PROPOSED SPATIAL DEVELOPMENT FRAMEWORK AND PRECINCT FRAMEWORK FOR GEORGE, WESTERN CAPE

Guillaume Jean- Robert Narainne

Dissertation presented in partial fulfilment of the degree of
Masters of City and Regional Planning
In the school of Architecture, Planning and Geomatics
University of Cape Town

26th October 2015

DECLARATION OF FREE LICENCE

“ I Guillaume Jean- Robert Narainne, hereby:

(a) grant the University free license to reproduce the above thesis in whole or in part, for the purpose of research;

(b) declare that:

(i) the above thesis is my own unaided work, both in conception and execution, and that apart from the normal guidance of my supervisor, I have received no assistance apart from that stated below;

(ii) except as stated below, neither the substance or any part of the thesis has been submitted in the past, or is being, or is to be submitted for a degree in the University or any other University.

(iii) I am now presenting the thesis for examination the thesis for examination for the Degree of Master of City and Regional Planning.”

Guillaume Jean- Robert Narainne

ACKNOWLEDGEMENTS

I hereby express my sincere gratitude to the following people who assisted me throughout this dissertation:

- Professor David Dewar

I would like to thank my research supervisor, David Dewar, for his assistance, guidance, inspiration and theoretical knowledge surrounding various planning issues and design principles.

- Stefan de Kock

for his enduring support and encouragement throughout this dissertation

- MCRP students

I would like to thank my fellow MCRP students for their camaraderie and support throughout the course of the MCRP programme. I wish them success in their future planning careers.

- My Family

I hereby extend my sincere gratitude towards my family for their support.

ABSTRACT

The South African city is facing overarching issues which include skewed and dysfunctional urban forms, rapid urbanization and population growth resulting in ever increasing poverty, inequality and unemployment. The spatial configuration and socio-economic concerns were triggered by the 'historical development trajectory' during the Apartheid Era alongside with infective urban management policies and practices during the post-Apartheid period. These innumerable patterns of spatial segregation have created important structural ineptitudes which contribute to the aforementioned socio-economic challenges. According to Stats SA (2011) more than 60% of South Africans live in urban regions. Thus, the consequences of urbanisation and a high fertility rate are bringing new challenges to the urban management in South African's settlements.

There are two main implications deriving from these identified demographic dynamics. Firstly, the patterns of urban growth which accompany rapid urbanisation. The legacy of the Apartheid Planning Model together with the rising demand for housing and social service infrastructure has resulted in an urban system characterised by low density urban sprawl, a fragmented coarse-grain urban fabric, the separation of various social groups (racial and income) and dysfunctional urban land-uses. Secondly, the social consequences resulted from expanding growing level of poverty, imbalanced development, unemployment and informality levels within human settlements.

In response to the fore-mentioned issues, this report argues a Spatial Development Framework and precinct design for the town of George. The SDF and precinct designare believed to create a restructuring process for a balanced approach towards development and economic growth. From a spatial perspective, the SDF aims to achieve this vision through the creation of a sustainable and equitable town.

Table of Contents

ABSTRACT		4
LIST OF FIGURES		8
1	INTRODUCTION	12
1.1 PURPOSE OF THE REPORT		12
1.2	METHOD	13
1.3	LOCAL CONTEXT- STUDY AREA	13
1.4	DESIGN PROCESS AND DEVELOPMENT OUTCOMES	13
2	URBAN CHALLENGES	16
2.1	URBAN CHALLENGES IN THE GLOBAL CONTEXT	16
2.1.1	POPULATION GROWTH AND URBANISATION	16
2.1.2	GLOBALISATION	16
2.1.2.1	CASE STUDY: BILBAO, SPAIN	17
2.1.3	SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT	17
2.1.4	CLIMATE CHANGE	18
2.1.5	FOOD SECURITY	19
2.1.6	CONCLUSION	19
2.2	URBAN CHALLENGES IN THE SOUTH AFRICAN CONTEXT	20
2.2.1	APARTHEID AND SEPARATE DEVELOPMENT IN SOUTH AFRICA	20
2.2.2	THE INFLUENCE OF MODERNISM	22
2.2.3	SPATIAL CONSEQUENCE PRESENT TODAY	23
2.2.4	TOWARDS HIGHER DENSITY	23
3	A WAY FORWARD	25
3.1	URBAN GROWTH MANAGEMENT	25
3.2	CORRIDOR DEVELOPMENT	25
4	VALUE BASED PERFORMANCE QUALITIES	27
4.1	BALANCE	27
4.2	EFFICIENCY	27
4.3	CHOICE	27
4.5	INTEGRATION	28
5	STATUTORY PLANNING FRAMEWORK	28
5.1	SPLUMA (THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT)	28
5.2	LUPA (LAND USE PLANNING ACT) AND LUPA REGULATIONS	29
5.3	GEORGE MUNICIPALITY LAND USE PLANNING BYLAW	29
5.4	RELEVANT PLANNING POLICY AND GUIDELINES	29
6	TOWN SCALE FRAMEWORK	31
6.1	INTRODUCTION TO CONTEXT	31
6.2	LOCATION OF THE STUDY AREA	33

6.3 LOCATING THE PROBLEM: SPATIAL FRAGMENTATION IN GEORGE 33
6.4 ECONOMIC CHANGE 34
6.5 SPATIAL SEGREGATION 34
6.6 URBAN DECAY AND HOUSING: A 'BED' OF CAPITALIST OPPORTUNITIES 35
6.7 BASIC HISTORIC BACKGROUND 35
7 ANALYSIS OF STUDY AREA AND ENVIRONS 40
7.1 BIO-PHYSICAL ANALYSIS 40
7.1.1 GEOLOGY AND SOILS 40
7.1.2 TOPOGRAPHY 40
7.1.3 CLIMATE 40
7.1.4 HYDROLOGY 40
7.1.5 BIODIVERSITY CONSTRAINTS 41
7.1.6 CLIMATE CHANGE 42
7.2 MOVEMENT ANALYSIS 43
7.2.1 RAIL 43
7.2.3 VEHICULAR MOVEMENT 44
7.2.4 PUBLIC TRANSPORTATION 44
7.2.3 DEMOGRAPHICS 45
8.4 WELFARE AND SOCIAL INFRASTRUCTURE 46
7.4.1 INCOME 46
7.4.3 POVERTY 47
7.4.4 EDUCATION 48
7.4.5 HEALTHCARE 48
7.4.5 EMPLOYMENT 49
7.4.6 SAFETY 49
7.5.2 SERVICE INFRASTRUCTURE 50
7.5.3 HOUSING 50
7.5.4 ECONOMY 51
7.5.5 EXCHANGE 51
8 DESIGN INFORMANTS AND CONCEPTS 53
8.1 THE IDEA OF PLACE 53
8.2 SPATIAL OPPORTUNITIES AND CONSTRAINTS 53
8.2.1 SPATIAL OPPORTUNITIES 53
8.3 CONSTRAINTS 54
8.4 SPATIAL DESIGN INFORMANTS 55
9 GEORGE SPATIAL DEVELOPMENT FRAMEWORK 55
9.1 PURPOSE OF THE PROPOSED GEORGE SDF 55
9.2 CONCEPT 59
9.3 THE SDF UNPACKED 59

9.4	THE CONCEPTUAL GRID	59
9.5	CONSERVATION OF BIODIVERSITY SYSTEM AS RESTRUCTURING ELEMENTS	59
9.5.1	URBAN FARMING: TYPOLOGY	60
9.5.2	OBJECTIVES	64
9.5.3	STRATEGIES	64
9.6	DEVELOPMENT OF PUBLIC SPACE SYSTEMS	65
9.7	PROGRAMMING OF THE SITE	67
9.8	ACTIVITY CORRIDOR	68
9.9	TRANSPORT AND ACCESS	72
9.11	OPEN SPACES AND SPORTS	72
10.11	URBAN SQUARES	72
10.12	COMMUNITY DEVELOPMENT	74
10.13	HEIGHT BULK AND MASSING	74
10.14	LAND USE INDICATIONS	74
10.15	HOUSING TYPOLOGY	74
10	DETAILED PRECINCT DESIGN	80
10.1	PURPOSE	80
10.2	VISION	80
10.3	LOCATION OF THE PRECINCT	80
10.4	STRUCTURING ELEMENTS	82
10.5	DESIGN PRINCIPLES	82
l10.6	INDICATIVE LAND- USE	82
11	IMPLEMENTATION	82
11.1	SHORT- TERM INTERVENTION	82
12.2	MEDIUM AND LONG TERM INTERVENTION	83
12.3	KEY PROJECTS 1: (TO BE IMPLEMENTED IN THE NEXT 5 YEARS)	83
12.4	KEY PROJECTS 2	83
13	CONCLUSION	84
14	REFERENCES	85

LIST OF FIGURES

Figure 1:Panoramic view of George in its broader context. Source: George Museum Photo Archives, 2005)

Figure 2: Diagram depicting spatial segregation in George. Source: drawing by author (2015)

Figure 3: Diagram depicting corridor growth (adapted from Dewar & Louw (2004) 24

Figure 4: Diagram depicting space bridges and space integrators(adapted from Dewar & Louw (2004)

Figure 5: Diagram depicting corridor growth inn the case of George. Source: drawing by author(2015)

Figure 6:Sketch of the study area , showing the different settlements which spatially make up the town. Source: Drawing by author (2015).

Figure 7: Location of the study area in relation to Cape Town. Source: Adapted from Google Earth (2013)

Figure 8:Outeniqua Mountain in the background. Image taken at George Botanical Garden. Source: Author (2014).

Figure 9: Future Spatial Development Pattern for George and Environs map. Source: Department of Constitutional Development and Planning (1982).

Figure 10: Earliest layout for George Town as compiled by surveyor JH Voorman in ±1811. Source: George Museum Archives.

Figure 11: Drawing adapted from early map of George (1800-1900). The drawing depicts early settlement of the study area and its relaion to the riverine context. Source: Geroge Museum Photo Archives (2015)

Figure 12: Diagram depicting the relationship of George's fragmented settlement to its movement systems. Source: Drawn by author (2015)

Figure 13: Hydrology Map. Source: Adapted from GIS

Figure 14:Protection biodiveristy areas map

Figure 15:Systems of movement. Source: Drawn by author (2015)

Figure 16:New Go George bus typologies, ranging from Mini Buses to standard ones. Source: Go George (2015)

Figure 17:George's Existing system of roads. Source: GSDF (2013).

Figure 18:Map showing the current GO George transport routes. Source: Go George

(2015)

Figure 19: Social infrastructure mapping throughout study area (Source: DELplan,2014)

Figure 20:Municipalities percentage contribution to real GDPR growth and size of the region (Source: Western Cape Government Provincial Treasury (2014).

Figure 21:Opportunities Map. Source: Adapted from GIS (2015)

Figure 22:Constraints Map. Source: Adapted from GIS (2013) drawn by author (2015)

Figure 23:Conceptual diagram of the proposed SDF

Figure 24:Area within the precinct where back yard gardening could be implemented (Source: drawing by author)

Figure 25:Example of typology of Urban Orchards (Source: drawing by author).

