastructure development which is of significant economic and social importance to South Africa and to ensure that infrastructure development in South Africa is given priority in planning, approval and implementation. It is further purposed to ensure that the development goals of the state is promoted through infrastructure development.

Although this statute does not specifically make reference to the requirement for resilience or sustainability its implementation has a potential major impact on municipal settlement functionality and therefore municipal sustainability and resilience because infrastructure is a major driver of urban development and as such has a major potential impact on the resilience and sustainability of settlements.

2.5.2 Overview of relevant South African policy

Green Paper on Planning and Development, 1999 (Green Paper) (South Africa NDPC 1999)

The Minister of Land Affairs appointed the National Development and Planning Commission (Commission) in 1997, in terms of the DFA (South Africa 1995) to advise on the future of development and planning in South Africa. Amongst others, the Commission was requested to prepare a Green Paper which would review and, if necessary, make recommendations with respect to changes to the legislation and process of land development in South Africa.

As a result, the Green Paper was produced and released in 1999. The intention of the Green Paper was to continue the national debate on development and planning, which would then serve as input into the development of a White

Paper which would be subsequently finalized by the Department of Land Affairs.

In developing the Green Paper, the Commission focused specifically on the spatial planning system for urban and rural development in South Africa. As part of its development process it embarked on an extensive process of research and consultation with a wide range of stakeholders to gain an in-depth understanding of the operation of spatial planning in South Africa, at that point in time, in order to identify key problems, and to seek innovative approaches to moving forward (South Africa NDPC 1999b: ii).

As a result the Green Paper eloquently provided us with the pre-1994 history of spatial planning in South Africa, illustrating the problems it resulted in. It also discussed the manner in which the spatial planning and land use management system developed subsequent to 1994 from a legal, procedural and policy perspective.

The Green Paper indicates that although the promulgation of the DFA (South Africa 1995) was informed by a new normative approach to spatial planning and land use management, many problems remained, even after its promulgation. These problems included a lack of shared vision about what spatial development should be; a lack of co-ordination between different spheres of government and between different departments; a lack of capacity; a high degree of legal and procedural complexity; and the very slow pace of land development approvals.

In concluding drafting of the Green Paper the Commission included a host of recommendations. These included that the DFA and its principles be used in an amended form as the basis of national enabling legislation for integrated development planning; that the legal framework for development planning be rationalized; that a shared vision and consistent direction for spatial development be developed based on the protection of the rights of people and the environment and that we assume an incremental approach to planning and development by ensuring that it is based on the minimum number of

government actions; that we avoid duplication of policy, legislation and process; and that we set appropriate planning and development priorities.

Further recommendations include that the co-ordination between public and private investment be improved; make more efficient use of resources; that all spheres of government be required to produce integrated development plans and that a land development management systems be developed which support these plans; that clarity be provided on the roles of the different spheres of government and the framework for decision making with respect to planning and development; that the decision-making power be placed in the hands of appropriately qualified people, within a broader framework of plans approved by political decision makers and that the process of land development approvals be facilitated and as far as possible decentralize the decision-making to local government, within a broader framework of national and provincial integrated development plans.

It is interesting that, although the Green Paper did not make specific reference to resilience or spatial resilience it did set the trend by entrenching the need for a normatively based planning system and highlighted the need to promote sustainable development with many of its recommendations speaking to elements of a resilience thinking approach.

White Paper on Spatial Planning and Land Use Management, 2001 (White Paper) (South Africa DoLA 2001)

The White Paper (South Africa DoLA 2001) was developed by the Department of Land Affairs and released in 2001 by the Ministry of Agriculture and Land Affairs. The White Paper was developed using the Green Paper, as its point of departure.

This White Paper states in no uncertain terms that the economic, social and environmental future of South Africa depends on the wise use of its land resources. In this regard, the Minister of Land Affairs indicated, at that point in

time, through the White Paper, his intention to rationalize planning laws in South Africa into one national law applicable to all in order to achieve the national objective of wise land use. The aim of the White Paper was to significantly contribute to the creation of this one national system for planning.

It is important to note that this policy document, strangely, as was the case with the Green Paper, did not make any specific reference to the broad concept of resilience or the more specific concepts of urban and spatial resilience. However, the policy document did entrench the need for a resilience thinking approach within the spatial planning and land use management sector by making reference to the requirement for sustainable development and the wise use of land.

National Development Plan, 2012 (NDP) (South Africa 2012)

Besides the first democratic Constitution of South Africa, the National Development Plan (NDP) (South Africa NPC 2012) is probably one of the more important policy documents post-1994.

The NDP creates a national plan which binds all of government and all of society. Its horizon is the year 2030. Every sphere of government, government department, state-owned enterprise and organ of state are duty bound to focus their organisational efforts, plans, strategies, actions and finances to achieve the objectives of the NDP. The NDP was developed by the National Planning Commission (NPC) and released in 2012. The NPC is an independent body constituted mainly of persons outside of government and was established in May 2010 by President Zuma with a mandate to draft a vision for South Africa and an accompanying national development plan to achieve the vision.

In drafting the vision for South Africa and the NDP, the NPC first engaged in what they called a National Diagnostic. The National Diagnostic was developed after broad consultation with all sectors of society. The National Diagnostic highlighted South Africa's achievements and shortcomings post-1994 and listed

nine primary challenges facing South Africa. These included the following: too few people work in South Africa; the quality of education of black people is poor; infrastructure is poorly located, inadequate and under maintained; spatial divides prevent inclusive development; the economy is unsustainably resource intensive; the public health system cannot meet the demand or sustain quality; public services are uneven and often of a poor quality; corruption levels are high; and South Africa remains a divided society (South Africa NPC 2011: 7).

The engagements and outcomes of the National Diagnostic informed the development of the NDP. All the challenges identified in the National Diagnostic are interlinked and in summary focus principally on eradicating poverty and inequality.

The NDP, itself, highlights that development is a complex process and indicated that the approach to tackling poverty and inequality must be premised on faster and more inclusive economic growth, higher public and private investment, improving education and skills, greater use of technology, knowledge and innovation and better public services which will hopefully lead to higher employment, rising incomes and falling inequality. The NDP further highlights the need to rethink South Africa's general strategy and indicates that a holistic and integrated approach is required, with longevity and patience being requirements (South Africa NPC 2012: 263 & 434).

It recognises that government on its own cannot improve the overall living standards and what is required is determined and measurable action by all sectors of society and the formation of partnerships across society (South Africa NPC 2012: 1, 25, 48, 58, 115 & 132).

The NDP indicates that development planning is about building linkages between the various strands of everyday life. The NDP further indicates that public investment must complement private investment, and that the synergy between the two is critical for job creation and for employment. In this regard, it argues strongly that the harmful effects of spatial separation, one of the

pillars of the apartheid dispensation must be dismantled in its totality. In addition to the physical aspects of development, the NDP recognised the social aspects of development. It highlighted the need for social cohesion to underpin faster progress, the need for greater accountability of leaders in both the public and private sectors, and for citizens to be active in their communities and in public life and for a capable and developmental state that is effective, caring and innovative.

The NDP indicates that despite massive progress since 1994, our development trajectory must be altered in order to achieve our target of eliminating poverty and reducing inequality by 2030. It indicates that without faster progress, there is a real chance that South Africa could slide backwards while dealing with the immense challenges which could overwhelm our capacity to succeed (South Africa NPC 2012: 35).

The NDP indicates that the overarching goal of eliminating poverty and inequality rest on six pillars. The first is to unite all South Africans around a common programme to fight poverty and inequality and to foster a spirit of unity. The second pillar is active citizenry. The third pillar is growing an inclusive economy. The fourth pillar of the plan addresses the urgent need to build capabilities. These capabilities apply to both people and the state. The fifth pillar is the building of a capable and developmentally oriented state. The NPC defines a developmental state as one that is capable of intervening to correct historical inequalities and to create opportunities for more people. It states that a capable state needs to be professional, competent and responsive to the needs of all citizens. The sixth pillar is the responsibilities of leadership throughout society to work together to solve our shared problems.

Importantly, the NDP posits that South Africa's progress in navigating the transition from apartheid to democracy must be built on the ability of leaders to put aside narrow sectarian interests in favour of national interest. It indicates that to achieve the South Africa that we all desire, we require leaders to put the country first, and to put the future ahead of today (South Africa NPC

2012: 27, 37 & 57).

The NDP concludes by advising that the world is changing and that the global environment is also fraught with risks and observed that much of the world is caught in a wave of low economic growth that will continue for some time. This it emphasises will impact on South Africa's plans for higher growth. As such, they indicate that South Africans need to understand these trends in order to minimise risks and to explore opportunities. They indicate that a failure to act will not only see the country being left behind but it will also confine future generations to poverty and hopelessness (South Africa NPC 2012: 26).

The NDP makes specific reference to the need for sustainability and the requirement of a broad resilience approach. Furthermore, it highlighted the impact that spatial inequalities and inefficiencies have had and continue to have on the functionality of settlements and the quality of life of the majority of the population. As such, I am of the opinion that the NDP strongly advocates the adoption and use of a resilience thinking approach, especially with regard to spatial planning and land use management (South Africa NPC 2012: 197-216 & 258-293).

Draft Integrated Urban Development Framework (2015) (South Africa CoGTA 2015)

Another extremely useful, relevant and important policy document with respect to the broad concept of resilience and the more focused concepts of urban resilience and spatial resilience is the draft Integrated Urban Development Framework (IUDF) (South Africa CoGTA 2015) that was developed by the national Department of Cooperative Governance and Traditional Affairs in partnership with several other departments and released in 2015. It notes the following problem statements:

- South African settlements, towns and cities have been indelibly shaped by the apartheid legacy of racial segregation, poverty and exclusion

from social and economic opportunities and acknowledges that after more than 20 years of democratic rule and significant financial investment the apartheid spatial patterns remain largely entrenched, and frustratingly, most of the public infrastructure investment since 1994 having unintentionally reinforced the pre-1994 spatial legacies.

- South Africa, as with most other developing nations, is experiencing high levels of urbanisation which will continue to create major challenges for its settlements, towns and cities. It indicates that managing this rapid urbanisation is something that needs to be done in an integrated and holistic fashion. It further recognises that although rapid urbanisation brings with it many problems and challenges, it also brings with it lots of potential opportunities. It recognises that in order to effectively manage the scale and growth of South African urban areas a concerted, integrated and cooperative effort is needed to capitalise on what it calls the "urban dividend".

- South African urban areas dominate the economy but there is an important and dynamic link between urban and rural areas and as such it cannot be the case of promoting the one over the other.

Given the above, the draft IUDF is essentially a multi-sectoral response to the calls of Chapter 8 of the NDP, which deals with the transformation of South Africa's human settlements and its space economy. It also speaks directly to Chapter 6 of the NDP which deals with the rural-urban nexus and Chapter 5 of the NDP which deals with the environmental sustainability and resilience. The draft IUDF is sculpted in a manner so as to try to unlock the development potential that comes from coordinated investments in people and places from an urban context.

The draft IUDF attempts to achieve this by identifying seven policy levers, each having their own set of interventions. The seven policy levers include integrated transport and mobility; integrated sustainable human settlements; integrated infrastructure planning; inclusive economic development; efficient

land governance and management; empowered and active communities; and effective urban governance.

In my opinion, this is one of the more important and more coherent multi-sectoral policy documents that have emerged from South Africa subsequent to the publication of the NDP. It clinically assesses the problems of planning and development from an urban perspective and it highlights the complexity associated with planning and development from an urban context and squarely entrenches the requirement for a resilience thinking approach across all sectors of society.

2.6 A Theoretical Framework for Understanding Resilience

This section attempts to build a theoretical understanding of the broad concept of resilience. This will then provide a framework to further understand the more specific concepts of urban and spatial resilience. It is important to note, from the onset, that the general literature on resilience uses the terminology interchangeably and this is confusing (Jabareen 2013: 220). Furthermore, terminology and definitions, with respect to resilience, seem to be created and changed over time. This seems to be an indication of the ongoing maturity in understanding the broad concept of resilience and its more specific offspring such as urban resilience (Harrison *et al.* 2014: 1). Despite this confusion, there is general consensus amongst most authors that the broad concept of resilience and the more specific concepts such as urban resilience all have the same origins, that is, concerning risk and vulnerability (Harrison *et al.* 2014: 2).

2.6.1 Understanding the broad concept of Resilience

Davoudi (2012: 300) indicates that the word resilient, itself, comes from the Latin origins of "resi-lire", which means to spring back. She indicates that the word was first used by scientists to describe the characteristics of a spring and

to describe the stability of materials and their resistance to external shocks or forces. Subsequently, and on the back of the evolution of systems theory thinking in the 1960's, the term resilience was used by the Canadian ecologist Crawford Holling to explain the response of natural systems to external shocks in the field of ecology (Holling 1973: 14). After this other meanings or interpretations of the term emerged (Davoudi 2012: 300).

Being aware of your understanding or interpretation of resilience is important because your theoretical understanding of resilience will have a major influence on the interventions you design and implement; no matter what sectoral interest you are trying to advance (Davoudi 2012: 300-306; Seeliger and Turok 2013: 2110; and Turok 2014: 751). The ultimate aim of resilience theory is to promote and mainstream a resilience thinking approach, a way of thinking about change (Gunderson and Holling 2002: 15; De Weijer 2013: iv & 1; and Harrison *et al.* 2014: 5).

Walker and Salt (2006: 14) introduced the term "resilience thinking". According to them, resilience thinking is about understanding, accepting, and engaging with a rapidly changing world. In terms of their understanding, resilience or resilience building is as an approach, a way of thinking, an attitude which enables a response to the continuum of challenges raised by the complexity, uncertainty and change experienced in the modern day world.

In terms of getting to grips with the broad concept of resilience, Folke (2006: 254-259); Folke *et al.* (2010: 1-2); Pendall *et al.* (2008: 2, 4 & 7); Pelling (2011: 10); Davoudi (2012: 300-306); Davoudi *et al.* (2013: 308); Seeliger and Turok (2013: 2012-2018); Turok (2014: 752); and White and O'Hare (2014: 936-937) have all made reference to three potential interpretations of or approaches to resilience.

They aver that in terms of using or adopting or applying a resilience thinking approach in a specific context, you would probably require the use of different types of or approaches to resilience depending on the context. As a consequence, different kinds of resilience or resilience thinking approaches

would be required at different times in the history of an urban settlement depending on the prevailing context of that urban settlement at that particular point in time.

The three interpretations of or approaches to resilience are (Folke 2006: 254-259; Folke *et al.* 2010: 1-2; Pendall *et al.* 2008: 2-14; Martin-Breen and Anderies 2011: 5-9; Davoudi 2012: 300-306; Davoudi *et al.* 2013: 308; Seeliger and Turok 2013: 2112-2018; Turok 2014: 751-752; and White and O'Hare 2014: 936-937):

- Engineering resilience, also referred to as the bounce-back ability, is characterised by its efficient maintenance of the status quo and its focus on mainstreaming stability.
- Multi-equilibria or ecological resilience, also referred to as the bounce-forward ability, is characterised by its emphasis on transition and incremental change.
- Evolutionary or socio-ecological resilience which is the newest interpretation or approach to resilience. It is characterised by the ability to both adapt and transform when required and is applied mainly in settings of complex human-nature interactions. This interpretation of resilience has a transformational agenda which it achieves through radical change.

2.6.1.1 Engineering Resilience

This is by far the most common or prevalent understanding or interpretation of resilience. In support of this, Seeliger and Turok (2013: 2112) indicate that it has been the most popular interpretation of resilience, in terms of general government policy, with its broadest application, in terms of urban settlements, being in the disaster management arena.

The focus of engineering resilience from an urban settlement perspective is on whether a city, town or settlement or any other system can recover the functionality of its population, infrastructure and institutions following a

disaster or shock event (De Weijer 2013: 2; Turok 2014: 751; and UNISDR 2012: 11).

Gunderson and Holling (2002: 27) indicate that engineering resilience emphasises "efficiency, control, constancy and predictability". They indicate that these attributes are essential when you are striving for a "fail-safe design and optimal performance". In their view these attributes are characteristic of systems where uncertainty is not a concern. They aver further that these attributes are not suited to systems that are dynamic, constantly evolving, and where uncertainty is a given.

This interpretation of or approach to resilience is essentially about preventing disturbance and returning to the pre-shock status quo with the main emphasis being how fast and efficiently the system can return to its pre-existing steady state or equilibrium position (Gunderson and Holling 2002: 27; Folke 2006: 256; Folke *et al.* 2010: 1; Pendall *et al.* 2008: 2; Simmie and Martin 2010: 29; Martin-Breen and Anderies 2011: 5-6; Davoudi 2012: 300; Seeliger and Turok 2013: 2112-2113; Turok 2014: 751; and White and O'Hare 2014: 936).

Seeliger and Turok (2013: 2113) specifically indicate that the engineering approach to resilience is currently practically applied in various settings. According to them, in the natural resource management arena, the engineering approaches to resilience is mainly used to optimize and manage the flow of resources in order to prevent disturbances or to put in place measures that will facilitate the return to the pre-existing position once a disturbance has occurred.

Seeliger and Turok (2013: 2113) and Turok (2014: 751) indicate further that the engineering interpretation or approach to resilience has also been practically applied in the social sciences. Here it is used mainly to delineate the strength of communities in the face of adversity and deals primarily with the ability of communities to deal with unexpected external events while maintaining their functional stability and social cohesion.

The engineering approach to resilience has also been used in the field of economics. Here the practical application of engineering resilience relates to the resilience of local economies. Here the resilience of local economies are determined by their ability to recover from an external economic shock and return to their pre-existing stable state with the maintenance of the core functions of the local economy (Seeliger and Turok 2013: 2113 and Turok 2014: 751).

According to Seeliger and Turok (2013: 2114) the application of the engineering approach to resilience has its merits, but, the practical application is dependent on the specific context. Interestingly, they indicate that the engineering approach to resilience is probably most appropriately used in local economies and urban settlements that are already robust and resourceful and where the urban settlement is at an advanced stage of development where urban functioning is already at a highly desired state. They motivate further that the engineering approach to resilience is probably not the most appropriate resilience approach to be utilised in most third world or developing local economies where most urban settlements and economies lack basic infrastructure and robust and formal systems of social, economic and environmental governance and functioning. Their argument is that the engineering approach to resilience in these settings would be of little value because most of the urban settlements and economies, in the third world, actually require some form of transformation, with the engineering approach to resilience, in this setting, not being appropriate because it does not lead to the required transformation but only serves to reinforce the return to the pre-existing position.

2.6.1.2 Multi-equilibria or Ecological Resilience

Holling (2001: 391); Gunderson and Holling (2002: 27); Folke (2006: 259); Folke *et al.* (2010: 2); Pendall *et al.* (2008: 4); Simmie and Martin (2010: 29); Davoudi (2012: 301); Davoudi *et al.* (2013: 308); Seeliger and Turok (2013: 2110); Turok (2014: 752); and White and O'Hare (2014: 936) have all

documented that the multi-equilibria or ecological interpretation of resilience arose from the field of ecology where it was recognised that some systems do not always return to the pre-existing stable state or equilibrium position after a shock as is the case with the engineering approach or interpretation of resilience. This thinking brought to the table the potential existence of more than one state of equilibrium or stable state to which a system could return after experiencing a shock.

Several authors (Folke 2006: 254; Swanstrom 2008: 5; Folke *et al.* 2010: 2; Pendall *et al.* 2008: 4; Davoudi 2012: 300-301; Davoudi *et al.* 2013: 308; Seeliger and Turok 2013: 2114 and White and O'Hare 2014: 936) are of the opinion that the main differences between the engineering approach to resilience and the multi-equilibria or ecological approach to resilience is that the engineering approach to resilience focuses on the efficiency with which a system can return to a pre-existing stable state while the ecological approach emphasises the existence of more than one equilibrium position within a system and is therefore about how long a system can remain in a specific equilibrium state following a shock and resist change before reaching the critical tipping point and moving into a potentially new equilibrium state. The main emphasis in the ecological approach to resilience being the adaption of the system to either a pre-existing or a new equilibrium position in order to deal with the external shock while the engineering approach to resilience seeks to restore system functionality to a pre-existing equilibrium position efficiently.

Notwithstanding the above, it is important to note that the engineering and the ecological approaches to resilience are related due to their sharing of the notion of the existence of equilibrium positions, be it pre-existing equilibrium position as is the case with engineering resilience or a potentially new equilibrium position as is the case with ecological resilience (Davoudi 2012: 301 and White and O'Hare 2014: 936). Another aspect that characterises both these approaches to resilience is that they do not incorporate the potential existence of continuous change (Davoudi 2012: 302; Seeliger and Turok 2013: 2119; Harrison *et al.* 2014: 18; Folke *et al.* 2010: 2; and Pendall *et al.* 2008: 7).

Seeliger and Turok, (2013: 2115-2116) indicate that there are several practical examples of the application of multi-equilibria or ecological resilience approaches in urban settlements currently in use. Within the natural resource management arena its use can be seen in the various engineered urban adaptations that prevent pollution levels from threatening the functioning of life sustaining environmental limits. Examples here include the introduction of bus rapid transit systems to reduce congestion and air pollution or the construction of local water reservoirs to alleviate the dependency on externally piped water.

Adger (2003: 1); Folke (2006: 254); Swanstrom (2008: 5); Folke *et al.* (2010: 2); Pendall *et al.* (2008: 7); Davoudi (2012: 300) and Seeliger and Turok (2013: 2119) are all of the opinion that the main advantage of the multi-equilibria or ecological approach to resilience is the recognition that returning to the pre-existing position subsequent to a shock may be unacceptable and the system would need to move to an alternative equilibrium position different to the pre-existing one in order to function more optimally.

Seeliger and Turok (2013: 2115-2116) argue that there are potentially various positive practical applications of the multi-equilibria approach to resilience in the field of economics. They indicate that the recognition of multi-equilibrium positions in local economies would constitute a clear admission that the specific local market is not functioning optimally.

Simmie and Martin (2010: 30) and Seeliger and Turok (2013: 2115) advise that the incorporation of considerations such as quality, liveability, distinctiveness, public transport accessibility and resource use efficiency into urban development and investment decisions above pure profit driven motives would be further examples of how urban settlements would be employing a multi-equilibria or ecological approach to resilience.

Seeliger and Turok (2013: 2115) aver further that the idea of multi-equilibria resilience fits in with the fact that urban settlements have historically always had to "adjust or adapt their structures to changing conditions and to re-invent

their purpose and identity in the face of shifts in the economic environment or the loss of comparative advantage." They stress the impacts that de-industrialisation has had on several cities across the globe as support for their argument.

Lastly, it should be noted that the attractiveness of using a multi-equilibria or ecological approach to resilience for urban settlements lies in the potential interplay between stability and adaption that is achieved through innovation (Seeliger and Turok 2013: 2116; Harrison *et al.* 2014: 17). In most developing urban settlements there is a need to protect or conserve or maintain some core assets or institutions and livelihoods while at the same time there may be a need to transition to new opportunities in other areas. The multi-equilibria approach to resilience allows urban settlements and individuals the time to adapt in some areas while at the same time providing stability in other critical areas.

2.6.1.3 Evolutionary or Socio-ecological Resilience

Many authors (Walker *et al.* 2004: 5; Folke 2006: 260; Swanstrom 2008: 7; Folke *et al.* 2010: 21; Davoudi 2012: 302-303; Wilkinson 2012a: 153; Seeliger and Turok 2013: 2116; White and O'Hare 2014: 937 and Harrison *et al.* (2014: 21) are in agreement that the evolutionary or socio-ecological interpretation of or approach to resilience focuses specifically on the interplay between the social and ecological change where human and biophysical systems are seen as intrinsically linked and co-evolving rather than independent systems. According to them, this interpretation of resilience recognises that urban settlements are complex human systems that interact with a variety of natural systems at various levels, across various scales in a dynamic manner. Such complex systems are referred to as socio-ecological systems.

This, they indicate, is in direct conflict with the thinking behind engineering and ecological resilience which firstly, do not see human and natural systems as linked and complex, and secondly, they do not accommodate the idea of continuous co-evolution of a system but rather focuses on equilibrium or

stability, with recovery after shock being to either the pre-existing stable state or equilibrium position or to a new stable state or equilibrium position.

In the socio-ecological or evolutionary interpretation of resilience urban settlements, are seen as complex adaptive systems with inherent adaptive capacity (Folke 2006: 254; Folke *et al.* 2010: 21; De Weijer 2013: 5; Cote and Nightingale 2012: 475; Davoudi 2012: 302; Wilkinson 2012a: 152; Desouza and Flanery 2013: 90; Seeliger and Turok 2013: 2116; White and O'Hare 2014: 937 and Harrison *et al.* 2014: 20). Here urban settlements are conceptualised as having many component elements that interact dynamically with each other, creating many potential direct and indirect feedback loops (Wilkinson 2012a: 154). In this regard, Seeliger and Turok (2013: 2116) indicate that the behaviour of such systems are best described by the nature of the interactions rather than a focus on the component elements of the complex system.

One of the unique characteristics of this interpretation of or approach to resilience is that it brings about the potential for unpredictable and surprising outcomes from simple interactions in a process referred to as "emergence" (Folke 2006: 259; Wilkinson 2012a: 154; Seeliger and Turok 2013: 2116, and Turok 2014: 752). According to Simmie and Martin (2010: 31-32); Davoudi (2012: 303) and Seeliger and Turok (2013: 2116) the possible feedback loops and reinforcing mechanisms in such complex adaptive systems make it difficult to forecast the evolving nature of the complex system, even with the availability of the most up to date and relevant information.

Importantly, such complex systems are characterised inherently by self-organising capabilities which allow them to transform in the face of both internal and external shocks (Folke 2006: 258; Folke *et al.* 2010: 25; Simmie and Martin 2010: 32; Davoudi 2012: 302; Wilkinson 2012a: 154; and Seeliger and Turok 2013: 2116-2118). On the back of this, Nel and Nel (2012: 6) indicate that resilience is an inherent property of such complex adaptive systems.

The Adaptive Cycle

Holling (2001: 397); Gunderson and Holling (2002: 32-62); Walker *et al.* (2004: 6); Pendall *et al.* (2008: 9 – 10); Davoudi (2012: 303-304; 2013: 310); Seeliger and Turok (2013: 2117); Harrison *et al.* (2014: 18) and Goldstein *et al.* (2014: 3) are all of the opinion that in the socio-ecological or evolutionary interpretation of or approach to resilience the emphasis is on the process of continual adjustment and evolution rather than on a stable state or equilibrium position.

This focus on continual adjustment and evolution, has given rise to the concept of the adaptive cycle, which is central to the socio-ecological or evolutionary interpretation or understanding of resilience (Gunderson and Holling 2002: 32-62; Walker *et al.* 2004: 6, and Wilkinson 2012a: 152). The adaptive cycle characterises the structure and functioning of such a complex system and consists of four phases which describes the dynamic nature of change within complex systems (Holling 2001: 393-396; Gunderson and Holling 2002: 32-62; Walker *et al.* 2004: 6; Folke 2006: 258; Swanstrom 2008: 8; Folke *et al.* 2010: 3; Simmie and Martin 2010: 33; Davoudi 2012: 303; Wilkinson 2012a: 152; Seeliger and Turok 2013: 2117; and Harrison *et al.* 2014: 19). They describe the four phases of the adaptive cycle as follows:

- The first phase is known as the growth or exploitation phase. In this phase the resources and the assets of the system is developed and the system stabilizes at some point.

- The second phase of the adaptive cycle is known as the conservation or consolidation phase. This phase is notably slower than the first phase and is characterised by the system becoming more predictable and brittle. This phase also implies that as systems mature they become less resilient and more fragile and hence open to new opportunities.

- The third phase of the adaptive cycle is the release or creative destruction phase. This phase is characterised by systemic breakdown

and the release of resources. In this phase the system is not strongly connected, so it is considered reasonably resilient.

- The last and fourth phase of the adaptive cycle is known as the renewal or reorganisation phase which is characterised by regeneration of the complex system. This phase is further characterised by creativity and experimentation. This is so because at this stage of the adaptive cycle the cost of system failure is low.

It is important to note that the adaptive cycle, in complex systems, is not sequential in nature and can move through different sequences. The essence of the adaptive cycle, in relation to complex systems such as urban settlements, is that it implies that times of crises or shock are not only times of hardship and negativity but can constitute times that are ripe for innovation, renewal and transformation, where urban settlement problems can be turned into opportunities for growth through human foresight, human ingenuity and preparation (Davoudi 2012: 304; Seeliger and Turok 2013: 2117; and Harrison *et al.* 2014: 20).

Furthermore, the analogy of the adaptive cycle broadens the evolutionary resilience perspective and distinguishes it from the engineering and ecological resilience interpretations in that it brings to the fore the dynamic relationship between the ability to persist, to adapt and to transform across different scales or levels and timescales within complex socio-ecological systems such as urban settlements (Gunderson and Holling 2002: 32-62; and Davoudi 2012: 304). De Weijer (2011: 14) is of the opinion that this characteristic of the socio-ecological or evolutionary approach to or interpretation of resilience emphasises a holistic approach to change.

Panarchy

Panarchy refers to the adaptive and evolutionary ability of the adaptive cycles of complex systems that are nested one within the other across space and time. As such, it is the word used to describe the multi-scale nature of complex

socio-ecological systems as they develop, disintegrate and re-emerge to changing conditions on different levels (Gunderson and Holling 2002: 74; Walker *et al.* 2004: 7 & 11; Folke 2006: 258-259; Pendall *et al.* 2008: 11-12; Swanstrom 2008: 15; Folke *et al.* 2010: 3; Holling 2001: 396-400; Simmie and Martin 2010: 33; Martin-Breen and Anderies 2011: 39; Davoudi 2012: 304; Wilkinson 2012a: 153; Seeliger and Turok 2013: 2117-2118; Harrison *et al.* 2014: 18; and Goldstein *et al.* 2014: 3).

The aforementioned authors are of the opinion that it is the Panarchy of these complex socio-ecological systems which brings to the fore the level of complexity within these systems. They are further of the opinion that the complexity of these systems becomes evident because the connections and interactions between the various scales are potentially limitless in the adaptive cycles of these systems. As a result of this complexity and multi-scalar nature of these socio-ecological systems it is easy to conceptualise how disruptions in such a system can be caused by both external as well as internal agents within the sub-systems.

As with the adaptive cycle the idea of Panarchy is central to evolutionary or socio-ecological interpretation or approach to resilience as it explains the cross-scalar dynamic interactions (Holling 2001: 396-400; Gunderson and Holling 2002: 63-102; Walker *et al.* 2004: 7 & 11; Folke 2006: 258-259; Folke *et al.* 2010: 3; Davoudi, 2012: 304; Wilkinson 2012a: 153; Seeliger and Turok 2013: 2117-2118; and Harrison *et al.* 2014: 19).

In terms of the concept of Panarchy the various scales or levels are not hierarchical in nature and as such there are no rules that guide the interactions between scales or levels, but rather a dynamic and complex set of interconnections and influences. This is further complicated by the existence of various adaptive cycles on each level or scale that operates at different speeds. Generally speaking, in terms of Panarchy, the larger components of such complex systems tend to transform slower than the smaller components of the system which have shorter adaptive cycles. As a result there is a continuous

interplay between change and continuity (Gunderson and Holling 2002: 101-102; Folke *et al.* 2010: 25; Simmie and Martin 2010: 8; Martin-Breen and Anderies 2011: 39-40; and Seeliger and Turok 2013: 2117).

According to the concept of Panarchy, dramatic change can occur if tipping points are reached at higher scales, within a complex system, while a collapse at one level of a complex system can trigger a crisis in another level of the same complex system. According to Holling (2001: 396-400) and Gunderson and Holling (2002: 72 & 99), Panarchy is a term used to describe the concept that explains the evolving and adaptive nature of complex adaptive systems.

Holling (2001: 396-400); Gunderson and Holling (2002: 99); Folke (2006: 258-259); Pendall *et al* (2008: 11-14); Folke *et al.* (2010: 25); Davoudi (2012: 304); and Seeliger and Turok (2013: 2118) are of the opinion that in such arrangements, as described above, the resilience of a complex system is based on the complex interplay between the various systems within the complex system, each of which can undergo their own internal dynamic process of adjustment. The dynamics of this change is an ongoing process of renewal and regeneration (Folke 2006: 259; Wilkinson 2012a: 154; Goldstein *et al.* 2014: 3).

If one applies this thinking to urban settlements it leads one to the conclusion that it is nigh pointless in the modern day world to isolate and examine individual urban settlements on their own. These settlements would need to be understood as comprising of multiple sub-systems and being part of larger regional, national and international systems, all of which impacts on the resilience of the specific urban settlement itself (Holling 2001: 395-400; Folke 2006: 257-262; Folke *et al.* 2010: 3; Pendall *et al.* 2008: 12; Davoudi 2012: 304; Seeliger and Turok 2013: 2118; and Harrison *et al.* 2014: 21).

In this regard, urban settlements need to view themselves as complex adaptive systems and apply the evolutionary resilience interpretation or approach in order to deal with many of the current societal dilemmas such as traffic congestion, immigration and environmental degradation. The value of adopting such an approach is that it would prevent isolated sectoral policy

responses that may lead to further unintended consequences in other parts of the bigger system, which seems to be the scourge of modern day governance. Here Seeliger and Turok make specific reference to the very relevant South African example of trying to alleviate poverty through the subsidisation of the travel costs of poor communities living in the periphery of the settlement. They indicate that by isolating and focusing on one aspect of the urban settlement you may in fact be perversely perpetuating fragmented and sprawling spatial development and thereby continue to promote inefficient public transport and bulk infrastructure arrangements, rather than to encourage more compact and efficient forms of physical urban growth (Seeliger and Turok 2013: 2118).

Adaptability and Transformability

Two other terms that are of importance in understanding the socio-ecological or evolutionary interpretation of or approach to resilience are adaptability and transformability (Holling 2001: 394 & 398; Gunderson and Holling 2002: 102; Walker *et al.* 2004: 7-11; Folke 2006: 262; Folke *et al.* 2010: 2; Davoudi 2012: 303-304; Wilkinson 2012a: 153; Seeliger and Turok 2013: 2118; Turok 2014: 750 and Harrison *et al.* 2014: 22).

They indicate that the term adaptability, in relation to evolutionary or socio-ecological interpretation of or approach to resilience, refers to the ability of a complex system to adjust to external as well as internal change through self-organisation and collective learning. They are further in concurrence that the term transformability, in relation to evolutionary or socio-ecological interpretation or approach to resilience, refers to the capacity of a complex system to progress to a new dynamic when the current situation is no longer viable. They stress that in the socio-ecological or evolutionary approach to resilience a greater emphasis is placed on transformability, that is, the ability to undergo dynamic change so as not be become trapped in undesirable system arrangements.

Seeliger and Turok (2013: 2117) indicate that this socio-ecological or evolutionary interpretation or approach to resilience has been apparent in various urban instances, most notably in the City of Detroit, in the United States of America, where the well documented motor industry slump has created or opened the doors to other opportunities.

Examples of applying evolutionary or socio-ecological resilience

Seeliger and Turok (2013: 2117) are of the opinion that socio-ecological or evolutionary resilience interpretation or approach has application and is very evident in the operations of the modern economic sector. They argue that within the modern context of fast changing markets and technologies flexibility is of paramount importance from an economic perspective. So from an evolutionary resilience perspective this is characterised within an economy by capitalising on the economic value and strength from dense local networks of business suppliers and services.

According to them, examples of this include where we find particularly the larger, leading companies tending to be leaner and more reliant on buying-in goods and services rather than focussing on in-house production. Here companies capitalise on the diversity of larger urban settlements which allows these businesses to use a variety of input suppliers and alter their workforce more readily in response to shifting business needs. Businesses thus capitalise on the self-organising ability of larger urban settlement, which is a dynamic property of these larger urban settlements, to lower business costs, raise productivity and improve their own adaptive ability.

The aforementioned are examples of how businesses employ the evolutionary or socio-ecological approach to resilience in high cost large urban settlements to continually differentiate themselves from the competition by continually developing more valuable products, processes and services. This approach allows these companies to compare, compete and cooperate which inculcates an inherent self-organising ability within these businesses and business

networks that pushes back boundaries, attracts mobile capital and talent and generates growth from within (Seeliger and Turok 2013: 2117).

2.6.1.4 Comparing the three interpretations of or approaches to Resilience

In terms of the advantages and disadvantages of the three approaches to or interpretations of resilience Gunderson and Holling (2002: 28 & 98-102); Folke (2006: 259; 2010: 23); Martin-Breen and Anderies (2011: 25 & 55); Seeliger and Turok (2013: 2118-2119); Wilkinson (2012a: 152-155) and White and O'Hare (2014: 937) indicate the following:

- In engineering or bounce-back resilience the focus is on the system stability and the efficiency with which a system can return to a pre-shock state of equilibrium and thereby retain its basic structure and functioning. This approach to resilience does not typically allow for reflection on whether the pre-shock state of equilibrium is indeed still relevant and appropriate.

  One of the problems of having an exclusive engineering resilience focus is that it propagates the notion that the variation within social and natural systems can be controlled, and that the consequences of actions in these systems can always be predicted (Gunderson and Holling 2002: 28).

- Multi-equilibria or ecological resilience, on the other hand, identifies critical thresholds within systems which warn about impending limits to stability (Gunderson and Holling 2002: 28 and Seeliger and Turok 2013: 2114). It does have a longer term societal perspective, than does engineering resilience, and does encourage the consideration of alternate outcomes so as to improve the conditions of current communities. Its weakness is that its focus on system equilibrium or steady states ignores the importance of ongoing adjustment and the need for flexibility in order to deal with the unforeseen (Seeliger and Turok 2013: 2119).

- Lastly, evolutionary or socio-ecological resilience is the broadest interpretation of resilience (Wilkinson 2012a: 155). Its relevance is of particular importance in more complex and interdependent systems that are open to all kinds of potential shocks. Its use does, however, require intensive community engagement and consensus on the resilience approach as part of its aim is to build capacity within the economy, society and the natural environment in order to cope with as many different shocks as possible (Wilkinson 2012a: 152-154; Seeliger and Turok 2013: 2119 and White and O'Hare 2014: 937).

  One of the disadvantages of this approach to resilience is that because of the uncertainty, unpredictability and the multiple risks associated with such a complex and dynamic system it does not sit easy with political decision-makers (Seeliger and Turok 2013: 2119; Folke 2010: 23; Martin-Breen and Anderies 2011: 25 & 55; and White and O'Hare 2014: 947).

  As conveyed above, the socio-ecological or the evolutionary approach to or interpretation of resilience concerns the manner of change, adaption and transformation of socio-ecological systems as they encounter disturbances and mature (Gunderson and Holling 2002: 98-102; Folke 2006: 259). Socio-ecological systems on the other hand are conceived as interlinked and interdependent human-nature systems (Wilkinson 2012a: 153). Logic dictates that there can be no doubt that urban settlements, towns and cities, due to their nature, are socio-ecological constructs and therefore socio-ecological systems. In this regard, Portugali (2008: 257) and Wilkinson (2012a: 159) indicate that urban settlements, towns and cities exhibit behaviour associated with complex adaptive systems and that these urban systems are self-organising systems with sub-parts that are themselves complex adaptive systems.