Figure 26:Illustrative Biodiversity map. Source: drawing by author).

Figure 29:The spatial structure of settlement planning in George. Source: Drawn by author (2015)

Figure 27:Urban Block dimensions. Source: Dewar & Louw, 2008)

Figure 28:Elements of Public Spaces. Source: Drawn by author (2015)

Figure 30:Hierarchy of Institution map. Source: drawn by author (2015)

Figure 31: Indications of Hierarchy of settlements

Figure 32:Identification of activity corridor

Figure 33:Identification of movement hierarchy. Source: Drawn by author (2015)

Figure 34:Identification of public transport system map. Source: drawn by author (2015)

Figure 35:Identification of movement of pedestrians. Source: drawn by author (2015)

Figure 37:Typology (Source: Author) and Precedent (Source: studiomk.co.uk)

Figure 36:Figure 3: Residential Typology Precedent (Source: www.rackheatheco-community)

Figure 38:Identification of educational institution map. Source: Drawn by author (2015)

Figure 39:Identification of sports institution map. Source: Drawn by author (2015)

Figure 40:Identification of Land use Source: Drawn by author (2015)

Figure 41:Identification of Proposed Height Density Source: Drawn by author (2015)

Figure 42:Precinct area within the development proposal. Source: drawn by author (2015)

Figure 43:Proposed Precinct Framework. Source: drawn by author (2015)

CHAPTER

01

1 INTRODUCTION

1.1 PURPOSE OF THE REPORT

The inheritance of apartheid- led planning policies has shaped the urban and rural landscape in South Africa for the past 20 years (Bernstein,1991). The George Spatial Development Framework (GSDF) (2013) and the Western Cape Provincial Spatial Development Framework (WCPSDF) (2012) have argued for the annulment of the fragmented and imbalanced urban structure found in the local and provincial level. The GSDF, WC PSDF and other supporting documents include broad planning-related policies aimed at realigning the spatial planning vision at provincial and local level. Also the documents include restructuring strategies such as intensification, balanced development, equity equality and social justice. However, the restructuring strategies aiming to achieve spatial integration and social justice appear to be lacking in the town of George; also referred to in this report as the 'Study Area'. Therefore the need for a spatial planning document, focussing on achieving spatial integration and real urban transformation remains indisputable. Urban restructuring and integration in George aspire to achieve human settlements which perform well for all residents, by creating a sustainable and liveable environment, as defined in the Western Cape Provincial Settlement Restructuring Manual (2009).

The overarching aim of this report is to explore how a re-imagined spatial development framework for the town of George might begin to address identified issues of socio- economic inequalities, spatial fragmentation, building decay, business flight and crime and grime. Similarly the brief argues for the utilisation of under- utilised land which surround George's urban core, and potential strategic mix- use infill development within the George Central Business District (CBD).

Figure 1:Panoramic view of George in its broader context. Source: George Museum Photo Archives, 2005)

1.2 METHOD

The proposed GSDF and precinct framework is a step to contest spatial fragmentation and imbalanced development. Prior to formulating design proposals, a series of analyses were launched at various scales, within the municipal area to holistically understand the region, the functionality and the role of the town of George in its regional and local context. Most importantly the analysis and design phases are intended to inform one another. The analytical process is undertaken as follows:

- Town context - Study Area;
- Precinct level.

The framework's concept at the regional and local area scales identifies "the minimum necessary strong actions required to give overall direction. These decisions, in turn, represent fixes which are passed onto successively smaller scales" (Dewar and Louw,forthcoming:17). Similarly, the report recognises that the local study area is just one element of a much larger framework.

1.3 LOCAL CONTEXT- STUDY AREA

This section analyses the urban core of the Study Area and its surroundings. Prior to the formulation of any proposals, the limitations of the Study Area need to be considered and set out. For this reason, the analysis includes: a historical background of the Study area, the bio- physical aspect, movement systems, settlement patterns and facilities. This section is spatially compiled using Geographical Information Systems (GIS) and other relevant maps and documents. Finally, this section will conclude with opportunities and constraints that will inform the design of the GSDF.

1.4 DESIGN PROCESS AND DEVELOPMENT OUTCOMES

Firstly, in order to achieve any new development and intervention in the town George, the latter has to be part of a restructuring strategy which includes the densification thereof, social integration and the introduction of mixed land uses. To achieve this outcome, a spatial desired form will be accomplished in the form of the GSDF. Furthermore the GSDF will guide the decisions of the municipalities relating to the use, development and planning of land. In addition the GSDF will facilitate viable development options that can accommodate incremental change over time, decide on where and how public funds are invested in the study area such as the extension of bulk service networks or provision of community facilities. Furthermore, the GSDF will guide developers and investors to find appropriate locations and forms of development, analyse the opportunities and constraints concerning heritage, economy, agriculture, environment, infrastructure, tourism and social development.

The second component of this phase will establish a precinct framework where an overall series of goals will be established. These goals are:

- Creating a safe and secure environment,
- Improving accessibility,
- Creating an active precinct,
- Establishing a coherent development framework for the area,
- Establishing a focused special purpose vehicle to drive the development and land release process.

The approach in preparing the GSDF and precinct framework is termed as 'package of plan approach' which informs that the development of a large parcel(s) of land takes place over some

time and within a broader urban context (Steenkamp and Winkler,2014). This process will allow for flexibility to deal with changing circumstances over the period of development. At the same time the process will provide for a degree of predictability for both George Municipality and the public (including investors, developers and land owners). The precinct plan will help to create a branding for the town of George, thus distinguishing the area to other districts.

CHAPTER
02

2 URBAN CHALLENGES

2.1 URBAN CHALLENGES IN THE GLOBAL CONTEXT

The motive of this chapter is to establish a sequence of global trends, to which all spatial planning schemes have to take into consideration. The 21st century marks an era of global change and uncertainty in terms of social, environmental, and economic. Thus, this chapter will explore the trends of rapid urbanisation, its consequences on the urban poor as well as on the earth's natural resources, food security and economic restructuring.

2.1.1 POPULATION GROWTH AND URBANISATION

Urbanisation is a combination of interdependent methods and their associated patterns which are "physical concentration of population" (Prinsloo,2014:4) and the social aspect of urbanisation (Prinsloo,2014). Below are sets of trends and processes analysed by Prinsloo (2014) which arise from urbanisation:

- Decision-making and control: the organisation in power influences the rate and pattern of urbanisation and subsequent urban development (Prinsloo,2014);
- Capital Flows: The devices responsible for urban growth generate rates and trends of urban development;
- Modernisation: A trend which influences the social character of cities and towns.
- Rural- urban migration: which also affects the social character of urban and rural areas by changing settlement patterns and land use (Prinsloo,2014).

The world is currently experiencing uncontrolled urbanisation. According to the UN Habitat (2009) almost 50% of the global population lives in cities and towns. It is estimated that the population will reach a figure of 6.3 billion by 2050 (UN Habitat,2009). The rapid tendencies of urbanisation and population growth are significantly felt in areas that are the least equipped to deal with this process (UN Habitat,2009; Prinsloo,2014). They have severe social and economic impact on urban and rural areas. Some cities tend to attract more migrants than others. However urbanisation and population growth tend to be amplified in these "megacities"(Prinsloo,2014:5). Employment opportunities, decent housing, education and basic service infrastructure remain a challenge within regions which are experiencing urbanisation and population growth. The search for better opportunities is the quest of many migrants. But mechanisation in the agricultural and industrial sector forced the rural population to move to new cities(Prinsloo,2014). This radical condition puts strains on cities, often contributes to the creation of informal settlements; which are characterised by poor housing and transport infrastructure (Urban LandMark, 2010). UN Habitat (2009) reported that it is the smaller cities are accommodating almost 66% of all African urban growth. Currently, almost 231.4 million people reside in smaller cities compared to 74.8 million almost 30 years ago. The table below depicts the average annual rate of change of the Urban World Population.

2.1.2 GLOBALISATION

Globalisation is a term used in the 1980s to describe the flow of people, economic resources and capitals across national and international borders (Shatkin,2007). Globalisation is often understood in terms of economic and monetary language. However, this process involves social and political implications(Soja and Kanai,2007). Society associates globalisation with modernisation much as

mechanisation and urban regeneration, but on a global level. Over the past century the global economic activities have become oriented and integrated. International trades create jobs and greater opportunities and flow of resources contributing to positive economic growth. But, to be able to compete within the global market significant changes in terms of development and economic restructuring should be undertaken- as analysed in the case study below.

2.1.2.1 Case study: Bilbao, Spain

Understanding society, mode of communication, getting key actors and implementing these processes in a workable profitable economic plan are the major steps towards urban regeneration and globalisation (Shatkin,2007). Due to lesser resistance from the government control the urban spaces, large underused state facilities and land have commenced great change in order to make provision for redevelopment to accommodate a new city economy (Harris, 2001). Example of this is the city of Bilbao in Spain which had eight critical issues to avoid the economic downfall of the metropolis, implemented over 10 years, in 4 phases. The public government and political leaders which had in view to change the situation of the city recognised that it was not possible just for the public sector to succeed in such a large project. Public- private partnership defined the mission as to lead the vision of the future through the implementation of the regeneration process (Plöger, 2007).The plan was developed through a series of emblematic projects which now can be called major achievements: the regeneration of the waterfront, a new airport terminal, the water treatment scheme which has cleaned up the river and the Port enlargement (Plöger, 2007). Frank Gerhy's Guggenheim Museum is Key to Bilbao's Strategic Regeneration. It gave Bilbao a Cultural Dimension by rendering it as a point of reference in cultural circuits and industries at an international scale. It became an international emblem that quickly changed the city's image and served as an economic multiplier for the area.

Bilbao offers constructive lessons regarding the process of globalisation and regeneration in Europe's industrial cities. This Strategic Regeneration Plan has contributed to developing a skilled workforce but most importantly a joint collaboration, networking, reciprocity and trust. The recovery of the city has been facilitated by the engagement of public sector leadership and an existing risk-taking regional and local culture. Several major investments such as the Guggenheim, the new metro system and the water sanitation project were important components of this strategy.

2.1.3 SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT

The term 'sustainability' features often in media circles especially when new developments such as new spatial frameworks and expansion of urban infrastructure are taking place. While the term is commonly used, it is a contestable term and many criticise that it is simply vague for it to carry any meaning (Dresner,2008). Conceptualised first in 1974 by the World Council of Churches, to address issues in the developing world with regard to human suffering and the environment; the term only came to "prominence" in the late 1980's after a publication by the United Nations World Commission on Environment and Development known as "Our Common Future" was published, also known as the 'Brundtland' report (Dresner, 2008:1). Sustainability is closely associated with 'sustainable development,' both received important attention in the Brundtland report and by The International Union for Conservation of Nature and Natural Resources in the early 1980's
Sustainable Development according to the Brundtland report is defined as development which "meets the needs of the present without compromising the ability of future generations to meet their needs" (United Nations, 1987:34). The term was developed in response to growing concerns about

economic development and the need to protect the environment (Dresner 2008).Sustainability does not always refer to the impacts on the environment; it's conceived as a matter of "equity" between generations. Every generation has an "obligation" to the next generation, and not just living according to one's own desires (Dresner, 2008:2). Many argue that the term sustainable development is meaningless, simply in the various contexts it used while others argue that it is not meaningless just controversial (Dresner 2008). Controversial because many disagree about what "sustainable development" refers to (Dresner 2008). The interchangeable use of the terms 'sustainability' and 'sustainable development' also adds to the argument, while it was used interchangeably in Agenda 21 Tim 'O Riordan (Dresner 2008) makes the argument that sustainable development refers particularly to development while sustainability refers to strictly to the environment.

The intention of sustainable development is that of "intergenerational justice" (Dresner, 2002:85) by conserving the environment now so that future generations may also use it. Its intentions are in regards to the environment and protection of this valuable resource. Urbanisation is taking place at rapid rates in our society, particularly in third world countries which are creating cities which are not liveable and neglect care and protection for the environment; these are cities which are not 'green, unliveable and potentially unresilient.' Sustainable development is there to enforce a society to develop and meet the needs of its people but also to protect the environment. As a framework for development it also addresses cities which have developed and are now ecologically unsustainable, by providing a back drop against which they can measure and rectify their errors and provide sustainable living for residents and protect the environment for future generations; restoring unsustainable settlements to ecologically sustainable settlements

2.1.4 CLIMATE CHANGE

Climate change according to the Intergovernmental Panel on Climate Change (IPCC) can be defined as changes in climates that are "statistically significant variations that persist for an extended period, typically decades or longer," (IPCC, 2007). Although the climate is changing, science has now determined that humans are the predominant driver of this change. Since the latest industrial revolution, global mean temperatures have risen significantly. Adaptation, mitigation and uncertainty strategies are 3 components to be considered when relating to climate change (Rottle et al,2008). It is imperative that human settlement should respond to the call to reduce the effects of climate change by converting human settlement into the most ecologically sustainable ones. Human settlements in the third world are fast becoming more ecologically unsustainable, and as a result becoming more unliveable. The increase in ecologically unsustainability, is due to factors such as urbanisation as said previously, and that these third world cities are parts of large "global economic and cultural activity" (Evans, 2002:1). It is predicted that within the next century "three-fourths" of new-borns will be living in these third world human settlements, which will present great challenges of sustainability (Evans, 2002:1). What is it that makes these human settlements ecologically unsustainable and vulnerable to climate change? Evans (2002) notes that pollution (air and water) from cars and industry are increasing, the time it takes to get to work is increasing which means more people are spending time in private cars, exacerbating the pollution issue. Low density housing is on the increase and as a result green space is decreasing. Third world cities are becoming less liveable and therefore less sustainable. The problem affects not only those who dwell within cities but also, those in the countryside or the "hinterland" (Evans, 2002:2). Cities can build up an ecological footprint which affects those in the surrounding areas (Evans 2002); judging whether or not cities are ecologically sustainable should take into consideration the hinterland.

Ecological Footprint

"The consumption of these populations is converted into a single index: the land area that would be needed to sustain that population indefinitely. This area is then compared to the actual area of productive land that the given population inhabits, and the degree of unsustainability is calculated as the difference between available and required land.

(Lenzen and Murray, 2003:5)
Ecological Footprint

2.1.5 FOOD SECURITY

Food is the most basic of human needs. Food security exists when individuals have the access to nutritious and healthy food. Four categories exist within the food system: availability, accessibility, utilisation and stability of food supplies (Erikson, 2008; Schimdhuber & Tubiello, 2007). Food security is a growing challenge in the context of urbanisation and rising poverty globally. Over the last few decades population growth and changing socio-economic patterns in the world have resulted in a rapid increase in the demand for land. Associated with this is the need for food, infrastructure and services.

2.1.6 CONCLUSION

This chapter highlights five of the most important challenges facing the world. Given the complex nature of these constraints and effects, it is clear that there cannot be a one-stop cure to bring about meaningful and sustainable change. It is essential that these problems are approached holistically. Possible strategies will be discussed later in this report, which will then inform the outcome on how these trends are addressed at the local scale.

2.2 URBAN CHALLENGES IN THE SOUTH AFRICAN CONTEXT

2.2.1 Apartheid and Separate Development in South Africa

"It was not safe to allow the free movement of Natives over the whole of South Africa ... (we want planning to keep South Africa white." - Dr H.F. Verwoerdi

This chapter examines the history of South Africa and its relation to urban planning and its resultant problems, since history determines the future.

Despite the progress done by the new democratic Government in developing new ideals for post-apartheid planning, it is clearly observed that there is a lack of guidelines and framework around planning of human settlements, land management and distribution in South Africa. Furthermore, cities and towns in South Africa often seem to lack social housing strategies and policies with aspects such as long-term affordability and viability in order to truly assist and uplift the urban poor (Urban LandMark, 2010). The legacy of separated and fragmented settlements has significantly contributed and exacerbated the situation regarding poverty, employment opportunities and public transport infrastructure (Urban LandMark, 2010). The political ideology of apartheid or separate development has shaped South African settlements (Dewar, Louw and Povall,2012) since its formalization in 1948 (Dewar, Louw and Povall,2012:3). Apartheid policies were implemented using the Population Registration Act of 1950 (Steenkamp, 2004) which placed all South Africans into racial categories: Bantu (black African), white, or Coloured (of mixed race) (Steenkamp,2004); which explains the concept of separation of land. The apartheid planning model forced the population to live away from areas of opportunities i.e people of colour moved within the peripheries of urban settlements while the 'white' lived close or in urban centres- as shown on the diagram below.

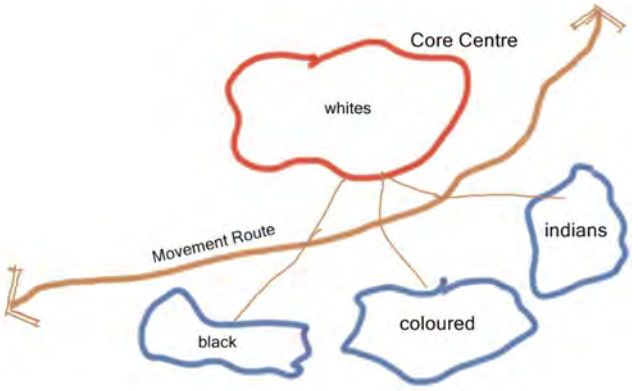

Figure 2: Diagram depicting spatial segregation in George.
Source: drawing by author (2015)

Currently South Africa is at a level of 62% urbanised and this figure is rapidly increasing (Stats SA, 2011). However, South African urbanisation differs from the one of other developing countries, as it is only since the 1980s that largely restricted access of the black population into South African cities became deregulated (Dewar, 2000). However, to understand the current spatial patterns in South African cities; the concept of Apartheid and Modernist planning ideals must first be understood. Racial segregation enforced through the South African Apartheid laws, which came to end with the achievement of democracy in 1994, left an inheritance of highly socially and economically unequal cities in South Africa. Apartheid spatial planning has resulted in segregated development, dormitory townships and poor settlement planning and layout. The spatial consequences of forced removals, evictions, un-serviced land and unequal distribution of services have negatively impacted on current local socio-economic conditions, which may not easily be reversed. According to their case study report, Urban LandMark (2011) stated that South Africa has the highest developed

and “sophisticated property market” in comparison to the rest of the Southern African region (Urban LandMark, 2011). “In South Africa, about 76% of land is under private ownership, which includes land owned by municipalities. About 58% of households have secure tenure in the form of ownership, leasehold or formal rental contracts” (Urban LandMark, 2011: 7)

Over the last few decades population growth and changing socio-economic patterns in South Africa have resulted in a rapid increase in the demand for land. Associated with this is the need for infrastructure and services for residential development. The South African Institute of Race Relations (SAIRR), in their most recent survey of the country released in January 2013, indicates that two-thirds of South Africa’s population now lives in urban areas. (SouthAfrica.info, 2013). The 2011 census revealed that “The proportion of people living in urban areas increased from 52% in 1990 to 62% in 2011” (SouthAfrica.info, 2013) while those living in rural areas dropped from 48% to 38% over the same period. The major cause of urban migration is the search for better employment opportunities and better lifestyle (Urban LandMark, 2010).

As a consequence, the urban poor have to step outside the formal land market and live in precarious conditions (Charlton, 2006). Yet the lack of housing and basic services is the reason for protest in South Africa (Joseph and Karuri-Sebina, 2014). It may be argued that these are in response to housing backlogs that the National Development Plan (NDP) “has identified the spatial transformation of South Africa’s large cities and towns as the catalyst for transcending our apartheid legacy” (NPC, 2012: 260). The vision of the NDP provides adequate shelter and services close to strategic nodes of activities, transport routes and job opportunities (Joseph and Karuri-Sebina, 2014).

South Africa has since adopted urban planning ideals and policies from the global North, which strongly entrenched modernist planning ideals, and are still visible in the form of South African cities today (Dewar, 2000). Similarly balanced development has always been a striving plan of the development strategy in the country. Since all parts of South Africa are not equally well gifted with physical and economic resources; and since apartheid spatial planning inequalities are still present, planned involvement is required to ensure that large regional imbalances do not occur (Drewes and van Aswegen, 2013). The distant location of many settlements to areas of opportunities affects the productivity and efficiency of core areas (Todes, 2013). Harrison and Todes (2014) put forward the idea that South African cities and towns have been developed as a result of capitalism and colonial history.

The ruling government in the 1940s reinforced the disparity between settlements by introducing low density suburbs and isolated high density black townships (Drewes and van Aswegen, 2013). Through enactment, the local government has been obligated to be formative in its approach, by moving away from its prevailing managerial capacity of the past. Under the apartheid administration, planning remained fragmented and segregated (Atkinson and Marais, 2006). It was mainly focused on land- use rather than integrating isolated areas to core regions (Todes, 2013). The government focused on its own “developmental priorities, with little concern about the ‘where’ of development, focusing instead on the ‘what’ of their sectoral programmes.” (Atkinson and Marais, 2006: 22). A top down strategy (initially implemented by higher spheres of government) was employed in 1970 (Drewes and van Aswegen, 2013) with strict developmental polices transformed into a more adaptable, “socially oriented” (Drewes and van Aswegen, 2013: 21) integrated bottom up approach towards planning (Todes 2013, Drewes and van Aswegen, 2013). Pre- 1994 the planning sector

in South Africa was dominated by political agendas (Drewes and van Aswegen, 2013). National planning took an imbalanced approach by concentrating resources and development in core regions. Drewes and van Aswegen (2013) argue convincingly that developments were lacking strategies and commitments since cooperation between sectors was inexistent. Drewes and van Aswegen (2013) also claimed that the Apartheid government used the growth centre strategy which leads to a more imbalanced economic growth. Conversely, regions outside core areas were isolated. And in spite of this challenge, ideas were put on the table to create socio- economic opportunities and balance but the strategy was a failure (Drewes and van Aswegen, 2013)

According to the Constitution of the Republic of South Africa (ActNo.108, 1996), national and provincial government in South Africa has functional strategies such as services and regional development (Republic of South Africa, 1996). The first spatial planning initiative, the National Physical Development Plan was introduced in 1975. It created changes on the national planning sphere (Drewes and van Aswegen, 2013). Post apartheid, South Africa came up with a rebirth of national spatial planning which provides multi sectoral analysis of national space (Drewes and van Aswegen, 2013). The strategy of the government was to reduce poverty and inequality (Drewes and van Aswegen, 2013). A framework had to be introduced to provide employment and income opportunities create a more balanced spatial and economic development. The Rural Development Framework was then introduced (Drewes and van Aswegen, 2013). As referred above, spatial planning was based on industrial development in growth centres. It later changed into a more balanced policy approach designed for the people. It also involved community participation and environmental sustainable principles. International contextual analyses have demonstrated that economic improvement activities need to be spatially concentrated so as to be effective; as such, an offset needs to be attained to between suitable spatial application and wide financial objectives (Drewes and van Aswegen, 2013). Resulting from this, South Africa adopted a more free market oriented and balanced approach: through the development of nodes and corridors despite the fact that the country has fallen behind in terms of economic growth rate of ineffective spatial planning policies as well as limited investment in sectors and locations (Drewes and van Aswegen, 2013).