From the arguments rendered above it should therefore be abundantly clear that if you are striving to build the adaptive capacity of a socio-ecological system in order to build its resilience you have to primarily adopt a socio-ecological or evolutionary approach to resilience. However, importantly, from a practical implementation perspective, Seeliger and Turok (2013: 2118) and Harrison *et al.* (2014: 17) aver that all three approaches to or interpretations of resilience have something to offer socio-ecological systems such as urban settlements that are in search of sustainability. They are of the opinion that it should never be the case of one approach to resilience prevailing over the other. They advise further that the specific interpretation or approach to resilience employed in complex socio-ecological systems, such as urban settlements, should only be dependent on the context of the urban settlement with the different approaches dependent on the kinds of shocks that has been or could be experienced, the specific characteristics of the urban settlement and the societal acceptance of approach to resilience. Societal acceptance of the approach to resilience, they emphasise, is important because it focuses on those most at risk and prioritises the need for attention.

2.6.1.5 Applying Resilience Thinking Theory to Socio-Ecological Systems

In applying the concept of resilience, which was initially conceived for use in natural systems, in the social or human context, Holling (2001: 401-402); Gunderson and Holling (2002: 99-101); Folke (2006: 259-263); Swanstrom (2008: 16-19); Folke *et al.* (2010: 2); Davoudi (2012: 305-306); Porter and Davoudi (2012: 331-332); Davoudi *et al.* 2013: 310); Carpenter *et al.* (2012: 3250) Seeliger and Turok (2013: 2119-2123); Bene *et al.* (2014: 606); Harrison *et al.* (2014: 20); and Vale (2014: 191) have individually contributed to identifying several critical features that distinguish human systems from natural systems that are of fundamental importance, especially when applying the evolutionary or socio-ecological interpretation or approach to resilience in complex adaptive systems such as urban settlements. According to them these critical features must inform your resilience thinking approach and your eventual interventions.

In this regard the collective efforts of the aforementioned authors with respect to the requirements for better understanding a resilience thinking approach when employed in a complex adaptive system and where there is a large human element include the following:

- A clear understanding of the vulnerabilities within the specific complex system;
- A clear understanding of what you want resilience for. Here it is important to understand the difference and interplay between what they refer to as general and specific resilience. In this regard they indicate that specific or specified resilience refers to the response of a complex system to one particular risk or uncertainty while general resilience refers to the response of the complex systems to all its risks and uncertainties. They indicate that one needs to be aware of the dynamic interplay between specific and general resilience because the increase or decrease in the specific resilience can have a profound impact on the general resilience (Folke *et al.* 2010: 23-24; and Carpenter *et al.* 2012: 3250). This has particular relevance to issues of governance in complex systems such as urban settlements where, what may seem as logical sectoral responses to a particular sectoral risk, can have profound unintended impacts or consequences for on the overall system;
- A clear understanding of what outcomes you are trying to achieve with the application of your resilience thinking approach;
- A clear understanding of whose resilience will be improved and whose will be compromised subsequent to the deployment of a resilience thinking approach. This is important because resilience is not an empirically blinkered or neutral exercise and whatever interventions are decided on or whatever other decisions or choices are made have consequences, with some inevitably improving their resilience, making gains and reaping rewards, while others lose;

- A clear understanding and awareness of the level of social acceptance of what is considered or conceived to be desired outcomes and whether this is fair and just;

- A clear understanding and awareness of the boundaries of the complex system to which you are applying your resilience thinking approach and resultant interventions because it could have major implications for those you include and those you exclude. This obviously brings into play the effects that power, politics, societal values and competing interests have in resilience thinking approach;

- A clear understanding of the fact that different challenges, risks and uncertainties require different measurement and response approaches in order to achieve resilience. In this regard it is important to understand the distinction between sudden and extreme occurrences and slow acting and gradual occurrences;

- A clear understanding and awareness of the impact that human foresight, human ingenuity and human intentionality can bring to the specific situation;

- A clear understanding and awareness of the impact that the human ability to communicate ideas and experiences over time and space can have and how this can allow for informed and coordinated action and the preservation of accumulated experience, and the ability to learn and to persist and progress.

- A clear understanding and awareness of the availability and impact that technology, could play in amplifying the scale of influence of human action,.

It is because of these abovementioned features that human or social systems are much more unpredictable and complex than natural systems but also more predisposed to active management approaches (Harrison *et al.* 2014: 20).

What obviously complicates matters more in a combined human-natural system is the integration of the social and natural systems. Holling (2001: 392) argues that this added complexity together with the fact that both the human and natural systems are continuously co-evolving is the major reason why they must be discussed and analysed within a single conceptual framework such as is done when applying the evolutionary or socio-ecological resilience approach.

2.6.2 Understanding Urban Resilience

Nel and Nel (2012: 3 & 4) indicate that urban areas are complex adaptive systems and socio-ecological systems and as such they possess all the key features associated with that. Resilience being one of the key features that a complex adaptive system possesses (Nel and Nel 2012: 6). With regards to urban resilience within urban systems, Harrison *et al.* (2014: 1 & 4) emphasise that there is no single truth about urban resilience. Rather they believe that the idea of urban resilience is a very useful way of thinking about the ability of urban settlements and the many actors and structures that constitute them to respond to the constant reality of change.

Interestingly, with respect to urban resilience, per se, Jabareen (2013: 220) was quite critical, indicating that although there have been many scholarly publications on the matter of urban resilience, most of these studies make use of rather confusing and vague descriptions and terms and fail to create a good, coherent theoretical framework for the concept.

Nevertheless, Harrison *et al.* (2014: 2) define urban resilience as follows:

> "the capability of individuals, social groups, or socio-ecological systems including towns and cities not only to live with changes, disturbances, adversities or disasters but also to adapt, innovate and transform into new more desirable configurations."

Nel and Nel (2012: 2) define urban resilience as the ability of cities, towns and settlements as well, to adapt to changes or prevent or recover from a setback. They indicate that resilience emerges in cities, towns and settlements because they are socio-ecological systems and as such they are complex adaptive systems.

Essentially, there is no difference between the theoretical underpinnings of the broader concept of resilience and the more focused concept of urban resilience, except for the urban emphasis in the concept of urban resilience.

Related to the aforementioned, and with respect to the further understanding of urban resilience, the Resilience Alliance (2007: 10) and Harrison *et al.* (2014: 21) indicate that the urban resilience is essentially constituted by four areas of overlapping concern. These include:

- Social dynamics of the urban settlement which include, but is not limited to, the demographics, human capital, social capital and socio-economic characteristics of a specific urban settlement.
- Metabolic flows within an urban settlement which include, but is not limited to the production, supply, demand, consumption and logistics of a specific urban settlement.
- Governance networks of the urban settlement which include, but is not limited to the institutional structures and arrangements and organisations required for the effective functioning of a specific urban settlement.
- Built environment system of the urban settlement which includes, but is not limited to the ecosystem services within the urban landscape, the spatial arrangements and spatial logic of an urban settlement, and the infrastructure arrangements of a specific urban settlement.

Harrison *et al.* (2014: 4) are of the opinion that urban resilience is essentially a way of thinking critically about how to come up with case or context specific

and varied approaches in response to the different ways in which urban environments change. As such, urban resilience concerns the building of the adaptive capacity of urban settlements so that they are able to develop and implement meaningful institutional and societal responses and actions to the specific circumstances of each urban settlement.

In this regard, Wilkinson (2012a: 151) and Harrison *et al.* (2014: 10) agree with Walker and Salt (2006) in that there are three critical factors that will enable resilience thinking within complex systems such as in the urban context.

- Firstly, it is the willingness to make the conceptual shift to realise that in socio-ecological systems human life and human systems and the natural environment cannot be separated as they are interdependent.
- Secondly, it is the willingness to make the conceptual shift to understand that socio-ecological systems are complex.
- Thirdly, it is the willingness to accept that a key goal of governance for resilience is to continuously strive to improve the adaptive capacity of these linked socio-ecological systems through collaborative, flexible and learning based approaches.

They advise that if one is willing to make these conceptual shifts then the governing authorities must inculcate and mainstream into their operations a way of thinking that supports and promotes this proactive adaption to change. Importantly, they indicate that these adaptions must speak to the most relevant issues that are faced by urban settlements. They further posit that these must speak to globally relevant urban issues such as social equity, economic growth and development, job creation, and environmental sustainability. They aver further that if such a way of thinking becomes the norm in the way that government in general operates, then all spheres of government, and most importantly, local municipalities, will become agents of positive change rather than simply being efficient in the exercise of rigid bureaucratic mandates.

Applying the concept of resilience to the urban context is difficult because urban settlements are inherently complex, agglomerations of things and the application of resilience thinking to it must be context sensitive and be done carefully with circumspection (Harrison *et al.* 2014: 21).

One of the critical questions in this regard that must be answered is: Are we talking about the resilience **of** cities or are we talking about the resilience **in** cities? They indicate that if we are concerned with the resilience of individuals or a group of individuals within the city we are talking about resilience in cities, but, if we are concerned with the growth and longevity of urban settlements only, then we are concerned about the resilience of cities. According to Harrison *et al.* (2014: 5) although the two are related, they are not the same. Folke (2010: 23) and Carpenter *et al.* (2012: 3251) provide more clarity on this very important distinction and indicates that general resilience refers to resilience of an all-encompassing socio-ecological system (refers to resilience of the entire city) to all sorts of shocks while specified resilience concerns the application of resilience to specific problems occurring in specific aspects of the larger socio-ecological system that may arise from a particular shock or set of shocks. The importance of this distinction is that specified resilience can cloud the real issues and unwittingly result in other systemic instabilities.

Harrison *et a*l. (2014: 5) are further of the opinion that, in terms of the resilience of urban settlements in general, history indicates that most urban settlements tend to be fairly resilient. They indicate that most urban settlements naturally evolve over time and what separates one settlement from another is simply the degree of resilience that each of them portray. They indicate that this is evidenced by the differing rates of recovery that the various urban settlements exhibit following exposure to a shock event/s be they sudden or slow acting shocks.

From an urban planning perspective, Harrison *et al.* (2014: 5) advise that it is important to understand why these different urban settlements respond differently or adapt to shocks, and how we may improve the resilience of

individual urban settlements. In this regard, broad resilience theory, as discussed earlier, does offer some valuable insights into how we can improve our responses to change. Walker and Salt (2006: 14); Folke (2010: 24); and Harrison *et al.* (2014: 5) believe that we need to stimulate resilience thinking and encourage stakeholders, more specifically local municipalities, to engage with urban resilience in a critical manner.

One of the important prerequisites for the building of resilience in urban settlements is the creation of solid relationships, both across spheres of government and between government and civil society (Armitage 2006: 2; Carpenter *et al.* 2012: 3254; Wilkinson 2012a: 161 and Harrison *et al.* 2014: 5). The building of resilience in urban settlements requires all to think and operate in an integrated manner rather than thinking in terms of self or sectoral interests.

2.6.2.1 Resilience thinking in an urban context?

Given the complexity associated with understanding and implementing resilience theory and achieving urban resilience Carpenter *et al.* (2012: 3253-3254); Wilkinson (2012a: 161-162); Davoudi *et al.* (2013: 311); Desouza and Flanery (2013: 91); and Harrison *et al.* (2014: 11) have proposed simple, yet logical principles, strategies or conditions that could be employed or promoted in the endeavour to mainstream a resilience thinking approaches into the operations of local municipalities so as to enable them to progress in their quest for urban resilience.

These common sense strategies, principles or conditions are not meant to be prescriptive, rather they are meant to clarify what resilience thinking involves in various urban contexts. They are aimed specifically at building resilience in municipal governance systems, and in the physical and social environments of the specific urban settlement. All of these proposed strategies, principles or conditions have one specific aim, that is, to improve the adaptive capacity of urban settlements in response to potential change which could be sudden or incremental in nature.

These common sense guiding strategies, principles or conditions include the following:

- Enhancing the Capacity to Learn

  Various authors support the emphasis given to enhancing the capacity to learn as contributing to improving urban adaptive capacity and as a result contribute to building resilience (Armitage *et al.* 2007: 1; De Weijer 2013: 3; UNISDR 2013: 5; Wilkinson 2012a: 153, 161 & 162; Carpenter *et al.* 2012: 3254; Jabareen 2013: 227; Desouza and Flanery 2013: 90-91; Nel and Nel 2012: 12; Goldstein *et al.* 2014: 3; Davoudi 2012: 304; Shaw 2012: 308; Davoudi *et al.* 2013: 311; Seeliger and Turok 2013: 2118; and Turok 2014: 751).

  They indicate that, with respect to achieving urban resilience, nothing is more important for improving the adaptive capacity than enhancing the learning capacity. In their view you enhance your learning capacity by improving your ability to acquire, absorb, retain and use knowledge. They further indicate that in order to achieve this you need to promote a culture of experimentation that rewards innovation; you must collaborate and build partnerships in building knowledge through learning networks; you must promote a culture of information sharing with open access to information that facilitates communication and collaboration; you must systematically increase the skills of employees by supporting multiple learning opportunities; you must create a culture which appreciates and supports learning as a core value; and you must develop the technology that supports learning capacity. They indicate further that one of the constraints to achieving this is the ever-present bureaucratic mind-set of governing institutions, which rewards stability, conformity more than it rewards learning and innovation.

  The essence of enhancing your capacity to learn is to do, learn from doing, and then do again. They indicate that mistakes will be made in such a process but that such mistakes must be valued, new learning

needs to happen from such mistakes and, importantly, this learning must feedback into the system (Harrison *et al.* 2014: 11).

- Redundancy or Spare Capacity

Support for the emphasis on redundancy as contributing to improving adaptive capacity and as a result contributing to building resilience comes from various authors. These include, Armitage *et al.* (2007: 11); De Weijer (2013: 3 & 13); UNISDR (2012: 96 & 103); Wilkinson (2012a: 161; 2012b: 323); Davoudi *et al.* (2013: 311); Desouza and Flanery (2013: 91); Seeliger and Turok (2013: 2116) and Turok (2014: 751).

Here redundancy is employed in the engineering sense, where it specifically refers to the duplication of critical components of a system to ensure improved reliability, especially in the event that things go wrong. Essentially it refers to the requirement for duplicate or spare capacity. They advise that from an urban resilience perspective, local municipalities, in particular, but not exclusively, must allow for redundancy. The relevance of this guiding principle to promoting urban resilience can be seen from various practical perspectives. For example, Harrison *et al.* (2014: 12) indicate that it can be applied to the organisations human resource system, where it can be employed to ensure that staff have the necessary skills to take on different jobs as and when needed and that the system of delegations of the institution is constructed so that decision-making is much more decentralised and autonomous and not vulnerable to sudden changes that can lead to inertia.

They indicate further that the guiding principle of redundancy can be built into other areas of urban functionality such as the economy where you can employ it to ensure that you are not only dependant on one supplier of a critical resource or that you are not dependent on only one market or a few buyers for your products. This principle also has relevance to urban infrastructural requirements where the relevant

questions need to be asked, such as, will the information technology systems survive and data be secured following a specific shock event? Other areas of application include alternate pathways of energy, food and water supply, waste disposal, roads and transport flows, and rail networks.

- Diversity

Various authors support the emphasis on diversity as essential to improving adaptive capacity and as a result contributing to the building of resilience. They indicate that while redundancy involves having several components that are able to perform the same function, diversity refers to the variety of components performing different functions or performing the same functions differently. They posit further that the more diverse a system is, the less risk and the greater the opportunity for growth and development. What this highlights is that we should guard against employing the "one size fits all" approach to our solutions and interventions (Armitage 2006: 2 & 8; De Weijer 2013: 13; UNISDR 2012: 95; Wilkinson 2012a: 162; 2012b: 323; Carpenter *et al.* 2012: 3254; Goldstein *et al.* 2014: 3; Shaw 2012: 308; Davoudi *et al.* 2013: 317; Desouza and Flanery 2013: 91; Jabareen 2013: 226; Seeliger and Turok 2013: 2117; Harrison *et al.* 2014: 12 and Turok 2014: 751).

The rationale for including diversity as a guiding principle is that in human systems, diversity allows for multiple ways of thinking and doing, for spreading risk and increasing the chances of finding better solutions for adaptions to change.

- Self-Sufficiency and Connectedness

Various authors support the emphasis on self-sufficiency and connectedness as contributing to improving adaptive capacity and as a result build resilience. They indicate that one of the tensions in the

application of resilience thinking, in the urban context, is the simultaneous need to increase both self-sufficiency and connectedness. Here that urban resilience will not be achieved if the urban system is too isolated nor if it is too overly dependent. They are of the opinion that urban resilience will only be achieved once the urban settlement finds the right balance between the two for a specific urban settlement (Armitage *et al.* 2007: 2; De Weijer 2013: 13; UNISDR 2013: 5, 11; Wilkinson 2012a: 162; Carpenter *et al.* 2012: 3253-3254; Jabareen 2013: 223; Goldstein *et al.* 2014: 1-2; Davoudi 2012: 304; Davoudi *et al.* 2013: 312 & 317; Desouza and Flanery 2013: 91; Seeliger and Turok 2013: 2116, 2118; Harrison *et al.* 2014: 13 and Turok 2014: 751-752 & 766).

In terms of connectedness they aver that well connected urban systems can overcome and recover from shocks quicker than urban systems that are too isolated, but in the same breath indicate that overly connected urban systems may lead to the spread of the effects of a shock quickly, impacting on all the elements of the urban system. As such, they advise that a balance must be found in this regard for all the critical elements of urban functioning, that is context specific. They are of the opinion that these critical elements from an urban perspective include urban governance; the urban economy; the urban spatial arrangements and the urban infrastructure system.

From a connectedness perspective, Harrison *et al.* (2014: 13) indicate further that the building of partnerships is of vital importance because local development is dependent on integrated action across sectoral and institutional and jurisdictional boundaries and local municipalities on their own cannot fulfil all the adaptation requirements in a complex and changing world. Of specific relevance here is the requirement for integrated planning, operational coordination, joint learning and the flow and sharing of ideas and innovation. This is what Harrison (2006: 189) refers to as "joined-up" government but it is better known as adaptive governance.

adaptability Walker et al. (2004: 11) and Folke *et al.* (2005: 441, 444) motivate for the use of an adaptive governance approach to the resilience debate. This they indicate is of particular relevance when dealing with the governance of complex adaptive systems. Adaptive governance is operationalised through adaptive management or co-management approaches of which social capital, networks, leadership and trust are inherently important informants (Folke *et al.* 2005: 444). Harrison *et al.* (2014: 27) supports this and notes that although governance is an important aspect, the management aspect is just as important because it is an important enabler of the governance aspects. Wilkinson, (2012a: 153) and Harrison *et al.* (2014: 25) agree that if resilience is about the capacity to respond meaningfully to change, then systems of governance and management must too be adaptive. So what is adaptive governance and adaptive management?

2.6.2.2.1 Adaptive Governance

Wilkinson (2012a: 153) and Harrison *et al.* (2014: 25) indicate that the primary focus of governing for resilience in complex adaptive systems facing constant uncertainty and unpredictability is to promote and ensure adaptability to change. They indicate that one has to be mindful that socio-ecological or evolutionary resilience refers not only to being persistent or robust to shocks, but also about being open to the opportunities that shocks and disturbances bring in terms of new combinations of structures and processes, renewal of systems and potentially new emerging pathways (Wilkinson 2012a: 154).

Promoting and ensuring the adaptive capacity of complex adaptive systems concerns matters of both process and substance, with the matters of process speaking specifically to the governance and management approach. As such, socio-ecological or evolutionary resilience is not exclusively a scientific discipline, it is also a governance approach, one which is becoming increasingly relevant in the urban policy and management debates (Wilkinson 2012a: 152 & 161).

Adaptive governance is in essence a way of thinking about governance that is informed by resilience theory. It requires a particular emphasis on the multiple scale nature of governance, the linkages, networks and interplay between the scales of governance, the focus on learning, innovation, formal and informal relationships, leadership, values and trust (Armitage 2006: 3). The aforementioned are prerequisite for an adaptive governance approach in order to deal with complexity and change.

This is further supported by Folke *et al.* (2005: 448-449) who indicate that adaptive governance involves polycentric institutional architectures, which are nested, one within the other, reasonably autonomous decision-making entities operating at different scales with the aim of finding the right balance between centralized and decentralized control. They indicate further that it is essentially the devolution of managerial rights and power sharing that promotes participation. Folke (2005: 448-449) indicates further that adaptive governance does not automatically create the environment for adaptive management or co-management to take root. They indicate that for this to happen you need the requisite social networks.

With respect to the above, Armitage (2006: 3); Folke *et al.* (2005: 444-449) and Harrison *et al.* (2014: 27) are all of the opinion that governance systems that lack accountability are hierarchical in nature, are driven by sectoral self-interest, and have patriarchal and authoritarian leadership and decision-making structures, are the greatest enemies of an adaptive governance approach that promotes resilience thinking.

Harrison *et al.* (2014: 28) conclude that in the South African context, although the Constitution, does not explicitly say so, it strongly infers the requirement for such an adaptive governance approach. This is evidenced by the manner in which the Constitution avoids a rigid hierarchical structure through the creation of three interrelated and interdependent spheres of government and not subservient tiers of government; the distribution of power across the three spheres of government; the separation of the legislative, executive and judicial

arms of government; and the introduction of the concept of cooperative governance which is a legislative requirement that is applicable to all three spheres of government and which requires the three spheres of government to work hand in glove with each other and with broader society in order to tackle the needs of the general populous. This they are of the opinion creates South Africa's complex governance Panarchy, with co-evolving spheres of government with seamless interaction with the broader society.

2.6.2.2.2 Adaptive Management

The afore-mentioned constitutionally proposed governance system in South Africa must obviously be implemented in order for it to become a reality. This is where the linkages between management and governance come to the fore.

Harrison *et al.* (2014: 27) aver that management refers specifically to the processes of monitoring, analysis, supervision, organisation and resource allocation required to achieve the agreed goals of the governance system. It is therefore logical that for an adaptive governance approach to work you need to adopt an adaptive management approach.

The traditional approach to management would be to assume that a system operates around a stable equilibrium and that management interventions will focus on one or a few variables (Wilkinson 2012a: 149). Contrary to this, an adaptive management approach assumes continual change and uncertainty and works from the departure point that social dynamics and relationships are as important, if not more important, than the traditional variables (Wilkinson 2012a: 161 and Armitage 2006: 1). In such an approach the management focus recognises the complex interactions amongst a diverse array of physical and social forces and discards linearity.

Harrison *et al.* (2014: 30) indicate that adaptive management is essentially a "doing-learn by doing-doing again" approach that is based on the desire to constantly improve the management of the complex socio-ecological system by understanding of the complex and changing variables that make up the

complex system. As such, it is as much of a social process as it is a scientific process.

Harrison *et al.* (2014: 30) indicate further that resilience literature makes the distinction between passive and active adaptive management approaches. Here passive adaptive management approaches involves the continuous and increased monitoring of key indicators, with feedback into the plan-do-review loop which then allows for policies to be adjusted in the light of what has been learned. On the other hand, active adaptive management approaches are an attempt to make a conscious effort to design management interventions which allows the testing of options. Wilkinson (2012a: 161) and Harrison *et al.* (2014: 30) indicate that active adaptive management specifically promotes the use of multiple management interventions to test competing hypothesis in order to determine which option works best.

Adaptive co-management is an attempt to combine both the adaptive and collaborative aspects into the realm of management (Armitage 2006: 2; Harrison *et al.* 2014: 29). Wilkinson (2012a: 161) indicates that the value of adaptive co-management is that it encourages collaborative learning and decision-making processes. Armitage (2006: 2) and Harrison *et al.* (2014: 28) are of the opinion that both passive and active management result in social learning that is horizontal in nature whereas co-management focuses on the vertical relationships between managers, other relevant government stakeholders, the private sector and the general society. In combining the two they indicate that adaptive co-management attempts to forge both horizontal and vertical linkages and partnerships so as to facilitate and improve the shared "doing-learn by doing-do again" process.

Having said the above, it should also be mentioned that there are concerns that even though adaptive co-management is the ideal, its effectiveness has not as yet been seen due to various social and institutional barriers (Wilkinson 2012a: 161 and Walker *et al.* 2004: 12). In addition to this, in the South African

context, awareness should also be had for potential legal barriers, due to the complicated legislative environment mentioned earlier.

2.6.2.2.3 Adaptive Governance and Management in practice

Harrison *et al.* (2014: 35) indicate that although adaptive governance and adaptive management or co-management are in essence different, they are interdependent, and the use of both should be encouraged, especially in an urban context, in order to achieve resilience.

They advise that successful examples of the application of adaptive management and adaptive governance have shown that there are critical factors that shape the extent to which adaptive governance and adaptive management can be successful in achieving the goal of strengthening adaptability.

In this regard Harrison *et al.* (2014: 36-38); Carpenter *et al.* (2012: 3251-3255); Goldstein *et al.* (2014: 3); Folke *et al.* (2005: 460-462); Armitage (2006: 1) and Wilkinson (2012a: 161) have identified various factors as being important for the success of implementing an adaptive governance and management approach to resilience. These include:

- Shifting the mind-set from the "logic of governing" to a focus on interacting with change. Here the logic of governing refers to the exercise of authority or power and control rather than adaptability.
- Building momentum that supports multi-nodal and integrated systems of governance. Here it is important to realise that resilience requires both multiple centres of activity so as to reduce risk and increase the opportunities for innovation and strong linkages across these centres to ensure synergy and coordination.
- Embracing the multi-scalar or sphere or sector nature of governance realising that very few societal issues can be solved by one sphere of government.

- Having a specific focus on building partnerships and nurturing the relational aspects of governance.

- Having a specific focus on building learning institutions and learning networks that is built on a willingness to assess performance and to reform if necessary.

- Enabling the building of mutual accountability in governance. Resilience requires overall accountability because accountability is the critical check in a complex evolving system. In this regard there needs to be a focus of strengthening accountability within each component of the complex system by protecting formal accountability and by promoting the use of compacts, contracts and normative commitments to ensure multi-directional and shared accountability and co-ownership.

- Promoting and enabling adaptive leadership. They indicate that the success of your quest for resilience is very much dependent on the impact of leadership in complex systems. Adaptive leadership challenges the traditional assumptions of leadership which is normally conflated with hierarchy and one-directional exercise of power. Adaptive leadership recognises that all members of the group have leadership abilities and that leader versus follower relationship should in fact be dependent on the context.

2.6.3 Understanding Spatial Resilience

A theoretical framework for understanding the broad concept of resilience has now been created and the related concept of urban resilience has been discussed and a basis for understanding urban resilience within the broader concept of resilience has also been placed on the table. Insight has also been provided on how a resilience thinking approach can be institutionalised through the use of appropriate governance and management approaches. It is now the opportune time to focus on the very new and seemingly narrower concept of spatial resilience.

There is virtually no literature on the concept of spatial resilience, especially within the context of urban planning and management or spatial planning and land use management. Desouza and Flanery (2013: 91) do, however, note that Cumming (2011) defines spatial resilience as "an interplay, at different scales, between spatial attributes of the system and the different system constituents (such as elements, interactions, adaptive capacity, memory, and history) that are typically included in the definitions of resilience." Desouza and Flanery (2013: 91) point out further that Cumming (2011) highlights variables such as system size, connectivity, structure and spatial variation as having possible resilience enhancing characteristics for urban systems.

This brings into frame the earlier statement made by Harrison *et al.* (2014: 1), who indicated that there is essentially no single truth about urban resilience. According to them, definitions, especially with regard to resilience, are created and changed over time, thereby reflecting an evolving understanding. This seems to be very much the case with the concept of spatial resilience. It seems to be a particularly South African concept that was introduced by the recently enacted SPLUMA.

As mentioned previously, SPLUMA does not provide a definition for spatial resilience it includes spatial resilience as one of the five normative development principles that apply to spatial planning, land development and land use management in South Africa and states under the heading of "Development Principles" that:

"the principle of spatial resilience, whereby flexibility in spatial plans, policies and land use management systems are accommodated to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks" (South Africa 2013: Section 7(d))

Interestingly, neither the Green Paper nor the White Paper, which were the national precursor policy documents that led up to the development and enactment of SPLUMA made any mention of the development principle of spatial resilience. Of further interest is that the SPLUMA description of spatial

resilience tends to be very neutral in terms of the type of resilience it is calling for, given the aforementioned contents of the theoretical framework and understanding of the concept of resilience.

Several authors have, however, written about urban resilience from a spatial planning perspective. These include Davoudi (2012: 299-307); Wilkinson (2012a: 148-169; 2012b: 319-324); Shaw (2012: 308-312); Porter and Davoudi (2012: 329-333); O'Sullivan *et al.* (2014: 302-316) and Nel and Nel (2012: 1-19). Other authors such as Jabareen (2013: 220-229; Van Niekerk (2013: 1-6); Goldstein *et al.* (2014: 1-18); White and O'Hare (2014: 934-950); and Desouza and Flanery (2013: 89-99) in writing about urban resilience have made some reference to either planning or spatial planning. None of these authors have specifically defined or made use of the term spatial resilience. All of them have, however, indicate, that planning or spatial planning has a very important role to play in contributing towards and ensuring urban resilience.

In the above regard, Wilkinson (2012a: 150) reminds us of the three key tasks that Friedmann (2008, cited in Wilkinson 2012a: 150) identified for planning theory. According to Wilkinson (2012a: 150) these tasks include the philosophical task, the task of adaptation and the task of translation. According to her, the main task for planning in terms of resilience centres around how planning translates or assimilates resilience into its theory and practice. This centres not only around how resilience theory informs planning but how planning can inform resilience theory as well. She indicates further that planning as a discipline or profession is primarily concerned with the cross-scale spatial dynamics of human-nature relations within complex systems such as urban systems and as such, there is a good link between planning and resilience (Wilkinson 2012a: 149).

In terms of urban systems the Resilience Alliance (2007: 10) and Harrison *et al.* (2014: 21) assert that urban resilience has four overlapping themes, which include: social dynamics; metabolic flows; governance networks; and built environment system. From this it is clear that the professional discipline of

planning or spatial planning and land use management has relevance in all four the elements of urban resilience with the main task being to translate the theoretical underpinnings of the broader concept of resilience and the narrower concept of urban resilience into planning theory and practice.

From a South African perspective the concept and development principle of spatial resilience speaks to the mainstreaming and uptake of resilience theory or the resilience thinking approach into the policy and practice realm of spatial planning and land use management sector. SPLUMA legislates this requirement, but, a closer reading of the description of spatial resilience indicates that the specific prescript requires the identification of those South African communities most likely to suffer from environmental and economic shocks and to ensure that flexibility is built into the spatial policies, spatial plans and land use management systems applicable specifically to those communities in order to ensure that their livelihoods are sustainable.

Seemingly, this interpretation of the description of the development principle of spatial resilience is very narrow. However, it has to be remembered that spatial resilience is only one of five development principles prescribed in SPLUMA. The general interpretation of statutes and simple logic requires that all five the development principles be read together in implementing SPLUMA. As such, the other four development principles, as stipulated in Chapter 2 of SPLUMA (Section 7) are the principle of spatial justice; the principle of spatial sustainability; the principle of efficiency and the principle of good administration.

The reading of the five development principles together in the context of the long title, the preamble, the application and the objects of SPLUMA indicates that what is required is not necessarily a narrow interpretation of spatial resilience, but a wider interpretation of spatial resilience that will contribute to attaining overall resilience and eventually sustainability. It must further be said that the reading of the principle of spatial resilience and the other development principles in the context provided earlier does make

interpretation much broader than anticipated. In this regard, the theoretical framework for both the broader concept of resilience and the narrower concept of urban resilience would therefore apply to spatial resilience. The broadness of interpretation is probably not a bad thing as this is the infancy stage of SPLUMA implementation as it affords society the opportunity to collaboratively determine the detail of how the five development principles should be implemented in unison. This provides further flexibility in terms of SPLUMA implementation.

2.7 Conclusion

In concluding on this chapter the following important points are summarised and highlighted:

There is a general consensus amongst authors that there is a strong case for the need of a resilience or resilience thinking approach to be applied to all sectors of society, not the least of which is the urban context and the spatial planning and management sector. We live in challenging, uncertain and unpredictable times in which the only constant is change. The motivation is further strengthened from a South African perspective based on the inheritance of major socio-economic challenges in our settlements following many years of colonial and apartheid rule, which to a large extent has been entrenched by the past twenty years of democratic rule.

From a South African legal perspective it is only SPLUMA (South Africa 2013) and the Disaster Management Amendment Act (South Africa 2015a) that directly call for a resilience approach to governance and implementation. Several other statutes, such as the Constitution (South Africa 1996) and NEMA (South Africa 1998) amongst others, indirectly call for a resilience thinking approach to be mainstreamed into governance and delivery through their prescription of the sustainable development requirement. In this respect, it is important to note that in terms of the theoretical framework I have presented,

the point of departure is that sustainability is the ultimate goal of development with resilience being an important contributor to or key factor in achieving sustainability. In this regard, the aim of resilience theory is essentially to promote and mainstream a resilience thinking approach, with resilience thinking being a way of thinking or an attitude towards dealing with change.

Further, in terms of the resilience literature studied, there is a general consensus that urban settlements, such as cities and towns, are complex adaptive systems made up of various natural and social or human systems, which are interlinked in many ways, and which have many variables which affect them. These variables can interact with each other, in all sorts of ways with many potential feedback loops. In this context resilience is considered to be an attractive concept because it provides a means by which we can understand how these complex adaptive systems can resist, adapt and transform in response to change by addressing the various risks and vulnerabilities.

Essentially the literature indicates that there are three possible interpretations of or approaches to resilience. Your interpretation of or approach to resilience is fundamental because it informs your point of departure in developing interventions to address the various risks and vulnerabilities and in so doing, deal with change. The literature conveys a convincing argument that all three these interpretations or approaches to resilience can coexist in the same complex system and be used to address different or similar risks and vulnerabilities dependent on the context of the system.

The first and most popular understanding or interpretation of resilience is engineering resilience. It is also known as the 'bounce back' ability. Critically, this approach or interpretation of resilience assumes that a system can, and would want to, return to its pre-existing equilibrium position following exposure to a risk or vulnerability. Thus this approach to or interpretation of resilience would be best suited to be applied in advanced systems where it is desirable to return to the pre-existing equilibrium position. It would be least

suited to be applied to systems where a return to the pre-existing equilibrium position is not desirable and where radical transformation is required.

The second interpretation of or approach to resilience is ecological or multi-equilibria resilience. This is also known as the 'bounce forward' ability. It recognises that sometimes it is not always desirable to return to the pre-existing equilibria position. As such, it makes provision for more than one equilibrium position within the system. This interpretation of or approach to resilience can be employed in systems where you generally want to improve the system to take it to the next level and as such its emphasis is on the potential adaption of the system.

Ecological or multi-equilibria resilience is related to engineering resilience in the sense that they both assume that systems have equilibrium positions. Furthermore, both of these interpretations or approaches seem to have an "all or nothing" approach to system improvement or advancement because neither holds the belief that systems can improve continuously and progressively. Lastly, both are generally applied to one system, such as either a human (social) system or a natural system, but not to both at the same time.

The third interpretation of or approach to resilience is socio-ecological or evolutionary resilience. This is the newest and broadest interpretation of or approach to resilience. Here it is assumed that systems are complex and made up of sub-systems that are connected to each other with potential feedback loops. This interpretation of or approach to resilience also assumes that human or social and natural systems are intrinsically linked with many dependencies and interdependencies. Complex human-natural or socio-ecological systems of this ilk include urban settlements, towns, cities, regions, provinces and countries.

Given the above, this interpretation of or approach to resilience has found specific traction in the urban context. In terms of this interpretation of or approach to resilience it is assumed that continuous and progressive change can take place through adaption and transformation and does not at any stage

assume that equilibrium positions occur in such complex systems. It assumes constant change with both system and sub-system able to evolve or co-evolve at the same time. In the socio-ecological or evolutionary approach to resilience the complexity and dynamism of the complex system and the evolutionary approach to resilience is characterised by the adaptive cycle and Panarchy.

The adaptive cycle emphasises the process of continual adjustment and evolution rather than the existence of equilibria positions while Panarchy emphasises the multi-scale nature of complex systems and the potential for connections and interactions between these various scales. The hallmark of the socio-ecological or evolutionary interpretation of or approach to resilience is that complex socio-ecological systems, such as urban settlements, that undergo this processes are characterised by both adaptability and transformability with adaptability referring to the ability of the complex system to adjust to both internal and external change through self-organisation and collective learning while transformability refers to the ability of the complex system to change totally should the current system no longer be viable. Such an approach to or interpretation of resilience is best applied to complex systems where there are many interdependencies and lots of uncertainty and where you want your system to potentially undergo transformations. Hence the appropriateness of this interpretation of or approach to resilience for use in the context of urban settlements, towns, cities, regions and countries.

In this regard, and because in these settings we are combining both human or social and natural environment systems, there are several critical considerations that have to be factored into your resilience approach. These include:

- understanding your social vulnerable groupings;
- understanding the goal of resilience within the specific context;
- understanding who will benefit and whose resilience will be compromised by your interventions;

- understanding the boundaries of your complex system and what the resultant effect will be on those excluded from your boundary definition;
- understanding the role of power and politics in your resilience approach;
- knowing what type of resilience one is striving for, is it specific or general resilience or both or a mixture of the two;
- understanding that different challenges, risks and uncertainties potentially require different approaches to both resilience measurement and resilience response;
- understanding the impact that human foresight, human ingenuity and human intentionality can offer in preventing or averting risks and challenges;
- understanding the power of the human ability to communicate ideas and the human ability to coordinate action;
- and lastly, understanding the power and impact that technology can play in averting potential disasters.

There is reasonable consensus in the resilience literature that indicates that aforementioned three interpretations of resilience can all co-exist, at the same time in the same complex system, depending on the context. Having said this, it is important to note that in complex socio-ecological systems, such as urban settlements, towns and cities, you would preferably have to employ the employ the socio-ecological or evolutionary approach to or interpretation of resilience. This further contributes to the attractiveness of resilience as a framework for understanding how complex systems such as urban settlements, towns and cities work because it is logical that in some sub-systems of these complex systems you would want stability, while in other parts of the same system you

would need adaptability and in yet other parts the system would require a total transformation.

The understanding of the broad concepts of resilience applies to the more focused concepts of both urban and spatial resilience with the only difference being the focus on urban and spatial contexts. In this regard, and for the purposes of this dissertation, the understanding of urban resilience is that it is a way of critically thinking about how to come up with case specific and varied approaches in response to the different ways in which urban environments change. In this way, urban resilience contributes to the achievement of overall resilience. The published literature indicates that the important elements of urban resilience are the social dynamics of the urban setting; the metabolic flows within that urban setting; the governance networks applicable in that urban setting; and the built environment system of that urban setting.