2.2.2 THE INFLUENCE OF MODERNISM

In South Africa, as in other countries, modernistic planning developed into a strong movement and its principles were applied through urban planning and architecture and thus working towards one goal: the need to create spaces, frameworks to breaks away from traditional forms (Hope, 1975). Various committees were established to address the issues affecting urban areas of South Africa. The idea of racial zoning arose as a key post-war reconstruction method (Dewar, Louw and Povall, 2012).

The overwhelming majority of South Africa's urban growth has occurred during the 1940s. Modernism is one among the many planning ideology that formed the urban landscape in South Africa. The ideology of urban modernism was born in Europe and later on, gradually moved to developing countries (Dewar, Louw and Povall, 2012). The aim of the urban modernism movement was to plan cities based on modern principles while putting aside "traditional settlement- making" (Dewar, Louw and Povall, 2012:2). To be able to understand the impact of modernism on South African cities and towns, the principles of the urban model of this movement have been set out below:

- The urban model or modernism was dominated by the "idea of separation" (Dewar, Louw and Povall,2012:2) - mainly separating activities such as live, play and work, in addition to vehicular

and pedestrian movement (Dewar, Louw and Povall, 2012:2; Dewar, 2000).

- The conviction that technology would free the society from limitations;
- Introducing free- standing buildings blocks;
- A strong move towards industrialization, use of machinery and mass production.

Similarly the modernist planning model in the South African context adopted the philosophy of the single dwelling unit on a free standing plot (Dewar et al, 2004), the domination of the machine (motor car), the creation of 'neighbourhood unit' (Dewar, Louw and Povall, 2012:4) which "occur at limited places only and these could be relatively easily to controlled and secured in the event of social unrest" (Dewar, Louw and Povall, 2012:4)

2.2.3 SPATIAL CONSEQUENCE PRESENT TODAY

Since the apartheid regime, housing and land markets have shifted from building houses to providing access to resources and creating opportunities where land would be used productively, thus contributing actively to the economic growth of South Africa (Charlton, 2006). In spite of considerable infrastructure implementation since 1994, the pattern of unequal distribution of land and housing amongst the nine provinces persists. However, in 2004, following President Mbeki's State of the Nation's speech to "conduct a thorough review of the impact of socio-economic transformation on social cohesion within communities" and also to address "the broader question of spatial settlement patterns and implications of this in our efforts to build a non-racial society", the Department of Housing was renamed to the Department of Human Settlement (DHS) which based itself on a holistic approach ofsustainable housing developments, social and economic inclusion of urban poor households. Regardless of the ideals of the DHS to eradicate poverty and alleviate housing delivery, the latter still fails to significantly address these challenges. This reality sets the scene for wholly undesirable urban conditions, including e.g. continued segregation, sprawling urban growth, unsustainable service demand and delivery patterns, inadequate capacity of infrastructure as well as associated negative socio-economic, environmental degradation etc., should unplanned urban growth persists.

2.2.4 TOWARDS HIGHER DENSITY

The spatial configuration for each new settlement should be formulated to allow for development within the proposed urban edge (close to primary and secondary nodes of activities) in a manner that is integrated, accessible and compact. These strategies should therefore focus on configuration, typology, and allocation of new developments as well as the regeneration and integration of strategic urban areas. An intervention to solve the problem of fragmentation ans sprawling is to implement higher density dwellings (Harrison,2003). "When local markets are intensive, diversification and specialisation- the motors of economic growth- are promoted" (Dewar,2000:212)

CHAPTER

03

3 A WAY FORWARD

As Todes (2013: 5) suggested, integration can be an important response in “reducing spatial inefficiencies which undermine the realization of development potentials, or which make access to employment and economic activities difficult” as not all regions in South Africa are able to become ‘leading areas’. Therefore the planning methodology needs to be take into account intensive investigation of the area, against the foundation of the opportunities and requirements that exist on a local, regional and national scale.

Dewar and Uytenbogaardt (1991), claim that to improve the urban performance for future generations, a list of criteria must me established as stated below:

• **Densities**: by increasing densities, this will have the effect of creating more economic and social opportunities (Dewar & Uytenbogaardt,1991);

• **Linking** urban settlements and down any pattern which causes sprawling;

• **Intensify** activities along intersections of movement systems in order to create more choice and activities;

• Creating a **choice** of transport systems;

However, it is a long term plan in order to achieve urban integration, equity and equality given the existing spatial reality of South African cities and towns Dewar and Todeschini (2004).

3.1 URBAN GROWTH MANAGEMENT

As previously mentioned in the previous chapter identified the fragmented and separated human settlements of South Africa which have been informed by the ideologies of Modernism and separate development. Dewar et al (2012) argued that the combination of these factors have created sparse and least equitable human settlements. There are various urban management answers in response to the problem of fragmentation and separation in South Africa. The approach that will be implemented is known as the Activity Corridor.

Hence this section of the chapter will analyse possible urban growth management in re-imagining South Africa: through densification and intensification of human settlements, in order to achieve a more equitable, a more balanced and environmentally sustainable human settlements.

What constitute liveable and integrated human settlements? Human settlements have become important centres of the world economy, while moving further away from environmental conservation. Liveable settlements are two fold; firstly residents in liveable cities work close to home with decent living wage and have access to important services which allow for proper living condition (Evans 2002). Secondly, they are sustainable which means that the environment is cared for (Evans 2002). Therefore cities and towns which are liveable are those which provide decent housing and short travelling distances to its citizens while also “preser[ving] the quality of the environment” (Evan, 2002:2). The Transportation for a Liveable City (TLC, 2002:7) defines a liveable settlement as one which makes “social justice and ecological sustainability” a priority while thriving in a “global economy,” “nurturing neighbourhoods” with integrity and “welcoming to immigrants.” Ling et. al (2006) sees liveable cities a one which promote “quality of life” and “sustainable development.” Sustainability is the key to a successful human settlement.

3.2 CORRIDOR DEVELOPMENT

According to Dewar, the development of any settlement is controlled by structuring elements. In

many cases, the primary structuring element is the movement generator, i.e the road and railway system. These linear structuring elements resulted in the formation of urban spaces.

What is an urban corridor? The urban corridor, according to le Grange et al (2004:10) refers to a “broad band of mixed use activity around one or more continuous transportation routes, preferable carrying public transportation”. Intensive activities tend to be located along the corridor or at intersections of primary nodes. The urban corridor ties several areas together, despite the fact that they are not forcibly dependent upon each other. Warnich and Vester (2005: 345) have a similar idea of the urban corridor as they state that it is a “collection of beads on a string”. In the case of the town of George, the study area will incorporate more than one urban corridor, due to the fragmentation of the urban spaces, mountainous topography and the N2 freeway which separates urban settlements.

Public transport plays a decisive role in the successful functioning of an urban corridor. However, a good system of public transportation is not the only element which will guarantee the success of the corridor. Mix- use land-use, high densities building typology, permeability in terms of access, nodes of activities and finely- grained urban blocks are some of the criteria to achieve a successful urban corridor.

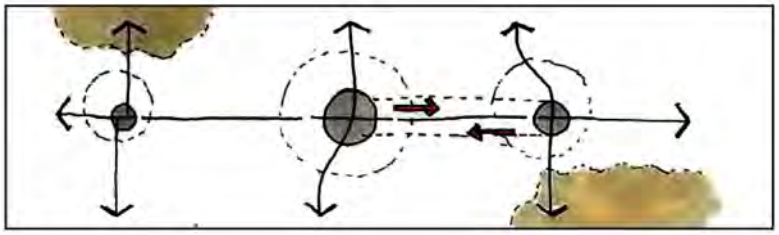

Figure 3: Diagram depicting corridor growth (adapted from Dewar & Louw (2004)

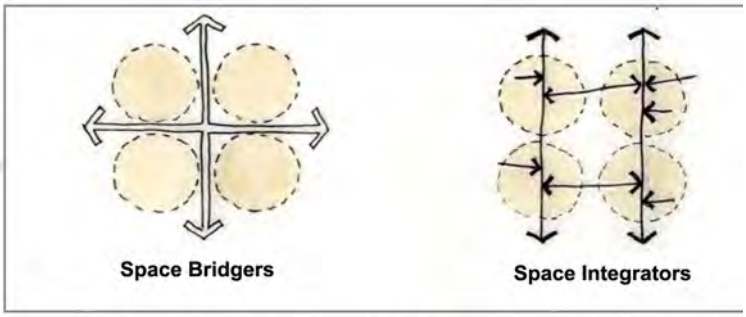

Figure 4: Diagram depicting space bridges and space integrators(adapted from Dewar & Louw (2004)

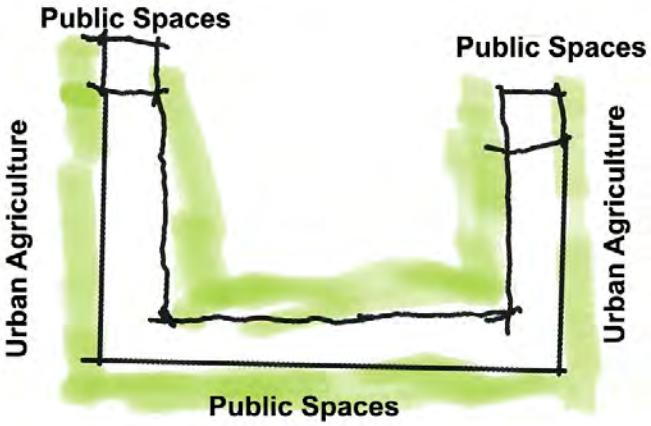

Figure 5: Diagram depicting corridor growth in George. Source: drawing by author(2015)

4 VALUE BASED PERFORMANCE QUALITIES

The previous chapter discussed the urban challenges which South African cities and towns are facing, as a result of poor planning practices influenced by ideologies of modernism and separation. The combination of these issues has created a limited and inadequate urban landscape, in terms of equity, equality and access. To reverse these ineffectiveness, future plans should set up a list of performance criteria which, every local, municipal and provincial municipalities must adhere to.

The following sets of performance criteria need to be considered as a collective set within which all cities and towns urban performances' should be satisfied. The qualities are balance, Efficiency Choice, integration

4.1 BALANCE

The criteria of balance over-arches all other performance qualities. Since cities are dynamic organisations (Dewar and Uytenbogaardt,1991) they are constantly growing and changing, as a result of population growth and urbanisation. In *South African Cities A Manifesto for Change*, Dewar and Uytenbogaardt (1991) state that the concept of balance branches out into 3 hierarchies. The first one is the relationship between society and cosmos (Dewar and Uytenbogaardt,1991). This first concept explores the establishment of human settlements which are guided by "spiritual concerns and symbols" (Dewar and Uytenbogaardt,1991:18).
The second concept deals with society and nature (Dewar and Uytenbogaardt,1991). The ability of our society to use and abuse resources and manipulate Earth's natural system puts the current and future generation in a vulnerable position. As species we provide and proliferate but we have an obligation towards Earth to maintain her resources and environment since we depends on them. The questions then become: what is the role of society in nature and do we have the right to manipulate the landscape or cause harm to our planet? Our society has transformed and modified about half of the Earth's surface, through agriculture and forestry, housing, industry, services and transportation. Balance is achieved through the design and implementation of development parameters to contribute to the protection of the bio- diversity. The last concept is the "relationship of people, as expressed thought urban activities" (Dewar and Uytenbogaardt,1991:19). Balance should promote easy access to places, cheap and efficient transportation and equal access to socio- economic opportunities (Dewar and Uytenbogaardt,1991)

4.2 EFFICIENCY

This term refers to the 'efficient' use of resources within urban settlements. "This requires achieving a satisfactory compromise between the potentially conflicting requirements for mobility...and greater accessibility" (Dewar, forthcoming: 11) . Dewar (1998) refers to efficiency of cities as a means of variety of choices for the users of urban spaces. It also refers to as the efficient use of resources. Dewar (2000) claims that in terms of urban settlements, compact cities are a better approach to the current spatial city structure (in South Africa for example) because compact cities provide cluster of facilities within a close viscinity.

4.3 CHOICE

Sustainable and successful urban settlements provide its users for a range of activities and and

alternatives (Dewar, forthcoming: 11). Choices should not be “impositionary” (Dewar, forthcoming: 11). “People should not have to chose, for example, to live in an area which is very intense and convenient, but which offers no access to green spaces” (Dewar, forthcoming: 11).

4.5 INTEGRATION

When human settlements perform positively, it reflects a high level of integration between parts and elements of the settlements (Dewar and Uytenbogaardt,1991). As such, this criteria is an important one in the performance of cities and towns. Dewar and Uytenbogaardt (1991: 21) argue that no citizen should be excluded in urban settlements and each citizen should be “provided with a range of opportunities and facilities can be generated by their operating in isolation”.

5 STATUTORY PLANNING FRAMEWORK

Following most recent legislative and procedural changes that have become applicable to management of land use planning in South Africa and consequently, the Western Cape province, it is considered necessary to summarise the implications of the current statutory framework within the context of this land use planning application.

5.1 SPLUMA (THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT)

Section 7 of this Act sets out the following five development principles that are applicable to spatial planning, land development and land use management, as follows:

- Spatial justice refers to the need for improved access and use of land in order to readdress past spatial and development imbalances as well as the need for SDF’s and relevant planning policies, spatial planning mechanisms, land use management systems and land development procedures to address these imbalances.
- Spatial sustainability refers to, inter alia, the need for spatial planning and land use management systems to promote land development that is viable and feasible within a South African context, to ensure protection of agricultural land and maintain environmental management mechanisms. It furthermore relates to the need to promote effective/ equitable land markets, whilst considering the cost implications of future development on infrastructure and social services as well as the need to limit urban sprawl and ensure viable communities.
- Efficiency relates to the need for optimal use of existing resources and infrastructure, decision-making that minimises negative financial, social, economic or environmental impacts and development application procedures that are efficient and streamlined.
- Spatial resilience refers to the extent to which spatial plans, policies and land use management systems are flexible and accommodating to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shocks.
- Good administration refers, inter alia, to the obligation on all spheres of government to ensure implementation of the above efficiently, responsibly and transparently.

Furthermore, Section 42 of SPLUMA refers to the factors that must be considered by a municipal tribunal when adjudicating a land use planning application, which include (but are not limited to):

- Five SPLUMA development principles;

- Public interest;
- Constitutional transformation;
- Respective rights and obligations of all those affected;
- State and impact of engineering services, social infrastructure and open space requirements;
- Compliance with environmental legislation.

5.2 LUPA (LAND USE PLANNING ACT) AND LUPA REGULATIONS

The development objectives entrenched in SPLUMA have been assimilated into the Western Cape Land Use Planning Act, 2014 (Act 3 of 2014) and sets out a basis for the adjudication of land use planning applications in the province requires that local municipalities have due regard to at least the following when doing so:

- Applicable spatial development frameworks;
- Applicable structure plans;
- Land use planning principles referred to in Chapter VI (Section 59);
- Desirability of the proposed land use; and
- Guidelines that may be issued by the Provincial Minister regarding the desirability of proposed land use.

5.3 GEORGE MUNICIPALITY LAND USE PLANNING BYLAW

Following from the legislative frameworks put in place through SPLUMA and LUPA, the George Municipality: Land Use Planning By-Law, 2015 proceeds to set out the general criteria for the consideration of applications in terms of the by-law (Section 65) which, inter alia, includes:

- Desirability of the proposed utilisation of land;
- Impact of the proposed land development on municipal engineering services;
- Integrated development plan, including the municipal spatial development framework, the applicable local spatial development framework and/or local structure plans;
- Relevant municipal policies;
- Western Cape Provincial Spatial Development Framework;
- Section 42 of SPLUMA (public interest, constitutionality);
- Land use planning principles transposed in LUPA; and
- Provisions of the applicable zoning scheme.

5.4 RELEVANT PLANNING POLICY AND GUIDELINES

George Spatial Development Framework (2013):

- According to the SDF (Section 4.3.4 (a)(i)) it is the intention of the Municipality to maintain the present environmental, rural and settlement character of the area by:
- Support compact development in areas approved for further residential development;
- Support the development of a neighbourhood commercial centre;
- Resist any form of expansion, densification or development of the buffer zones of residential, eco and golf estates;

CHAPTER

06

6 TOWN SCALE FRAMEWORK

The preceding chapters aimed at establishing a theoretical analysis to understand the urban challenges which South African cities and towns are currently facing.

6.1 INTRODUCTION TO CONTEXT

Whilst the design proposal tries to address the global, national and local challenges identified in this report, the most significant challenges faced by the local study area are summarised below. The fragmentation generated under the precepts of apartheid planning as mentioned previously has resulted in the town George being made up of four distinct settlements: George itself, Pacaltsdorp, Thembalethu and Blanco (Louw& Dewar,2008).

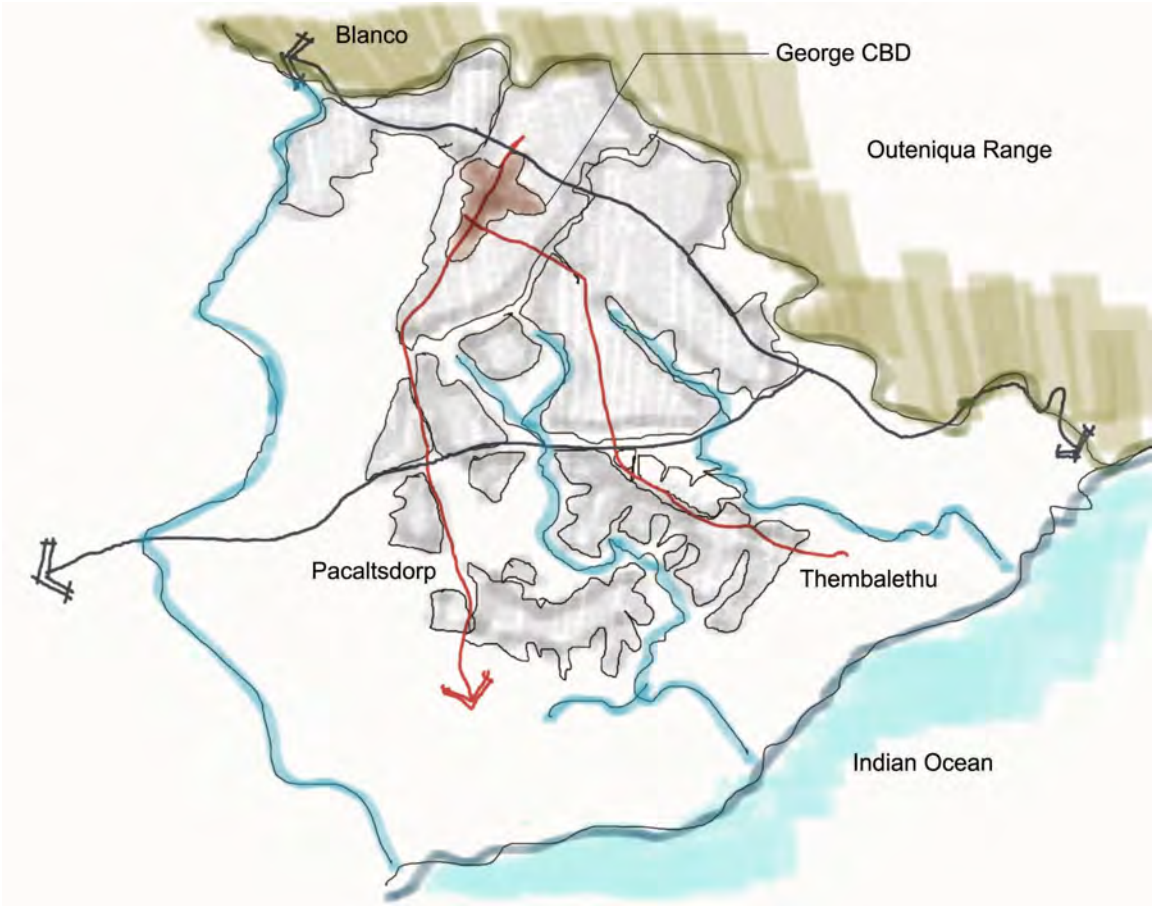

Figure 6:Sketch of the study area , showing the different settlements which spatially make up the town.
Source: Drawing by author (2015).

Apartheid planning has separated social and racial classes, creating a fragmentation within the spatial pattern of the town. The planning ideology of separated land use meant the town was not designed to accommodate diversified activities. As such, the town effectively shuts down after office hours.