On the other hand, spatial resilience, for the purposes of this dissertation, is broadly considered to be the contribution that the spatial development planning, land development and land use management can make to achieving urban resilience. In the South African context that has a specific meaning due to the specific prescripts of SPLUMA. In both the cases of urban and spatial resilience there are several common sense guidelines for making resilience thinking practical in order to improve both urban and spatial resilience. These include improving the adaptive capacity of the complex system by improving its learning capacity; duplicating critical components of the complex system so as to ensure improved reliability in the event that things go wrong; ensuring diversity by ensuring that a variety of components within your complex system can perform different functions or that they can perform the same functions differently; and ensuring that your complex system has the right balance between self-sufficiency and connectedness.

Lastly, there is a school of thought that indicates that because urban settlements, towns, cities, regions, etc., are complex and adaptive socio-ecological systems which have unique features that separate them from less

complex one dimensional systems they are more unpredictable but also more amenable to active management through specific approaches such as adaptive governance and adaptive management approaches. This is another reason why assuming a resilience thinking approach is so attractive in dealing with modern day societal dilemmas.

Chapter 3 Research Methodology

3.1 Introduction

A research methodology is not only about methods but is a system of organising principles that provides the foundation for the specific research area. It is essentially a series of choices that informs the structure of the proposed research; the data and information that need to be gathered; the manner of the analysis of data and information gathered; the particular theoretical stance adopted; and the issues that will condition the research (Mouton 2001: 55-57; Hofstee 2006: 108; and Cohen *et al.* 2011: 128-135).

The research methodology, in essence, informs the reader of the broad approach that was used to design the research, analyse and explain the data and information gathered. In contrast, the research method refers to the actions engaged in order to collect the required data and information (Cohen *et al.* 2011: 128-135).

According to Cohen *et al.* (2011: 28-30 & 219-227), qualitative research is generally utilised to attempt to answer questions on complex phenomena, often with the purpose of describing and understanding the phenomena from the respondents' perspective. In this regard, this research endeavour can be described as being qualitative in nature, with the aim of assessing the respondents' opinions on the concept and principle of spatial resilience. This research endeavour also has a quantitative aspect to it as several of the questions in the survey questionnaire will be analysed via simple statistical analysis of the responses of the study participants and as such will augment the qualitative aspects.

Jabareen (2013: 220-221) indicates that working on matters related to urban resilience requires complex thinking and sometimes requires unconventional methods to obtain a holistic view of the issues at hand. Various other authors indicate that urban resilience as a phenomenon is complex, non-deterministic,

dynamic in structure and uncertain in nature (Nel and Nel 2012: 3; Seeliger and Turok 2013: 2108 & 2116; Stumpp 2013: 165; Harrison *et al.* 2014: 4 and Caputo *et al.* 2015: 13).

Jabareen (2013: 221) states further that urban resilience is a phenomenon that is affected by a multitude and multiplication of economic, social, environmental, spatial, physical and other factors and adds that urban resilience is further complicated by the involvement of a wide range of stakeholders including civil society, local, provincial and national governments, the private sector, and various professional communities, and it affects a wide range of urban communities.

In this research endeavour reference will be made to the term or concept of urban resilience as opposed to spatial resilience because very few relevant literature references could be found for the concept of spatial resilience. The concept of urban resilience, on the other hand, is well grounded and to a large extent synonymous or related to the concept of spatial resilience. In this regard, and for the purposes of this research endeavour, the concept and principle of spatial resilience, in the South African context, is seen as an attempt to mainstream resilience theory and a resilience thinking approach into the policy and practice realm of spatial planning and land use management sector. As such, spatial resilience is seen as contributing to achieving urban resilience, which in turn is seen as contributing to overall resilience. So the theory and literature relevant to overall resilience and urban resilience is considered to be relevant to the concept and principle of spatial resilience.

In order to build a conceptual framework for understanding spatial resilience within the South African context and to attempt to answer the questions posed in this research endeavour, a combination of literature analysis in combination with qualitative research methods was employed. The qualitative data collected was then augmented by quantitative methods of analysis of some of the qualitative data generated.

According to Gonzales *et al.* (2008: 3) and Cohen *et al.* (2011: 219), the use of qualitative research methods is desirable when one wishes to understand meanings; look at and describe and understand experience, ideas, beliefs, opinions, values and the intangibles.

3.2 Methodological Approach

Cohen *et al.* (2011: 28-30 & 219) indicate that there is no blueprint for qualitative research, because there is no single picture of the world. They aver further that there are many worlds and many ways of investigating them. This view is supported by Mouton (2001: 138).

To guide this research endeavour and to decide on the research methodology the following logical questions were asked and answered (Bak 2004: 25-28; Mouton 2001: 44-55).

- What is the research endeavour trying to find out?
- What type of data will be collected?
- Who holds the data and information?
- What are the goals of this research endeavour?

The answers to the above questions were as follows:

- What is the research endeavour trying to find out?

  As the concept and principle of spatial resilience is an entirely nascent feature within the South African spatial planning and land use management and development planning sector, the broad aim of this research endeavour is to try to obtain a better understanding of the principle of spatial resilience, as described in SPLUMA, so as to contribute to the proper implementation of the principle. In order to better understand the principle of spatial resilience this research endeavour will attempt to investigate the following important

questions: what does spatial resilience really mean?, what must be done to ensure its successful implementation?, how it can be practically implemented?, and what the major impediments that could hinder the successful implementation of the principle of spatial resilience that one should be aware of?.

- What type of data will be collected?

The data and information to be collected during this study are the opinions of professionals working in the South African spatial planning and land use management and development planning sector on the concept and principle of spatial resilience as set out in SPLUMA.

Specifically, the data and information to be collected would relate to the opinions of the professionals and practitioners' over the period August 2015 – November 2015. This period was significant and relevant because it corresponded to the dates immediately subsequent to the coming into force of SPLUMA in South Africa, which was 1 July 2015 (South Africa 2015b: 3).

- Who holds the data and information?

As the principle of spatial resilience is intrinsically linked to the South African spatial planning and land use management and development planning sectors through its prescription as one of the five development principles in SPLUMA (South Africa 2013: section 7) the assumption is that, as a starting point, the professionals and practitioners' who work in the sector, on a day-to-day basis, and who need to embrace and implement this concept and principle, are the holders of this information. Furthermore, because of the relative recent introduction of the principle of spatial resilience and because of the complexity of the subject area it made perfect sense to start such an inquiry within the professional ranks.

- What are the objectives of this research endeavour?

The broad objectives of this research endeavour were dealt with in Chapter 1 and as such will not be repeated here.

It is clear from the above that the objectives of this research endeavour touch on aspects related to both the practical and intellectual perspective.

In considering the above it was decided that a primarily qualitative research methodology approach would be most suitable. Lincoln and Guba (1985: 39-43); Dixon-Woods *et al.* (2001: 131) and Cohen *et al.* (2011: 219-222) cite the following as supporting reasons for deciding on a qualitative research design approach:

- It allows for humans to be the research instrument.
- It allows for tacit knowledge to be utilised.
- It allows participants to actively construct their own meanings of situations and issues.
- It generates data that is socially situated, context-related, context-dependent and context-rich.
- It allows for participant meanings and understandings to replace proof.
- It allows for data to be analysed inductively, with hypothesis arising from the data during the research. As such, the data generates the theory and the theory does not generate the data. This means the theory emerges from the data. It allows researchers to generate rather than test hypothesis.
- It allows for alternate perspectives on topics.
- It complements quantitative data.

Given all of the above it was decided that the best method to use in this primarily qualitative research endeavour was to employ a cross-sectional survey approach. Survey research is defined by McMillan and Schumacher 2001, in Maree, K. (2007: 155), as the assessment of the current status,

opinions, beliefs and attitudes by questionnaires or interviews from a known population.

Cross-sectional surveys are surveys that are carried out at a specific point in time. They provide you with a snapshot of what is happening in that particular study population at that particular point in time (Cohen *et al.* 2011: 266). They usually take a descriptive or exploratory form that sets out to describe behaviour or attitudes but can also generate numerical data (Cohen *et al.* 2011: 256-257 & 266-273). Rindfleisch *et al.* (2008: 261-279) raises the concern of common method variance (CMV) bias associated with the use of cross-sectional surveys and the resultant negative impact it has on the causal inference (CI). In this research endeavour this was, however, controlled for by employing multiple respondents and obtaining different types of data.

Surveys, in general, are a very traditional way of conducting research. They are particularly useful for non-experimental descriptive designs that seek to describe reality and are frequently used to collect information on attitudes, opinions and behaviour (Hofstee 2006: 122 and Cohen *et al.* 2011: 256-258).

3.3 Research Data and Information

3.3.1 Literature review

The research relied heavily on reviewing a large amount of literature related to the following topical areas of relevance to this research endeavour. These include:

- South African spatial planning and land use management policy and legislative domain and context.
- The broad international concept of resilience and resilience thinking.
- International and South African perspectives on spatial planning.
- The international concept of urban resilience.

- The relatively nascent concept of spatial resilience.

The literature review is discussed in Chapter 2 of this dissertation and was used to develop a framework of understanding and analysis, which informed the development of the spatial resilience research survey questionnaire which was the only instrument employed during this research endeavour to obtain data and information from the study population.

At this point in time it is important to note that the researcher could not find any other comparable South African study of this nature within the spatial planning and land use management and development planning sector in the published literature.

3.3.2 Research survey questionnaire

The only instrument employed to obtain data and information from the study population, in this research endeavour, was via a structured, self-completed questionnaire. A questionnaire in itself is simply a tool for collecting and recording information about a particular issue of interest (Cohen *et al.* 2011: 377). In this instance, the structured, self-completed questionnaire had a definite purpose which related directly to the principle of spatial resilience and to the aims of this research endeavour.

There were specific reasons why a structured, self-administered questionnaire was the instrument of choice in this primarily qualitative research methodological approach (Bailey 1994: 148; Hofstee 2006: 132-133; Maree 2007: 157; Fowler, 2009: 80-83 and Cohen *et al.* 2011: 271-274). These include the following:

- Structured, self-completed questionnaires are inexpensive to manage.
- Structured, self-completed questionnaires are useful when dealing with a study population that is dispersed over a wide geographic area.
- Structured, self-completed questionnaires reduce the possibility of interviewer bias.

- Structured, self-completed questionnaires allow the respondents the time to consider their answers, especially when dealing with complex issues.

- Study participants are more likely to give more honest answers to a computer or via e-mail than to a person on a paper questionnaire, which would be the case with a face-to-face interview.

The above advantages of structured, self-completed questionnaires were of particular relevance to this research endeavour as the potential participants as well as the actual study population were geographically widespread across the Western Cape Province, with some residing outside of the province (Maree 2007: 157). Furthermore, the principle of spatial resilience is a relatively new concept in South African policy circles and as such, the use of structured, self-completed questionnaires would allow the respondents the time to consider their inputs.

There are disadvantages to using structured, self-completed questionnaires (Bailey 1994: 149; Maree 2007: 157; Fowler 2009: 80-83; and Cohen *et al.* 2011: 271-272). These include:

- It is generally recommended that the questionnaire needs to be short and simple.

- There is no control over who completes the questionnaire.

- Respondents with low levels of literacy or poor access to computers and electronic mail are unlikely to complete a questionnaire.

- Response rates to structured, self-completed questionnaires generally tend to be low.

These potential disadvantages of structured, self-completed questionnaires were not considered to be applicable to this research endeavour because:

- The study population consists of professionals and practitioners' within the spatial planning and land use management and development planning sectors who are all highly literate, have access to computers and electronic mail and have a vested interest in the improved understanding of the SPLUMA requirements for implementation as it would affect their day-to-day professional lives.

- Furthermore, as can be seen from the spatial resilience research survey questionnaire which is attached as Annexure 1, and which was administered in this research endeavour, that it was not short and not simple in nature. This was, however, not seen as a negative, because the topic of spatial resilience is a new concept and by its nature is a complex concept. As such, there was no way that the structured, self-administered questionnaire could by its nature be short and simple. No comparable local literature or research could be found to use as a foundation for this research endeavour and as such this research endeavour, in many respects, lays the foundation for further research on this topic.

- The fact that the study population consists of highly skilled and experienced professionals and practitioners' should be an exception to the general requirement that the self-completed questionnaire needs to be short and simple.

In addition to the above, it is important to note that several of the responses from the study population with regard to the structured, self-completed spatial resilience research survey questionnaire were positive with many responding as follows:

- study participants indicated that they felt challenged by the questionnaire.

- study participants indicating that it was the first time that they really thought about the concept of "spatial resilience".

- study participants indicating that they were interested about the outcomes of the research.
- study participants indicating that they found the survey questionnaire and the research to be exciting, appropriate and relevant.

As far as the actual spatial resilience research survey questionnaire is concerned, it was made up of twenty-one (21) questions. Eleven (11) of the twenty-one (21) questions were closed questions with simple "Yes" or "No" answers required. Ten (10) of the twenty-one (21) questions were open questions.

All the questions were numbered and ordered in a manner that seemed most logical to the researcher. The actual questionnaire was devised by the researcher in consultation with the research supervisor and was piloted amongst five professionals to test the relevancy, clarity, logic and flow of the questions (Mouton 2001: 103). All questions were developed within the context of spatial resilience as described in SPLUMA with the intent on obtaining the study population's opinion on spatial resilience. All the questions were considered to be relevant with some questions inserted to possibly confirm or corroborate responses to other questions.

Open questions were employed to ensure that the researcher had covered all the relevant issues related to spatial resilience and because they were considered the best way in which to get the study participants to voice their own opinions on the relevant issues (Bailey 1994: 120; Maree 2007: 161, and Cohen *et al.* 2011: 382). They were also seen as a mechanism to potentially corroborate some of the responses received to the closed questions and as a safety net to identify potential issues not specifically covered by the questionnaire.

Closed questions were employed in the research survey questionnaire because they are considered to be efficient as far as data collection, coding and analysis are concerned. Closed questions are also considered an efficient means of

collecting data on the attitudes and experiences of a study population. It is interesting to note that all of the closed questions had an open question element attached to it through the use of the "Any comments?" statement and the inclusion of a blank text box for possible participant responses. The use of this approach is seen as redressing the power imbalance between the researcher and the research participant with respect to the use of closed questions (Oppenheim 1992: 115; Bailey 1994: 118; Maree 2007: 164 and Cohen *et al.* 2011: 382).

3.4 Study population

The study population for this research endeavour were professionals, practitioners' and academics currently active in the spatial planning and land use management and development planning sectors in the Western Cape. The study population was restricted to professionals who have an operational footprint in the Western Cape because of time and logistical constraints. As such, the study population cannot be seen as entirely representative of all professionals within the spatial planning and land use management and development planning sectors in South Africa. Map 1 depicts the Republic of South Africa, highlighting the physical position and the extent of the Western Cape Province.

The list of one hundred and twenty three (123) potential participants to whom the spatial resilience research survey questionnaire was initially sent with the request to participate nor the list of fifty (50) study participants who responded positively to the request to participate in this research endeavour are not included in the dissertation for ethical reasons. Table 1 sets out the sectoral representation break-down of the study participants who responded positively.

Given the above there was a study participant response rate of 40.65%. Although this response rate may be considered to be low, it is regarded as adequate for the purposes of this study.

Reasonable assumptions made about the study population were discussed in Chapter 1 and as such will not be repeated here.

3.5 Data collection

As mentioned earlier, the twenty-one (21) question spatial resilience research survey questionnaire was sent to all one hundred and twenty-three (123) potential study participants, in electronic format, via electronic mail, with the request to participate. The spatial resilience questionnaire was accompanied by an introductory background electronic mail message and an informed consent form (Fowler 2009: 58; and Cohen *et al.* 2011: 263-264). See Annexure 1 for the spatial resilience research questionnaire along with the background document and informed consent form. The potential participants were requested to read through the introductory message, then to read through the questionnaire and then to decide if they wanted voluntarily to participate or not. If they agreed to participate the study participants were then requested to complete the informed consent form and the spatial resilience research survey questionnaire electronically and to re-submit it to the researcher, via electronic mail, within 4 weeks of receipt. In many respects this approach can be considered to be a hybrid sampling approach, combining elements of convenience sampling and homogenous sampling (Miles and Huberman 1994: 28 and Cohen *et al.* 2011: 229-230).

In reality it took close to 8 weeks and several electronic mail follow-up communications (Fowler 2009: 56 and Cohen *et al.* 2011: 263) to get the fifty positive responses to the spatial resilience research survey questionnaire.

As mentioned previously, the response rate to the completion of the survey questionnaire was 40.65%. Although the percentage may be regarded as low, the actual number of responses, in this case fifty (50), was considered acceptable for such a research endeavour.

The main reasons for the somewhat low response rate could be due to several possible factors some of which are listed below:

- The questionnaire was considered to be lengthy and complex in nature.
- Professionals and practitioners', especially those at local municipal level, were under tremendous work pressure, with staffing constraints being the main issue. In this regard, several potential participants indicated that they would have liked to have participated but simply could not find the time to do the questionnaire justice.
- Professionals and practitioners' in the private sector suffered the same fate. In their instance it was the pressure of working toward several project dead-lines at the same time which prevented them from participating.
- Three academics indicated that they would not participate. One academic indicated that the questionnaire was simply too long and complicated, and the other two indicated that they were simply not well versed enough in the subject to participate.
- Several professionals and practitioners' simply did not respond at all, not even to indicate that they would not participate.
- Several of the fifty (50) study participants who responded positively to the request to participate indicated that they found the questionnaire interesting and that it forced them to think about the subject matter and that they enjoyed working through the questionnaire.

On receipt of the completed questionnaires the researcher engaged in the following activities:

- An electronic mail message was sent to the study participants to thank them for agreeing to participate and for taking the time and effort to complete the spatial resilience research survey questionnaire.

- The researcher then worked through the completed questionnaire to ensure that all questions had been answered. In the event that some questions were not answered an electronic mail communication was sent to the participant to highlight that a question/s had not been answered and to provide the study participant an opportunity to answer the unanswered question. If no response was then received from the study participant – an input of "no response" was entered.

- The completed and returned questionnaires were saved in a *pdf* format if they were not submitted in a *pdf* format.

- The responses to all the questions were then transcribed into an *excel* spread sheet for analysis purposes.

- The responses to the questions in the spatial resilience research survey questionnaire were then coded accordingly.

3.6 Data Analysis

The results obtained for both the open and closed questions were analysed as follows:

- The closed questions were simple "Yes" and "No" response questions. As such, no specific coding was required. All that was required was to add up the number of "Yes" and "No" responses to a particular question and to work out the percentage as a proportion of the study population size of fifty (50). One occurrence with the closed questions that was not anticipated was that study participants could provide both a "Yes" and "No" response to a particular question. This occurred on a few occasions. In order to accommodate for this, provisions for both "Yes" and "No" responses to a particular question in the results and the analysis of the data collected was made during the analysis. Based on this the researcher then explored the possible implications this had or

would have for the implementation of a spatial resilience approach as is required from SPLUMA.

- The results of the responses to the open questions were analysed based on the thematic coding for each of the open questions. Coding of open questions took the form of a thematic approach rather than a numeric approach. Furthermore, coding could not be anticipated for the open questions as the responses could not be anticipated. As such, the thematic coding of the open questions took place after the researcher worked through all the responses for a particular question and was able to pick up thematic trends in study participant responses. Based on the themes identified for the responses to each of the open questions the primary researcher performed a simple statistical analysis of the percentage of responses per theme in terms of the total study population of fifty (50). The researcher then explored the possible implications and the significance of the preponderance of the responses for the implementation of a spatial resilience approach as is required from SPLUMA.

- Lastly, the researcher performed a check on the questions that were linked to each other in order to see if there was indeed corroboration or not and the implications of this for the implementation of a spatial resilience approach as is required from SPLUMA.

3.7 Ethics

3.7.1 Ethics Statement

In terms of ethics, the researcher for this research endeavour committed to the following:

- Strive to ensure that the work will, as far as possible, make a positive contribution to society in general and more specifically the spatial planning and land use management and development planning sectors.
- To ensure that this research endeavour does not cause harm to any sector of society, and in particular, those individuals who have agreed to participate in this research endeavour.
- To endeavour to ensure that any benefits and risks associated with this research endeavour are well assessed in advance and will be equitably distributed throughout society.
- To ensure that the research endeavour respects and protects the rights and dignity of participants at all times.
- To ensure full compliance with all legal requirements regarding the collection, storage, handling, processing and analysis of the primary data collected.
- To ensure that participants at all stages in the research endeavour will be given full and accurate information in regard to issues such as the background, nature, purpose, findings and outputs of the research.
- To ensure that all participants in this research endeavour were given sufficient details on the research in question so as to allow them to make an informed decision to participate or not in this research endeavour.
- To continue to be fully aware of the obligation to safeguard the interests of vulnerable or potentially "at risk" groups who have been involved in this research endeavour.
- To continue to ensure that participants involved in the proposed research endeavour have the right not only to agree to participate in the research but also to decide on which information to provide as part

of this research and to withdraw from the research endeavour at any time.

- To continue to ensure that the information provided by the participants is treated as confidential and used for research purposes only.
- To continue to ensure that the participants in this research endeavour will not be put under any undue or unnecessary risk as a result of their participation.
- To place the results of this research endeavour in the public domain with a view to transparency, scrutiny and peer review.

It should be noted that the researcher followed due process and obtained the necessary University of the Free State ethical clearance in order to perform this study.

3.7.2 Informed Consent

All potential study participants, to whom the spatial resilience research survey questionnaire was initially sent, via electronic mail, were at the same time provided with a short background electronic mail message on the research endeavour and an informed consent document. All potential participants were requested to voluntarily participate in the research endeavour and if they agreed to participate were also requested to complete the informed consent form and to submit it with the completed spatial resilience research survey questionnaire.

The background information electronic mail message and the informed consent documents sent to the potential study participants can be found in Annexure 1.

3.8 Conclusion

It should be noted that although fifty (50) participants responded positively to the request to participate in the research endeavour, not many of them completed the informed consent form. Nevertheless, the fact that the participants completed the spatial resilience research survey questionnaire and submitted it via electronic mail was considered by the researcher as an indication of consent to participate. As such, the inputs of participants who completed the survey questionnaire but who did not complete the informed consent form were still used in the study and the obligations and commitments of the primary researcher, as spelt out in 3.6.1 above, apply to those participants as well.

In terms of this research endeavour the following can be confirmed:

- It is essentially a qualitative research endeavour that makes use of a cross-sectional survey design to obtain the study populations opinion and perception on spatial resilience. This qualitative research methodology will be augmented by quantitative analysis of some of the qualitative data generated from the cross-sectional survey.
- The study population are professionals active within the spatial planning and land use management sector with an operational footprint in the Western Cape Province.
- The two main sources of information are the literature review and the use of a structured, self-completed questionnaire.
- The use of the structured, self-completed questionnaire, sent via electronic mail, is considered to be the most appropriate instrument for obtaining the data from the study population because of the dispersed nature of the study population, the complex nature of the subject area of spatial resilience, the high literacy rates of the study population, the study participants favourable access to computers and electronic mail,

and the need for the study population to take the time to ponder on their responses.

- Several of the study population expressed their pleasure and appreciation with the spatial resilience research survey questionnaire.
- In terms of the participant response rate, it was calculated at 40.65% with fifty (50) respondents in total. This was considered to be appropriate for such a research endeavour.
- The analysis of both open and closed question were kept as simple as possible with closed questions coded thematically subsequent to receiving the study participant responses and the open questions not coded specifically but employing a simple statistical approach to the "Yes" and "No" and "Yes and No" proportionate responses to each of the closed questions. In each instance the outcome of the responses to the various questions would be used to explore and discuss the implications such an outcome for the study population would mean for the implementation of a spatial resilience approach as required by SPLUMA.

Chapter 4: Results and Analysis

4.1 Introduction

This chapter presents the results obtained from the responses to the spatial resilience research survey questionnaire. Here the study population response results of each of the twenty-one (21) questions contained in the spatial resilience research survey questionnaire are presented, analysed and discussed. Potential linkages and cross-references between questions are also highlighted.

4.2 Study Population

In order to obtain the opinions of professionals and practitioners active in the spatial planning and land use management and development planning sector in the Western Cape on the principle of spatial resilience, as described in the SPLUMA, the spatial resilience research survey questionnaire was forwarded to one hundred and twenty three (123) potential participants. All these potential participants are professionals or practitioners active within the spatial planning and land use management and development planning sector within the Western Cape. They were either in the employ of national or provincial or local government sectors, or the academic and private sector, with an operational footprint in the Western Cape. Chapter 3 presents the methodology employed in this research endeavour and describes how potential participants were sampled and approached, as such, those details will not be repeated here. Annexure 1 contains the spatial resilience research survey questionnaire.

In response fifty (50) participants agreed to participate in the study and as such form the study population. This translates into a study response rate of 40.65%. Table 1 presents the sectoral employment affiliation break-down of

the fifty (50) study participants who constitute the study population. Table 2 presents the break-down of the employment status of the study population at the time of the study. Map 1 shows a map of South Africa, highlighting the Western Cape Province, which is the province in which all of the study population have an operational footprint.

Table 1: Sectoral Employment Affiliation of the Study Population

Sectoral Employment Affiliation	Number of Study Participants
National Government	4 (8%)
Provincial Government	21 (42%)
Local Government	16 (32%)
Private Sector & Academia	9 (18%)
Total Respondents	50 (100%)

Table 2: Profession of Study Population

Responding Participant Professions	Number of Participants
Professional Planners	40 (80%)
Economists	4 (8%)
Policy Analysts	2 (4%)
Environmental Scientists / Environmental Management Professionals	3 (6%)
Disaster Management Professional	1 (2%)
Total	50 (100%)

The final study population therefore consisted of fifty (50) participants or respondents. Of this study population of fifty (50), participants 80% (40) were employed and working as registered or un-registered professional planners in various sectors. See Table 2 in this regard.

With respect to the sectoral employment affiliation of the study population, at the time the study was initiated, 82% (41) of the study population were employed by one of the three spheres of government with the other 18% of the study population employed in the private sector or in the academic world. Deeper drilling in terms of the study population employment information indicates that 32% (16) of the study population were employed in the local government sector with 5 (10%) of these local government sector participants employed by the City of Cape Town Metropolitan Municipality, the sole metropolitan municipality within the Western Cape Province.

4.3 Main Study Results and Analysis

4.3.1 Introduction to Study Results

The spatial resilience research survey questionnaire consisted of twenty-one (21) questions made up of eleven (11) open and ten (10) closed questions. The closed questions were exclusively Yes or No questions whereas the open questions gave study population carte blanche in terms of their responses to the questions posed. Due to the responses received to the closed questions, an additional option of a combined Yes and No response was included in the analysis of the study population responses. Annexure 1 contains the final draft of the spatial resilience research survey questionnaire which was sent to one hundred and twenty-three (123) potential participants with the request to participate.

Questions 3; 6; 9; 10; 11; 12; 14; 19; 20 and 21 represent the closed questions in the spatial resilience research survey questionnaire. The tabulated results

for all the closed questions, broken up per sector, are presented in Annexure 2 through to Annexure 9.

Table 3 presents the summarised results of all ten (10) closed questions cumulatively for all fifty (50) of the study population.

Annexure 2 presents the summarised response results of the closed questions for the twenty-one (21) Provincial Government sector study participants only.

Annexure 3 presents the summarised response results of the closed questions for the fourteen (14) Provincial Government sector study participants employed by the Department of Environmental Affairs and Development Planning (DEA&DP), who are the Western Cape Government's lead Department for spatial planning and land use management and development planning.

Annexure 4 presents the summarised response results of the closed questions for the seven (7) Provincial Government sector study participants not employed by DEA&DP.

Annexure 5 presents the summarised response results of the closed questions for the four (4) National Government sector study participants only.

Annexure 6 presents the summarised response results of the closed questions for the sixteen (16) Local Government sector study participants only.

Annexure 7 presents the summarised response results of the closed questions for the nine (9) Private and Academic sector study participants only.

Annexure 8 presents the summarised response results of the closed questions for the forty (40) professional planner study participants only.

Annexure 9 presents the summarised response results of the closed questions for the ten (10) non-professional planner study participants only.

In section 4.3.2 below the summarised response results to all the twenty-one (21) questions in the spatial resilience research survey questionnaire are summarised and discussed.

4.3.2 Spatial Resilience Research Survey Questionnaire Results

This section describes the study population response results to all twenty-one questions contained in the spatial resilience research survey questionnaire. Table 3 below statistically summarises the responses of the study population to all ten (10) Closed Questions.

Table 3: Tabular Representation of the Study Population Responses to all the Closed Questions in the spatial resilience research survey questionnaire

	Yes	No	Yes & No or No Response or Do Not Know	Total Responses
Question 3	27 (54%)	19 (38%)	4 (8%)	50
Question 6	6 (12%)	37 (74%)	7 (14%)	50
Question 9	3 (6%)	46 (92%)	1 (2%)	50
Question 10	7 (14%)	39 (78%)	4 (8%)	50
Question 11	34 (68%)	13 (26%)	3 (6%)	50
Question 12	33 (66%)	15 (30%)	2 (4%)	50
Question 14	33 (66%)	12 (24%)	5 (10%)	50
Question 19	14 (28%)	30 (60%)	6 (12%)	50
Question 20	22 (44%)	23 (46%)	5 (10%)	50
Question 21	11 (22%)	33 (66%)	6 (12%)	50

Question 1

The question posed in Question 1 reads as follows:

"What is your understanding of the principle / concept of "spatial resilience"?"

All fifty (50) of the study population provided responses to question 1. This question sought to obtain the respondents personal understanding or perspectives of the principle / concept of spatial resilience and not the SPLUMA interpretation of the principle / concept of spatial resilience.

A wide variety of participant responses were obtained to Question 1. Consequently, participant responses were categorised into one of five thematic areas.

See Figure 1 below for the summary of the study population responses to the five thematic areas identified for Question 1, which are further highlighted in Figure 1 and discussed below.

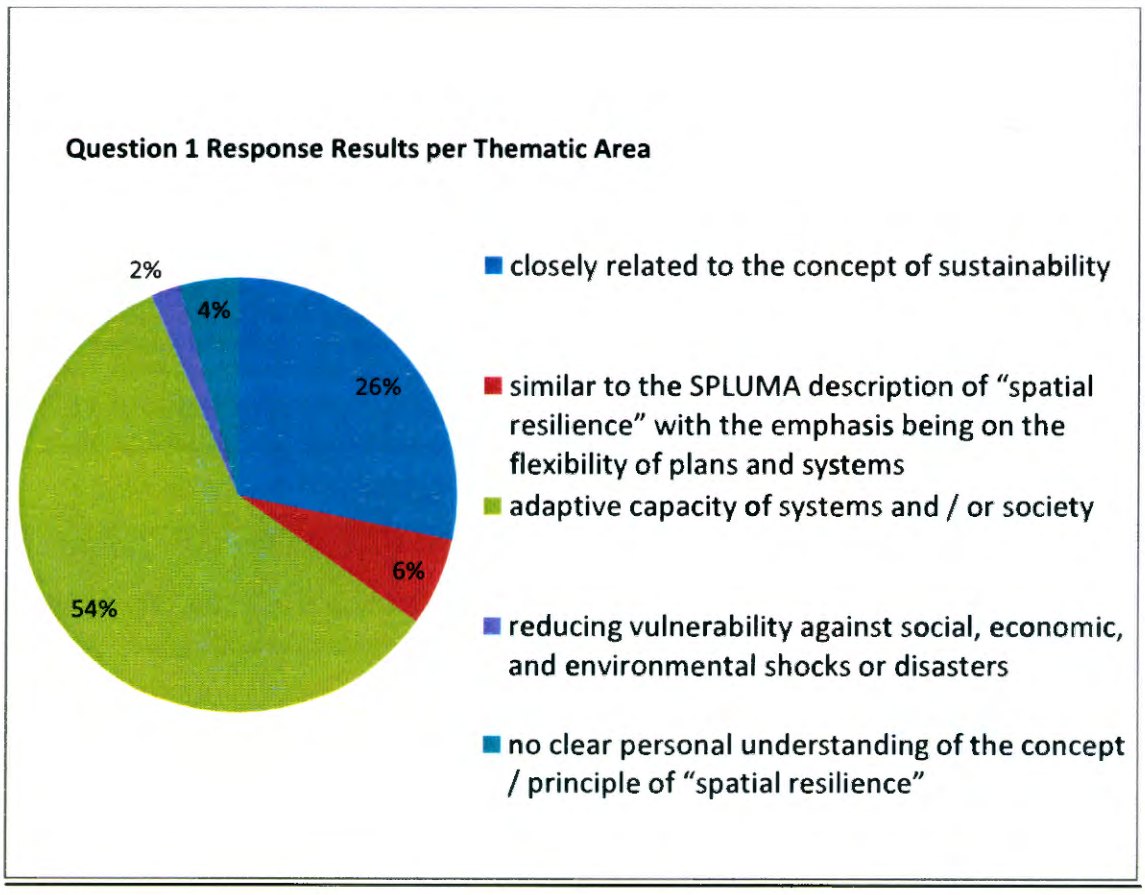
In terms of the responses received for question 1:

- 26% (13) of the study population made reference to their personal understanding of spatial resilience as being **closely related to the concept of sustainability**.
- 6% (3) of the study population indicated their personal understanding of spatial resilience to be very similar to the SPLUMA description of spatial resilience **with the emphasis being on the flexibility of plans and systems** which would enable society to "bounce back" after experiencing an environmental and / or economic shock.
- 54% (27) of the study population indicated that their personal understanding of spatial resilience to be about the **adaptive capacity of systems and / or society**.

- 2% (1) of the study population indicated that their personal understanding of the concept / principle of spatial resilience as **being about reducing vulnerability against social, economic, and environmental shocks or disasters**.

- 4% (2) of the study population indicated that they **had no clear personal understanding of the concept / principle of spatial resilience** with one of the two participants indicating that he had never heard the term spatial resilience in his 25 year career and the other labelling spatial resilience as "another catch word in the sector that appears to refer to flexibility, a pro poor orientation, and an ability to allow land use over time".

Figure 1: Pie Chart indicating the Study Population Responses to Question 1 as per the five thematic areas identified



Three (3) study participants provided quite intuitive personal understanding of spatial resilience. These interesting submissions included the following:

- "A lot has been written about "resilience" over the last number of years. For many "resilience" is seen as similar to "sustainability" or "sustainable development". In this context "resilience" goes beyond mere sustaining of the status quo (old "sustainability") and also focusses on the need to be able to withstand impacts and shocks.

  Some also go further by saying that "resilience" is also about avoiding risk and ensuring increased resilience against (less vulnerable to) impacts/shocks. Some go even further, by saying that "resilience" is not just about being less vulnerable but also about adaptation. Nassim Taleb says that "resilience" does not go far enough, because impacts/shocks on some systems (social, ecological, urban, etc.) are in fact sometimes required for the system to improve. Taleb proposes that the term "Anti-Fragility" as a better concept. I am of the view that Taleb's thought on "anti-fragility" can sit comfortably with a broader understanding of the concept of "resilience."

  When the term "spatial" is added to the term "resilience" it obviously has specific implication for the understanding of the concept. "Spatial resilience" is about how in space (location, distribution, organisation, relationships, linkages, etc.) "resilience" is to be addressed and maintained. "Spatial" also has specific connotations in terms of the spatial planning and the regulation of land use and therefore "spatial resilience" is also about how to address resilience in terms of spatial planning and land use management.

  "Resilience" and "spatial resilience" are also often seen in a too negative a light in that it becomes about survival. Taleb is on the right path with his concept of anti-fragility and the argument that sometimes impacts/shocks are needed. "Resilience" and "spatial resilience" are not

just about surviving, but are about thriving in terms of ensuring qualitative improvements and quality of life."

- "Spatial resilience relates to the ability of spaces to cope with diversity and change whilst retaining their identity. It is the dynamic capacity of a system to cope with disturbance at scales larger than individual eco-systems. A resilient and sustainable urban system is able to tolerate financial, economic, social, cultural and environmental change before reorganising around a new set of structures and processes. Given that the world is in a constant state of flux, the ability of the system to return to its original state (equilibrium) is a bit of a misnomer. Rather, the ability of the system to adapt to internal/ external processes by not keeping still is vital. Urban systems need to respond to the differing needs, wants and desires of different users, consumers and investors."

- "As an attribute of a complex system, spatial resilience refers to the durability of a network arising from the intensity and redundancy of linkages between its component parts, allowing the network to adapt to changing external conditions.

  This attribute is 'spatial' in the sense that the social and economic ties which bind these interdependent parts and strengthen the system as a whole is not random but in fact creates discernible patterns (e.g. clusters, boundaries) which- by shaping the way scarce resources and information are distributed across space- is a significant determinant of the livelihood prospects of individuals, households and communities.

  The contextual mechanisms which underpin these dynamics are based on human tendencies and preferences (e.g. affiliative tendencies), on global organising principles (i.e. market capitalism) and on historical and current state policies and investments. These dynamic networks are not spatially discrete but are nested across scales, operating at local, regional and global levels.

As a policy outcome, spatial resilience is a consequence of interventions which seek to strengthen existing or create new linkages between individuals, households, communities and regions. Such policy actions should be premised on a nuanced, evidence-led understanding of the dynamics underpinning these networks, and how these networks respond to external changes. Because complex networks are characterised by nonlinearity and emergence, well-intentioned but poorly conceived interventions on existing networks tend to precipitate significant unintended consequences. My view is that spatial resilience within the context of planning is about being sensitive to the ties which bind people, places and resources, ties which, in aggregate, results in greater durability amid uncertain external conditions. It is about erring on the side of caution and avoiding over-reach when intervening in a complex system, recognising the spectre of unintended consequences when trying to plan in opposition to people's normal behaviours and preferences.

Spatial resilience is about prioritising structural reforms over integrative/connective interventions and prioritising integrative/connective interventions over area-based interventions. Because people and resources are mobile, the greater the focus on the local (to the exclusion of the network), the greater the likelihood of unintended consequences. It is about building new connections between people rather than disrupting existing connections for the sake of social engineering."

Analysis of Response Results to Question 1

A wide variety of personal understandings of spatial resilience exists among the study population. The majority (94%) of the study population's personal understandings of spatial resilience conveyed in the responses does not correspond to the SPLUMA explanation of spatial resilience.

In fact, many of the responses do not accord with the latest understandings of broader concept of resilience and the narrower concept of urban resilience. This must be seen against the backdrop of the large quantum of international published literature on these concepts as presented in Chapter 2 of this dissertation.

The wide variety of responses indicates that there is a lack of a consensus around the understanding of what spatial resilience is, amongst the study population. This could be due to a variety of reasons. It could be indicative of a lack of debate during the SPLUMA policy development process and / or a lack of policy advocacy subsequent to the SPLUMA policy development process and / or a general lack of local professional and academic debate within the spatial planning and land use management and development planning sectors and / or a lack of individual professional responsibility in keeping up with the latest trends and debates within the professional and academic arenas, especially with respect to issues such as spatial resilience, which is new to the South African spatial planning and land use management policy milieu.

Although this question sought to obtain the study populations personal opinions on the issue of spatial resilience, the general lack of consensus around the understanding of spatial resilience is disconcerting since spatial resilience is now a South Africa spatial planning and land use management legislative imperative. The problem with this is the unintended consequences and potential impact that individual professional interpretation and expression of this legislative imperative could have on the coherence of the implementation of this legislative imperative and the potential knock-on effects this could have on broader policy coherence and cohesion and ultimately settlement form and functionality.

As the majority of the study population are professional planners (see Table 2) this does raise further questions as to the role of professional associations, such as the South African Planning Institute (SAPI), the South African Association of Consulting Professional Planners (SAACPP), and the South African Council for

Planners (SACPLAN), in stimulating debate and gaining some sort of professional consensus around new policy imperatives such as spatial resilience and the importance that the institutionalisation of continuous professional development needs to play within the spatial planning and land use management sector in order to ensure that policy imperatives are understood in theory and in practice in order to realise the policy objectives (Coetzee 2012: 15-16).

Of greater concern is the actual individual study participant interpretation of spatial resilience and the impact that this could have on successful implementation of a spatial resilience approach in South Africa. In this regard, Chapter 2 of this dissertation sets out to develop a theoretical framework for understanding the broad concept of resilience and the narrower concept of urban resilience and spatial resilience. In terms of this theoretical framework we now know that resilience is in essence the promotion and mainstreaming of a resilience thinking approach, which is a way of thinking about change so that we can better cope with it (Gunderson and Holling 2002: 15; De Weijer 2013: iv & 1; and Harrison *et al.* 2014: 5).

In this regard we are aware that several authors (Folke 2006: 254-259; Folke *et al.* 2010: 1-2; Pendall *et al.* 2008: 2; Pelling 2011: 10; Davoudi 2012: 300-306; Davoudi *et al.* 2013: 308); Seeliger and Turok 2013: 2012-2018; Turok 2014: 752; and White and O'Hare 2014: 936-937) have all made reference to the existence of three specific interpretations of or approaches to resilience. These interpretations are:

- Engineering resilience which is also referred to as the bounce-back ability and is characterised by its efficient maintenance of the status quo and its focus on stability.
- Multi-equilibria or ecological resilience, also referred to as the bounce-forward ability, is characterised by its emphasis on adaptability.

- And lastly, evolutionary or socio-ecological resilience which is the newest interpretation or approach to resilience and it is characterised by the ability to both adapt and transform when required and is applied mainly in settings of complex human-nature interactions.

If one goes back to the responses received to question 1, and we exclude the two study participants who did not provide a response, then it is quite clear that all of the study participants, excepting for four study participants, have an understanding of resilience that is very much aligned to the engineering interpretation or approach to resilience or the multi-equilibria or ecological approach to resilience. Only four study participants make reference to characteristics associated with the evolutionary approach or interpretation of resilience.

The major concern with this is that we now know that your understanding or interpretation of resilience is important because it influences the interventions you design and implement (Davoudi 2012: 300-306; Seeliger and Turok 2013: 2110; and Turok 2014: 751). In addition to this several authors (Folke 2006: 254; Folke *et al.* 2010: 21; Pendall *et al.* 2010: 76; De Weijer 2011: 5; Cote and Nightingale 2012: 475; Davoudi 2012: 302; Wilkinson 2012a: 152; Desouza and Flanery 2013: 90; Seeliger and Turok 2013: 2116; White and O'Hare 2014: 937 and Harrison *et al.* 2014: 20) have indicated that urban settlements, towns and cities are socio-ecological systems, and are seen as complex adaptive systems with inherent adaptive capacity. These authors see urban settlements, towns and cities as having many component elements that interact dynamically with each other, creating many potential direct and indirect feedback loops (Wilkinson 2012a: 154).

Given this, it should be clear that if you are striving to build the adaptive capacity of a socio-ecological system, such as an urban settlement, town or city, in order to build its resilience you have to, as a point of departure, adopt a socio-ecological or evolutionary approach to resilience. Further to this, importantly, from a practical implementation perspective, Seeliger and Turok

(2013: 2118) and Harrison *et al.* (2014: 17) have indicated that all three approaches to or interpretations of resilience can co-exist and have something to offer socio-ecological systems such as urban settlements, towns and cities that are in search of sustainability.

These authors indicate that it should not be the case of one approach to resilience prevailing over the other, but, that in complex socio-ecological systems you preferably have to employ the evolutionary or socio-ecological approach to building resilience with the other two interpretations of resilience being employed in addition to the use of the evolutionary or socio-ecological approach to resilience, dependent on the context of the urban settlement, town or city and the kinds of shocks that has been or could be experienced, and the specific characteristics of the urban settlement, town or city and the societal acceptance of approach to resilience.

What makes this understanding of how resilience should be employed in the context of an urban settlement, town or city appealing, is that it is logical that in some complex system with sub-systems you would want stability in some instances, while in other parts of the same system you would need adaptability and in yet other parts the system would require a total transformation. What is further important about this understanding of the broader concept of resilience is that the same theoretical understanding and application applies with respect to the narrower concepts of urban and spatial resilience.

Given this, it is clear that the majority of the study population (88%) do not have this aforementioned understanding of resilience or spatial resilience and this could have implications for the manner in which our urban settlements, towns, cities and regions respond to or cope with change.

Question 2

The question posed in Question 2 reads as follows:

"What is your understanding of the principle of "spatial resilience" as presented in SPLUMA?"

This question sought to obtain the study populations understanding of the principle spatial resilience as conveyed in SPLUMA. A wide variety of responses were obtained to this question, and as such, responses were grouped into five (5) thematic areas which is highlighted in Figure 2 and discussed below.

See Figure 2 below for the study population response results for Question 2 as per the five thematic areas.

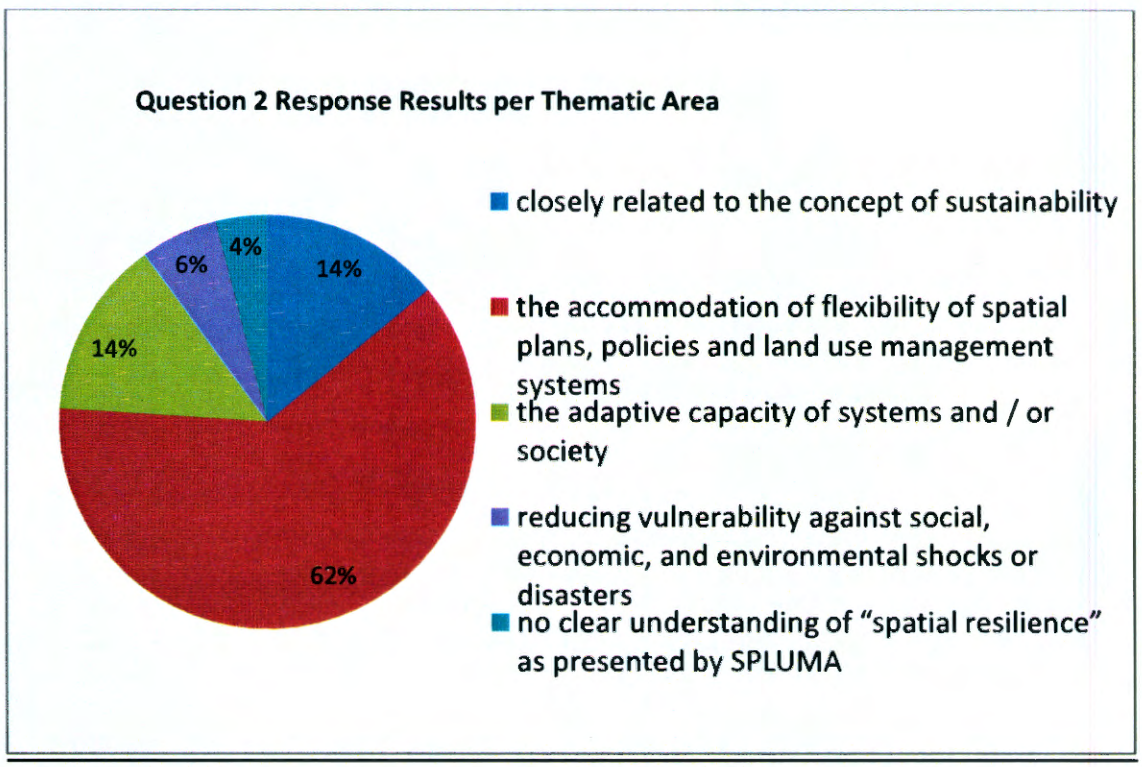
In terms of the responses received for Question 2:

- 14% (7) of the study population made reference to their understanding of spatial resilience as presented in SPLUMA to be **closely related to the concept of sustainability**.
- 62% (31) of the study population indicated their understanding of spatial resilience as presented in SPLUMA to being very similar to the SPLUMA description of spatial resilience with the emphasis being on **the accommodation of flexibility of spatial plans, policies and land use management systems** so as to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks.
- 14% (7) of the study population indicated that their understanding of spatial resilience as presented in SPLUMA to be about **the adaptive capacity of systems and / or society**.
- 6% (3) of the study population indicated that their understanding of spatial resilience as presented by SPLUMA to be about **reducing**

vulnerability against social, economic, and environmental shocks or disasters.

- 4% (2) of the participants indicated that they had **no clear understanding** of spatial resilience as presented by SPLUMA.

Figure 2: Pie Chart indicating the Study Population Responses to Question 2 as per the five thematic areas identified



Some of the study population understandings of spatial resilience as presented in SPLUMA that emanated from the responses to Question 2, included the following:

- "Spatial resilience regarding environmental shocks would entail planning for or mitigating environmental shocks (for example, mitigating the effects of climate change by the delineation of coastal setback lines to limit the negative effects of sea level rise, storm surges, floods, etc.). In my opinion, that is sustainability i.e. planning to mitigate negative impacts and to realise opportunities. Spatial resilience

regarding economic shocks – cannot plan for economic shocks. The economy is reliant on and influenced by many factors. It is not possible to plan for every eventuality. Communities must first be economically viable and sustainable to withstand economic shocks. The best spatial planners can do is to ensure an environment conducive to economic growth is created."

- "Section 7 of SPLUMA indicates that "spatial resilience" is about how "flexibility in spatial plans, policies and land use management systems are accommodated to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks". As such, one must unpack what is meant by "flexibility in spatial plans, policies and land use management systems", what it means to "ensure sustainable livelihoods", which communities in the area in question are most likely to suffer, and nature of possible economic and environmental shocks"

- "This principle is not fully unpacked in SPLUMA and requires more thoughtful thinking with practical examples.

Spatial resilience is not a normative outcome. Rather, it refers to the extent to which a network, a community, or a settlement is able to adapt to changing circumstances, regardless of the desirability of those circumstances and regardless of the nature and end-state of the transformation. For example, if Detroit completely de-industrialises and undergoes a complete repositioning into a white-collar corporate centre, the city can be said to be spatially resilient since it has adapted to changing circumstance. However, many blue collar workers may be forced to find work elsewhere as a result. Similarly, Woodstock has proven resilient in that it has transformed from a predominantly light industrial area to a mixed use inner city part of Cape Town. However, one person's regeneration is another person's gentrification. In contrast, Philippi East was intended to be an industrial hub. However,

the spread of informal settlements combined with deteriorating urban safety has transformed this node into a dormitory settlement. Consequently, tens of thousands of previously landless persons have now settled informally in close proximity to an area where there were supposed to be jobs. Is this spatial resilience? In short, it is a non-normative, agnostic characteristic of a system or settlement."

- "The principle is not explained or elaborated at all in SPLUMA. Section 7(d) seems to suggest the key to resilience lies in "flexibility". There is no indication of what flexibility in spatial plans policies and systems means or how it would work, or indeed, whether in all circumstances it is flexibility that would ensure resilience."

- "SPLUMA requires flexibility and adaptability in spatial planning and land use management, to reduce vulnerability of communities to shocks – specifically, reducing the vulnerability of livelihoods to environmental or economic shocks.

  It is tempting to bemoan SPLUMA for failing to adequately define "spatial resilience" beyond the conceptual level. I would caution, however, that too narrowly defining it contradicts the very requirement of flexibility – that each spatial area (regardless of how narrow or broad the scale of such) will be resilient not through a top-down imposition of standards for planning and design; but through a bottom-up instrumentalism that works with what is already there (both "hard" and "soft"). The principle of spatial resilience is also not discreet from the other principles held in SPLUMA (the principle of spatial justice; the principle of spatial sustainability; the principle of efficiency; the principle of spatial resilience and the principle of good administration) - these principles are seen as interdependent. In my opinion, these principles should also not be viewed as hierarchical (no principle is more important than the other - rather, each one necessitates the other)."

- "SPLUMA describes the principle of spatial resilience as the accommodation of flexibility in spatial plans, policies and land use management systems to ensure sustainable livelihoods in communities most likely to suffer the impact of economic and environmental shocks. First of all this is not so clear to me. In my understanding it is not in the nature of policy to be 'flexible' because for policy to be flexible then it also implies that it is vague in the way it is written. Flexibility is a human element more than it is a policy element."

With respect to the responses to Question 2 it is important to note that, of the study population responses received, 24% of the study population indicated directly or indirectly that they were confused by the SPLUMA explanation of spatial resilience or bemoaned the fact that SPLUMA had not sufficiently defined spatial resilience.

Analysis of Response Results to Question 2

If one compares the SPLUMA description of spatial resilience to the theoretical understanding of the broader concept of resilience and the narrower concept of urban resilience as conveyed in the international published literature and as summarised in Chapter 2 of this dissertation, then it is clear that there is discord. This discord could potentially lead to misunderstanding, misinterpretation and policy implementation incoherence and this discord could possibly have contributed to the confusion and lack of consensus within the study population on what spatial resilience really is.

Now, with respect to the responses received to question 2, although the majority of the participants (62%) have indicated that their understanding of the SPLUMA description of spatial resilience relates to the accommodation of flexibility of spatial plans, policies and land use management systems so as to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks, none of these 62% (31) of the study population indicated what this exactly meant, except for one study participant. This indicates that, in general, although the default response seems to indicate

a reasonable consensus around the understanding of the SPLUMA description of spatial resilience there may be an underlying lack of clarity of what is actually meant by the SPLUMA description of spatial resilience.

It is a fact that SPLUMA does not have a specific definition for spatial resilience and, if one is truly honest, then it is clear that the description of spatial resilience in Chapter 2 of the SPLUMA is not as definitive as would be expected, especially since it is a new policy concept. The concern with this, in relation to the responses received for question 2, is that if the professionals and practitioners who need to implement SPLUMA are not guided sufficiently with respect to the definitions of spatial resilience and other principles in SPLUMA, it could lead to misunderstanding and misinterpretation which could result in potential unintended policy consequences and the non-attainment of the SPLUMA policy objectives and conflicting decisions and outcomes.

Another area of concern arising from the analysis of the responses to question 2 is the seeming lack of understanding of how to read and interpret SPLUMA. As one of the study participants eloquently put it, any concept or prescript of any legislation, including SPLUMA, must be read together with all the definitions provided in the specific legislation, and be interpreted within the context provided by the specific legislation in question. Furthermore, this participant indicates that the five development principles as set out in Chapter 2 of SPLUMA are not mutually exclusive. All the principles must be read together in addressing spatial resilience and the linkages between the various principles, in a particular spatial context, must be made. According to this participant, it is within this context that all the principles must at the same time be given effect to. From a common sense perspective this seems to be rational.

The point raised above should therefore ring true for all legislation, with concepts in legislation having to be read together with all the definitions provided in the legislation, and being interpreted within the context provided by the legislation in question. In this regard, the long-title and preamble of SPLUMA does provide us with a good context, with the objects of SPLUMA as

set out in Section 3 being of particular relevance. The objects of SPLUMA, amongst others, makes it clear that SPLUMA deals specifically with spatial planning and land use management and as such spatial resilience must be interpreted within the context of spatial planning and land use management.

Furthermore, the objective of SPLUMA, amongst others, is to promote social and economic inclusion, to provide for the sustainable and efficient use of land; to provide for cooperative government and intergovernmental relations and to redress the imbalances of the past and to ensure that there is equity in the application of spatial development planning and land use management systems.

As such, in ensuring that spatial resilience is given effect to, it must be considered how, in spatial planning and land use management, spatial resilience is given effect to in terms of these objects. As mentioned previously, all the development principles set out in Section 7 of SPLUMA are not mutually exclusive. All the principles are to be read together in addressing spatial resilience with consideration given to the linkages between the various principles, in a particular spatial context, and how all the principles can at the same time be given effect to.

The fact that there was a wide variety of responses to question 2 is therefore indicative of three issues of concern. Firstly, it is indicative that the policy debates both prior to and subsequent to the culmination of the SPLUMA policy development process does not seem to have been adequate, from a substantive perspective. Secondly, if one follows the SPLUMA policy development process, from the promulgation of the DFA (South Africa 1995) up until the promulgation of SPLUMA (South Africa 2013), then it seems to be quite clear that the principle of spatial resilience was never on the cards. In this regard, it is a fact that neither the Green Paper nor the White Paper, made any reference to the concept or principle of spatial resilience. This begs the question "Where did the principle of spatial resilience come from? and at what stage did it become a priority in the policy development process that eventually

led to SPLUMA?" Furthermore, "Was the principle of spatial resilience ever debated with the spatial planning and land use management and development planning sector stakeholders in any depth, prior to its inclusion in SPLUMA?" Certainly from the responses received to question 2, it does not seem to be the case for this study population. The fact that there is not a more illuminating definition or explanation of spatial resilience in SPLUMA and the fact that the description provided in SPLUMA differs somewhat from the understanding of the broader concept of resilience as garnered from the international published literature, does complicate matters further as this opens up the principle to potential misinterpretation and misunderstanding and policy implementation incoherence.

Further vexing questions related to the above is "Is this the way we are meant to develop such policy, especially policy which holds potentially far reaching implications for our nation and its people?", and given the aforementioned, "Can we then blame the spatial planning and land use management sector and the professionals and practitioners in the sector for not having consensus on what is meant by the principle of spatial resilience?". There seems to be important policy development lessons that we, as a nation need to take from the SPLUMA process, especially with respect to consultation, gaining sufficient consensus and the important role that continued policy advocacy needs to play in institutionalising policy shifts or changes.

Thirdly, notwithstanding the possible flaws in the policy development process there has not been much local professional or academic debate within the sector on the concept or principle of spatial resilience. As with the analysis to question 1, above, this seems to call into question the role of professional organisations and association in debating policy imperatives and ensuring professional coherence and cohesion in terms of understanding the theory and translating it into practice. Related to this is the role that these professional associations need to play in ensuring that the planning profession embraces the need for continuous development and debate (Coetzee 2012: 15-16). Furthermore, as with question 1, it also questions the professional

responsibility of individual professionals and practitioners, and their role in ensuring that they are informed with the latest thinking, debates and developments within their professional area of expertise.

Further points of interest in terms of the linkages between Question 1 and 2 stemming from the analysis of responses received

Question 1 sets out to obtain the participants own personal opinions on spatial resilience. In this regard, it is important to note that the majority of the responses (88%) to question 1 seem to have the same personal understanding as most of the current international published literature with respect to the engineering and ecological understanding or interpretation of resilience, with only 8% of the study population indicating an understanding that closely relates to the evolutionary or socio-ecological understanding or interpretation of resilience.

In relation to the aforementioned, and in terms of question 2, SPLUMA, the South African national framework law for spatial planning and land use management, does require a specific approach to the development principles in general, and to the principle of spatial resilience, in particular, whether you agree with it or not. It must be stated that, the current SPLUMA description of spatial resilience does not sit comfortably alongside the current international perspectives and discourse around the broader concept of resilience, nor the narrower concept of urban resilience, as pointed out in Chapter 2 of this dissertation and as gained from the above.

From the long title, preamble and objects of SPLUMA it is clear that the intention of SPLUMA is to deal with spatial planning and land use management issues in complex adaptive systems, such as urban settlements, towns, cities, and regions. However, its description of spatial resilience seems to call for an engineering or ecological approach to resilience and not an evolutionary approach to resilience. From Chapter 2 of this dissertation we have learned from the international literature that implementing a resilience approach in a complex adaptive, socio-ecological system requires that you preferably employ

the evolutionary or socio-ecological approach to resilience as a default and that the engineering and ecological approaches to resilience then be employed in addition to or in concert with the default of evolutionary or socio-ecological resilience approach. It must however be said that several participants have raised the fact that the SPLUMA description of spatial resilience does not go far enough. This is potentially an element that needs to be debated further, both within the professional and policy arenas.

Notwithstanding the theoretical problems associated with the SPLUMA description of spatial resilience, which should at some stage be debated further within the policy arena, the fact of the matter is that all stakeholders in the spatial planning and land use management and development planning sector need to understand what SPLUMA currently requires of them, not only in terms of the principle of spatial resilience, but in terms of all five the development principles mentioned in Chapter 2 of SPLUMA. If we do not get a better sectoral understanding of what SPLUMA imperatives requires of us, we run the risk of having policy incoherence and uncoordinated and misaligned implementation which can then potentially expose us to the possibility of not achieving the objectives of SPLUMA.

Related to the above, even though the focus of this study is on the principle of spatial resilience, it is important to understand that in implementing SPLUMA you need to understand what SPLUMA requires of you with respect to each of the five development principles. For any potential intervention/s to be coherent and coordinated all the interventions need to speak to all five the development principles simultaneously. So there should never be the case of the principle of spatial resilience having its own set of interventions that speak to it only.

With specific regards to the principle of spatial resilience, it is important that stakeholders in the spatial planning and land use management sector clearly understand what SPLUMA requires of them in terms of this principle. In the absence of an explicit definition in SPLUMA we have to work through the

description of spatial resilience as set out in Chapter 2. Here it clearly states that spatial resilience refers to "whereby flexibility in spatial plans, policies and land use management systems are accommodated to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks". In unpacking what is required with this principle a few important questions need to be asked. These include:

- Firstly, what are the possible environmental and economic shocks that may be encountered by a specific area? Remember that your interventions to address the principle of spatial resilience and the other four development principles will have to be context specific.

- Secondly, which communities in an area are most likely to be affected by these environmental and economic shocks?

- Thirdly, what livelihoods are in those communities or what the potential livelihoods are in those communities? and what would constitute sustainability of those livelihoods?

- Fourthly, what spatial plans, spatial policies and land use management systems are applicable to that specific community in that specific area?

- Fifthly, what flexibility can be built into the spatial plans, spatial policies and land use management system in order to ensure the sustainable livelihoods of the communities most likely to suffer from the environmental or economic shocks? Here it is important to note that there are a wide range of interventions that can potentially be pursued. These interventions will need to be context specific. They can vary from amending the municipal spatial development framework, to developing precinct or neighbourhood plans, to forming the right strategic partnership to ensure continued electricity or water supply, to developing or amending the municipal development contributions policy. There are many more possible interventions. The idea behind the aforementioned is not to describe these interventions in a

conclusive manner but to highlight the breadth and depth of possibilities that potentially exists.

Lastly, and in relation to the aforementioned, it would be remiss of me not to reiterate the underlying theory behind spatial resilience. As mentioned previously, Chapter 2 builds a theoretical framework for understanding the concept of spatial resilience based on the current literature around resilience theory. In terms of Chapter 2, the theoretical framework has been designed in such a way so as to tie up the concept of spatial resilience with the broader concepts of urban resilience and resilience. In this regard, spatial resilience is seen as a contributing element to achieving urban resilience, and urban resilience is seen as contributing to achieving overall resilience. The golden thread that ties these concepts together is the application of a resilience thinking approach, with resilience thinking being a way of thinking about how to deal with change. So spatial resilience is not simply about interventions that will contribute to achieving spatial resilience, it is a way of thinking about how all the facets of spatial planning and land use management can deal better with change, build adaptive capacity and thereby improve resilience within a specific context.

Question 3

The question posed in Question 3 reads as follows:

"Do you agree with the SPLUMA description / definition of spatial resilience? Yes / No"

See Figure 3 below for the study population response results to question 3.

In terms of the responses received for Question 3:

- 54% of the study population indicated that they agreed with the description / definition of spatial resilience as contained in SPLUMA;

38% indicated that they did not agree; while 8% did not issue an opinion.

- A deeper analysis into the responses to Question 3 indicates that if one looks at a comparison of the professional planner participant grouping responses with that of the non-professional planner participant grouping responses it indicates that 50% of the professional planners and 70% of the non-professional planner grouping agreed with the description / definition of spatial resilience as contained in SPLUMA.

- Furthermore comparisons of the responses to this question indicate that 57.1% of Provincial government sector participants; 50% of National government sector participants; 56.25% of Local government sector participants and 44.4% of Private and Academic sector study participants agreed with the description / definition of spatial resilience as contained in SPLUMA.

Analysis of Response Results to Question 3

The study population results obtained for question 3 is indicative that there is no clear consensus on what the concept or principle of spatial resilience is, within the study population. This result further supports the analysis of the responses received to questions 1 and 2.

Furthermore, this result again raises concerns with the quality and depth, not the legality, of the policy development process associated with the development of SPLUMA in South Africa. Specifically, as with the analysis of both question 1 and 2 above, it calls into question whether the spatial planning and land use management and development planning sector was sufficiently consulted and if enough effort were placed on policy advocacy in order to obtain the necessary consensus view with respect to spatial resilience, and other related concepts contained in SPLUMA, both during and subsequent to the SPLUMA policy development process.

Of issue here is the level of buy-in or understanding of the contents and prescripts of SPLUMA by the various sectoral stakeholders. If the professionals and practitioners, who are to implement SPLUMA, don't buy-in to or understand its contents and prescripts then what does this potentially tell us about the future successful implementation of SPLUMA?

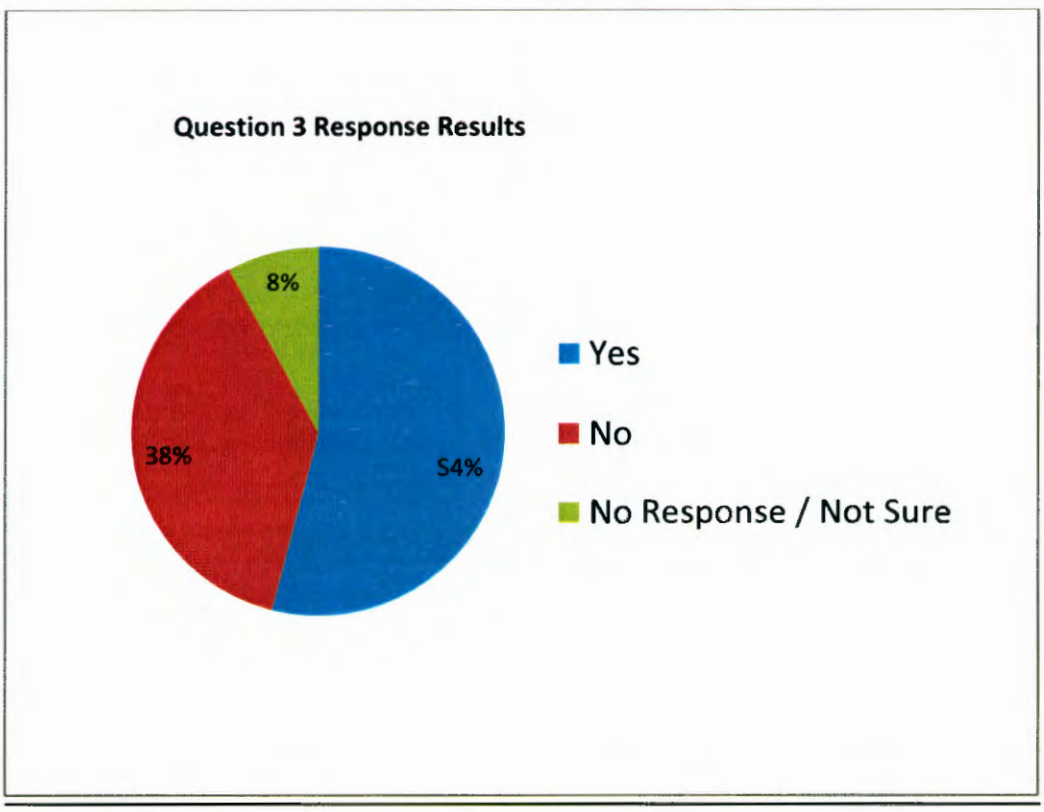
Furthermore, it is only common sense that the professionals and practitioners in a sector are important torchbearers of policy development, policy adjustment and more importantly, policy implementation. In this instance, based on the inputs received from the study population, it is clear, that the professionals and practitioners in this sector do not seem to have been the torchbearers of this policy development process, specifically with regard to the principle of spatial resilience. Given this, how can we then expect them to be the torchbearers of policy implementation?

Related to the above, this result is further indicative, as with the analysis of both question 1 and 2, of the potential lack of organisation and coordination within the professional planning fraternity, who are the dominant profession within the spatial planning and land use management and development planning sector. This inference is made because it is common knowledge that it is one of a very few professions, regulated by a statute of parliament, that has not as yet got its house in order in terms of continuous professional development (Coetzee 2012: 15-16). The continuous professional development vehicle is one of the tools used by professions to ensure that their members remain at the cutting edge of knowledge, best practice and discursive debate around issues of policy and practice.

Deeper analysis of the responses to questions 1, 2, and 3 indicate that the majority of the study population responses do not align with what the current international discourse is around the concept of resilience and the narrower concept of urban resilience, as mentioned previously. In Chapter 2 of this dissertation, and in the analysis of responses to question 1 and 2, these arguments are set out.

Further analysis of the study population responses to question 3 indicates that the professional planner participant group, in particular, indicate that only 50% agree with the SPLUMA definition of spatial resilience. This supports the earlier assertion that there is really no consensus amongst the professional planners on what the concept of spatial resilience is. The question that then arises is "why would they not be in agreement?" and "what is driving this discord?" Is it simply due to a lack of understanding or knowledge or is it due to the previously mentioned lack of consultation, debate, consensus and awareness around what spatial resilience is or could it be that the planning professionals are indeed up to speed with the latest international discourse on resilience and therefore simply do not agree with the SPLUMA interpretation thereof? Another possible explanation for this discord is that there could potentially have been a disconnect between the drafters of SPLUMA and the stakeholders in the spatial planning and land use management and development planning sector

Figure 3: Pie Chart indicating the Study Population Responses to Question 3



Question 4

The question posed in Question 4 reads as follows:

"What, in your opinion, is the difference between the principle of spatial resilience and the principle of spatial sustainability, if any?"

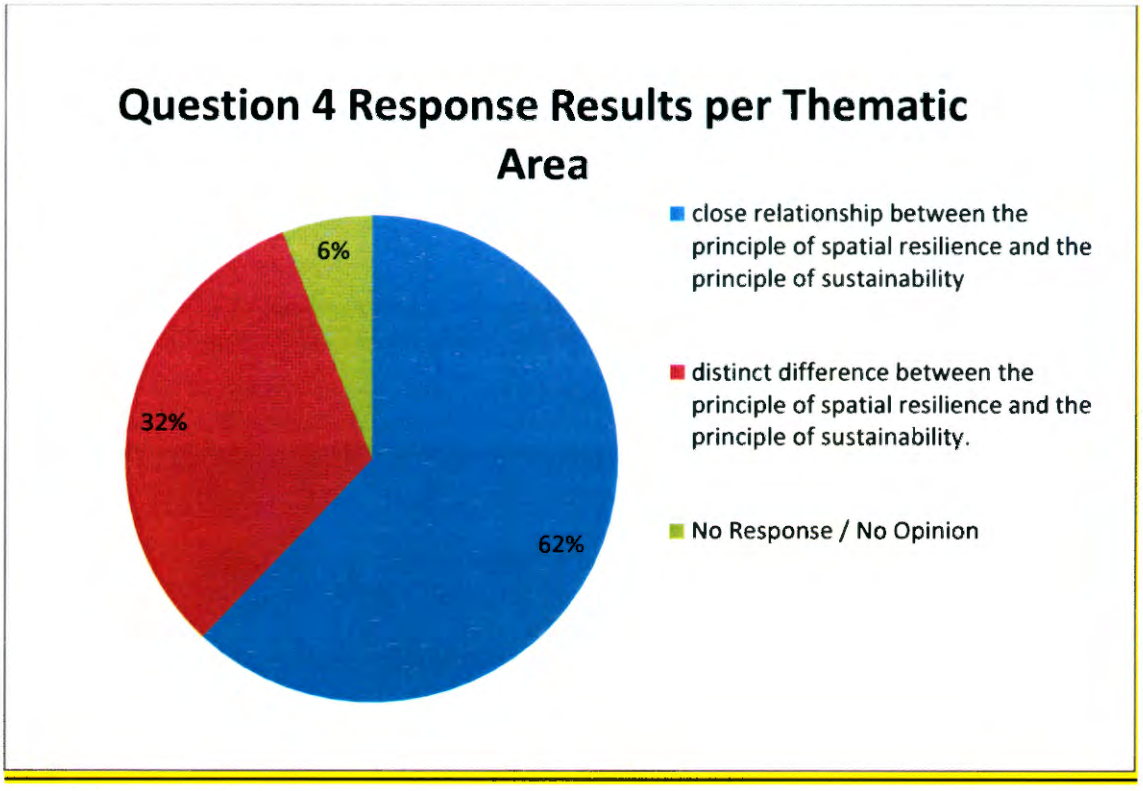
Due to the wide variety of responses received to this question the responses were grouped into three (3) thematic areas.

See Figure 4 below for the study population response results for question 4, as per the three (3) thematic areas.

In terms of the responses received for Question 4:

- 62% (31) of the study population responses indicated that there was a **close relationship between the principle of spatial resilience and the principle of sustainability**. Many of these 31 participant responses indicated that they felt that spatial resilience was indeed an informant to or a sub-component of spatial sustainability.
- 32% (16) of the study population responses indicated that there was a **distinct difference, and no relationship, between the principle of spatial resilience and the principle of sustainability**.
- 6% (3) of the study population **did not issue an opinion on whether or not there was a difference between the principle of spatial resilience and the principle of sustainability**.

Figure 4: **Pie Chart indicating the Study Population Responses to Question 4 as per Thematic Area**



Some of the comments received from the 62% of the study population that indicated that there was a close relationship between the principle of spatial resilience and the principle of spatial sustainability included the following:

- "Sustainability, including spatial sustainability, is a broad goal (the highest aim towards which we strive), and spatial resilience is an objective which will further our progress towards the goal."

- "Spatial resilience" and "spatial sustainability" focusses on different but related aspects of spatial planning and land use management. While the concept of "spatial sustainability" also does not contain all the aspects it should, it must be read together with the other development principles set out in Section 7 of SPLUMA as well as with the national environmental management principles set out in Section 2 of NEMA. Read together, all the principles adequately cover all the aspects."

- "Spatial sustainability encompasses the principle of spatial resilience. Spatial sustainability is an overarching view in that it speaks to maintenance and continuous functioning of a space. In order for a space to continuously function it needs to be resilient."

- "Spatial resilience is a subcomponent of sustainability, as a sustainable settlement would need to be one which is able to withstand stresses and shocks, but sustainability is so much more than this."

Comments received from the 32% of the study population that indicated that there was a distinct difference between the principle of spatial resilience and the principle of spatial sustainability, with no relationship, included the following:

- "The two terms are often used inter-changeably, but incorrectly so. Spatial resilience refers to spaces being able to withstand shocks caused by external factors. On the other hand Spatial Sustainability refers to factors that need to be built into the system to ensure longevity."

- "The principle of sustainability is thus aimed at the planned use of resources within a manner that ensures that such resources are preserved for future generations, whilst the principle of resilience aims to prepare and deal with unplanned occurrences that may have an impact on the urban and rural environment."

- "Spatial resilience infers that the settlement / system can sustain and thrive despite shocks. Spatial sustainability infers that the settlement can persist in a steady state of environmental, social and economic sustainability if the current status quo persists."

- "Spatial sustainability refers to patterns of consumption and production that should be supported, and ways of living promoted that do not damage the natural environment (e.g. protection of prime agricultural land). Spatial resilience refers to the capacity and ability of a

community to withstand stress, survive, adapt, and bounce-back from a crisis or disaster."

Comments received from the 3% of the study population who did not issue an opinion on whether or not there was a difference between the principle of spatial resilience and the principle of sustainability included the following:

- "I have never understood the word "spatial sustainability". I do understand "sustainability" (as in the Brundtland Report) but when it comes to being applied to spatial structure I do not understand it. When it comes to whether cities and towns are sustainable, there really are very few towns which have "stopped"... disappeared, and so have been unsustainable."

Analysis of Response Results to Question 4

From the study population responses received to question 4, the general understanding of spatial sustainability seems to be closely linked to the ecological sustainability concept.

In terms of the relationship between spatial resilience and spatial sustainability it is worth noting that SPLUMA does have a much more directive and informing description of what spatial sustainability entails in comparison to its description of spatial resilience.

As mentioned previously, the five principles contained in SPLUMA are not mutually exclusive. They must be individually understood and un-packed, but must at all times be read together and implemented in unison.

The majority (62%) of participants seem to propose that spatial resilience is a sub-component of spatial sustainability. This, in theory, is correct. Chapter 2 of this dissertation deals with the relationship between sustainability and resilience. Interestingly, in this regard, Harrison *et al.* (2014: 15) have discussed the relationship between the broad concepts of sustainability and resilience. They indicate that one of the more common misunderstandings made about

resilience is that it replaces sustainability or that resilience and sustainability are essentially the same.

According to Harrison *et al.* (2014: 15) resilience and sustainability are conceptually linked or related, but they do not have the same meaning. In their view, sustainability should be seen as an essential goal of development and resilience as a way of thinking and acting that would lead us towards achieving sustainability. If this is so then, theoretically, the same should be true for spatial resilience and spatial sustainability.

What is concerning is that, according to the responses received for question 4, 38% of the study population have a differing view. This seems to indicate that there could potentially be a mismatch between what SPLUMA requires in terms of spatial resilience and spatial sustainability and what the professionals, who need to implement SPLUMA, are understanding of these requirements. Furthermore, there also seems to be some discord between the SPLUMA descriptions of spatial resilience and spatial sustainability as compared to what the international discourses indicate about the broader concepts of sustainability and resilience. Responses received to question 4 seem to corroborate the responses to questions 1, 2, and 3 in the sense that, as mentioned previously, the quality or the depth of the policy development process that resulted in SPLUMA, and the policy advocacy process subsequent to SPLUMA's promulgation is of concern, especially with respect to the consultation with the professionals and practitioners directly involved in the spatial planning and land use management and development planning sector.

A further issue that was picked up from the responses received to questions 2, 3 and 4, is the fact that many of the professionals and practitioners seem not to have taken the time to read through and engage with the contents of SPLUMA. This comes through in some of the responses received.

Here again, the role of leadership, or the lack thereof, of professional organisations and associations in gearing their professionals for new legislative

and policy dispensations and the related lack of individual professional responsibility, which potentially seems to be at issue here.

What the responses to questions 1, 2, 3 and 4 further highlights, is the complexity associated with a subject such as resilience. However, this serves only to emphasise the need for sufficient debate and consensus within the policy domain which will then translate into improved policy coherence and coordination and lead to improved implementation.

Question 5

The question posed in Question 5 read as follows:

"What, in your experienced professional opinion, makes a settlement (and communities) spatially resilient?"