The core area of George is its business district which has undergone some spatial transformation in terms of who lives and works in the town, since the construction of the Garden Route Mall in 2006. As a result, important businesses left the core urban area, triggered by the desirability for other new developments (Louw& Dewar,2008). Nevertheless many sets of consumer services remained in the core urban area such as small firms offering legal advice, health centres and dentists. Empty

offices are still a challenge. The most striking change after 2006 is the growth of informal traders in the study area. There have been various tensions between formal and street vendors, especially around the use of pavement space and shop frontage. There are also perceptions that the street traders enable criminal activity, but these perceptions need to be investigated and challenged. Finally, the study area is framed as constantly fighting against a tide of building decay, business flight, general squalor, crime and grime.

Figure 7: Location of the study area in relation to Cape Town. Source: Adapted from Google Earth (2013)

6.2 LOCATION OF THE STUDY AREA

The town of George, administered by the George Municipality, is located between the metropolitan areas of Cape Town and Port Elizabeth as seen in Figure 7. The George Municipality controls a vast and diverse geographic area that accommodates 193 672 people (GMPD,2013) and extends from the dry and climatically extreme Little Karoo in the north, to the wetter more temperate Garden Route in the south. It is a region of significant natural resources, including: sweeping mountains and forests, a variety of indigenous vegetation, streams and estuaries (GMPD,2013). The Garden Route National Park and the Baviaanskloof Wilderness Zone form part of the natural protected assets of the region. Also the municipal area comprises of fertile farm lands and timber plantations (GMPD,2013). George Municipality has the strategic advantage of being traversed by national roads such as the N2, N9 and the N12, which makes the town an important node of activities. As such, its location creates investment opportunities, with regards to logistics and manufacturing. Furthermore the area is connected to other neighbouring regions and towns and cities via the George Airport.

Figure 8:Outeniqua Mountain in the background. Image taken at George Botanical Garden. Source: Author (2014).

6.3 LOCATING THE PROBLEM: SPATIAL FRAGMENTATION IN GEORGE

The town of George is experiencing rapid urban growth (GMPD, 2013). The GSDF (2013) supports this statement by affirming that George is “ranked second to Cape Town on the W Cape list of rankings of “Development Potential Index” (GMPD, 2013: 5). In spite of the economic potential that George holds, the study area is faced with severe challenges. As stated previously, the study area is fragmented into 4 settlements. As such the proposed GSDF and precinct framework will help will create a socially and economically integrated community and contribute to the positive reinforcement of the sense of place that is physically and socially rooted to location and history.
The proposed GSDF will in addition, aim to create a balanced approach towards development and economic growth. From a spatial perspective, this framework intends to achieve this vision through creating an environmentally, economically and spatially sustainable and equitable town.

6.4 ECONOMIC CHANGE

The town of George is still enduring the disruptions of the 2009 financial crisis. The percentage of people living in households with an income less than the poverty income was at 20.4% in 2010 (Stats SA,2011). In 2011, the unemployment rate was situation at around 20.7%. The future of existing small businesses is under threat. The town of George has several economic drivers in its space economy (GMPD,2013). These are the CBD, the industrial area, the new business node at the George Mall and a future economic node in the Hansmoeskraal area which will function as a special investment area for hi-tech industries (de Kock Associates,2012). The George Municipality formulated an incentive scheme to facilitate new business and expansion of existing business in the town (LSP,2012). The aim of the incentive is to lower start–up costs and initial utility expenses of a new investment to improve cash flow and survival rate (History of George,2015). In order to survive in a competitive economic environment, the unique functioning of the town of George needs to be understood, defined, strengthened and maintained. George has been plagued with a "laissez faire" approach where the free market took its course with minimum intervention and control. This approach has led to a continuation of the "mistakes of the past" by allowing a sprawl of the business uses in the residential area. Such a sprawl has generated a dispersal of businesses with divided customer support, fragmented within the built- fabric, with no core centres and no mix-use activities.

6.5 SPATIAL SEGREGATION

The town of George spatial arrangement was set up according to racial groups during the Apartheid Era. The urban morphology is discussed in the "historical background" of this report. The N2 freeway separates the settlement of Pacaltsdorp and Thembalethu to the rest of the town. From the Future Spatial Development Pattern for George and Environs map (1982), it can be observed that the white residential and economic areas are located to the north of the town, while the rest are located on the outer periphery. This is a comparatively frequent conceptual understanding of the planned spatial hierarchy delineate in many apartheid cities and towns. However, George's spatial planning was mostly influenced by its natural system, namely the Outeniqua Mountain Range to the east and its undulating topography; and in the same way, by a system of regional and local movement system.

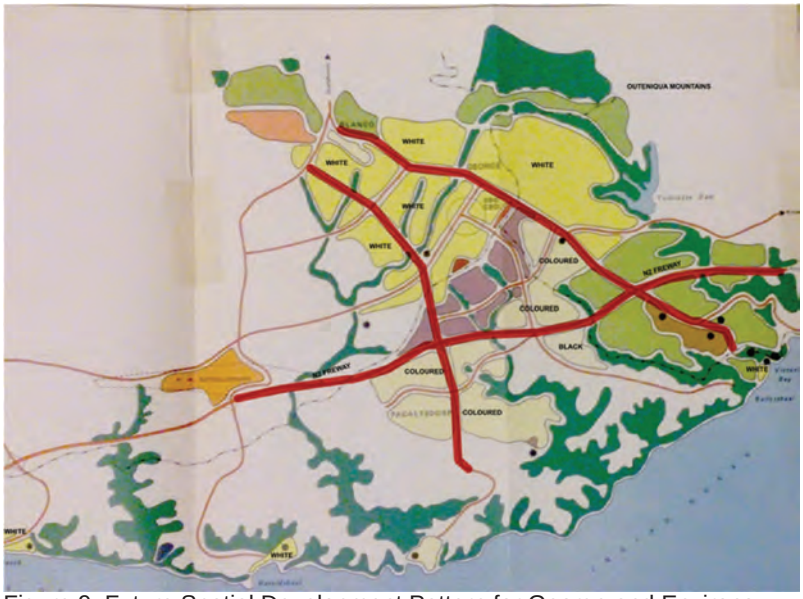

Figure 9: Future Spatial Development Pattern for George and Environs map. Source: Department of Constitutional Development and Planning (1982).

Before the implementation of the Garden Route Mall in 2006, George Central Business District (CBD) was considered to be the main economic hub of the town. It was a desirable location in terms of variety, access and opportunities. It was a point of exchange, and intersection used by the local community. However, the economic hub has since become decentralised. Growth has now shifted from the CBD to the South East, towards the precinct of the Garden Route Mall.

6.6 URBAN DECAY AND HOUSING: A 'BED' OF CAPITALIST OPPORTUNITIES

A reoccurring theme within the study area is that of urban decay, where the latter is framed as constantly fighting against a tide of building decay, business flight, general squalor, crime and grime. Although no longer rationalised as a result of racial mixing or 'white flight' as it was stated by some inhabitants, the quest for urban regeneration in the CBD continues (Perception Planning, 2015). The town has had various attempts over the years to work towards urban regeneration, such as the introduction of the GSDF (2013) and an Economic Revitalization Policy (ERP) with the aim of uplifting areas within the study area. However, the development and future existence of the town of George is dependent upon the development perspective, the national and provincial objectives of urban restructuring. In order for the government, urban planners and private developers to initiate a balanced approached to development; they need to be in a position to plan strategically and to manage investments effectively. For this reason, the proposed SDF and precinct design can be used as a tool to help in the aforementioned goals.

6.7 BASIC HISTORIC BACKGROUND

From historical perspective the town of George was established on a portion of the early 1760 loan farm "Post Rivier", which was annexed by the Dutch East India Company during 1777 for the purposes of establishing a new Company Post to monitor the felling of indigenous woods in the area. The original boundaries of the farm Post Rivier (History of George,2015) remain known as the "George Commonage", or Erf 464, George.

George was the first drostdy district to be formally registered (1811) after the 1806 British Occupation. Consequently, a surveyor was commissioned to compile a layout plan for the new town, to be known as George Town. Surveyor JH Voorman's basic layout of the town consisted of two parallel streets namely York Street (±60m wide but increasing to ±100m width at the northern/ top end) and a second, narrower Meade Street (±20m wide) (History of George,2015). These two streets run into a cross street, being Courtenay Street in which the main public buildings dating back to the Colonial Period were situate.

The layout plan shows a fairly large town for that period of time but with little over 70 dwellings scattered about, most of these along York Street. This plan shows elongated erven of similar proportions along both sides of York Street (not dissimilar to early "market garden lots" of the nearby Blanco village layout) and smaller, rectangular erven along both sides of Meade Street – also of similar size. Approximately 13structures (presumably dwellings) are shown along Meade Street at this time (History of George,2015).