All of the fifty (50) study population, excepting one, provided responses to Question 5. The responses were once again numerous and varied in nature. As such, the responses to question 5 were summarised and captured under the banner of one of five of the following broad thematic areas as follows:

Settlement Functionality elements

According to the study population responses, from a settlement functionality perspective, spatially resilient settlements have the following characteristics:

- are well planned and managed within their given context and resource footprint; and utilises well researched and established urban planning concepts such as compact, mixed use, medium to high densities, multi-functionality, and spatial variation; and are designed for communities with nature in mind and embraces diversity; displays locational logic, promotes connectivity, has an efficient, effective and affordable public transport system; and has access to goods and services of both a public (schools, hospitals, clinics, libraries, parks, recreational areas) and

private nature; has access to an adequate level of basic services (water, electricity, sewage, housing, waste disposal); has an over-designed infrastructure system; is pedestrian friendly; and operates within its financial resource constraints.

Social elements

According to the study population responses, from a social perspective, spatially resilient settlements have the following characteristics:

- characterised by active citizenry; with appropriate levels of education and skills; and display and encourage strong social networks and social cohesion; and provide choices and options for its citizens; and embraces complexity.

Policy Coherence and Coordination elements

According to the study population responses, from a policy coherence and coordination perspective, spatially resilient settlements have the following characteristics:

- are based on a common vision which is achieved through policies, plans and programmes that are transversally coordinated and coherent and which promotes and increases resilience and continuously strives for efficiency, effectiveness, resilience, good governance and improved sustainability in all respects; embraces a risk avoidance and risk management approach; and is evidence led using the best available intelligence (data and information) and promotes a culture of learning through implementation.

Good Governance elements

According to the study population responses, from a good governance perspective, spatially resilient settlements have the following characteristics:

- have a government and public service that has good leadership team; and have a public service that is well capacitated and engaged with its citizens and responsive; have a government and public service that make rational decisions and empowers its citizens to participate actively in the business of governance and delivery; have a government and public service that is able to build partnerships, especially with the private sector; and have a government and public service that has a culture of continuous planning but understands that you plan to implement and therefore has a strong focus on implementation and delivery.

Economic elements

According to the study population responses, from a social perspective, spatially resilient settlements have the following characteristics:

- creates the environment that promotes and encourages innovation, economic growth and development and investment and provides equal access to all services and opportunities; and operates with intent from a base of sound knowledge and understanding of the space economy and the settlement dynamic.

Analysis of Response Results to Question 5

From the wide range of responses received for question 5, it is clear that many of the study population do have an impressive understanding of the broad characteristics associated with spatially resilient settlements. This seems to be counter to what was seen in the responses received to questions 1, 2, 3, and 4. This could again be highlighting that the problem lies with the lack of depth of the SPLUMA policy development process and the lack of obtaining sufficient consensus on the various important SPLUMA imperatives. Having said this, many of the responses tended to focus on the broader questions of resilience

and not so much on the focused issue of spatial resilience, which has a particular meaning in terms of SPLUMA.

However, many of the responses do add genuine value and do contribute to the improved broader understanding of what characterises a spatially resilient settlement. It is evident that the views of the study population are obviously based on their professional experience of working in their sector.

However, what is apparent is that all the characteristics of a spatially resilient settlement, as tabled by the study population, do not necessarily need to be relevant to all settlements as, the spatial resilience of a settlement is context specific and should be informed by the collective vision of the citizens of that specific settlement as to where they want their settlement to be and how they want to experience their settlement.

The aforementioned wide range of responses as to what constitutes a spatially resilient settlement is further indicative of the complexity associated with spatial resilience. This added complexity could also be a potential reason for the apparent lack of consensus of what spatial resilience entails evidenced from questions 1 to 4, but adds support for the need to adopt an evolutionary or socio-ecological approach to resilience within urban settlements, towns and cities.

Question 6

The question posed in Question 6 reads as follows:

"Are South African settlements spatially resilient? Yes / No"

See Figure 5 below for the study population response result for question 6.

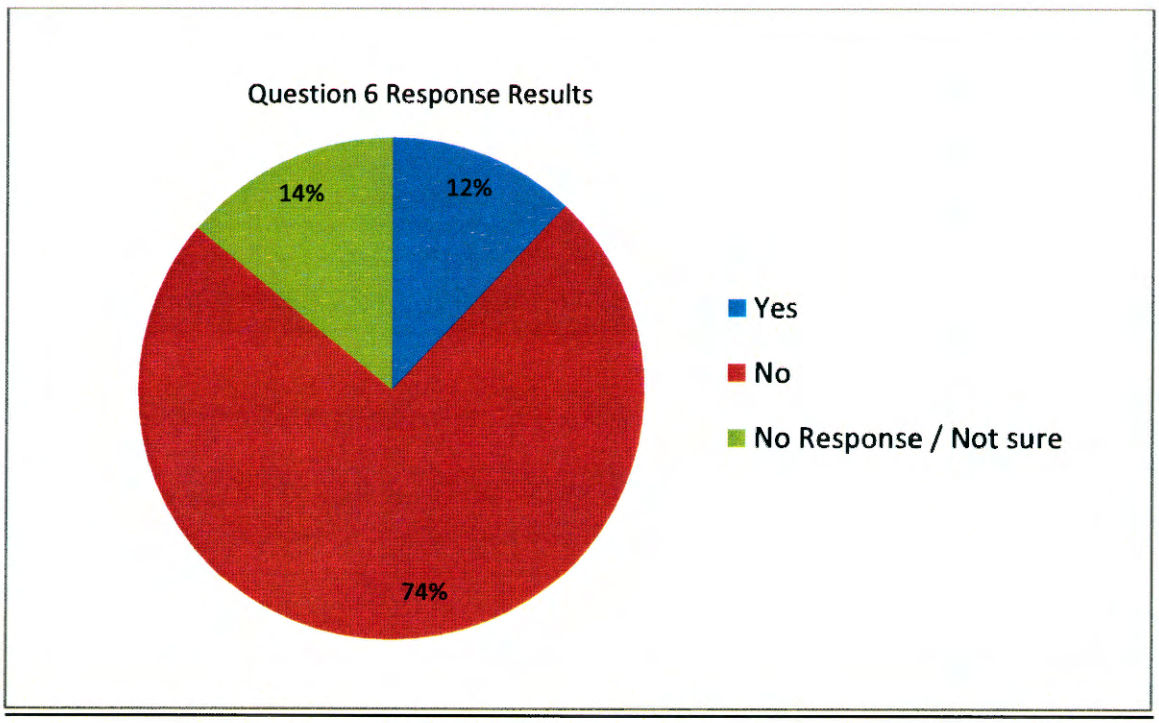
In terms of the responses received for Question 6:

- 74% of study population indicated that South African settlements are currently not spatially resilient; 12% indicated that South African

settlements were indeed spatially resilient; while 14% did not express an opinion on the question or indicated that in their opinion there were some South African settlements that were spatially resilient while others were not.

- Further comparison of the responses received for Question 6 show that 70% of the professional planner grouping and 90% of the non-professional planner grouping indicated that South African settlements are not currently spatially resilient. A deeper interrogation of the responses indicate that 76.2% of Provincial government sector participants; 100% of National government sector participants; 50% of Local government sector participants and 100% of Private Sector and Academia participants indicated that South African settlements are not currently spatially resilient.

Figure 5: Pie Chart indicating the Study Population Responses to Question 6



Analysis of Response Results to Question 6

There seems to be consensus amongst the study population that South African settlements are currently not spatially resilient. This is generally in accord with the views expressed by several authors (Harrison *et al.* 2008: 9-10; Mabin and Smit 1997: 207-213; South Africa NDPC 1999: 7; Berrisford 2011: 248-249; Todes 2012a: 158; Coetzee 2012: 11; and Du Plessis 2013: 2) who have written about the dysfunctional nature of South African settlements. There does, however, seem to be some disagreement between the participant sectors because if one looks deeper into the responses obtained from the local government sector participants then one sees that only 50% of the local government participants agreed with the majority view.

Significantly in this regard is that a further 31.25% of the local government sector respondents did not provide a definitive response to this question. Why would this be so, given the fact that our local government sector participants are at the coalface of settlement functionality?

Could it be because they see it as a critique of themselves or could be it due to the lack of consensus on what spatial resilience entails as was picked up with their responses to questions 1 to 4? A deeper analysis of this 31.25% of local government sector respondents that did not provide a definitive response to this question indicate that in most instances, the 31.25% of local government sector participants who did not provide a definitive response, actually provided both a "Yes" and "No" response indicating that it is not so simple to make a statement such as our settlements are spatially resilient or not and that the answer in many instances lies somewhere in the middle of the continuum with the yardstick used for comparing the spatial resilience of settlements being important. The take home message being that currently some settlements are probably more spatially resilient than others.

Of further interest here is that, of the study population who are professional planners, only 70% were in agreement with the view that our settlements are currently not spatially resilient. Is the reasoning for this similar to that spelt out

for our local government sector participants or is there something else that is driving this? In fact, most of our local government sector participants were Professional Planners and hence the lower than expected result for the professional planner grouping.

Obviously a further complicating factor impacting on the spatial resilience of South African settlements is the urgency for delivery and the general lack of good administrative and political leadership, which according to van Niekerk (2013: 3), results in a "short-term focus on attaining 'servicing' targets (which are immediate and bottomless)" and often comes at the expense of long-term and transformative planning and delivery.

The aforementioned also opens up the discussion as to the level of complexity within a modern society and our general lack of ability to deal with the complexity that exists at settlement level. This is particularly directed at the needed trade-offs that need to be made on a daily basis and the potential that this could have on the spatial resilience of settlements.

Question 7

The question posed in Question 7 read as follows:

"What indicator/s or performance measures do you suggest should / could be used to evaluate our efforts in realising spatial resilience within settlements, towns and cities in South Africa?"

All of the study population submitted responses to this question. The responses were once again numerous and varied. As a result of the diversity of responses with respect to proposed indicators or performance measures for spatial resilience the inputs were summarised and grouped into five broad thematic areas. The thematic areas along with the proposed performance indicators / measures that speak to spatial resilience within settlements highlighted by participants included the following:

Social indicators / performance measures:

According to the study population responses the social indicators or performance measures that could be tracked to provide a sense of the performance with respect to realising the goal spatial resilience include:

Risk of exposure to natural disaster; Level of Education / Skills; Level of access to social facilities and services; Quality of life index; Level of Social Networks ; Level of crime (gang violence activity, etc.); Equality / Inequality indices; Social Vulnerability Indices; Social Cohesion Indices; Self-sufficiency indices; Adaptive capacity indices.

Environmental indicators / performance measures:

According to the study population responses the environmental indicators or performance measures that could be tracked to provide a sense of the performance with respect to realising the goal spatial resilience include:

Biodiversity thresholds; Ecosystems thresholds; Conservation thresholds; Environmental Integrity composite index; Green or Open space availability in settlements; Resource use efficiency indices; Water resource management indices; Environmental sustainability indices.

Economic indicators / performance measures:

According to the study population responses the economic indicators or performance measures that could be tracked to provide a sense of the performance with respect to realising the goal spatial resilience include:

Employment / Unemployment rates; Affordability Indices; Level of Disposable Income (% of income spent on travelling versus food); Level of access to goods and services; Level of access to effective and affordable public transport; Economic vitality indices; Level of exports versus imports; Labour market "thickness" indices; Level of economic diversification; Level of dependence on non-renewable energy sources; Innovation indices.

Governance indicators / performance measures:

According to the study population responses the governance indicators or performance measures that could be tracked to provide a sense of the performance with respect to realising the goal spatial resilience include:

Active citizenry indices; Good governance indices; Levels of access to basic services provided (including water / sanitation / waste collection / electricity); Level of intra and inter-governmental coordination and cooperation; Level of integration and of planning, budgeting and implementation; Partnerships indices; Institutional "thickness" index; Level of access to reliable data, information and intelligence; Resilient cities indices; Level of water, food and energy security; Citizen perception based survey indices; level of availability and use of intelligence in making public sector development and investment decisions; presence of a robust monitoring and evaluation system and transparent reporting; Number of service delivery protests; Number of fires in informal and formal residential areas; Number of service delivery failures; Access to adequate infrastructure indices.

Spatial, Infrastructure and Settlement Functionality indicators / performance measures:

According to the study population responses the spatial, infrastructure and settlement functionality indicators or performance measures that could be tracked to provide a sense of the performance with respect to realising the goal spatial resilience include:

Level of spatial integration (links to economic centres, links to means of production, links to socio-cultural centres); Level of access to employment opportunities; Level of mixed land use; Level of connectivity across settlements; Physical growth rate of towns; Time spent commuting to work and home per day; Distance from job opportunities; Distance from social facilities (schools / hospitals / clinic / libraries / police station / fire station); Density of settlements; Level of spatial variation within settlements; Percentage of

settlements that are multi-functional (or mono-functional); Level of availability of polyvalent spaces; Urban functionality and efficiency indices.

Analysis of Response Results to Question 7

A wide variety of potential indicators and performance measures were put forward by the study population.

All of the proposed indicators and performance measures appear to be relevant to spatial resilience to some degree or another. Here again, the in-depth responses provided to this question go counter to the confusion seen in the responses received for questions 1, 2, 3 and 4. The importance of performance measures and indicators are confirmed by the responses of the study population and supports the broader call for a performance management focus in spatial planning and land use management (Du Plessis 2013: 15-18).

There is no absolute right or wrong answer with regard to potential indicators and performance measures to be used. The huge response is a further indication that SPLUMA implementation is still very much in its infancy and issues of indicators and performance measures have, not as yet, served at the policy or professional tables for debate and as such a process of distillation has not as yet taken place.

The ultimate decision on what indicators or performance measures are to be used to measure performance with respect to spatial resilience is beyond the scope of this study and needs to be a consensus decision informed by a variety of variables, of which the austere financial context we currently find ourselves in is clearly also one. It is further suggested that the use of proxy and / or composite indicators as potential indicators or performance measures of our performance with respect to spatial resilience be explored and that this is informed by our collective financial ability to collect data and monitor our performance with respect to spatial resilience. Importantly, we should never forget the emphasis on performance. This is important because it will inform

our future programmes of action and intervention within our settlements and serve as an indication of our successes and failures.

As a closing input into the analysis of question 7 it is important to remember that the proposed indicators and performance measures, from a spatial resilience perspective, as currently contained in SPLUMA, must be related to the flexibility of the spatial plans, policies and land use management systems in terms of ensuring sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks, as this is what the provision calls for.

As indicated earlier, the objects of SPLUMA should also receive attention in terms of the development of indicators as well as how the development principles have been collectively addressed. In this regard, some of the indicators must measure the level of cooperative government and intergovernmental relations associated with the spatial resilience efforts, as well as the level of community engagement, empowerment and partnership in terms of spatial resilience. In this regard, it is important to note that what spatial resilience calls for is intergovernmental coordination and specific performance indicators related to the actual joint implementation (and budgeting) of the plans, policies, systems and strategies. Lastly, spatial resilience is potentially an issue that may require both short-term interventions and longer-term transitional approaches. As such, indicators to measure progressive transition to more spatially resilient settlements and communities must also be considered and be developed.

Question 8

The question posed in Question 8 reads as follows:

"What in your personal and professional opinion are the major impediments to realising the principle of spatial resilience within settlements, towns and cities in South Africa?"

A whole host of responses were received from the study population, except for two (2). Due to the numerous submissions the major impediments were categorised into four broad thematic areas that included Settlement Functionality impediments; Institutional Capacity and Capability impediments; Policy Coherence and Coordination and Integrated Planning impediments; and Inherited Legacies and Economic impediments. The potential impediments under the thematic areas are as follows:

Legacy and Economic impediments:

According to the study population responses the major impediments to realising the principle of spatial resilience within settlements from a legacy and economic perspective include:

- South African cities, towns and settlements are still largely segregated along racial lines, characterised by poverty and inequality. This has been compounded by continued racial and economic discriminatory land use management practices that have been entrenched and reinforced by post-apartheid planning;
- The South African economy is still in the process of transformation and transition. In addition to this, market forces and economic and market realities further hamper real transformation. This is further exacerbated by apathy, greed and a lack of concern for the majority (and mostly less fortunate) of the citizens;
- Land ownership and the value of land, in and around our cities, is a major contributor to the continued spatial inequalities;
- The urgency of having to address other seemingly larger developmental, social and economic challenges, faced by South Africa in general;
- Economic effects that are attenuated over geographic distance. The vast distance between settlements in sparsely-populated rural environments increase their spatial isolation and thus undermines their resilience;

- Disjuncture between dispersive public service and agglomerative private sector investment approaches;

- Historical under-investment in connective infrastructure and systems, particularly public transport, has and continues to aggravate these spatial imbalances;

- the continued lack of economic complexity and diversity, based in part on our historical legacy as a mineral resource-based economy, further entrenched as a result of corporatism which saw the conflation of state and state-backed industrial complexes. This has resulted in a market structure with high barriers to entry for firms and entrepreneurs alike;

- Technological and infrastructural barriers and path dependencies, in rural areas, has resulted in an over-dependence on homogenous farming practices and vertical integration into a food distribution networks which are price-giving rather than price taking. This has made local farming economies highly vulnerable to global market prices;

- Limited vocational training opportunities and other labour regime issues have also contributed to the perpetuation of local economic dependencies on a limited number of vertically integrated economic sectors. This is exacerbated by the South Africa economy not being able to absorb all of its potential labour. Furthermore, where the formal economy offers jobs does not seem to be close to where the people most in need live;

- Socially non-cohesive settlements, characterised by divisive politics which adds to an already unstable social situation;

Policy Coherence and Coordination and Integrated Planning related impediments:

- Isolated silo-based sectoral policy and programme thrust. An example of this is housing policy which continues to create settlements further

and further away from economic opportunities and the means of social reproduction. Another example of this is the use of new terminology to describe old, well-trodden concepts;

- Lack of sectoral understanding buy-in into sustainable development being the common development goal of the country;
- Society's dependency on the government to supply basic needs has resulted in a loss of survival skills, basic life skills and the ability to take responsibility or initiative to solve problems;
- The failure of the spatial planning functionality which speaks to the lack of institutional capacity to understand, commit to, and undertake its strategic integrative function and to perform proper evidence led spatial planning, and develop strategy and interventions that have real impact. Examples here include the inability to strategically link infrastructure spending, which re-shapes our cities and neighbourhoods, and the municipal SDFs;
- Uncoordinated and incoherent development initiatives by all spheres of government that impact settlement functionality and resilience in a major way;
- Insufficient and inaccurate data and information streams and the lack of knowledge sharing and joint learning in terms of spatial resilience imperatives, risks, opportunities and best practices;
- Lack of cooperation and strategic partnership formation within and between government agencies, but also between government, communities and business;
- Lack of a common understanding of the concept of spatial resilience, starting with those that will be directly involved in the implementation of this principle;

- The continued use of a one-sized fits all approach, with long planning cycles that are not flexible and that miss the opportunity to respond to new trends and opportunities as they emerge or become known;
- The perpetuation of regulatory environments that make innovation particularly difficult, coupled with a political and bureaucratic system that sees participation as a painful, time-consuming tick-box exercise;
- Lack of a shared community vision. Growing mistrust between communities and the state, making it harder to truly collaborate, co-design and co-implement.

Institutional Capacity and Capability impediments:

- Cash-strapped and ill capacitated municipalities that persist with their silo or individual mentality;
- Uncoordinated and incoherent initiatives by all three spheres of government which stem from the inability to cooperate and to form the required partnership, not only within and between government agencies, but also between government, communities and business;
- Lack of ability to deal with complexity and to manage change and transition;
- Maladministration, political abuse and a lack of ability to prioritise.
- The failure of technical and administrative leadership to speak truth to power. This is coupled with the failure of political leadership due to their insistence on trying to simplify complex problems in complex systems which is an admission of their inability to deal with complexity. It is further linked to their preference of short-term perspectives over the more enduring longer term perspectives;

Settlement Functionality impediments:

- Lack of planning for informality; Lack of settlement establishment at locations where they are environmentally safe (e.g. out of flood prone areas – away from areas affected by sea level rise and storm surges), where there is the sufficient economic activity to provide sustainable real jobs and designed in such a fashion that all social facilities are provided, where affordable and practical public transportation is available and where buildings (be it residential or other) are located out of harm's way, to be coupled to sustainable energy resources and other engineering services;

- Uncoordinated and incoherent physical development initiatives by all spheres of government that do not speak to a common vision;

- For settlements, towns and cities in dire need of jobs and growth, the opportunity to act on the first development proposals that come along, at the expense of sound spatial and land use management practises, is often too good to pass up politically;

- Settlements that are car oriented; not pedestrianized or NMT friendly; mono-functional in nature; low Density; have very low levels of accessibility, particularly for the poor; high dependence on non-renewal energy sources for the majority of our energy requirements (exposure to 'peak oil' is high); high dependency on global food systems, although a degree of self-sufficiency is evident within some regions.

Analysis of Response Results to Question 8

The responses received to question 8 go a long way to validating the outcomes of the National Planning Commission's "Diagnostic Report" which sought to identify and highlight the current major issues facing South Africa (South Africa NPC 2011: 16-20).

The responses were numerous and each and every contribution can in some way be linked back to being a major impediment in realising the principle of spatial resilience within settlements, towns and cities in South Africa.

What the study population responses are confirming is the complexity of the modern world. We are faced with so many challenges and so much complexity which we can no longer afford to ignore. The responses therefore provide insight into the issues that one needs to be aware of when trying to implement resilience thinking or inculcate a spatial resilience approach. In fact, these are issues that we should be aware of and mitigating with the implementation of not only SPLUMA, but with all of governments business as whole.

As mentioned, the major impediments listed are supported by the National Planning Commissions Diagnostic Report (South Africa NPC 2011: 16-20). They are further supported by a host of other authors (Mabin and Smit 1997: 207-213; Harrison *et al.* 2008: p vii – viii, 6 – 10; Berrisford 2011: 248-249; Todes 2012a: 158; Coetzee 2012: 11; South Africa NDPC 1999: ii-iii and 4-7; South Africa DoLA 2001: 3-10; Turok 2014: 749; and Du Plessis 2013: 2). What is disconcerting is that many of the impediments raised by the study population were highlighted way back in 1999 with the release of the Green Paper. Yet seventeen years later they still seem to be frustrating our progress. What this raises is the concerns with the effectiveness of the policy responses over the past seventeen years and the sheer enormity of the problems that professional planners are trying to address in the South African context.

Question 9

The question posed in Question 9 reads as follows:

"In your experienced and professional opinion, is spatial resilience a concept that is generally understood within the South African context? Yes / No"

See Figure 6 below for the study population response results to Question 9.

In terms of the responses received for Question 9:

- 6% (3) of the study population indicated that spatial resilience, as a concept, is generally well understood within the South African context; 92% (46) of the study population indicated that it is generally not well understood within the South African context; while 2% (1) of the study population either did not issue an opinion on the question or indicated that in their opinion there were evidence of both understanding and misunderstanding of the concept.

Analysis of Response Results to Question 9

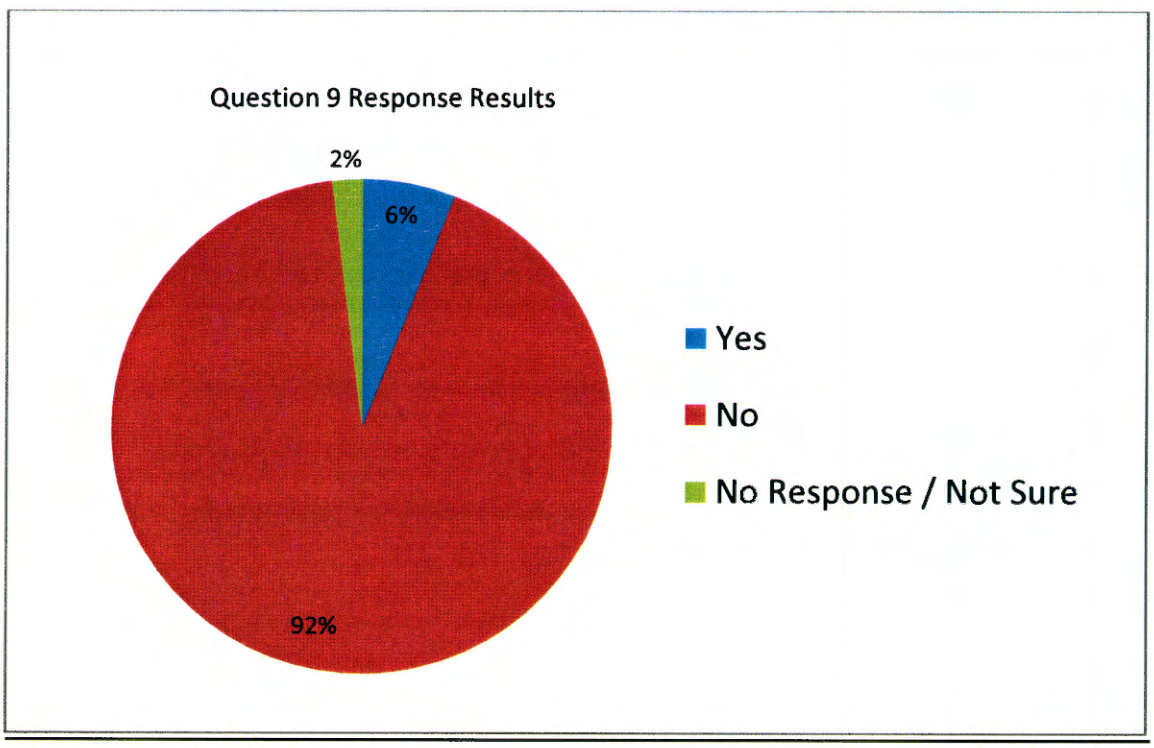
This result of study population responses to question 9 is further indicative of the complexity associated with the broader concept of resilience and the narrower concept of spatial resilience (Wilkinson 2012a: 151 and Harrison *et al.* 2014: 10). It is further indicative of a lack of quality and depth of the policy development process associated with the development of SPLUMA in South Africa and the policy advocacy process subsequent to its promulgation. This has been identified in the analysis of several of the previous questions.

The result speaks volumes about how the spatial planning and land use management and development sector engages with or fails to engage with and mainstreams its imperatives into the broader society. Lastly, it highlights a potential lack of leadership within the spatial planning and land use management and development planning sector, both politically and administratively, in terms of mainstreaming its policy imperatives into the broader society. The potential lack of leadership is highlighted because it is common sense that the mainstreaming of complex concepts which challenges the business as usual approach requires leadership. The obvious question that arises is "What does this mean for the successful implementation of SPLUMA, as a whole, and what does it mean for the future of our settlements, towns and cities?"

The responses received to this question corroborate and is supported by the responses received to questions 1, 2, 3 and 4. If the professionals and practitioners, who are supposed to be the torchbearers of policy implementation, have no clear consensus on what spatial resilience entails then how could we expect the broader South African public to understand what it is?

Although enacting laws that the broader society potentially do not understand, even though it would have a tremendous impact on their daily lives, is not ideal, it must be stated that SPLUMA is still in its infancy, and what is required is a concerted effort at capacitating and advocating the objectives and requirements of SPLUMA across the board and then also to potentially consider amending and improving SPLUMA over the short to medium term, where necessary.

Figure 6: Pie Chart indicating the Study Population Responses to Question 9



Question 10

The question posed in Question 10 reads as follows:

"Is spatial resilience as a concept generally understood within the South African spatial planning and land use management and development planning sector? Yes / No"

See Figure 7 below for the study population response results for question 10.

In terms of the responses received for Question 10:

- 14% (7) of study population indicated that spatial resilience as a concept is generally understood; 78% (39) of the study population indicated that it is generally not understood; while 8% (4) of the study population either did not express an opinion on the question or indicated that in their opinion there were evidence of both understanding and misunderstanding of the concept by the sector.
- A deeper analysis of the responses indicate that 85% of the professional planner study participant grouping and 50% of the non-professional planner study participant grouping indicated that spatial resilience as a concept is generally not understood by the South African spatial planning and land use management and development planning sector.
- Further analysis of the study participant sectoral representation indicate that 71.4% of Provincial government sector participants; 75% of National government sector participants; 81.25% of Local government sector participants and 88.9% of Private Sector and Academia participants indicated that spatial resilience as a concept is generally not understood by the South African spatial planning and land use management and development planning sector.

Analysis of Response Results to Question 10

The results of study population responses to question 10 is indicative of the current state of the spatial planning and land use management and development planning sector in South Africa. They corroborate the responses received to questions 1, 2, 3, 4 and 9. Moreover, it says much about the current state of the planning profession. The obvious question is "What does this mean for the successful implementation of spatial resilience as described in SPLUMA?" and "What does it mean for the future of our settlements, towns and cities?" and "What does the planning profession need to do to remain relevant in this regard?"

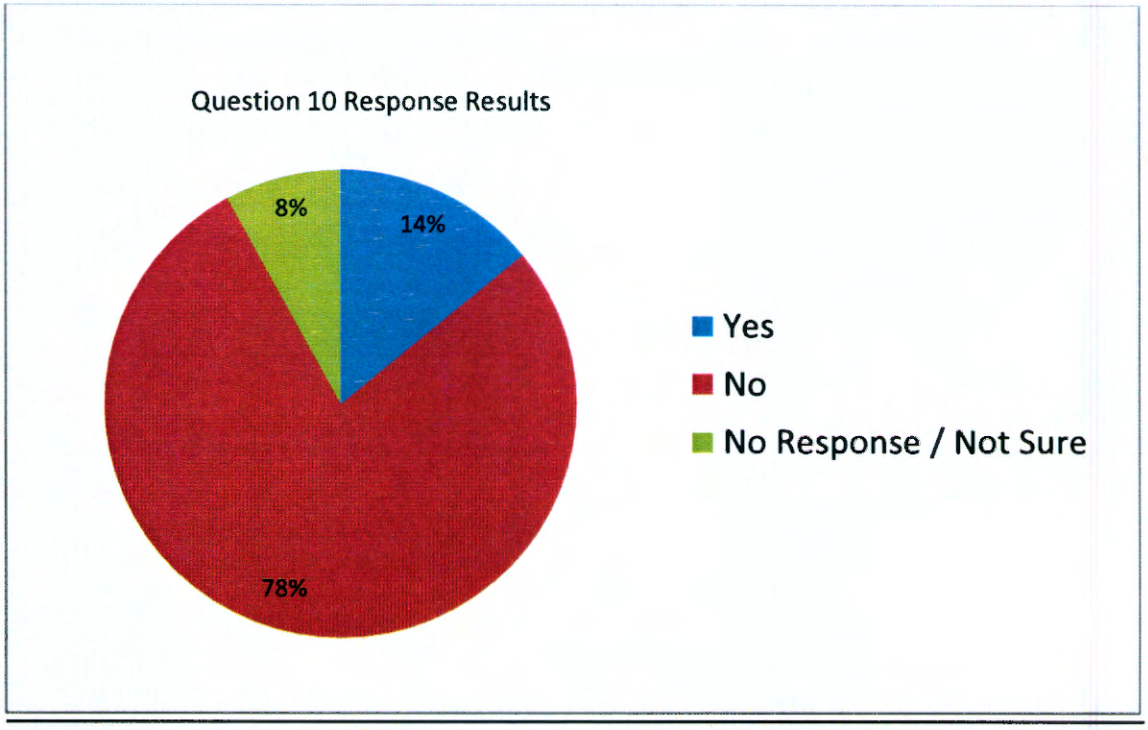
The response to this question is supported by and supports the responses received for questions 1 to 4 and question 20. Supporting cross references can also be made between the responses received to this question and questions 9, 11 and 12.

However, the fact of the matter is that the term spatial resilience is a new local policy construct. It has never before been used within the South African spatial planning and land use management policy context. As mentioned previously, the principle of spatial resilience never featured in neither the Green Paper nor the White Paper. As such, there has not really been an opportunity for professionals and practitioners operating in the spatial planning and land use management and development planning sector to engage with and familiarise themselves with this concept. Although many professionals do have some idea of what the concept entails very few actually appear able to claim to know what it entails. To add salt to the wound, SPLUMA has not only introduced a uniquely new term in spatial resilience, but its description of what spatial resilience entails does not seem to tie up with the international theoretical underpinnings of resilience and urban resilience, as mentioned previously. This could also have contributed to the sectoral confusion and lack of consensus.

Interestingly, it is the study participants who are seen as being the furthest away from the centre of policy development, the local government and private

sector and academic participants, who seem to feel the strongest about this question.

Figure 7: Pie Chart indicating the Study Population Responses to Question 10



Question 11

The question posed in Question 11 reads as follows:

"If South Africa adopts a spatial resilience approach, as described in SPLUMA, do you think it could have a significant positive impact on the functionality of contemporary South African settlements, towns and cities? Yes / No"

See Figure 8 below for the study population response results for question 11.

In terms of the responses received to Question 11:

- 68% of the study population agree that adopting a spatial resilience approach could have a significant positive impact on the functionality of settlements, towns and cities; 26% of all participants indicated that,

adopting a spatial resilience approach, would not have a significant impact on the functionality of settlements, towns and cities; while 6% of all participants either did not express an opinion or indicated that the impact of the adoption of a spatial resilience approach by South Africa would depend on how it was implemented.

- A deeper analysis of the responses received to this question indicates that 60% of the professional planners and 100% of the non-professional planner grouping agree that if South Africa adopted a spatial resilience approach it could have a significant positive impact on the functionality of settlements, towns and cities.

- Further analysis of the study population sectoral representation indicates that 66.7% of Provincial government sector participants; 75% of National government sector participants; 68.75% of Local government sector participants and 66.7% of Private Sector and Academia participants agreed that if South Africa adopted a spatial resilience approach it could have a significant positive impact on the functionality of settlements, towns and cities.

Analysis of Response Results to Question 11

This result indicates that even though the majority of the study population agree that South Africa's adoption of a spatial resilience approach could have a significant impact on the functionality of settlements, towns and cities, there is still some doubt as to the nature of the potential impact or value add the adoption of a spatial resilience approach could have on the functionality of settlements, towns and cities in South Africa.

The fact that the majority of study population are in agreement that the adoption of a spatial resilience approach could have an impact on the functionality of settlements, towns and cities is significant given the lack of consensus around what spatial resilience actually entails as was indicated by responses to questions 1, 2, 3, 4 and 10. Here again, this may be indicative that

the problem around the lack of consensus could not necessarily be a professional or practitioner problem, but a policy development problem as a result of the lack of depth of the policy development process. What the responses to this question further validate, is the need for a resilience approach and for SPLUMA to legislate it in line with the international view on the matter. Given the responses to this question and the responses received for questions 1 to 6 and 9, 10 and 12, the importance of unpacking and gaining consensus on what the concept or principle of spatial resilience means in practice is again emphasised.

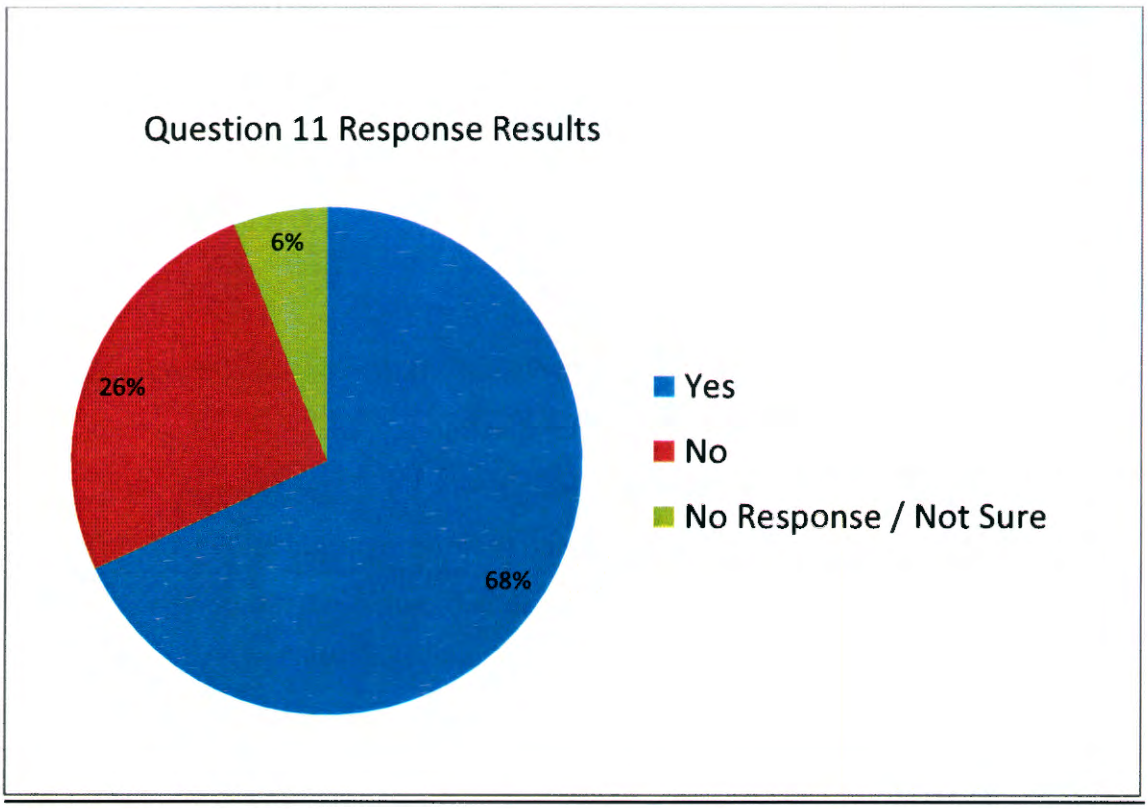
What these responses indicate further is that there seems to be a realisation, amongst the study participants, that the business-as-usual approach in our settlements is not working, and that we need to adopt new strategies and do things differently in order to turn the current trajectory around. This view does accord with some of the criticism that has been levelled at effectiveness and influence of past and present spatial planning and land use management approaches in South Africa (Du Plessis 2013: 1).

What the responses to this question further identify is the concern amongst the study population that the adoption of new theoretical concepts or approaches may fly in the face of reality and the urgency for delivery in the South African context. In this regard, several participants noted that adopting a spatial resilience approach may not bear fruit in the short term, but that it is a long term investment. As such, given the urgency for delivery, a balance would need to be sought when adopting a spatial resilience approach between ensuring the delivery on the low hanging fruits while not losing sight of the long term investment. The question is how do we get this balance? This is potentially also a matter for further intra and inter-sectoral collaborative debate. As such, the responses to and analysis of questions 8, 12 and 21 are of particular relevance to this question.

The doubts expressed in the responses received, can also be related to the lack of understanding of what the principle of spatial resilience entails, as was

highlighted from the responses to questions 1, 2, 3, 4, and 10 and the lack of guidance, best practice examples and support for implementing a spatial resilience approach.

Figure 8: Pie Chart indicating the Study Population Responses to Question 11



Question 12

The question posed in Question 12 reads as follows:

"In your experienced, professional opinion, is the institutionalising of the principle of spatial resilience an imperative in South African settlements given all our other societal challenges? Yes / No"

See Figure 9 below for the study population response results for question 12.

In terms of the responses received to Question 12:

- 66% of study population indicated that the institutionalisation of the principle of spatial resilience is an imperative in South African settlements; 30% of the study population indicated that it is not an imperative in South African settlements; while 4% of the study population either did not express an opinion.

- A deeper analysis of study participant responses indicate that 60% of the professional planners and 90% of the non-professional planner grouping indicated that the institutionalising of the principle of spatial resilience is an imperative in South African settlements, given all our other societal challenges.

- Further analysis of the study participant sectoral representation indicates that 80.9% of Provincial government sector participants; 25% of National government sector participants; 68.75% of Local government sector participants and 44.4% of Private Sector and Academia participants indicated that the institutionalising of the principle of spatial resilience is an imperative in South African settlements given all our other societal challenges.

Analysis of Response Results to Question 12

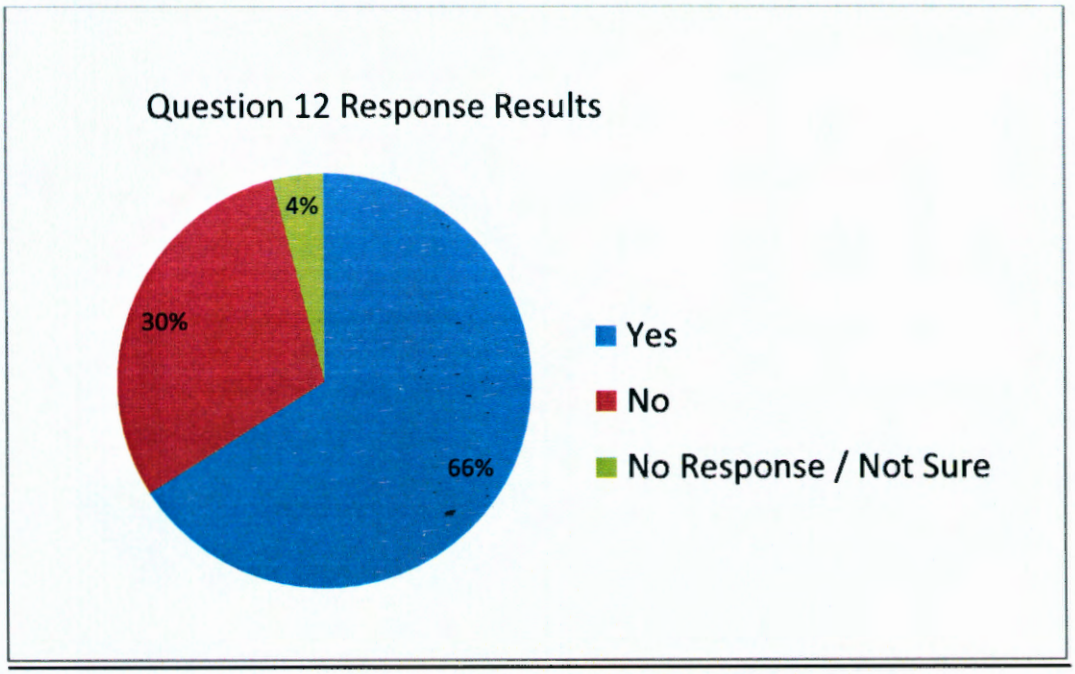
The result of the responses to question 12 seems to validate the need for a spatial resilience approach and the need for SPLUMA to legislate as such. Furthermore, it highlights the need for further policy debate, ongoing policy advocacy and for the immediate use of some of the other tools that SPLUMA has placed on the legislative table, such as the use of norms and standards, as set out in Section 8 of Chapter 2 of SPLUMA. To a large extent the responses received to this question links up and support the responses received to questions 10 and 11.

This result is further indicative that, even though the majority of the study population agree that the institutionalising of the principle of spatial resilience

is an imperative in South African settlements, there remains a significant amount of concern or caution with regard to the actual value add and the priority of institutionalising the principle of spatial resilience. What could possibly be coming through here is that spatial resilience may not be as high a priority as some of other societal challenges that professionals and practitioners have to deal with on a daily basis. This could possibly be linked to and supported by the responses received to questions 9, 10 and 19, 20, and 21.

In closing on the analysis of question 12, it is worth reiterating that for the majority of study participants (66%) the importance and priority of spatial resilience to improving settlement form and functionality is evident. For the minority (30%) of the study population the urgency for delivery and the plethora of other societal challenges seem to be of higher priority than the institutionalisation of spatial resilience. Some may say that this is a case of a lack of appropriate prioritisation. This, however, could also be the reality for these professionals and practitioners, who are highlighting the limitations of such policy thrusts as a result of a lack of political, strategic and administrative leadership in this regard (van Niekerk 2013: 1-3). Here again, the responses to questions 19, 20, and 21 are of relevance. The minority opinion could further be as a result of a lack of understanding of the principle of spatial resilience and its importance given the responses received for questions 1, 2, 3, 4, 8, 9 and 10.

Figure 9: Pie Chart indicating the Study Population Responses to Question 12



Question 13

The question posed in Question 13 reads as follows:

"To what extent is the aim of spatial resilience implicit in South African spatial planning and land use management and development planning, albeit under a different guise?"

See Figure 10 below for the study population response results for question 13.

In terms of responses received for Question 13:

- 64% of the study population indicated that spatial resilience is implicit in current South African spatial planning and land use management and development planning, albeit under a different guise; 24% of the study population indicated that spatial resilience is currently not implicit in South African spatial planning and land use management and development planning, albeit under a different guise; 6 (12%)

participants indicated that they did not know or they simply provided no comment.

Some of the comments highlighted specific areas that the study population felt were an indication that spatial resilience has been implicit in South African spatial planning and land use management and development planning, albeit under a different guise. These include the following:

- Zoning scheme procedures such as departures, consents and rezoning are existing mechanisms that can contribute to spatial resilience, because they relate directly to the interaction of people and land.
- SDFs are instruments that influence spatial form, function and logic, and it is important how they could be used as policy drivers of spatial resilience.
- The concept of sustainable development has always been incorporated into spatial policy and land use decision-making. If settlements were sustainable or made sustainable then resilience would perhaps not be an issue.
- The promotion of policy imperatives such as densification, mixed use development, delineation of urban edges, and the like have always been part of spatial policy and land use management decision-making criteria. They are considered as spatial instruments which could potentially promote spatial resilience.
- Local economic development (LED) strategies; spatial development frameworks (SDFs); disaster management plans (in terms of the Disaster Management Act); coastal management programmes (in terms of the NEM: ICMA); water services plans; and integrated transport plans (ITPs) (in terms of the National Land Transport Act) are all adopted as part of the municipal IDP. These are all existing policy instruments that could in theory promote resilience.

- The use and designation of no-go areas or areas with spatial constraints in response to environmental constraints, such as, no development within the 1:50 year flood-lines and 1:4 slope restrictions, are existing mechanisms that represent the avoidance of "shocks" philosophy.

- The use of existing land use management mechanisms such as overlay zones has enabled the principle of resilience to be applied where previously very little flexibility existed. This serves as supporting mechanism for spatial planning initiatives aimed at promoting resilience.

Analysis of Response Results to Question 13

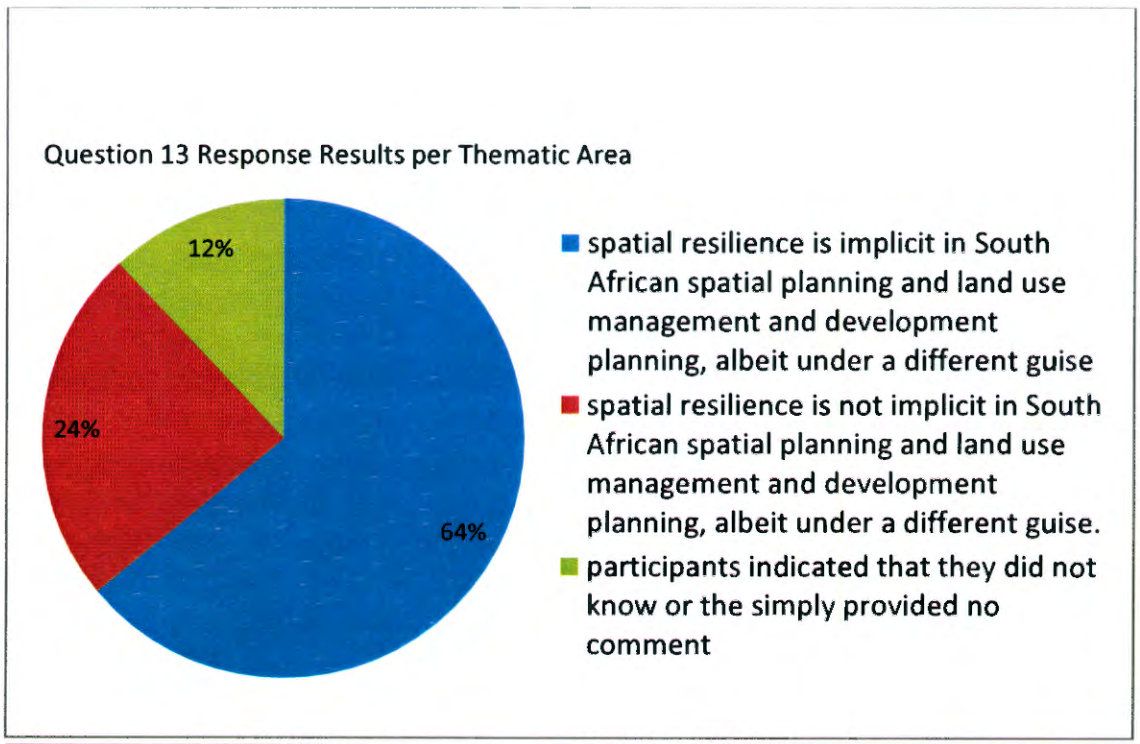
Interestingly, the majority of study population (66%) have indicated that what is being called for by spatial resilience, in terms of SPLUMA, has been and is already present in spatial planning and land use management and development planning system in South Africa, albeit not explicit. This is an interesting result given the criticism that has been levelled at the lack of effectiveness and influence that spatial planning and land use management approaches has had on South African settlements (Du Plessis 2013: 1).

The study population, in support of their responses, have cited a variety of instruments, which have historically been in use, and which in their opinion provide flexibility to spatial planning and land use management. These include amongst others land use applications such as departure and consent use applications; the use of overlay zones; disaster management plans; the use of compact (densification), mixed use and inclusive city principles; SDFs, LEDs, ITPs and Disaster Management Plans as part of the municipal Integrated Development Plan.

The question that then arises is: If the elements of spatial resilience have always been there, according to the study participant responses, then why has it not born any fruits? especially given the study populations responses

received for questions 6 and 8 or is it simply due to some of the issues associated with the responses received to questions 1, 2, 3, 4, 9, 10, 19, 20, and 21?

Figure 10: Pie Chart indicating the Study Population Responses to Question 13 per thematic area



Question 14

The question posed in Question 14 reads as follows:

"Is the concept of spatial resilience something that informs your personal and/or professional opinion and practice on a day-to-day basis? Yes / No"

See Figure 11 below for the study population response results for question 14.

In terms of the responses received to Question 14:

- 66% of the study population have indicated that the concept of spatial resilience does inform their personal and/or professional opinion and practice on a day-to-day basis; 24% of the study population indicate

that it does not; while 10% of all study population did not express an opinion.

- Further analysis indicates that 62.5% of the professional planner grouping and 70% of the non-professional planner grouping have indicated that the concept of spatial resilience does inform their personal and/or professional opinion and practice on a day-to-day basis.

- A deeper analysis of the participant sectoral employment affiliation indicate that 80.9% of Provincial government sector participants; 75% of National government sector participants; 43.75% of Local government sector participants and 55.6% of Private Sector and Academia participants have indicated that the concept of spatial resilience does inform their personal and/or professional opinion and practice on a day-to-day basis.

Analysis of Response Results to Question 14

The study population response results for question 14 indicates that the majority of the study participants seem to have embraced the concept of spatial resilience and are employing it to inform their personal and/or professional opinion and practice on a day-to-day basis. This does not imply that the study population do or do not understand the concept of spatial resilience. Rather it indicates that they have an opinion on what it is, and whatever their opinions are, it is informing their day-to-day practice.

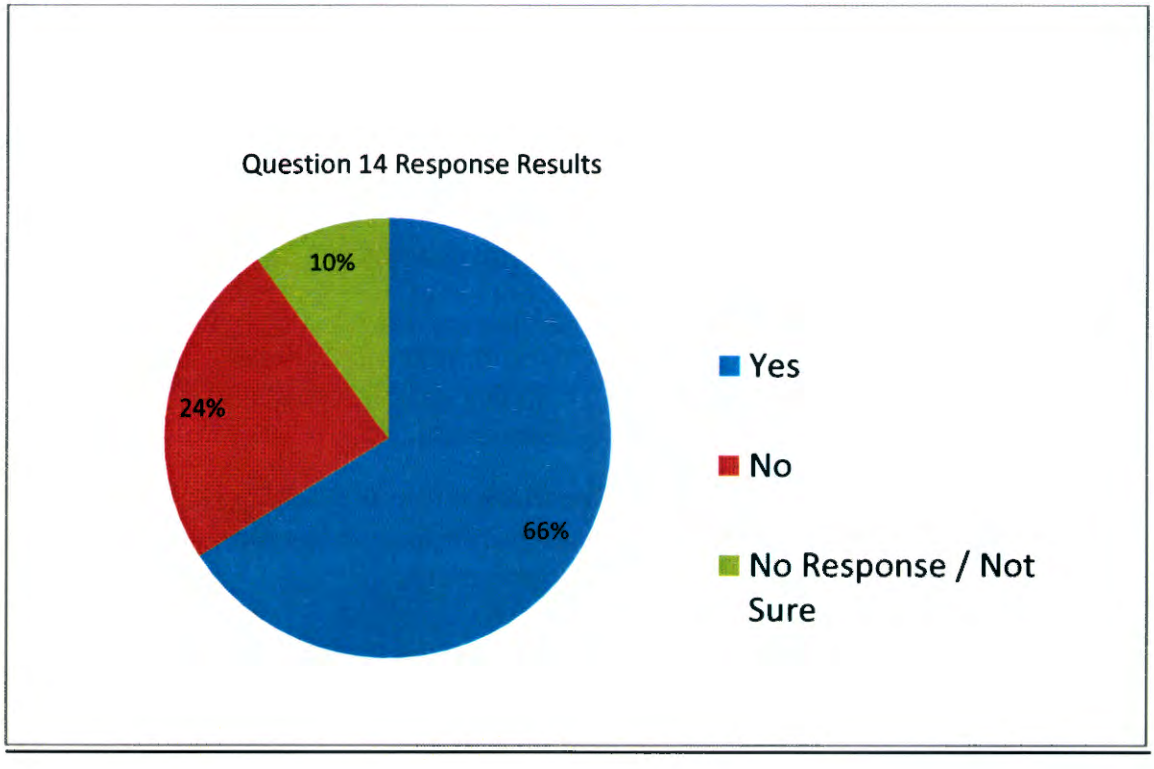
Of concern is the low percentage of local municipal sector participant group (43.75%) and the professional planner group (62.5%), who have indicated that the concept of spatial resilience informs their day-to-day professional opinion and practice. This could be due to a variety of issues including amongst others the low priority assigned to issues such as spatial resilience; political pressure; the urgency of delivery; the threat of job loss, the lack of human resource and financial capacity, the lack of professional support; the lack of access to good

data and information which can be converted to better intelligence in order to build better arguments or the general lack of understanding of what spatial resilience entails. There seems to be some correlation between this result and some of the minority opinion inputs received for question 12.

Conversely national and provincial sector participants seem to have a much higher percentage of respondents who indicated that the concept / principle of spatial resilience does inform their day-to-day professional opinion and practice.

Of further concern here is that if two thirds of the study population use resilience theory and thinking in the day-to-day practice, then firstly, why are we not seeing this come through in the performance of our settlements and secondly, what is their understanding of spatial resilience that is informing their day-to-day practice. Is this possibly related to the issue of power and politics as discussed by Coetzee and Oranje (2006: 6-10) and in this regard, the responses to question 21 are potentially also relevant here?

Figure 11: Pie Chart indicating the Study Population Responses to Question 14



Question 15(a)

The question posed in Question 15(a) reads as follows:

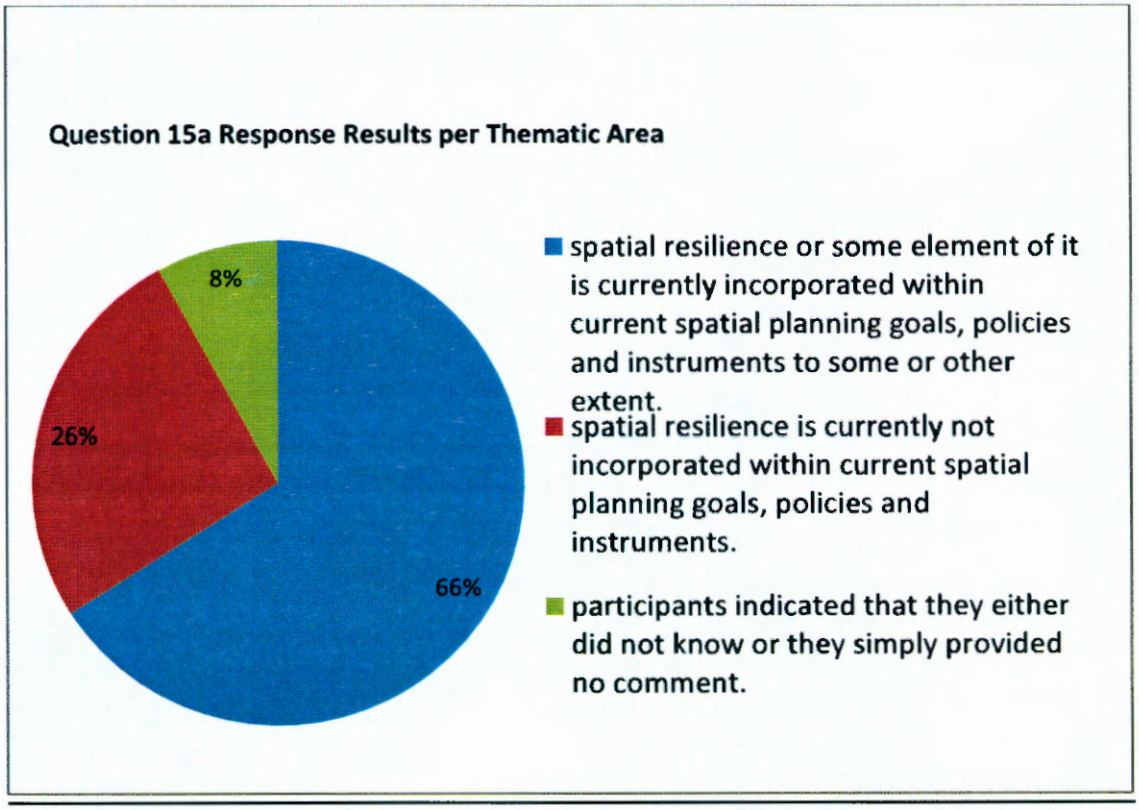
"To what extent is spatial resilience incorporated within current spatial planning goals, policies and instruments?"

See Figure 12 below for the study population response results for question 15(a).

In terms of the responses received for Question 15:

- 66% of the study population indicated that, spatial resilience or some element of it is currently incorporated within current spatial planning goals, policies and instruments to some or other extent; 26% indicated that it is not; while 8% of study population indicated that they either did not know or they simply provided no comment.

Figure 12: Pie Chart indicating the Study Population Responses to Question 15(a) as per Thematic Area



Analysis of Response Results to Question 15 (a)

From the study population response results it is apparent that the majority of the study participants are of the opinion that spatial resilience or some element/s thereof has been around and is evident in some of our spatial planning policies and instruments.

Inputs received from participants indicate that spatial resilience has been incorporated into existing spatial planning policies and instruments mainly through the incorporation of the sustainability requirement into provincial and municipal spatial development frameworks.

Some of the areas of weaknesses with respect to our spatial planning policies and instruments that potentially hinder the mainstreaming of the spatial resilience principle include the assertion that many of the current spatial planning policies and instruments are strong on description, but weak on analysis and often even weaker in terms of strategy formulation that allows for implementation and performance management in terms of specific goals, targets, indicators, timeous monitoring and adjustment (Coetzee 2012: 11; and Du Plessis 2013: 1-2).

Question 15(b)

The question posed in Question 15(b) reads as follows:

"What would you do or recommend be done to improve South African spatial policies in order to make them more flexible, given the need to give effect to the principle of spatial resilience as described by SPLUMA? This includes municipal spatial development frameworks."

From the responses received the recommendations provided to improve South African spatial policies in order to make them more flexible include the following:

- Municipalities need to be given greater autonomy with respect to develop their own spatial policy and to implement it;
- Consideration need to be given to the development of comprehensive impact assessments of municipal spatial development frameworks, as per the United Kingdom, specifically focusing on resilience could possibly be used as a mechanism to promote and ensure resilience;
- Proper longer-term future planning (20+ years) with the necessary population projections and spatial budget should be engaged in with frequent performance reviews and updates that will provide the needed flexibility and relevance. This must be informed by better data and data-driven decision-making tools;
- Local municipal SDFs must be measurable with a specific emphasis on performance management and implementation;
- There needs to be a stronger focus on spatial education and spatial advocacy for the public, decision makers and the market on the reasoning and imperatives of relevant spatial policies;
- Spatial policies and plans must be developed jointly with stakeholders and should endeavour to build strategic partnerships wherever possible;
- South African spatial policies should not over "regulate" or be overly prescriptive. The policies must allow for adaptive co-management and responsiveness;
- Spatial policies need to be more incentivised and should stick to the basics. Spatial policy should be based on an understanding of underlying dynamics, should avoid spatial engineering, avoid over-reach in relation to existing social networks. Spatial policies should never ignore people and group behaviour and preference as this will result in unintended consequences;

- Spatial policy should develop appropriate strategies through which it can influence sectoral investments (such as Human Settlements);
- Spatial policy needs to stop using new jargon, such as spatial resilience, and focus on the political economy and operational factors that lead to undesired outcomes.

In summary, spatial policy should be looking into the future, anticipating potential undesirable situations and plan for prevention thereof; look back, learn lessons from the past and implement improvements; analyse the needs of the community and the constraints of the environment in its wider context and use it as informants for the future; avoid sectoral approaches to development and instead seek integrated planning; define priorities, develop strategies, project and monitor outcomes and impacts; employ evidence based decision-making, and form the necessary strategic partnerships.

Analysis of Response Results to Question 15 (b)

From the study populations response results the following has emerged as important strategic interventions that needs to be considered in order to improve spatial policies:

Local municipalities require a better understanding of their space economy and settlement dynamics. Spatial policy should be risk based, anticipatory, evidence driven, context specific, have a specific focus on implementation and performance management. Spatial policy must further focus on the settlement and not the plan and incorporate the important element of constant learning.

Question 16(a)

The question posed in Question 16(a) reads as follows:

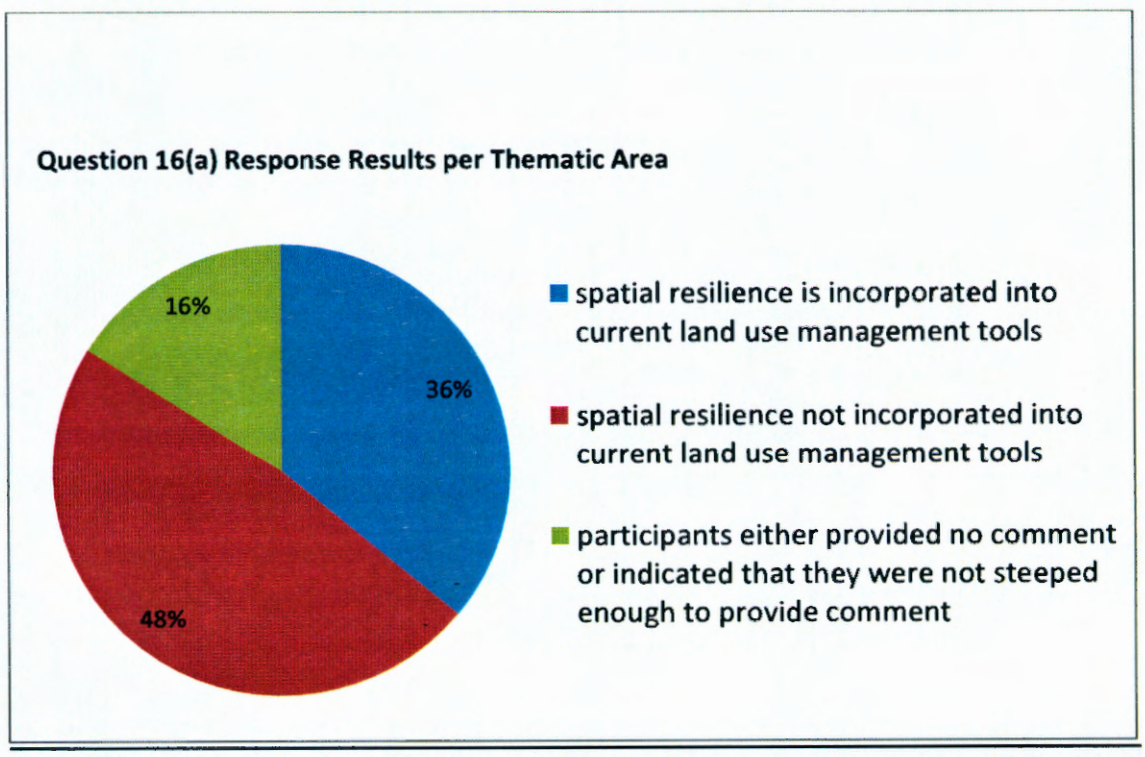
"To what extent is spatial resilience incorporated into current land use management tools such as land use schemes / zoning schemes?"

See Figure 13 below for the study population response results for question 16(a).

In terms of the responses received for Question 16(a)

- 36% of study population indicated that spatial resilience is incorporated into current land use management tools such as land use schemes / zoning schemes to some extent or the other; 48% indicated that it is not; while 16% of study population either provided no comment or indicated that they were unable to provide comment on this question.

Figure 13: Pie Chart indicating the Study Population Responses to Question 16(a)



Analysis of Response Results to Question 16 (a)

The study population response results indicate that no clear consensus exists amongst the study population as to whether spatial resilience is currently incorporated into current land use management tools such as land use schemes / zoning schemes.

Some of the elements mentioned by the participants as currently incorporated into land use management tools that contribute to spatial resilience include the following:

Procedures such as departures, consents and rezoning allow a level of responsiveness to changes in the environment; use of concepts such as home businesses (house shop, home enterprise) and mixed use have also contributed to spatial resilience; The use of flood-lines and setback lines; the use of overlay zones; the use of urban edges; linkage of the land use management system to municipal SDFs, disaster management plans, and local economic development strategies, as well as municipal climate change response strategies have also addressed some resilience related aspects; and the promotion of higher densities and compact cities.

However, notwithstanding the aforementioned, in terms of spatial planning and land use management in South Africa, the land use management aspects have always been somewhat of a step-child, with respect to innovation, with much less attention having been paid to it over the last thirty years or more. Why this has been so is definitely a subject for further contemplation. However, a possible explanation for the pre-1994 inertia was probably because of the highly regulatory and rigid nature of land use management laws, which suited the needs of the ruling elite and the resulting general perception that this is the way it is and as such it cannot be changed. Furthermore, post-1994, and after the adoption of the first democratic constitution in 1996 other issues came to the fore. These include legal interpretation difficulties in terms of the new constitution, impacts on property rights and related to this was the issue of vested interests, lack of clarity around institutional responsibility for land use

management laws and the resulting tension between spheres of government (Berrisford 2011: 253-257). This together with the fact that land use management issues touched on the sensitive matter of property rights, made many people wary of being to innovative, as the spectre of court action always loomed large.

Question 16(b)

The question posed in Question 16(b) reads as follows:

"What would you do or recommend be done to improve municipal land use management systems in order to make them more flexible, given the need to give effect to the principle of spatial resilience, as described by SPLUMA?"

Recommendations provided to improve local municipal land use management systems in order to make them more flexible include the following:

- use proactive zoning so that you can make provision for appropriately zoned land in strategic areas of development; experiment with the relaxing of zoning schemes to allow owners a broader range of use rights; allow more flexibility during times of economic and environmental shocks; make more effective use of overlay zoning approaches; ensure that the spatial aspects of the disaster management plan and the local economic development strategy are mainstreamed into the land use management system of the local municipality and that problem areas from a spatial perspective are designated as such in the land use management system.

- encourage a greater mix of land uses and make provision for informality; allow for greater decentralization of local economic opportunities to improve the sustainability of the urban poor on the periphery; build in social criteria into land use management systems specifically for determining the priority use of vacant municipal and

state land; ensure more frequent review of municipal land use management system so as to ensure that it is context specific, relevant and flexible.

- make innovative use of lapsing of development rights and explore alternative zoning systems; land use management systems and zoning schemes must be designed around the settlements spatial economy and dynamic; make better use of incentives; have specific performance indicators and targets for the municipal land use management system and ensure that it is performance reviewed and assessed annually; make use of a policy driven land use management system as opposed to the normal legislated land use management system; make provision for expedited procedures or the suspension of statutory requirements in cases of emergency.

Analysis of Response Results to Question 16 (b)

From the study population response results the following has emerged as important strategic interventions that need to be considered in order to improve municipal land use management systems in order to make them more flexible:

Local municipalities require a better understanding of their local space economy and settlement dynamics; local municipalities need to be willing to experiment and innovate with their land use management systems; local municipalities need a focused approach to monitoring the performance of their land use management systems and adapt and to change it when needed; and in the aforementioned regard, land use management systems must be intelligence driven.

Here again, it is important to understand that the suggested interventions need to be context specific. As such, a one size fits all approach is not the desired outcome as municipalities have to design interventions that meet their needs,

speak to their strategic contexts and their capacity and their financial realities. It is further important for those municipalities who do not have the needed capacity or finances for such interventions to be innovative and to pursue the relevant strategic partnerships in order to realise such ventures.

Question 17

The question posed in Question 17 reads as follows:

"What would you do or recommend be done in terms of other non-spatial South African policies in order to enable the principle of spatial resilience, as described by SPLUMA, to become entrenched in settlement planning and functioning?"

Some of the recommendations received for application on non-spatial South African policies in order to enable the principle of spatial resilience include the following:

- "The integration of planning (joint planning initiatives) and policy making (across the three spheres of government, and between government and the private sector). This is seen as being instrumental to achieving the goal of sustainable development, with spatial resilience of settlements contributing to the goal."
- "By recognising, elevating and entrenching the spatial (development) planning functions in the everyday business of governance so that it can perform its ordained integrative function."
- "All policies should focus on creating an environment for economic growth. The government should leave job creation to the private sector and not try to interfere with markets. Effective job creation can only be done by the private sector, with government policies creating an enabling environment. Government should focus on creating the

enabling environment by reducing red tape and by ensuring coherence and coordination of government policy and action."

- "Most people do not understand the spatial implications of what they perceive to be non-spatial decisions. We need far more sophisticated understanding of the space-economy, of trends in growth and decline, of where there is potential for growth and development. The research undertaken must feed into decisions on where to prioritise public infrastructure and spending. As such, there needs to be specific strategies to influence sectoral investments and improved spatial advocacy in non-spatial sectors."

- "We do not need more policies, but rather better aligned policies and better implementation of the better aligned policies."

- "The following should underpin all sector planning: risk mitigation / scenario planning to identify risks / diversification should be promoted / Self- sufficiency should be promoted / sustainability principles should be promoted / constantly think about how to deal with change / identify potential unintended consequences of actions."

- "The recognition that 'things' happen in space and human activities and economies are dependent on space. However shocks also occur in space. Shocks may be either natural or anthropogenic but its impacts occur in settlements that occur in space. The actions of other role-players should therefore consider how their actions cumulatively act out in space and what their effects will be in a settlement space."

- "Clear communication and advocacy about importance of spatial resilience in all decision-making events, albeit at policy formulation or decision-making level. Consider unintended consequences of decisions."

Analysis of Response Results to Question 17

The study population response results obtained for question 17 indicate that for concepts such as spatial resilience to be mainstreamed into non-spatial South African policies and to contribute positively to settlement planning and functioning, the whole of government must, in their policy development and implementation, understand the spatial implications of what they perceive to be non-spatial decisions (RTPI 2014: 5).

In order to do this government, as a whole, in its policy development must be more sophisticated in its understanding of the space-economy, of trends in growth and decline, and of where there is potential for growth and development. Such intelligence must then be factored into decisions on policy, priorities, and spending.

Related to the aforementioned, sectoral or silo thrusts in policy development and implementation should be thwarted in favour of integrated policy development and implementation that is informed by risk identification, risk avoidance, risk mitigation, sustainability and other agreed to national imperatives which utilises scenario planning exercises to inform its ultimate decisions. Underlying all of these efforts is the need to build a bridge between planning and management and implementation so as to improve service delivery and to be flexible enough to respond to the new rapidly changing world from a spatial perspective (Coetzee 2012: 12; and Coetzee and Oranje 2006:10).

The result emphasises the fact that South Africa does not need more policies, but rather better aligned policies and better implementation of the better aligned policies. The mainstreaming, internalisation and implementation of the better aligned policies should be achieved locally as part of the municipal Integrated Development Planning process in each municipality, which should then act as the melting pot for better implementation of the better aligned policies. No government delivery should be allowed to take place outside of the municipal Integrated Development Planning context.

Linking on to the aforementioned the result highlights the need for both vertical and horizontal integration of policy-making, planning and implementation within government through improved joint planning and implementation initiatives.

The result also calls for the need for a "joined-up" government to recognise its limitations and to enter into similar joint planning and implementation initiatives with the private sector (Harrison 2006: 189-191). Government's role in such a partnership needs to be about creating an enabling environment for economic growth and the private sector's role being one of economic growth and job creation. This is important because economic growth, job creation and improved strategic partnerships are important elements of spatial resilience.

Question 18

The question posed in Question 18 reads as follows:

"If one looks at the description of spatial resilience in terms of SPLUMA, and one accepts that that the municipal sphere of government is at the heart of all delivery, then, to what extent do local municipalities have control over measures that may influence spatial resilience?"

See Figure 14 below for the study population response results for question 18.

In terms of the responses obtained for Question 18:

- 54% of study population indicated that the local **municipalities have full control over measures that may influence spatial resilience**; 34% of study population indicated that the local municipalities **only have part control over measures that may influence spatial resilience**; 2% (1) of study population indicated that the local municipalities **have no control over measures that may influence spatial resilience; while** 10% (5) of study population either **provided no response or indicated that they**

did not know the level of control local municipalities have over measures that may influence spatial resilience.

A summary of the responses received by the 54% (27) of study population who indicated that local municipalities have full control over measures that may influence spatial resilience reflects the following:

- "The municipal sphere is at the forefront of land use planning and are legislatively empowered (in terms of the MSA) to develop IDPs and SDFs. These are non-spatial and spatial municipal plans which can be used to influence the extent to which spatial resilience is mainstreamed in the development paradigm."

- "As the ultimate decision maker for land use applications municipalities have a lot of control of what happens within their area of jurisdiction."

- "Under the current Constitutional dispensation in SA, local authorities have a lot of control. One may even argue that they almost hold exclusive control over measures that may influence spatial resilience. The question is whether they understand the mandate and or the implications of their decision–making. Tools available to municipalities include inter alia the SDFs, IDPs, Disaster Management Frameworks, Zoning Schemes and planning and land use decision making powers. An SDF must, amongst others, identify sensitive areas and risks and contain strategies to deal with these. An IDP must contain a chapter on Disaster Management which must now also deal with spatial resilience. Municipalities must provide municipal infrastructure and services in an environmentally sustainable and financially sustainable manner. Municipalities are responsible for LED and therefore must already plan for and contribute to Local Economic Development and livelihoods. The LED strategies must now also address the spatial resilience aspects as set out in SPLUMA."

A summary of the responses received by the 34% (17) of participants who indicated that local municipalities only have partial control over measures that may influence spatial resilience include the following:

- "Key characteristics of resilience relating to the environment, economy, culture and politics lie outside the realm of municipal power. Municipalities need to be liberated, by better legislation and availability of resources, to improve settlement resilience."

- "Local municipalities are at the heart of all delivery but they do not have control over migration patterns and housing delivery budgets. This will definitely influence their ability to move towards building communities that are spatially resilient."

- "Local municipalities do not have much control if you understand global trends in the space economy, e.g. the price of gold or platinum on the world market (over which no sphere of government has control) impacts on local settlements e.g. mining towns in the Free State Gold Fields."

- "The problem is with the practicalities, and specifically with the resources. Municipalities do not have financial resources to implement the measures that would be required to achieve resilience and the planners that they employ are often not up to the task of developing plans with the necessary degree of sophistication. In addition the structures of municipalities militate against holistic approaches to issues and the legislative frameworks (such as supply chain management regulations) are designed to prevent corruption and wastage, rather than to promote innovation or flexibility. So it is not impossible that municipalities could do what is necessary, but it is going to take a lot of creative work to get them to that point."

- "Local municipalities will only have a spatial resilience influence over the physical aspects of the space. They have much less control over

social and economic resilience as these are influenced by more than just local settings."

- "They are but a player in the field of spatial resilience. Unfortunately, due to the way in which the constitution allocated powers and functions, as well as the fact that we operate in a democratic, capitalist economy, municipalities are more influencers than direct controllers of all activities and land within their space."

Analysis of Responses to Question 18

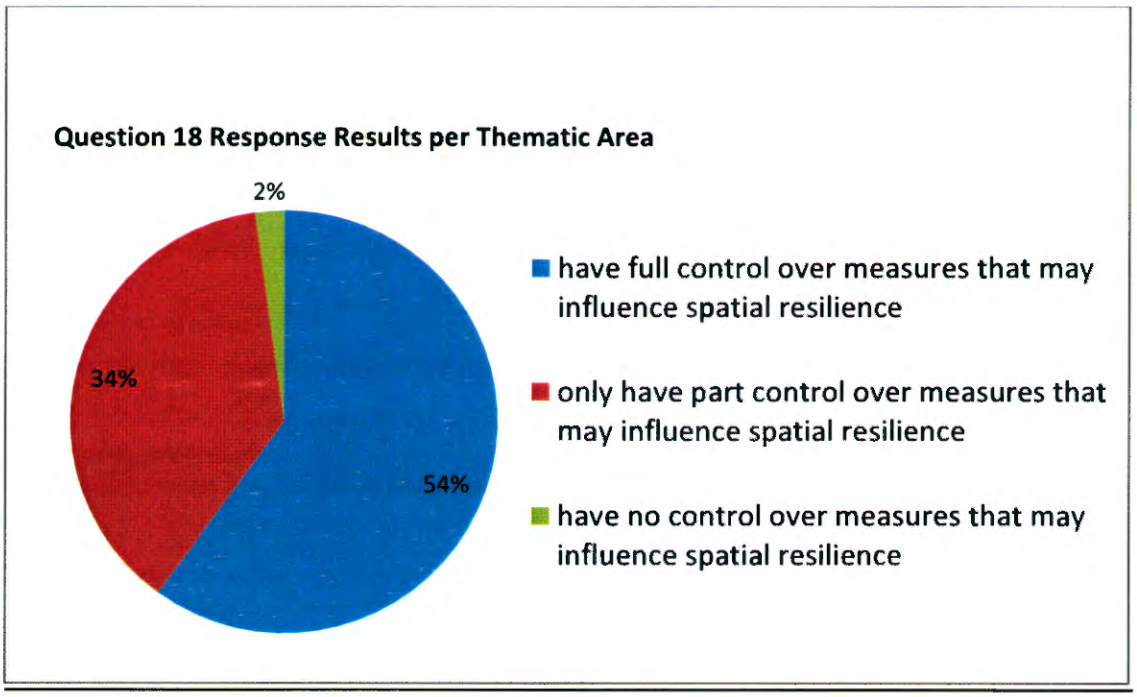
The vast majority (88%) of study participants are of the opinion that local municipalities either have full or partial control over measures that may influence spatial resilience.