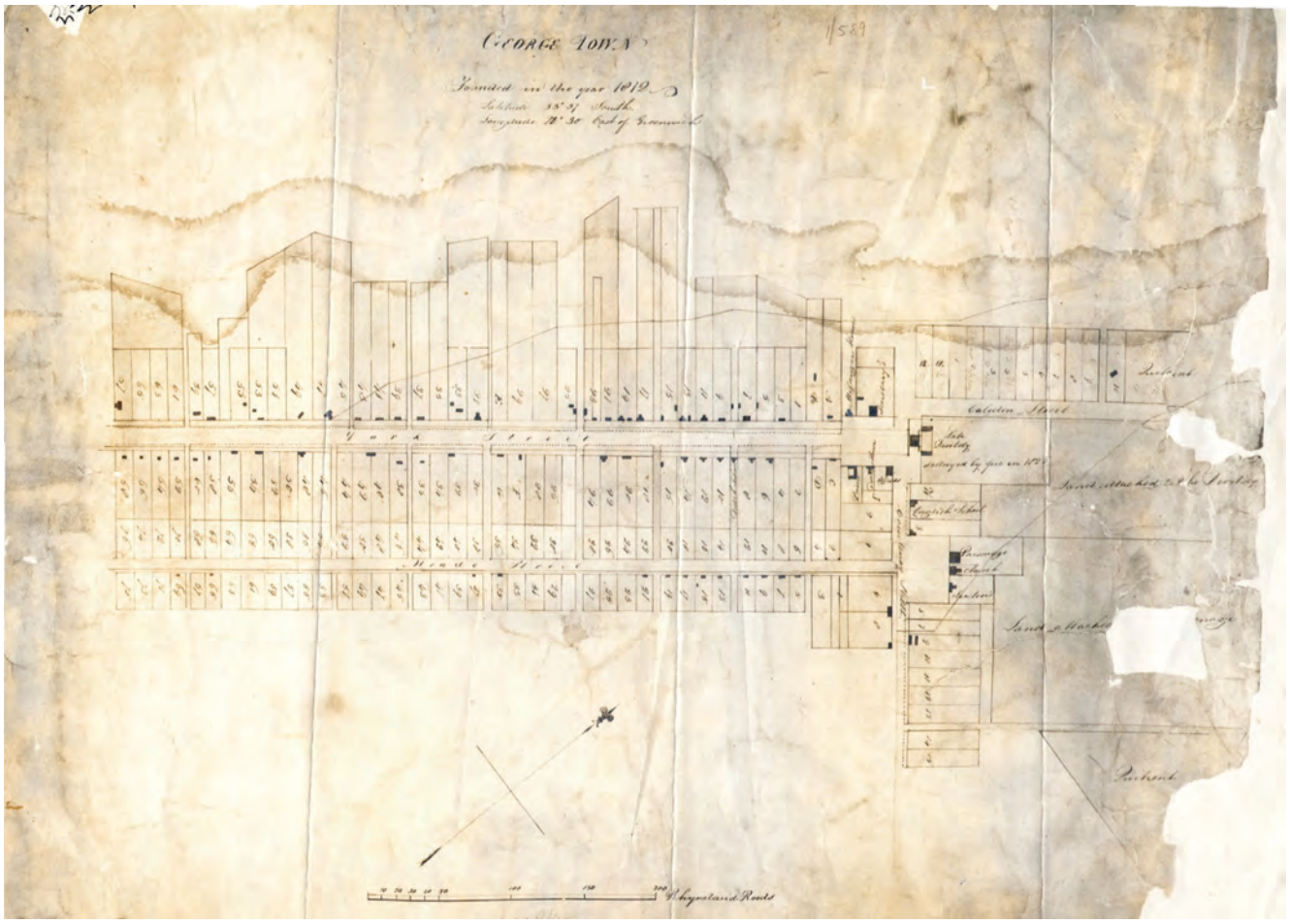

Figure 10: Earliest layout for George Town as compiled by surveyor JH Voorman in ±1811. Source: George Museum Archives.

Unfortunately the excessive overall lengths of York and Meade Streets meant that opportunities for creating intimate and interesting streetscapes along these public roads were largely lost (Schulz,2015). Development of the town was generally slow until the 1920's at which time many subdivisions or development of the original blocks started taking place, partly due to the establishment of railway links during the early 1900's and an economic boost in the timber industry as a result thereof (Perception Planning,2015). It also seems that throughout the 19th century dwellings had been widely spaced with erven generally 160m deep and with 45m street frontage. Unfortunately, this inhibited the spontaneous involvement of architecturally–coherent streetscapes. Water furrow systems ran along the length of Meade and Cradock Streets and provided water to erven from natural sources situated above the Van Kervel Gardens (now "George Botanical Garden") (Perception Planning,2015). Water furrows were in place in George from the time inner-urban street blocks were surveyed and granted until the 1960's when all remaining furrows were filled in by the municipality as part of modern road construction (Perception Planning,2015).

From an urban morphological perspective, the development of Pacaltsdorpand, Blanco, two smaller villages historically situated along the outskirts of George, had a significant impact on the current spatial form and challenges experienced within the study area (Perception Planning,2015).

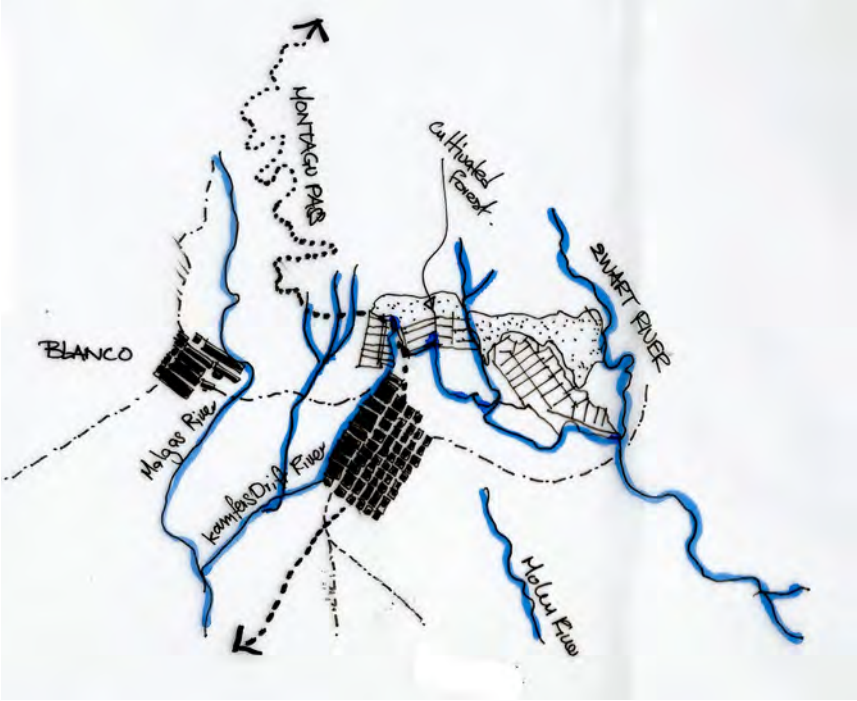

Figure 11: Drawing adapted from early map of George (1800-1900). The drawing depicts early settlement of the study area and its relaion to the riverine context. Source: Geroge Museum Photo Archives (2015)

The village of Pacaltsdorp, situated well south of the historic George town centre, was named after former London Missionary Society (LMS) missionary Rev Charles Pacalts who upon in death in 1818 left the farm Hoogekraal to the residents at the time (Perception Planning,2015). The mission village grew organically over the next fifty years and by 1876 land surveyor I.A. Thwaits was tasked to survey 146 parcels of land in preparation for private ownership and lease (Perception Planning,2015). In 1886 the London Mission Society (LMS) withdrew financial support to Pacaltsdorp and a Village Management Board was established to replace the previous LMS Church Council who had administered to the needs of the village since 1813 (Perception Planning,2015). It is important to note that indigenous people resided within the vicinity well before formal establishment of the village. The village remains connected to York Street by Beach Road (Perception Planning,2015).

Located west of the George town centre, the village of Blanco is situated on land that was expropriated by Government during the 1820's when George was developing as a town. The village evolved during the twentieth century - housing many church members who lived on land granted to various churches by Government (Perception Planning,2015). The company Searles of Great Brak, built a sizeable leather/shoe manufacturing business in Blanco (date not established). By 1883, four professional shoemakers were employed by Searles and an additional 8 independent shoemakers had settled in the village (Perception Planning,2015). Tasks related to tanning hides and shoe production provided job opportunities to residents. An engineer and surveyor formed part of the community. Wagon drivers and couriers also lived in the village, providing assistance to travellers making their way over the Montague Pass (Perception Planning,2015).

Blanco village is located roughly halfway between George and the Montague Pass and is connected to the town through George Road. The village itself retains a homogeneous grid-pattern, designed concurrently with three access routes defining its basic physical form. The vertical-orientated

Montagu Street remains the dominant axis, focusing on the old Anglican Church (St. Mary's Church), dating back to c. 1851 (further north of the subject site). The main axis connected the village to the Montagu Pass and the interior beyond as well as Great Brak River, Mossel Bay, etc. following the coastal route (Perception Planning,2015).

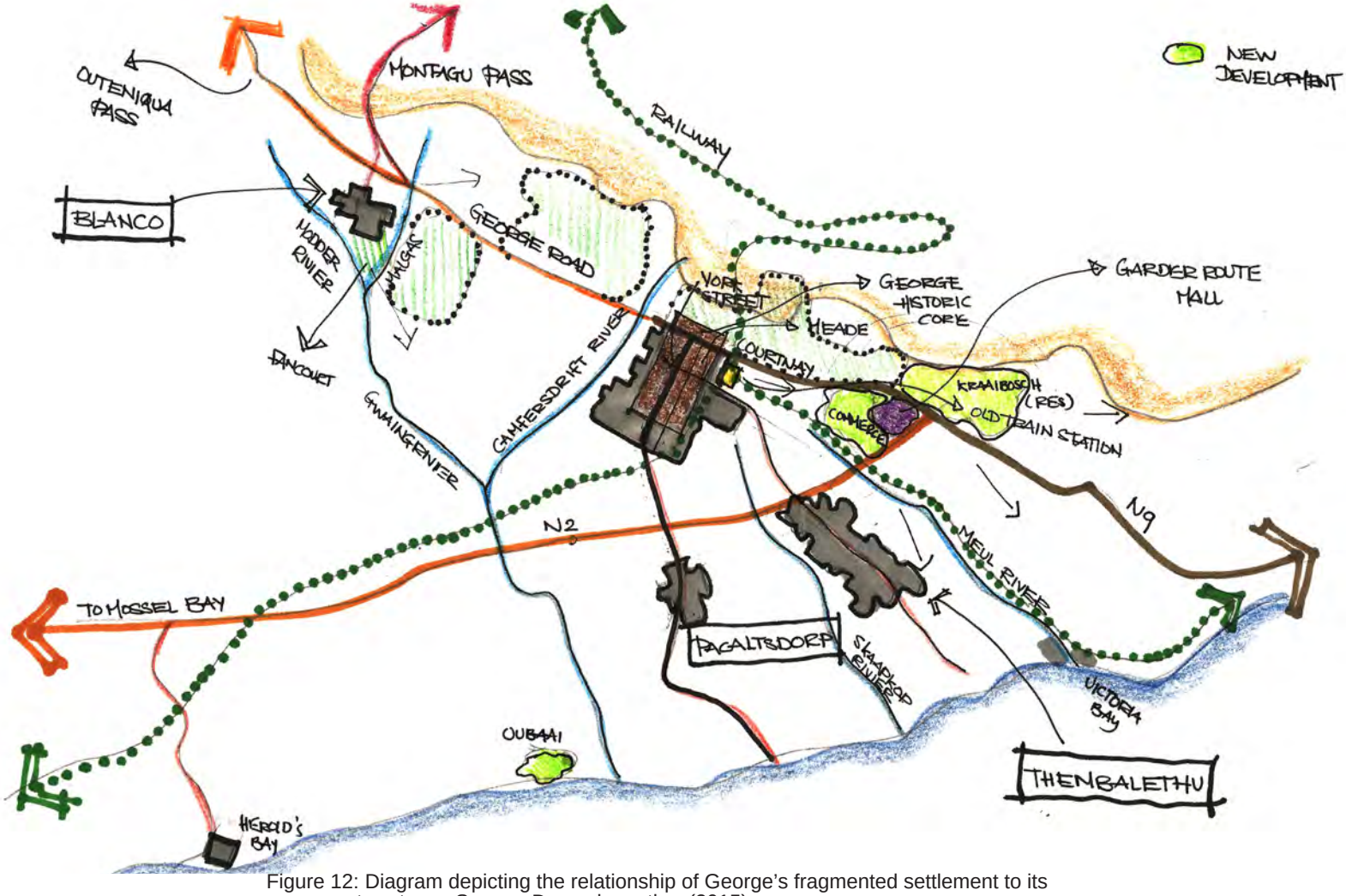

Figure 12: Diagram depicting the relationship of George's fragmented settlement to its movement systems. Source: Drawn by author (2015)

To conclude this chapter, the historical background reveals that it is essential to understand the history and urban morphology of a place in order to establish any design proposal.