This result confirms the importance of local municipalities in the spatial planning and land use management and development planning sectors and their importance in the implementation of SPLUMA and its requirements, such as the principle of spatial resilience.

From a spatial planning and land use management perspective local municipalities do theoretically have control over measures that may influence spatial resilience as they should theoretically have almost exclusive control over the use of land and the physical development of space due to their municipal planning mandate in terms of the Constitution, although this is not always the case due to a number of potential reasons. Parnell and Pieterse (2010: 152-157) draw attention to some of these reasons, one of which is the lack of institutional capacity to do so. These powers have been afforded to them via the Constitution, with SPLUMA providing further guidance. Furthermore, the MSA also affords local municipalities great control, in theory, over what other spheres of government and organs of state may want to do in their local municipal area in terms of the investment in and physical development of space and the use of land through the much under-estimated IDP process.

It is important to note that, in contrast, local municipalities do not have any control over the global trends in the space economy. Here we refer specifically to things such as the price of commodities. They have no control over issues such as migration of people, urbanisation and nature. The control they do have is the choice to plan and develop, in partnership, for and with nature and not against it.

Figure 14: Pie Chart indicating the Study Population Responses to Question 18



Question 19

The question posed in Question 19 reads as follows:

"Based on your experience, do you think the three spheres of government in South Africa have the institutional ability, skill and the will to implement a spatial resilience approach, as described by SPLUMA? Yes / No"

See Figure 15 below for the study population response results for question 19.

In terms of the responses received to Question 19:

- 28% of the study population indicated that the three spheres of government in South Africa have the institutional ability, skill and will to implement a spatial resilience approach; 60% of study population indicated that they do not; while 12% of the study population either did not express an opinion on this question or indicated that they were not in a position to express an opinion on this matter.
- Further analysis of the responses indicate that 55% of the professional planners and 70% of the non-professional planner grouping have indicated that the three spheres of government in South Africa do not have the institutional ability, skill and will to implement a spatial resilience approach.
- A comparison of the participant sectors indicate that 52.4% of Provincial government sector participants; 50% of National government sector participants; 62.5% of Local government sector participants and 66.7% of Private Sector and Academia participants have indicated that the three spheres of government in South Africa do not have the institutional ability, skill and will to implement a spatial resilience approach.

Analysis of Response Results to Question 19

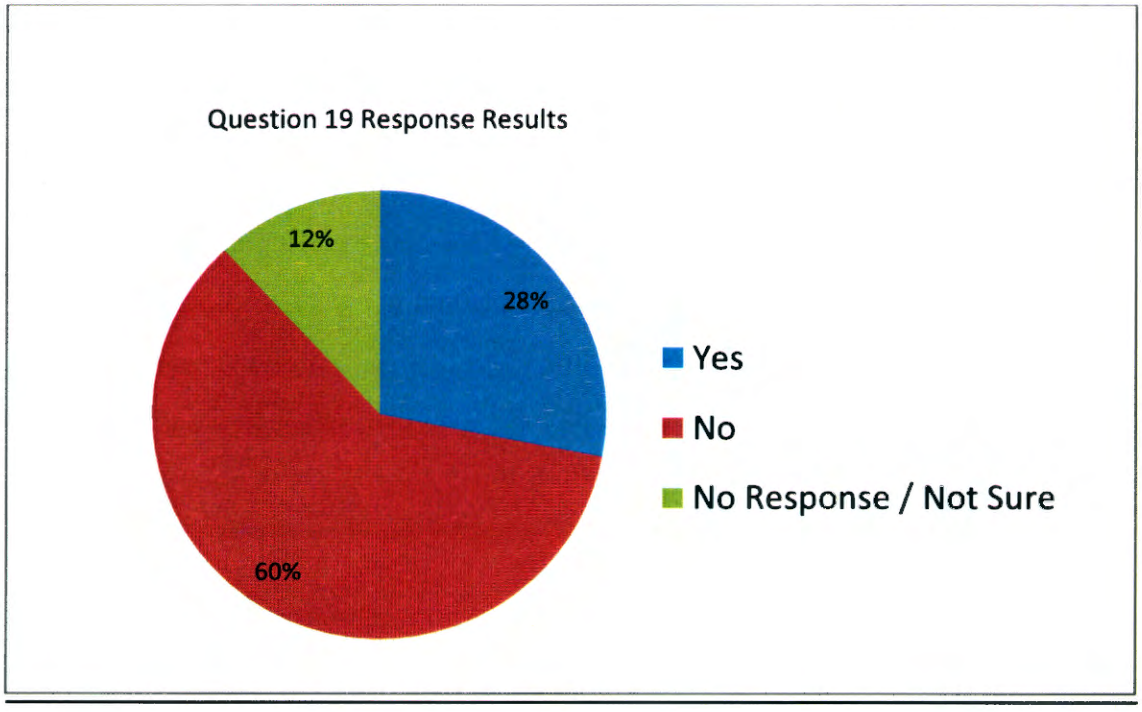
The responses obtained for question 19 indicate that the majority of the study population do not have faith in the current institutional ability, skill and will of all three spheres of government in South Africa to implement a spatial resilience approach. The responses to this question regarding the institutional ability, skill and will of the three spheres of government are to an extent supported by several authors (South Africa NDPC 1999: 14-17; Parnell and Pieterse 2010: 152; Coetzee 2010: 21-23; Oranje 2014: 6; Coetzee 2012: 16;

South Africa NPC 2012: 407-443; South Africa CoGTA 2015: 46-50; and SAIRR 2014: 16-17).

The study population responses could be due to a variety of reasons which could include, amongst others:

An honest assessment of the current institutional ability, skill and will due to the first-hand experience of participants in working with or for one of the three spheres of government; due to the current perception of the study participants of a lack of ability of one or more or all of the spheres of government; or due to bias of participants to one or more or all spheres of government.

Figure 15: Pie Chart indicating the Study Population Responses to Question 19



Question 20

The question posed in Question 20 reads as follows:

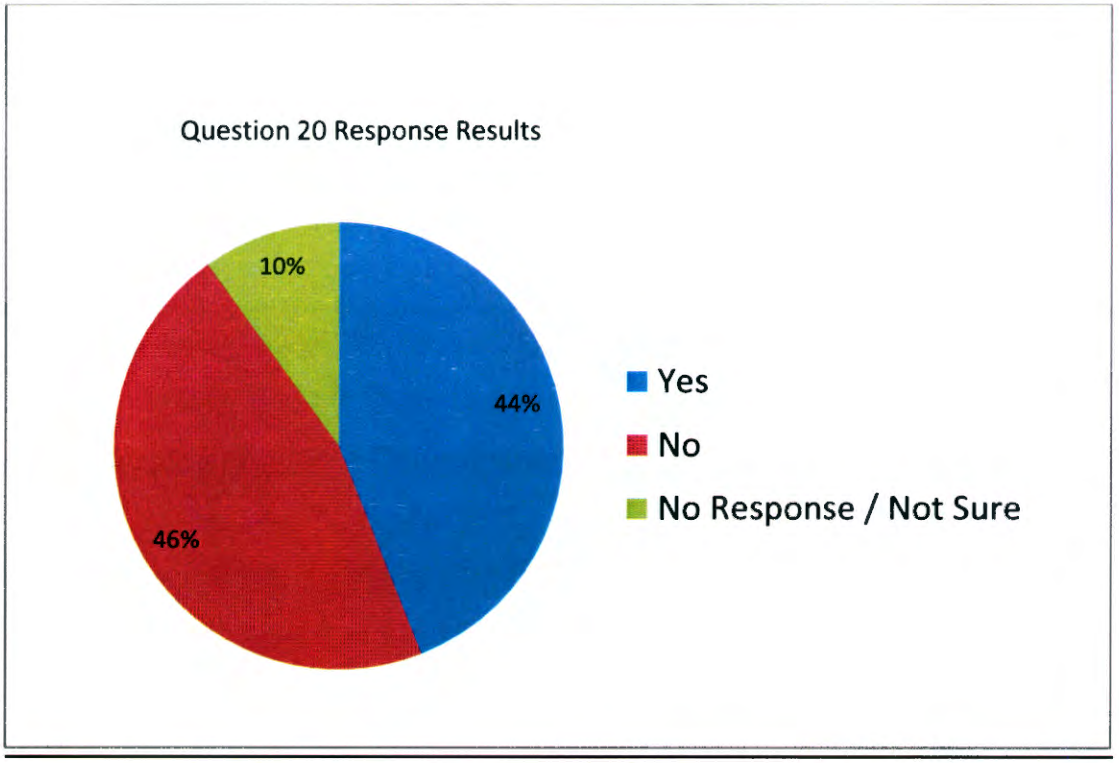
"Do you think that Professional Planners in South Africa have the necessary knowledge, skill, expertise and will to implement a spatial resilience approach, as described by SPLUMA? Yes / No"

See Figure 16 below for the study population response results for question 20.

In terms of the responses received for Question 20:

- 44% of the study population indicated that professional planners in South Africa do have the necessary knowledge, skill, expertise and will to implement a spatial resilience approach as described by SPLUMA; 46% of the study population indicated that they do not; while 10% of the study population either did not express an opinion on this question or indicated that they were not in a position to express an opinion on this matter.
- A deeper analysis indicates that 42.5% of the professional planner group and 60% of the non-professional planner group have indicated that professional planners in South Africa do not have the necessary knowledge, skill, expertise and will to implement a spatial resilience approach as described by SPLUMA.
- A comparison of the participant sectors indicate that 38.1% of Provincial government sector participants; 50% of National government sector participants; 37.5% of Local government sector participants and 77.8% of Private Sector and Academia participants have indicated that professional planners in South Africa do not have the necessary knowledge, skill, expertise and will to implement a spatial resilience approach as described by SPLUMA.

Figure 16: Pie Chart indicating the Study Population Responses to Question 20



Analysis of Response Results to Question 20

The results indicates that there is a clear difference in opinion within the study population as to whether professional planners have the knowledge, skill, expertise and will to implement a spatial resilience approach. In my view this can be interpreted as a vote of no confidence, from the study population, in the knowledge, skill, expertise and will of Professional Planners to implement a spatial resilience approach, at this point in time.

It is apparent from the sectoral breakdown of the responses that both the private and academic sector and the provincial government sector respondents have very little faith in the knowledge, skills, expertise and will of the professional planning fraternity to be able to implement a spatial resilience approach, whereas the local government sector respondents seem to be evenly split in their responses to this question. The question of the knowledge, skills

and expertise of professional planners to implement a new agenda has been questioned before by several authors (Oranje 2014: 7; Coetzee 2012: 14-16; 2010: 23-24).

The study population response results could be due to a variety of reasons which could include, amongst others:

An honest assessment of their own and their peers' ability to implement a spatial resilience approach which could be based on the professional experience and the genuine lack of capacity amongst the professional planners to implement a spatial resilience approach as required by SPLUMA; it could simply be due to the lack of current clarity around what the principle of spatial resilience entails, which would be supported by some of the response results received in this study; or it could be an honest admission that the majority of Professional Planners currently lack the ability to deal with the complexity around matters such as spatial resilience.

Question 21

The question posed in Question 21 reads as follows:

"Do you think that politicians in South Africa have the necessary political appetite and knowledge, skill, expertise and understanding to persevere with the implementation of a spatial resilience approach, as described in SPLUMA, given their aggressive transformative agenda? Yes / No"

See Figure 17 below for the study population response results for question 21.

In terms of the responses received to Question 21:

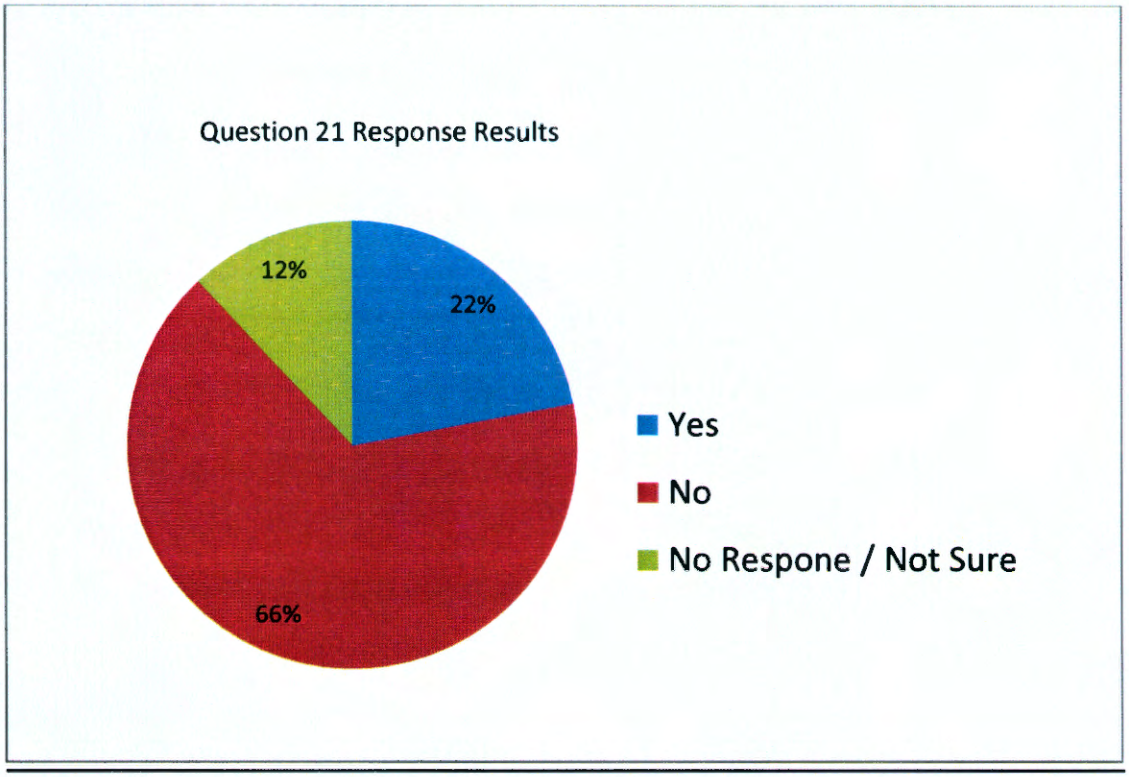
- 22% of the study population indicated that politicians have the necessary political appetite and knowledge, skill, expertise and understanding to persevere with the implementation of a spatial resilience approach, as described in SPLUMA; 66% of the study

population indicated that they do not have the necessary political appetite and knowledge, skill, expertise and understanding; while 12% (6) of the study population either did not express an opinion on this question or indicated that they were not in a position to express an opinion on this matter.

- Further analysis of the responses indicate that 62.5% of the professional planners and 80% of the non-professional planner grouping have indicated that politicians do not have the necessary political appetite and knowledge, skill, expertise and understanding to persevere with the implementation of a spatial resilience approach, as described in SPLUMA.

- A deeper drill into the responses indicate that 61.9% of Provincial government sector participants; 50% of National government sector participants; 62.5% of Local government sector participants and 88.9% of Private Sector and Academia participants have indicated that politicians do not have the necessary political appetite and knowledge, skill, expertise and understanding to persevere with the implementation of a spatial resilience approach, as described in SPLUMA.

Figure 17: Pie Chart indicating the Study Population Responses to Question 21



Analysis of Response Results to Question 21

The results of question 21 indicates that the majority of the study population do not believe that the politicians have the political appetite, knowledge, skill, expertise and understanding required to implement a spatial resilience approach. It is interesting to note that the sector that feels the strongest about this is the private and academic sector participants given that they, in general, seem to be the sectors that are the furthest removed from the day-to-day interaction with politicians. The political appetite, skill, expertise, understanding and the agendas of politicians, including the need for good leadership and the impact this has and could have on settlement form, functionality and sustainability have been highlighted by several authors (South Africa NPC 2011: 1, 16, 23, 26 & 28; SAIRR 2014: 17 & 24-30; Coetzee 2010: 21-23; 2012: 14 & 17; Coetzee and Oranje 2006: 8-11)

The results of the study population responses could be due to a variety of reasons which could include, amongst others:

The study populations previous experiences in working with politicians; the specific context of the spatial planning and land use management and development planning sector in South Africa, which has historically been characterised by tensions between professionals, mainly professional planners, and politicians; a simple lack of trust between the professionals, mainly professional planners, and politicians which may be due to previous experiences and the historical tensions; the historical lack of clarity on roles and responsibility of professional planners and politicians in the spatial planning and land use management sector; or it may be due to a genuine lack of political appetite, knowledge, skill, expertise and understanding by the politicians which have been experienced by professionals in the spatial planning and land use management and development planning sector.

Combined Analysis of Response to Questions 19, 20, and 21:

Question 19, reflects that the study population is largely of the view that the three spheres of government do not have the institutional ability, skill and will to implement a spatial resilience approach at this point in time. This view is echoed and supported by the study population responses to question 20, because professional planners are essentially the ones who have to drive spatial planning and land use management in all spheres of government.

Question 20 indicates that only 44% of the study population are of the opinion that professional planners in South Africa have the necessary knowledge, skill, expertise and will to implement a spatial resilience approach. The study population therefore express significant doubts regarding professional planners' current knowledge, skill, expertise and will. This is, notwithstanding that 80% of the study population are themselves, professional planners.

The study population responses to question 21 indicate politicians do not have the necessary political appetite and knowledge, skill, expertise and understanding to persevere with the implementation of a spatial resilience approach.

The combined analysis of questions 19, 20 and 21 does not bode well not only for the implementation of a spatial resilience approach, nor for the implementation of SPLUMA in general, at this point in time, because it calls into question the readiness and maturity of the sector as whole for SPLUMA implementation.

4.4 Conclusion

This section summarises the main results and analysis of the spatial resilience research survey questionnaire responses and attempts to build the narrative around the concept or principle of spatial resilience as informed by the study population responses to the survey questionnaire.

There is significant consensus (74%) amongst the study population that South African settlements are currently not spatially resilient. This study population response result is generally in accord with the literature which depicts the sad spatial and settlement legacy left behind by the colonial and apartheid era spatial planning and land use management system and which has admittedly been exacerbated by the last twenty-one years of democracy (Harrison *et al.* 2008: 9-10; Mabin and Smit 1997: 207-213; South Africa NDPC 1999: 7; Berrisford 2011: 248-249; Todes 2012a: 158; Coetzee 2012: 11; South Africa NPC 2011: 5 & 7-8; 2012: 24-25; South Africa CoGTA 2015: 4, 7 & 10; Coetzee 2012: 18; and Van Wyk and Oranje 2014: 366). This is seen from the responses received to question 6.

There is reasonable consensus (68%) amongst the study population that adopting a spatial resilience approach could potentially have a positive impact with respect to improving the current functionality of South African

settlements, towns and cities. This is born out of the study population responses received to question 11. This outcome is supported by the numerous publications on the need for a resilience thinking approach (Davoudi 2012: 299; Davoudi *et al.* 2013: 307; Seeliger and Turok 2013: 2109; Goldstein *et al.* 2014: 1; Turok 2014: 750; Coaffee *et al.* 2008: 1; 2013: 323; Walker and Cooper 2011: 2; UNISDR 2013: 3; Shaw 2012: 308; De Weijer 2013: p. iii & 1; Vale 2014: 192; Bene *et al.* 2014: 598; and White and O'Hare 2014: 934). Related to this, there is reasonable consensus amongst the study population (66%) that the adoption of a spatial resilience approach is a current imperative in South African settlements, notwithstanding all their other societal challenges. This conclusion is supported by the responses received to question 12.

Further with respect to the above, the respondents have provided clear, common sense responses in terms of what they see as the characteristic traits of spatially resilient settlements as per the responses received to question 5 and have also detailed a litany of potential obstacles that could prevent the realisation of spatial resilience in South African settlements as per the responses received to question 8. These obstacles are generally in accord with the published literature on the current issues hampering progress within the South African spatial planning and land use management governance system (Pieterse 2009: 1-8; Coetzee 2010: 21; De Visser 2009: 14-19; Berrisford 2011: 248; South Africa NPC 2011: 5-8 & 16-28; 2012: 259-293; South Africa CoGTA 2015:7-8 & 58-59; Coetzee 2012: 12-17; Oranje 2014: 3-7; Du Plessis 2013: 5 & 10; Van Wyk and Oranje 2014: 354-356 & 360-363; Todes 2011: 125; Coetzee and Oranje 2006: 6-11).

In addition to the above, the respondents have also detailed a variety of potential performance indicators that could be tracked to indicate whether the efforts being expended to achieve spatial resilience are indeed succeeding or not. In this regard see the study population responses received to question 7. The study population have further indicated that the possibility of creating some sort of composite index or set of indices, in this regard, must be explored,

specifically for the South African context. Related to this, the study population indicates that the establishment of a performance management system and the potential use of the aforementioned performance indicators or establishment of composite indices would, however, need to be informed by the realistic ability of the relevant institutions to fund and operationalise such a performance management system. However, the importance of having a performance management system is unequivocal, and comes through clearly in the study population responses and is generally supported by the literature which reiterates the need to monitor the performance of not only our spatial resilience interventions but the general performance of our spatial planning and land use management system.

There seems to be reasonable consensus within the study population with respect to the assertion that the elements that make up spatial resilience have been present in the spatial planning and land use management sector prior to the promulgation of SPLUMA. This is supported by the study population responses received to question 13. The study population seem to be of this belief especially with respect to spatial planning goals, spatial planning policy and spatial planning instruments. This is supported by the responses to question 15(a). The question that then naturally arises is: "If this is so, why has this not translated into better functioning settlements, and more resilient settlements?" At this point in time there is not unequivocal answer to this question. The non-performance of current spatial goals, spatial policy and spatial planning instruments is supported by the literature which indicates that these spatial goals, policies and instruments seem to have had a much more productive life on paper than in practice (Coetzee 2012: 11; and Oranje 2014: 6-7).

Furthermore, the study population is less enthusiastic about the pre-SPLUMA era when it comes to land use management. Here their responses to question 16(a) indicate that only 36% of the study population are of the view that elements of spatial resilience had been incorporated into land use schemes. This is supported by the literature which indicates that land use management

prior to SPLUMA was very control oriented, rigid and structured (Coetzee 2010: 21; 2012: 13; Coetzee and Oranje 2006: 8-10; Pieterse 2009: 1-8; Berrisford 2011: 248; South Africa DoLA 2001: 3 & 6-8; South Africa NPC 2011: 5 & 19-20; 2012: 259-293; South Africa CoGTA 2015: 10; Oranje 2014: 3-7; Van Wyk and Oranje 2014: 354-356). These typically are characteristics which militate against a spatial resilience approach.

In determining what exactly spatial resilience is it is quite clear from the responses to questions 1, 2, 3, and 4, that, amongst the study population, there is no clear consensus on what spatial resilience is. This does not mean that the study population, as a whole, do not understand what spatial resilience is. To the contrary, there were many responses which accord with the international literatures' understanding of the broader concept of resilience and the narrower concept of urban resilience. What this means is that within the study population, spatial resilience means different things to different study participants.

These findings are validated by the responses to questions 9 and 10 where the study population indicate unequivocally that spatial resilience is generally not understood within the South African context in general (92%) nor the spatial planning and land use management sector (78%).

This obviously does not bode well for the mainstreaming and implementation of a spatial resilience approach, or for the general implementation of all the SPLUMA principles and other SPLUMA imperatives. Various factors could be ascribed to this perceived lack of understanding or consensus around what spatial resilience entails. These could include: lack of debate, consultation and consensus building both during and after the SPLUMA policy development process; disconnect between the drafters of SPLUMA and the stakeholders within the spatial planning and land use management and development planning sector; the lack of individual professional responsibility to keep abreast of the latest trends and policy developments within the international and local spatial planning and land use management arena; the lack of the right

mind-set for SPLUMA and spatial resilience implementation; the lack of the requisite knowledge, skill and expertise; the lack of an on-going professional development programme within the spatial planning and land use management sector; curricula deficiencies within the training of planning professionals; and the lack of support by the various professional planning associations and institutions with respect to nurturing professional debate and promoting sectoral understanding, coherence and cohesion with respect to policy imperatives. Many of these potential causes have been raised previously as inherent weaknesses of South Africa's spatial planning and land use management sector (Coetzee 2012: 11-18; and Oranje 2014: 6-7).

Related to the aforementioned and far more problematic are the study population's responses to question 19. Their responses indicate that the majority of the study population (60%) are of the opinion that, institutionally, the three spheres of government in South Africa do not have the required ability, skill and the will to implement a spatial resilience approach. This is augmented by the responses received to questions 20 and 21 which indicate that the majority (66%) of the study population do not be believe that the politicians have the political appetite nor the knowledge, skill, expertise and understanding necessary to implement a spatial resilience approach and that there is an almost even split in the study pollution as to whether professional planners have the necessary knowledge, skill and expertise to implement a spatial resilience approach.

In relation to the responses received to questions 19, 20 and 21 is the important role that leadership plays in enabling an adaptive approach to both governance and management. Several authors have highlighted the inherent importance of leadership, both from a governance and management perspective to enable a resilience thinking adaptive approach to be realised (Folke *et al.* 2005: 444-449; Harrison *et al.* 2014: 27; and Armitage 2006: 3).

In the above regard, and in conclusion of this chapter, there is a pertinent analogy between the outcomes of this study and the general story behind the

theory of resilience. Just as with the theory of the broader concept of resilience which indicates, that it does not matter what your context is or what risk or hazard or shock is you may be facing, you should not underestimate the power and the impact that human foresight, human ingenuity and human intentionality can offer in preventing or averting risks and challenges, and the power of the human ability to communicate ideas and the human ability to coordinate action; and lastly, understand the power and impact that technology can play in averting potential disasters (Davoudi 2012: 304; Seeliger and Turok 2013: 2117; and Harrison *et al.* 2014: 20), so too, the outcomes of this study, are generally indicating that, based on the opinions of the study population, we are probably headed down the wrong path in terms of SPLUMA implementation. Importantly, in this regard, as the theory of resilience indicates, we should not underestimate the power and the impact that human foresight, human ingenuity, human intentionality, and the power of the human ability to communicate ideas and the human ability to coordinate action; and the power and impact that technology can play in changing the course of SPLUMA implementation.

As such, although the study population are not too confident over what has transpired the last seventeen (17) years in respect of spatial planning and land use management policy development, it is not all doom and gloom. What needs to happen within the spatial planning and land use management sector now is that we have to use our human foresight, our human ingenuity our human intentionality, our human ability to communicate ideas and to form partnerships and to coordinate our actions and the technology at our disposal to turn what could become a spatial planning and land use management catastrophe into a bold statement of the potential contribution that planning can play in creating a very different society, a better settlement, a better town, a better city, a better country, one suitable for all to live in, based on the passion, belief, and the ability to accept and deal with change as envisioned by the planning forefathers (Oranje 2014: 1-2 & 6-8). For this to happen we need

the required stakeholders to raise their hands, accept responsibility, show leadership, and work in partnership.

Chapter 5 Conclusions and Recommendations

5.1 Introduction

This chapter presents the conclusions and recommendations that have emanated from this research endeavour. It further takes a critical look at the research questions and objectives as described in Chapter 1 of this dissertation and assesses whether the research questions have been answered and whether the research objectives, as set out at the start of the study, have been met.

The conclusions put forward are drawn from two sources:

- Conclusions that emanate from the opinions of the study populations based on their responses to the spatial resilience research survey that was conducted amongst professionals and practitioners currently active within the spatial planning and land use management and development planning sector in the Western Cape.
- Conclusions that emanate from the literature review and the theoretical framework that has been developed for better understanding spatial resilience.

The recommendations and further areas for possible research proposed speak directly to the conclusions of the study.

5.2 Conclusions emanating from the opinions of the study population in response to the spatial resilience survey questionnaire

Based on the opinions of the study population the researcher concludes that:

5.2.1 According to the responses received from the study population there is no clear consensus within the study population on what the concept or principle of spatial resilience is or what it entails.

This conclusion was reached based on the study population's responses to questions 1, 2, 3 and 4 of the survey questionnaire. This conclusion was further supported and based on the study population's responses to questions 9, 10 and 20.

This conclusion is disconcerting since spatial resilience is one of the five development principles introduced by SPLUMA. The importance of the five development principles as set out in Section 7 of SPLUMA cannot be understated.

The introduction of the concept of development principles entrenches the important South African policy shift towards a normatively based spatial planning and land use management system. Furthermore, all of these development principles apply to all organs of state and other authorities responsible for the implementation of legislation regulating the use and development of land, and guides the preparation, adoption and implementation of any spatial development framework, policy or by-law concerning spatial planning and the development or use of land.

The five development principles must further guide the compilation, implementation and administration of any land use scheme or other regulatory mechanism for the management of the use of land and must guide the sustainable use and development of land, the consideration by a competent authority of any application that impacts or may impact upon the use and development of land and the performance of any function in terms of SPLUMA or any other law regulating spatial planning and land use management. As such, from a SPLUMA perspective the five development principles form the foundation on which the new South African spatial planning and land use management system is built. It will have major implications for settlement form and functionality which in turn has a major impact on settlement

efficiency, viability, sustainability and quality of life. Engaging with and understanding the development principles are therefore of paramount importance in the new spatial planning and land use management system introduced by SPLUMA.

This conclusion is further disconcerting from a spatial resilience perspective, as the literature clearly indicates that your interpretation of resilience is important because your theoretical interpretation of resilience will have a major influence on the interventions you design and implement. This has particular relevance in South Africa given our major issues with dysfunctional settlements. As such, it does not bode well if there is no consensus on what spatial resilience entails and how spatial resilience and the other four development principles should be practically implemented within the spatial planning and land use management milieu.

This conclusion does not imply that the respondents do not understand spatial resilience, although there may be an element of this that is true.

What it does imply is that:

- There are a variety of opinions amongst the study population on what spatial resilience is.
- In some instances these opinions on what spatial resilience entails are diametrically opposed to each other and to the literature on the theory behind the broader concept of resilience and the narrower concept of urban resilience.

Although, the fact that professionals and practitioners have different opinions on matters is not necessarily a bad thing, at the end of the day there has to be some sort of consensus, on how as a country, we take certain important policy imperatives forward. This study has posited why this is so and put forward a variety of possible explanations for this. These include:

- Potential lack of depth of the SPLUMA policy development process in terms of debating, popularising and gaining consensus on the policy imperatives of SPLUMA.

- Related to the above is the lack of policy advocacy, subsequent to the promulgation of SPLUMA in 2013, especially with respect to the SPLUMA policy imperatives.

- The role of professional representative bodies and associations in the policy development and policy advocacy has also been questioned.

- The role of individual professionals taking responsibility in keeping abreast with policy developments, participation in policy development processes, and taking ownership of their own professional development has also been raised as a potential issue. Professional development is important because it has a major impact on the professional advice given to employers and clients and ultimately on the settlement development paths embarked on. As change is a constant, professional knowledge gained years ago can no longer be relevant in a contemporary world, as such, it does not matter how experienced a professional is, the need to constantly ensure that you are aware of current policy and current professional trends and knowledge is an absolute must, especially in the spatial planning and land use management and development planning arena, where the impacts and outcomes of misguided professional advice can remain with society for decades.

5.2.2 According to the study population, spatial resilience, as a concept, is generally not well understood in South African society as a whole and particularly within the broader spatial planning and land use management and development planning sector in South Africa.

This conclusion was drawn based on the study population responses to questions 9 and 10 of the survey questionnaire. Much of the same arguments presented in 5.2.1 apply here as well.

Given the conclusion drawn in 5.2.1, above, this conclusion although disconcerting, is not totally unexpected. Simple logic would dictate that if there is no clear consensus on what spatial resilience is amongst the professionals and practitioners who operate in this field on a daily basis then one cannot expect the general public to understand the concept of spatial resilience.

5.2.3 According to the study population, South African settlements, for the most part, are currently not spatially resilient. This conclusion is based on the study population responses received to question 6. However, some of the responses received from the study population indicate that it is not easy to make broad brush statements with regard to the spatial resilience of settlements as this characteristic tends to vary from settlement to settlement, is dependent on the context of the settlement, and depends on what you are using as a yardstick to measure against. This conclusion does however fit in with the published literature on South African settlements which generally indicates that our settlements are dysfunctional, fragmented and inefficient.

5.2.4 According to the study population, the need for a spatial resilience approach or for the application of a resilience thinking approach in our settlements, towns and cities is unequivocally supported. This conclusion is drawn based on the study population responses to questions 11 and 12. This conclusion is supported by the litany of literature on resilience and urban resilience which motivates why a resilience thinking approach is required in the governance and management of settlements.

To a large extent this conclusion is further also rationally linked to the responses received to question 5 and 6 and the literature on the current state of South African settlements.

In this regard, it is appropriate to mention that the respondents have documented a host of impediments that they believe could prevent the realisation of the principle of spatial resilience in South African settlements. These impediments are to large extent supported by local literature. Importantly, in deciding on and implementing a spatial resilience agenda in a particular settlement, town or city would require that these potential impediments be considered and strategies be designed to deal with them. The litany of impediments listed further emphasises the complexity associated with resilience in general and spatial resilience in particular.

5.2.5 According to the study population, the need for a uniform performance management system associated with SPLUMA implementation is of paramount importance. This conclusion is based on the responses to question 7, and indirectly inferred from the responses received to questions 8, 11, 12, 13, 15, 16 and 17

Underlying all of this is the need for a better approach to data, information and intelligence management which can inform both higher level policy decisions and settlement or site level decision-making. It must be emphasised that this has been a golden thread that has run through many of the responses received to the survey questionnaire.

5.2.6 The study population has voiced major concerns with regard to the knowledge, skill, expertise and will of both the politicians and professional planners to implement a spatial resilience approach.

This conclusion was drawn directly from the responses received to question 20 and 21. This conclusion was further indirectly informed by the responses to questions 1, 2, 8, 9, 10 and 14. This is an extremely disconcerting conclusion and does not bode well for the future successful implementation of SPLUMA and its imperatives. This conclusion is further supported to a certain extent by local literature. The major problem with this is that in the spatial planning and land use management system created by SPLUMA, the role of both the politician and the professional planner is of paramount importance. The one

cannot function without the other. Even in a scenario where the one grouping is strong and the other not, would not serve any purpose, as it would disable the entire system. What is required is good strong and competent leadership, both politically and professionally, working hand in glove, putting the best interest of the broader society at the forefront of their considerations. The working relationship should be based on what is right and not who is right.

5.2.7 The study population has further voiced major concerns with regard to the institutional ability, skill and the will of all three spheres of government in South Africa with respect to the implementation of a spatial resilience approach.

This conclusion is based on the responses received to question 19. The conclusion was further indirectly informed by questions 8, 9, 10, 12, 14, 17, and 18. This conclusion is very disconcerting as it too does not bode well for future successful SPLUMA implementation. Again, simple logic dictates that implementation will be most efficient and effective and achieve the desired impacts and outcomes when:

- there is sufficient consensus and understanding on what is required.
- the institutions empowered with the necessary responsibility understand their responsibility, and are able to execute it.
- the institutions empowered with the necessary responsibility have the right calibre of leadership and the professional ability to deliver on their mandates.
- the institutions understand their legal obligations and their local contexts.
- the institutions understand that they are not islands on their own and, as such, cannot operate in a vacuum as they are not able to determine their own destinies and must therefore be able to identify, develop and maintain the necessary strategic partnerships that are delivery focused.

This conclusion is to a large extent supported by local literature.

5.3 Conclusions that emanate from the literature review and the theoretical framework

Based on the literature review and the theoretical framework developed the following can be confirmed and concluded with respect to the broader concept of resilience and the narrower concepts of urban resilience and spatial resilience:

5.3.1 The world is currently experiencing unprecedented challenges, with increased uncertainty and unpredictability of what the future holds. It is now an accepted truth that governments and communities are faced with many challenges, most of them cannot be predicted, and when they do occur, they have the ability to interact with each other in ways that may worsen outcomes. In the broader South African context and specifically from a spatial planning and land use management perspective this is further complicated by the constant change and the political nature of the issues the sector is faced with. In addition to this South Africa, due to its history, has massive societal problems, inherited from its colonial and apartheid past, that continues to persist today, more than twenty years into democracy.

5.3.2 There is general agreement amongst authors and governments that institutionalising the broad concept of resilience is a potential remedy for dealing with this constant change, uncertainty and unpredictability and this is supported by the current global focus on resilience from a policy perspective. The reasons for the attractiveness of the concept of resilience is that it provides a means for reasoning how complex systems such as settlements, towns and cities can resist, adapt and when necessary, transform in the face of change and challenges, yet continue to function.

5.3.3 In the South African context SPLUMA has made spatial resilience a legal requirement. This concept is uniquely South African with virtually no published

literature on spatial resilience from a spatial planning and land use management perspective. Most authors talk about the broad concept of resilience and the narrower concept of urban resilience and how planning (spatial planning and land use management) can contribute to achieving urban resilience. As such, the concept of spatial resilience does not have its own unique foundational theory. In establishing the theoretical framework for understanding spatial resilience we have to go back to the theory underpinning the broader concept of resilience and the narrower concept of urban resilience.

In doing so it can be confirmed that there is agreement that the ultimate aim of resilience theory is to promote and mainstream a resilience thinking approach. Resilience thinking is in essence a way of thinking about how you deal or cope with change. It is essentially about understanding, accepting, and engaging with a rapidly changing world. It is a way of thinking, an attitude, which enables you to respond to the continuum of challenges raised by the complexity, uncertainty and change experienced in the world.

Further to the understanding of the theory of resilience it can be confirmed that the literature indicates that there are currently three understandings or interpretations of or approaches to resilience. Importantly, being aware of your interpretation of or approach to or understanding of resilience is paramount because your theoretical point of departure, with respect to resilience thinking, has a major influence on the interventions you design and implement.

The three interpretations of or approaches to or understandings of the broad concept of resilience are confirmed as follows:

- Engineering resilience is also referred to as the bounce-back ability. It is characterised by its maintenance of the status quo or pre-existing steady state and its focus on stability. It emphasises efficiency, control, constancy and predictability. Its use is most suited in settings where things are robust and you don't need or want any change.

- Ecological Resilience or Multi-equilibria resilience is also referred to as the bounce forward ability. It is characterised by its emphasis on transition with incremental change which it achieves by moving from one position of equilibrium to another after the system experiences a shock. The main emphasis here is about adaption of the system to a pre-existing or new equilibrium position in order to deal with an external shock.

- Evolutionary or socio-ecological resilience is characterised by the ability to both adapt and transform when required. It is applied mainly in settings of complex human-nature interactions where the systems are seen as intrinsically linked and co-evolving and are not seen or treated as independent systems.

With respect to the evolutionary or socio-ecological approach to or understanding of resilience, settlement, towns, cities, and regions are seen as complex socio-ecological systems. These socio-ecological systems are complex adaptive systems with inherent adaptive capacity. Because of this, such systems have the potential for surprising and unpredictable outcomes. Such complex systems are further characterised by feedback loops and reinforcing mechanisms that make it difficult to forecast the evolving nature of the system.

Such complex systems are also characterised by inherent self-organising abilities which allow them to transform in the face of both internal and external shocks. As such, in these complex adaptive systems, resilience is therefore seen as being an inherent property. In such complex systems the emphasis is on a process of continual adjustment and evolution, achieved through a process known as the adaptive cycle.

In such complex systems, Panarchy explains the cross-scalar dynamics interactions that happen. With respect to this, in a complex socio-ecological system you may have multiple adaptive cycles at various scales or levels that are characterised by a dynamic and complex set of interconnections and

influences. As a result of this, such complex systems have a continuous interplay between change and continuity.

Urban settlements, towns and cities, which are considered to be complex socio-ecological and adaptive systems, have multiple sub-systems that are inter-connected. As a result of this, it is preferable that such systems apply the evolutionary or socio-ecological resilience approach or understanding in order to deal with the many current societal challenges. A hallmark of such systems is their ability to adapt. This means they are able to adjust to external and internal change through self-organisation and collective learning, and transformation.

Applying resilience theory in complex adaptive systems such as urban settlements, towns and cities:

It can be confirmed that, in terms of applying the theory of resilience or the three types of resilience to an urban settlement, town, city or region there is consensus that because these constructs are complex socio-ecological systems the evolutionary or socio-ecological approach to resilience should preferably be employed in order to build resilience. There is further consensus that in these complex systems the resilience of the systems is built by increasing the adaptive capacity of such systems.

Importantly, in such complex socio-ecological systems, although the default resilience approach should preferably be the evolutionary or socio-ecological approach, all three types of resilience can co-exist simultaneously. This is so because there will always be elements or components of such complex systems where you would want to maintain the status quo, and therefore employ engineering resilience, elements where you would want improvement, and therefore employ ecological resilience, and yet other elements where you would want radical change or transformation, and here you want to employ evolutionary or socio-ecological approach to resilience.

Furthermore, it can be confirmed that, in applying resilience theory or thinking to a complex adaptive system, there are several critical elements that need to inform your resilience approach. These include: understanding the vulnerabilities of the system; understanding what you want resilience for; understanding what the outcomes are you are wanting to achieve; understanding whose resilience you want to improve and whose resilience will or could be compromised by the deployment of your application of resilience thinking approach; understanding of the level of social acceptance of what is conceived to be desired outcomes; understanding of the boundaries of your complex system; understanding that the different challenges, risks and uncertainties require different response approaches; understanding the potential impact that human foresight, human ingenuity, human intentionality, the human ability to communicate ideas and experiences over time and space; and the impact that technology can have on the situation. These elements are important because they create the context for the application of a resilience thinking approach.

In essence, the application of resilience theory in complex adaptive systems such as urban settlements, towns and cities in order to build adaptive capacity and improve resilience requires you to understand, what it is you want to keep the same, what it is you want to improve and what it is you want to transform.

Lastly, it can be confirmed that, in such complex systems, the adaptive capacity is enhanced by: enhancing the capacity to learn; ensuring redundancy or spare capacity; emphasising diversity; finding the right balance between self-sufficiency and connectedness; creating solid partnerships across spheres of government and between civil society and government.

5.3.4 This study further confirms that urban resilience, in relation to broader resilience theory, is a useful way of thinking about the ability of urban settlements, towns and cities and the many actors and structures that constitute them respond to the constant reality of change. Harrison *et al.* (2014: 2) defines urban resilience as "the capability of individuals, social groups,

or socio-ecological systems including towns and cities not only to live with changes, disturbances, adversities or disasters, but also to adapt, innovate, and transform into new more desirable configurations." As such, urban resilience, concerns the building of the adaptive capacity of urban settlements so that they are able to develop and implement meaningful institutional and societal responses and actions to the specific circumstances of each settlement.

5.3.5 Complex adaptive systems such as urban settlements, towns and cities are complex and unpredictable but their very human element or nature also makes them amenable to active management. As such, in pursuing resilience in such complex socio-ecological systems, you cannot separate the governance and the management elements of the system as there is an intimate relationship between governance and management, in such systems that are informed by the context of the situation.

Here governance refers to the multitude of arrangements, processes and relationships through which policy, legislative, institutional, social, programmatic and actual delivery coordination occurs. Given this, and if resilience is characterised by the need to build adaptive capacity, then your governance and management structures must be set up to deal with such constant change. As such, there is general agreement that in such instances you require an adaptive governance approach which is operationalised through an adaptive management or co-management approaches.

Adaptive governance approaches are characterised by integrated and coordinated governance approaches. Such governance approaches are characterised by a connect between those in control and those they serve; where priorities speak to the needs of the masses; where the doing-learning by doing-doing again cycle works; and where governance is not necessarily only rule based. Such a governance approach is essentially a way of thinking about governance that is informed by resilience theory. It has a particular emphasis on the multi-scale nature of governance, with the focus on learning, innovation, formal and informal relationships, values and trust.

As a matter of fact, interrogation of the South African Constitution indicates that it implicitly calls for an adaptive governance approach through its creation of the three inter-dependent and inter-related spheres of government; its distribution of powers across the three spheres of government; its separation of the legislature, judiciary and the executive arms of government; and its introduction of the requirement for cooperative governance.

There is further consensus that for an adaptive governance approach to succeed and be enabled you have to employ adaptive management approaches. Adaptive management approaches are essentially a "doing-learn by doing-doing again" approach which is based on the desire to constantly improve the management of a complex socio-ecological system by understanding the complex and changing variables that make up the complex system.

5.3.6 Given the aforementioned theoretical understanding of resilience and urban resilience and how they should preferably be governed and managed in order to be realised we can now conclude and propose an understanding for spatial resilience.

Using broad resilience theory and the theory of urban resilience, together with the SPLUMA description of spatial resilience, it is proposed that spatial resilience is seen as an important contributor and element of urban resilience and that it be interpreted or understood as the capacity of the South African spatial planning and land use management system (through its spatial policies, spatial plans, land use management systems and decision-making responsibilities) not only to live with changes, disturbances, adversities or disasters but also to adapt, innovate and transform, into new more desirable configurations dependent on the specific context.

As such, spatial resilience is in essence a way of thinking about how the spatial planning and land use management system and sector can deal with the broader societal change and contribute to achieving urban (and rural) resilience and thereby enable broader societal resilience. In this regard it must also be

noted that the position of this dissertation with respect to the relationship between resilience and sustainability is that sustainability is the overarching goal of all development and that resilience, in any of its guises, is an essential contributor to achieving the overarching goal of sustainability.

This proposed understanding of spatial resilience is seen as aligned with the SPLUMA description of spatial resilience as it speaks to building the adaptive capacity of the sector through its consideration of the important foundational aspects of being informed by risk and vulnerability, enhancing the capacity to learn, ensuring the emphasis on redundancy or the building of spare capacity, promoting diversity, obtaining the appropriate balance between self-sufficiency and connectedness, innovation and context specificity.

5.4 Recommendations proposed based on the Conclusions of the Study

5.4.1 The national Department of Rural Development and Land Reform, the lead national department for SPLUMA development and implementation should, in partnership with the provincial departments responsible for spatial planning and land use management, the South African Local Government Association (SALGA), the academia and the relevant representative professional associations and institutions:

- Initiate intra and inter-sectoral policy debate and strive for an improved understanding on the role and function of spatial planning and land use management within the South African broader governance system and specifically with regard to its role in integrated planning.
- Initiate national policy debate and reach consensus on the understanding and unpacking of all five development principles introduced by SPLUMA. With specific regard to the principle of spatial resilience and spatial sustainability it is important that in the debates the theoretical underpinnings of the principles are clarified and

explained so that the rational linkages with the international literature and understanding is made absolutely clear.

It is important that these debates strive to attain sectoral consensus on the theoretical understanding and interpretation of the development principles and how they could be practically implemented depending on the context. It is important that these policy debates initially specifically target the politicians, professionals and administrators working in the spatial planning and land use management sector. Once sectoral consensus, coherence and cohesion have been achieved with these stakeholders the sectoral understanding should be shared with the other related sectors and with the public.

- As soon as possible, in relation to the aforementioned, set up task teams to investigate and advise on how the development principles, including spatial resilience, can be operationalised within the various elements of the spatial planning and land use management system and as a result of this develop policy guideline documents, best practice documents and tools which will assist stakeholders to better understand and operationalise the development principles of SPLUMA.

- Develop a policy advocacy and capacity building programme that clarifies the understanding of the development principles in SPLUMA and how they should be employed in the spatial planning and land use management sector. This policy advocacy and capacity building programme should specifically be targeted towards the various interest groupings such as politicians, government officials, the private sector, and the general public.

- Related to the above, develop policy advocacy material that clarifies the understanding of the development principles in SPLUMA and how they should be employed in the spatial planning and land use management sector, and make these advocacy material readily available. In this regard the use of various communication media must be considered.

- Review the current curricula of academic programmes for the training of professional planners in order to ensure that it speaks to the needs and requirements of the new spatial planning and land use management regime.

- Create a spatial planning and land use management innovation and learning hub or colloquium or network where the various potential novel approaches to spatial planning and land use management can be discussed, encouraged, funded, experimented with, monitored and be reported on and which can be used as a platform from where best practice can be disseminated to the rest of the sector and continuously promote a culture of "doing-learn by doing-doing again" which stimulates innovation.

- Discuss, develop and institutionalise a framework for an appropriate spatial planning and land use management performance management system that will allow the sector to track the performance of its interventions and feedback into policy review processes.

- Related to the aforementioned, discuss, develop and institutionalise a framework for an appropriate data, information and intelligence management system that will allow access to relevant and appropriate data, information and intelligence that will enable better decision-making, better building of arguments and contribute to building a better informed and learning sector.

- Create a platform for partnership formation in terms of operationalising various aspects of SPLUMA.

- Discuss, develop and institutionalise a framework for a coordinated research agenda that is relevant to the sectoral needs and requirements and that encourages practitioner based research on matters that will add value to the sector and that encourages practicing professionals to participate in national and international sectoral and policy debates

through the publishing of experience, best practice and critical discourse.

5.4.2 The South African Council for Planners (SACPLAN) in partnership with the national Department of Rural Development and Land Reform, the provincial departments responsible for spatial planning and land use management, the South African Local Government Association (SALGA), the academia and the relevant professional associations, develop, concretise and implement an appropriate registration regime for professional planners which is linked to a proper continuous professional development programme as a matter of urgency given the important role that professional planners need to play in addressing the developmental challenges of South Africa.

5.4.3 As this study has shown that there is no clear consensus around the understanding of spatial resilience and that there is further potential non-alignment between the SPLUMA description of spatial resilience and the international literature on the broader concepts of resilience and urban resilience, the national Department of Rural Development and Land Reform should use the same debates referred to above to assess the need for potential legislative clarification and improvement. If such clarity is indeed necessary, this should be implemented via potential amendments to SPLUMA. These potential improvements need not only be for the principle of spatial resilience or the other four development principles but could be with regard to making improvements to any of the provisions of SPLUMA.

5.4.4 That the theoretical framework for understanding spatial resilience as summarised in 5.3 above and as discussed in Chapter 2 be critically engaged with by the sector.

5.4.5 That the professional planning associations and institutions accept their responsibilities in promoting and regulating the planning profession, promoting its best interest, encouraging discourse, critique and thinking, while holding their professional members accountable for their actions.

5.4.6 That individual planning professionals accept their professional responsibilities by ensuring that they keep up to date with the latest policy, sectoral trends and best practice in the planning profession and that they carry the torch of better settlements, better towns, better cities, better regions, in the best interest of the greater society and that they accept their responsibility in this regard to "speak truth to power" with the passion and commitment of the planning forefathers.

5.5 Possible areas of future research

In terms of potential further areas of research which come to mind subsequent to this research endeavour include:

5.5.1 That a similar or the same professional and practitioner based research survey on spatial resilience be conducted 12 – 18 months subsequent to this initial survey, to obtain and assess whether the opinions of the same study population has changed or not and to interrogate the associated reasons.

5.5.2 That we consider deploying of a similar professional and practitioner based research surveys to obtain the opinions and understanding of professional practitioners on all of the other SPLUMA development principles.

5.5.3 That we consider employing the professional and practitioner based survey that formed the basis of this research endeavour to obtain the opinions and understandings of professional practitioners in other provinces in South Africa in order to obtain their opinions and understandings so as to see if the results of this survey can indeed be generalised or not.

5.5.4 That we consider employing the professional and practitioner survey that formed the basis of this research endeavour and the other

professional practitioner based surveys referred to above to obtain the opinions and understandings of politicians who are intimately involved in the spatial planning and land use management milieu.

5.5.5 That the understanding and unpacking of some of the more complicated matters in SPLUMA that were listed as part of the recommendations, possibly be pursued using more contemporary, interactive and relevant research methodologies such as participatory action research.

5.5.6 That we explore the development of a potential rapid resilience assessment tool that could be deployed in local municipalities and other institutions in order to provide a "dip-stick" indication of their spatial resilience or urban resilience or overall resilience which could then be used to inform policy, strategy, programmes and projects.

5.5.7 That we assess the general progress with SPLUMA implementation of the development principles via professional and practitioner based methods 12 – 18 months after SPLUMA became operational.

5.5.8 That we consider performing an assessment of the provincial and metropolitan variation in the responses to the SPLUMA development principles.

5.5.9 That we assess the impact of the SPLUMA development principles 18 – 24 months after SPLUMA has come into force.

5.5.10 That we assess the opinions and understanding of municipal tribunal members on the SPLUMA development principles and the value that these development principles have brought to the spatial planning and land use management decision-making arena.

5.5.11 That we assess the use and impact of the SPLUMA development principles on actual land use management and land development decisions.

5.6 Rejoinder: Research Questions, Research Objectives and Relevance of Study

It seems appropriate at this point in time to revisit the contents of Chapter 1 of this dissertation in order to see whether the primary and secondary research questions have been answered and the broader research objectives have been achieved. In this regard, Table 4 sets out the manner in which this research endeavour has answered the primary and secondary research questions and Table 5 sets out how this research endeavour has realised the broader research objectives.

In general, based on the contents of Table 4 and 5, it is confirmed that the primary and secondary questions as set out in chapter 1 of this dissertation have been answered and that the broad research objectives of this research endeavour have been met.

Table 4: Indication of how the Primary and Secondary Questions of the research endeavour have been addressed

Research Questions	How the Research Questions have been addressed in this research endeavour
Primary Question	
What are the opinions of the professionals and practitioners currently active in the spatial planning and land use management and development planning sectors on the concept or principle of spatial resilience?	Questions 1 – 21 of the survey questionnaire.
Secondary Questions	
What are the opinions of the professionals and practitioners currently active in the spatial planning and land use management and development planning sector on the general understanding of the principle of spatial	Questions 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 of the survey questionnaire.

resilience?	
What are the opinions of the professionals and practitioners currently active in the spatial planning and land use management and development planning sector on how the principle of spatial resilience could be practically implemented?	Questions 5, 7, 8, 13, 15(b), 16(b) and 17 of the survey questionnaire.
What are the opinions of the professionals and practitioners currently active in the spatial planning and land use management and development planning sector on the potential merits for settlement functionality of adopting a spatial resilience approach?	Questions 1, 2, 5, 6, 8, 9, 10, 11, 12, 14, 15(a), 16(a), 17, 18, 19, 20 and 21 of the survey questionnaire.
What are the opinions of the professionals and practitioners currently active in the spatial planning and land use management and development planning sector on the readiness of the relevant institutions and important role-players for the implementation of the principle of spatial resilience?	Questions 5, 8, 9, 10, 12, 13, 15(a), 16(a), 18, 19, 20 and 21 of the survey questionnaire.

Table 5: Indication of how the Research Objectives of this research endeavour have been addressed

Research Objectives	**How the Research Objectives have been addressed in this research endeavour**
To contribute to the broader debate around how the development principles contained in SPLUMA should be interpreted and implemented and the role they should play in the new spatial planning and land use management system in South Africa.	Responses to the research survey questionnaire and the development of a theoretical framework for better understanding spatial resilience.
To contribute to the more specific debate around	Responses to the research survey

the concept or principle of spatial resilience, within the context created by SPLUMA.	questionnaire and the development of a theoretical framework for better understanding spatial resilience.
To contribute to the broader body of knowledge on spatial planning and land use management practice in South Africa.	Responses to the research survey questionnaire and the development of a theoretical framework for better understanding spatial resilience.
To contribute to the further policy debate on spatial planning and land use management from a practitioner's perspective.	Responses to the research survey questionnaire and the development of a theoretical framework for better understanding spatial resilience.
To emphasise the importance of practitioner based / focused research within the spatial planning and land use management sector.	Responses to the research survey questionnaire.

Significance and Relevance of the Study

It must be remembered that the results of this study are based on a cross-sectional survey approach. By its nature cross-sectional studies, "take the temperature" of the study population at a particular point in time. Given this, it must be remembered that the data collection for this study took place over the period August to November 2015. This is a significant period because it was immediately after the coming into force of SPLUMA on 1 July 2015. There is no doubt that this was a very sensitive and stressed period for most professionals working in the spatial planning and land use management sector, especially those in the employ of one of the three spheres of government, whose job was to ready their institutions for SPLUMA implementation.

As such, the results must be viewed in that particular context. This does not, however, detract, in any way, from the validity of the data collected. In fact, it probably makes

the data and the results that much more credible. Be that as it may, the results presented in this chapter, does not make good reading in terms of possible future successful implementation of the concept of spatial resilience, nor does it make good reading in terms of the future successful implementation of any of the other provisions of SPLUMA, from the perspective of the study population. However, as with the case for the broader concept of resilience, the impact of human foresight, human ingenuity, human intentionality, and the human ability to communicate ideas and to form partnerships and to coordinate actions along with the impact of technology, should not be under-estimated in its ability to avert crisis. This will obviously require, for spatial resilience and for general SPLUMA successful implementation, that the stakeholders in the spatial planning and land use management sector form the required partnerships, show the necessary leadership and innovation, have the required disposition to implementation and learning, in the best interest of the broader society.

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ANNEXURES

Annexure 1

Spatial Resilience Research

Brief introduction to the proposed research on Spatial Resilience

The South African spatial planning and land use management system pre-1994 was influenced over a long period of time by various factors that led to an extremely non-uniform and complicated system, characterised by amongst others, by being overtly control-oriented with a major emphasis on the separation of land uses, the ideology of separate development, forced removals and the exclusion of black people from urban areas.

Post-1994, with the dawn of the democratic era in South Africa, the new Constitution, Act 108 of 1996, laid down the foundation for a new policy, legislative and administrative regime in South Africa. It placed a specific emphasis on co-operative governance, the promotion of social and economic rights, public participation and accountability for decision-making, which all have a profound effect on how the new spatial planning and land use management system should be shaped. Furthermore, the Constitution, Act 108 of 1996, also re-organised the relationships and the legal framework within government, moving away from the hierarchical and vertical three tiers of government system to a more horizontal and interdependent three spheres of government system.

More importantly, the post-1994 era ushered in a shift in policy from a control orientation to a more normative orientation, within the spatial planning and land use management sector, with respect to all levels of policy and decision-making. This was first evidenced by the introduction of the Development Facilitation Act, Act 67 of 1995. This is important because it signified that future spatial planning and land use management policy and legislation would need to embrace substantive principles or norms that would essentially guide land use, land development and decision-making related to this. This shift to a more normative approach within the spatial planning and land use management system creates the requirement for the political decision-makers to, informed by the principles and norms, set up spatial plans or policy plans, mainly through the integrated development plan and the spatial development framework/s, which should contain their political objectives and targets for the development of an area, based on the spatial and development imperatives of the area. This should then be responded to by the relevant decision-makers. As such, the normative approach creates the imperative for politicians to translate the development principles into contextually-specific proposals for an area subsequent to the necessary engagements with the public and introduces the separation of decision-making. Decisions on policies and plans are to be taken by politicians, while first instance decision-making with regard to actual land use and land development applications must be taken by technical experts, but be informed by the policies and plans approved by politicians. Land use management and land development management must therefore be seen as a function that must be performed within the context of politically approved policies and plans. Given the aforementioned, the importance of principles and norms, and a broad understanding of what they are and mean, should be apparent.

On the 2 August 2013, President Jacob Zuma assented to the Spatial Planning and Land Use Management Act, Act 16 of 2013 (SPLUMA). SPLUMA embraces and introduces this more normative approach to spatial planning and land use management.

Importantly, Chapter 2 of SPLUMA specifically sets out the general development principles which apply to all organs of state and other authorities responsible for the implementation of legislation regulating the use and development of land. Chapter 2 therefore lays down the foundation for the policy shift from a control orientation to a more normative approach with regard to spatial planning and land use management.

According to SPLUMA the specific function of the general development principles are to guide the preparation, adoption and implementation of any spatial development framework, policy or by-law concerning spatial planning and the development or use of land; the compilation, implementation and administration of any land use scheme (zoning scheme) or other regulatory mechanism for the management of the use of land; the sustainable use and development of land; the consideration by a competent authority of any application that impacts or may impact upon the use and development of land; the performance of any function in terms of SPLUMA or any other law regulating spatial planning and land use management.

SPLUMA further states that the principles contained in Chapter 2 apply to all aspects of spatial development planning, land development and land use management, and land use management, and specifically that the spatial development frameworks must give effect to the principles. Chapter 2 of SPLUMA lists the five development principles referred to above as the principle of spatial justice; the principle of spatial sustainability; the principle of efficiency; the principle of spatial resilience; the principle of good administration. Most of these development principles are relatively well understood, as they emanate directly from the intentions of our Constitution, Act 108 of 1996, and have featured in other South African legislation, post 1994.

The one principle that does raise some discussion, especially within the spatial planning and land use management community within South Africa, is the principle of spatial resilience. Spatial Resilience, to a large extent appears to be less well understood. SPLUMA does provide a description of what it conceives spatial resilience to be. It states that spatial resilience refers to the accommodation of flexibility in spatial plans, policies and land use management systems in order to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks. Although much academic literature exists on the topics of spatial planning and the broader concept of resilience or urban resilience, as mentioned before, very little has been written about spatial resilience in the context of spatial planning. The question that therefore beckons is "What is Spatial Resilience?" and how do we, in the context of the SPLUMA definition of spatial resilience, make spatial plans, spatial policies and land use management systems more flexible so as to ensure the sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks.

Given the lack of academic literature on spatial resilience in the context of spatial planning and land use management, and, as it is a relatively new concept in the South African policy and

legislative vocabulary, it is considered prudent to investigate it further by initiating the debate on spatial resilience and trying to establish a common understanding of spatial resilience and by unpacking what it would practically translate into within the broader South African context. Context is especially important because both spatial planning and urban resilience are two very context specific areas of focus, with the context determining the realistically achievable societal vision, in relation to the status quo, and, therefore, indicating what the transition should be. The same, I would suggest, applies to the principle of spatial resilience.

With the above in mind, it would be useful to gain the insight from the professionals practicing in the spatial planning and land use management milieu or those professionals or administrators or decision-makers, who through their day-to-day work impact significantly on the spatial planning and land use management of settlements, on the topic of spatial resilience, and through this, to provide some improved understanding and practical recommendations as to how the principle of spatial resilience should guide spatial planning and land use management and how, specifically, spatial development frameworks and land use management systems should give effect to spatial resilience.

Given this, you are requested to, as frankly as possible, reflect on and respond to the following questions and in so doing contribute to the improved understanding of the imperatives of SPLUMA.

Research Ethics Statement – Anthony (Tony) Barnes

Beneficence

As primary researcher I, Anthony (Tony) Barnes, will strive to ensure that my work will make a positive contribution to the welfare of those affected by it.

Non-maleficence

As the primary researcher I, Anthony (Tony) Barnes, will ensure that the proposed research endeavour to be undertaken does not cause harm to any sectors of society and, in particular, to participants.

Justice

As the primary researcher I, Anthony (Tony) Barnes, will endeavour to ensure that the benefits and risks associated with the proposed research endeavour is well assessed in advance and will be equitably distributed throughout society.

Autonomy of subjects

Where applicable, I, Anthony (Tony) Barnes, will ensure that the proposed research endeavour respects and protects the rights and dignity of participants.

Research involving primary data collection

Certain aspects of the proposed research endeavour may involve primary data collection, in the form of interview surveys. As the primary researcher I, Anthony (Tony) Barnes, will ensure full compliance with all legal requirements regarding the collection, storage, handling, processing and analysis of data.

Veracity

As the primary researcher I, Anthony (Tony) Barnes, will ensure that participants in the proposed research endeavour will be given full and accurate information in regard to issues such as the background, nature, purpose, funders and outputs of the research.

Informed Consent

As the primary researcher I, Anthony (Tony) Barnes, will ensure that participants in this proposed research endeavour are given sufficient details on the proposed research so to allow them to make an informed decision to participate or otherwise in a research study.

Protection of Vulnerable Groups

As the primary researcher I, Anthony (Tony) Barnes, am fully aware of my obligations to safeguard the interests of vulnerable or potentially 'at risk' groups who may be involved in this proposed research endeavour.

Privacy

As the primary researcher I, Anthony (Tony) Barnes, will ensure that participants involved in the proposed research endeavour have the right not only to agree to participate in the research but also to decide on which information to provide as part of the research and to withdraw from the research endeavour at any time.

Confidentiality

As the primary researcher I, Anthony (Tony) Barnes will ensure that the information provided by participants is treated as confidential and used for research purposes only.

Minimising Risk

As the primary researcher I, Anthony (Tony) Barnes will ensure that the participants in the proposed research endeavour will not be put under undue or unnecessary risk as a result of their participation.

Research Outputs

As the primary researcher I, Anthony (Tony) Barnes, am committed to putting the results of this proposed research endeavour into the public domain with a view to transparency, scrutiny and peer review.

Breaches of Procedures

Breaches of the Ethical Principles set out in this document will be investigated following the University of the Free State's procedure for investigating allegations of research misconduct and may be subject to disciplinary procedures.

Details of Participant and Consent to Participate in the Research on Spatial Resilience

Name:

Surname:

Title:

Highest Academic Qualification achieved:

Profession:

Professional Registration (if applicable):

Current Employer:

Current Job Title:

Other Leadership positions of note (if applicable):

E-mail contact details:

Telephone contact details:

Are you willing to participate in this research endeavour? Yes / No

If you are willing to participate in this research endeavour, do you wish to remain anonymous in terms of the final report? Yes / No

Please note that should you answer "No" to the previous question, your contribution to the study will be acknowledged in the final report.

If you are willing to participate in this research endeavour, you are then requested to sign this consent form and complete the attached questionnaire electronically using the MS Word version of the questionnaire provided. Once you have completed the questionnaire and signed the consent form, you are requested to e-mail it back to the primary researcher, Anthony (Tony) Barnes, at anthony.barnes@westerncape.gov.za.

Please feel free to contact the researcher, Anthony (Tony) Barnes at (021) 483 4093/4 or 082 776 1960 should you have any questions of clarification. The study supervisor, Professor Verna Nel, can also be contacted telephonically at 051 409 2499 or via e-mail at nelvj@ufs.ac.za / vernanel@gmail.com.

Signature:

(You are most welcome to use your electronic signature)

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YUNIVESITHI YA
FREISTATA

Research Questionnaire on Spatial Resilience

August / September 2015

Primary Researcher: Anthony (Tony) Barnes

Research Supervisor: Professor Verna Nel

School of Urban and Regional Planning

University of the Free State

SPATIAL RESILIENCE AS A CONCEPT

1. What is your understanding of the principle / concept of "spatial resilience"?

2. What is your understanding of the principle of "spatial resilience" as presented in SPLUMA

3. Do you agree with the SPLUMA description/definition of spatial resilience?
   Yes / No

Any comments?

4. What, in your opinion, is the difference between the principle of spatial resilience and the principle of spatial sustainability, if any?

5. What, in your experienced professional opinion, makes a settlement (and communities) spatially resilient?

6. Are South African settlements spatially resilient?

Yes / No

Any comments?

7. What indicator/s or performance measure do you suggest should / could be used to evaluate our efforts in realising spatial resilience within settlements, towns and cities in South Africa?

8. What in your personal and professional opinion are the major impediments to realising the principle of spatial resilience within settlements, towns and cities in South Africa?

9. In your experienced and professional opinion, is spatial resilience a concept that is generally understood within the South African context?
   Yes / No

Any comments?

10. Is spatial resilience a concept generally understood within the South African spatial planning and land use management and development planning sector?

Yes / No

Any comments?

THE APPLICATION OF SPATIAL RESILIENCE

11. If South Africa adopts a spatial resilience approach, as described in SPLUMA, do you think it could have a significant positive impact on the functionality of contemporary South African settlements, towns and cities?
    Yes / No

Any comments?

12. In your experienced professional opinion, is the institutionalising of the principle of spatial resilience an imperative in South African settlements given all our other societal challenges?
    Yes / No

Any comments?

13. To what extent is the aim of spatial resilience implicit in South African spatial planning and land use management and development planning, albeit under a different guise?

14. Is the concept of spatial resilience something that informs your personal and/or professional opinion and practice on a day-to-day basis?
Yes / No

Any comments?

15. a) To what extent is spatial resilience incorporated within current spatial planning goals, policies and instruments?

b) What would you do or recommend be done to improve South African spatial policies in order to make them more flexible, given the need to give effect to the principle of spatial resilience as described by SPLUMA? This includes municipal spatial development frameworks.

16. a) To what extent is spatial resilience incorporated into current land use management tools such as land use schemes / zoning schemes.

b) What would you do or recommend be done to improve municipal land use management systems in order to make them more flexible, given the need to give effect to the principle of spatial resilience, as described by SPLUMA?

17. What would you do or recommend be done in terms of other non-spatial South African policies in order to enable the principle of spatial resilience, as described by SPLUMA, to become entrenched in settlement planning and functioning?

18. If one looks at the description of spatial resilience in terms of SPLUMA, and one accepts that that the municipal sphere of government is at the heart of all delivery, then, to what extent do local municipalities have control over measures that may influence spatial resilience?

19. Based on your experience, do you think the three spheres of government in South Africa have the institutional ability, skill and the will to implement a spatial resilience approach, as described by SPLUMA?
    Yes / No

20. Do you think that Professional Planners in South Africa have the necessary knowledge, skill, expertise and will to implement a spatial resilience approach, as described by SPLUMA?
    Yes / No

21. Do you think that politicians in South Africa have the necessary political appetite and knowledge, skill, expertise and understanding to persevere with the implementation of a spatial resilience approach, as described in SPLUMA, given their aggressive transformative agenda?
    Yes / No

THANK YOU VERY MUCH FOR YOUR TIME AND EFFORT, IT IS SINCERELY APPRECIATED.

ANNEXURE 2

The Summarised Responses Results of the Closed Questions for the twenty-one (21) Provincial Government sector study participants

	Yes	No	Yes & No or No Response or Does Not Know	Total
Question 3	12 (57.1%)	6 (28.6%)	3 (14.3%)	21
Question 6	3 (14.3%)	16 (76.2%)	2 (9.5%)	21
Question 9	1 (4.8%)	19 (90.4%)	1 (4.8%)	21
Question 10	4 (19.1%)	15 (71.4)	2 (9.5%)	21
Question 11	14 (66.7%)	5 (23.8%)	2 (9.5%)	21
Question 12	17 (80.9%)	3 (14.3%)	1 (4.8%)	21
Question 14	17 (80.9%)	3 (14.3%)	1 (4.8%)	21
Question 19	7 (33.3%)	11 (52.4%)	3 (14.3%)	21
Question 20	11 (52.4%)	8 (38.1%)	2 (9.5%)	21
Question 21	6 (28.6%)	13 (61.9%)	2 (9.5%)	21

ANNEXURE 3

The Summarised Responses Results of the Closed Questions for the fourteen (14) Provincial Government sector study participants employed by the Department of Environmental Affairs and Development Planning (DEA&DP), who are the Western Cape Government's lead Department for spatial planning and land use management and development planning

	Yes	No	Yes & No or No Response or Does Not Know	Total
Question 3	8 (57.1%)	5 (35.8%)	1 (7.1%)	14
Question 6	3 (21.4%)	9 (64.3%)	2 (14.3%)	14
Question 9	1 (7.1%)	12 (85.7%)	1 (7.1%)	14
Question 10	2 (14.3%)	11 (78.6%)	1 (7.1%)	14
Question 11	9 (64.3%)	4 (29.1%)	1 (7.1%)	14
Question 12	11 (78.6%)	3 (21.4%)	0 (0%)	14
Question 14	11 (78.6%)	2 (14.3%)	1 (7.1%)	14
Question 19	7 (50%)	5 (35.8%)	2 (14.3%)	14
Question 20	9 (64.3%)	3 (21.4%)	2 (14.3%)	14
Question 21	5 (35.7%)	7 (50%)	2 (14.3%)	14

ANNEXURE 4

The Summarised Responses Results of the Closed Questions for the seven (7) Provincial Government sector study participants not employed by the Department of Environmental Affairs and Development Planning

	Yes	No	Yes & No or No Response or Does Not Know	Total
Question 3	4 (57.1%)	1 (14.3%)	2 (28.6%)	7
Question 6	0 (0%)	7 (100%)	0 (0%)	7
Question 9	0 (0%)	7 (100%)	0 (0%)	7
Question 10	2 (28.6%)	4 (57.1%)	1 (14.3%)	7
Question 11	5 (71.4%)	1 (14.3%)	1 (14.3%)	7
Question 12	6 (85.7%)	0 (0%)	1 (14.3%)	7
Question 14	6 (85.7%)	1 (14.3%)	0 (0%)	7
Question 19	0 (0%)	6 (85.7%)	1 (14.3%)	7
Question 20	2 (28.6%)	5 (71.4%)	0 (0%)	7
Question 21	1 (14.3%)	6 (85.7%)	0 (0%)	7

ANNEXURE 5

The Summarised Responses Results of the Closed Questions for the four (4) National Government sector study participants

	Yes	No	Yes & No or No Response or Does Not Know	Total
Question 3	2 (50%)	1 (25%)	1 (25%)	4
Question 6	0 (0%)	4 (100%)	0 (0%)	4
Question 9	0 (0%)	4 (100%)	0 (0%)	4
Question 10	0 (0%)	3 (75%)	1 (25%)	4
Question 11	3 (75%)	1 (25%)	0 (0%)	4
Question 12	1 (25%)	2 (50%)	1 (25%)	4
Question 14	3 (75%)	0 (0%)	1 (25%)	4
Question 19	2 (50%)	2 (50%)	0 (0%)	4
Question 20	2 (50%)	2 (50%)	0 (0%)	4
Question 21	2 (50%)	2 (50%)	0 (0%)	4

ANNEXURE 6

The Summarised Responses Results of the Closed Questions for the sixteen (16) Local Government sector study participants

	Yes	No	Yes & No or No Response or Does Not Know	Total
Question 3	9 (56.25%)	7 (43.75)	0 (0%)	16
Question 6	3 (18.75%)	8 (50%)	5 (31.25%)	16
Question 9	2 (12.5%)	14 (87.5%)	0 (0%)	16
Question 10	3 (18.75%)	13 (81.25%)	0 (0%)	16
Question 11	11 (68.75%)	5 (31.25%)	0 (0%)	16
Question 12	11 (68.75%)	5 (31.25%)	0 (0%)	16
Question 14	7 (43.75%)	7 (43.75)	2 (12.5%)	16
Question 19	4 (25%)	10 (62.5%)	2 (12.5%)	16
Question 20	8 (50%)	6 (37.5%)	2 (12.5%)	16
Question 21	3 (18.75%)	10 (62.5%)	3 (18.75%)	16

ANNEXURE 7

The Summarised Responses Results of the Closed Questions for the nine (9) Private and Academic sector study participants

	Yes	No	Yes & No or No Response or Does Not Know	Total
Question 3	4 (44.4%)	5 (55.6%)	0 (0%)	9
Question 6	0 (0%)	9 (100%)	0 (0%)	9
Question 9	0 (0%)	9 (100%)	0 (0%)	9
Question 10	0 (0%)	8 (88.9%)	1 (11.1%)	9
Question 11	6 (66.7%)	2 (22.2%)	1 (11.1%)	9
Question 12	4 (44.4%)	5 (55.6%)	0 (0%)	9
Question 14	5 (55.6%)	2 (22.2%)	2 (22.2%)	9
Question 19	1 (11.1%)	6 (66.7%)	2 (22.2%)	9
Question 20	1 (11.1%)	7 (77.8%)	1 (11.1%)	9
Question 21	0 (0%)	8 (88.9%)	1 (11.1%)	9

ANNEXURE 8

The Summarised Responses Results of the Closed Questions for the forty (40) professional planner study participants

	Yes	No	Yes & No or No Response or Does Not Know	Total
Question 3	20 (50%)	17 (42.5%)	3 (7.5%)	40
Question 6	5 (12.5%)	28 (70%)	7 (17.5%)	40
Question 9	3 (7.5%)	36 (90%)	1 (2.5%)	40
Question 10	5 (12.5%)	34 (85%)	1 (2.5%)	40
Question 11	24 (60%)	13 (32.5%)	3 (7.5%)	40
Question 12	24 (60%)	15 (37.5%)	1 (2.5%)	40
Question 14	25 (62.5%)	11 (27.5%)	4 (10%)	40
Question 19	14 (35%)	22 (55%)	4 (10%)	40
Question 20	20 (50%)	17 (42.5%)	3 (7.5%)	40
Question 21	10 (25%)	25 (62.5%)	5 (12.5%)	40

ANNEXURE 9

The Summarised Responses Results of the Closed Questions for the ten (10) non-professional planner study participants

	Yes	No	Yes & No or No Response or Does Not Know	Total
Question 3	7 (70%)	2 (20%)	1 (10%)	10
Question 6	1 (10%)	9 (90%)	0 (0%)	10
Question 9	0 (0%)	10 (100%)	0 (0%)	10
Question 10	2 (20%)	5 (50%)	3 (30%)	10
Question 11	10 (100%)	0 (0%)	0 (0%)	10
Question 12	9 (90%)	0 (0%)	1 (10%)	10
Question 14	7 (70%)	1 (10%)	2 (20%)	10
Question 19	0 (0%)	7 (70%)	3 (30%)	10
Question 20	2 (20%)	6 (60%)	2 (20%)	10
Question 21	1 (10%)	8 (80%)	1 (10%)	10