CHAPTER

07

7 ANALYSIS OF STUDY AREA AND ENVIRONS

7.1 BIO-PHYSICAL ANALYSIS

7.1.1 Geology and Soils

The analysis of the geology and soil attributes of the study area is critical in order to determine the subsurface conditions in order to accommodate future development.
The geology of the George area consists of basal rocks of the Kaaimans Group which are locally intruded by granite of the George Granite Suite (Agriculture,2015). These rocks are typically deeply weathered and the development of a thick soil profile is common in most areas. The associated soil types are diverse, typically including a mixture of silty or clayey sands, clayey gravel and sandy clay. From a development perspective, the occurrence of problem soils in the area is not uncommon and often additional site-specific geotechnical investigations are required for detailed design and planning purposes (Agriculture,2015)

7.1.2 TOPOGRAPHY

The study area forms part of a generally southwards-sloping coastal plain situated between the foothills of Outeniqua mountain range and the coastline. The town is overlooked by the visually prominent George Peak (1336m above sea level) and a number of hills to the north and northwest, which simultaneously enhance the natural setting of the town and furthermore directly influence climatic conditions experiences in the town. The landscape has been shaped by a series of rivers draining across the coastal plain, which over time, gave rise to its present undulating character (Agriculture,2015)

7.1.3 CLIMATE

The climate of the study area is often referred to as moderate and it greatly influenced by the topography – often resulting in relief rain. Rainfall tends to occur throughout the year, peaking during the autumn and spring months. Annual rainfall ranges between 500 to 1400 mm. The summers are warm (22-25ºC) (Agriculture,2015) and winters mild (18-21ºC). Occasional bergwinds raise the temperatures to the upper 30ºC. The mild weather can be attributed to among others, the influence of the warm Agulhas current. (Agriculture,2015).

7.1.4 Hydrology

The study area study area serves as a catchment area for a number of natural aquatic systems and primary river systems traversing the study area include the Malgas River/ Gwaiang River, Camphersdrift River/Rooi River, Molen River and Skaapkops River, all of which originate in the Outeniqua Mountains towards the Indian Ocean- see figure 13. The study area is furthermore characterised by a relatively narrow coastal plain, which results in natural drainage occurring rapidly and across relatively short distance. Other important river systems along the northern and eastern periphery of the study area include the Kat River and Kaaimans River, respectively. The Gwaing and Skaapkops are both urban rivers, running through George and Pacaltsdorp, respectively. The Kaaimans River enters the sea just west of Wilderness. In physical terms it is still in good condition and is home to important fish species, although infestations of invasive alien plants in adjacent

areas need to be cleared.

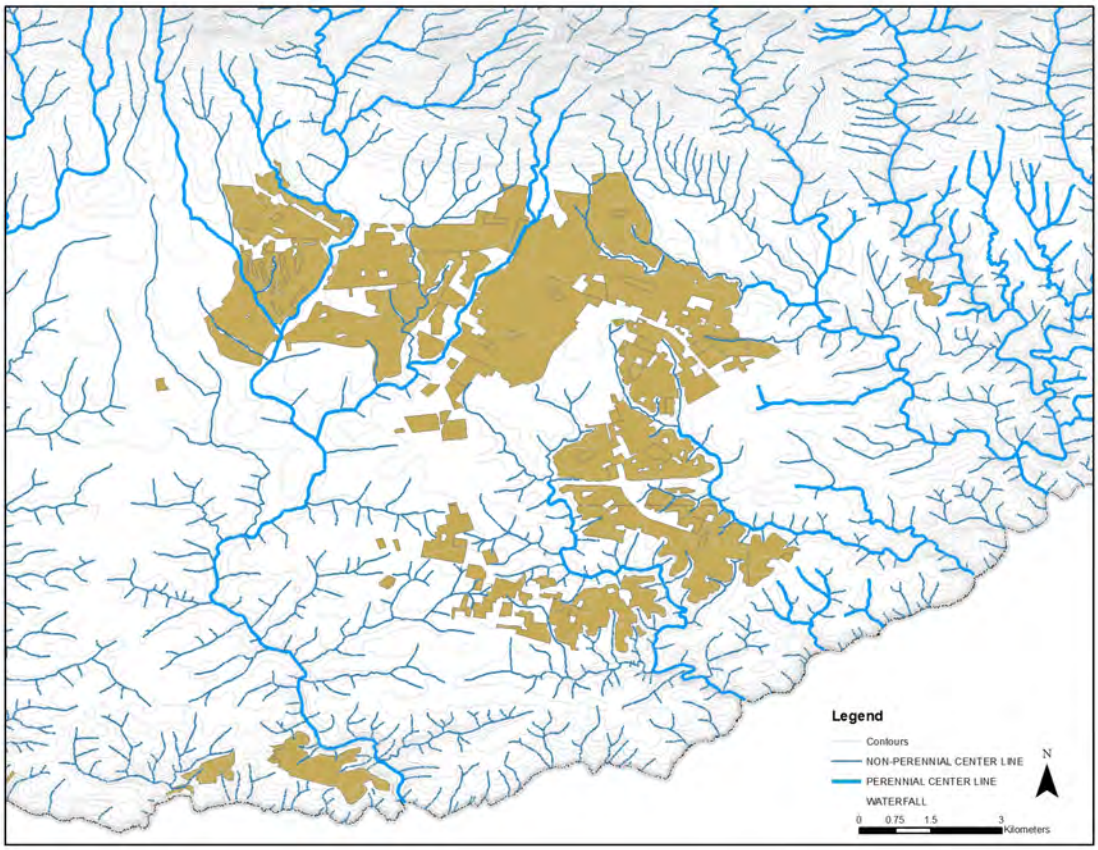

Figure 13: Hydrology Map. Source: Adapted from GIS

7.1.5 Biodiversity constraints

Notwithstanding the fact that a significant portion of the study area has been transformed to urban-related land use, several Protected Areas, Critically Biodiversity Areas (CBA's) and Ecological Support areas (ESA's) occur throughout the study area. The locations of these mostly coincide with river corridors and tributaries as illustrated through Garden Route Initiative (GRI) environmental sensitivity mapping for the area as seen in figure 14.

While most river corridors have been identified as ESA's, the Camphersdrift/ Rooi River system as well as entire length of the Molen/ Skaapkop River system towards the coastline have been earmarked as CBA's. The latter furthermore include areas north and east of the Pacaltsdorp town centre and the entire coastal belt, which is considered of high conservation significance – partly due to the occurrence of indigenous fynbos and afromontane forest. Protected Areas include the Outeniqua mountain range, George Botanical Garden as well as the Kat River system, which drains into the Garden Route Dam.

The implications of the above sensitivity analysis therefore highlight the need for future spatial planning and land use management processes to facilitate future urban development of the town through sustainable and innovative ways. The list below demonstrates the development restrictions of urban development on Biophysical elements:

- **No Go: Prohibits all urban development as development cannot be supported by**

biophysical elements;

- **Tread Lightly: Biophysical Elements can support some developmeny if mitigation measures are respected**
- **Suitable: Urban development can be biophysical elements.**

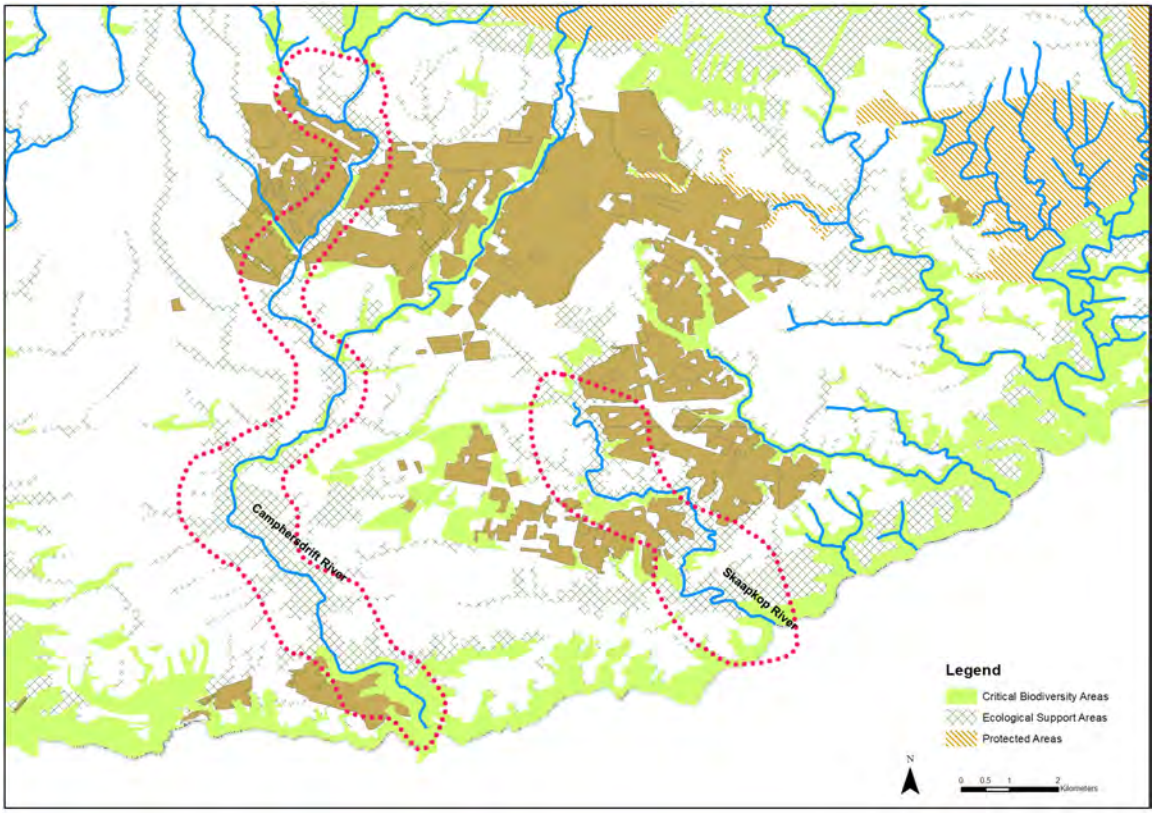

Figure 14:Protection biodiveristy areas map

7.1.6 Climate change

Climate change is a global phenomenon driven primarily by an increase in the production of greenhouse gases. Carbon dioxide, the principle greenhouse gas, is released to the atmosphere by the burning of fossil fuels. Greenhouse gases absorb infrared radiation emitted from the earth's surface and heats the atmosphere and thus global warming (Hoel & Koverndokk,1996).

In the Western Cape there is a tendency towards more irregular rainfall and a rise in average temperatures. Taken in conjunction with this, as well the relatively narrow coastal plain, which results in natural drainage occurring rapidly and across relatively short distance, climatic change is likely to negatively impact on the availability of water resources and put further pressure on existing water storage capacity and water supply within the municipal area. Aspects such as rapid urban growth, development within close proximity to the coastline or river, the demands placed through low density residential development and water-thirsty golf estates area likely to further exacerbate this situation. Other likely impacts that may be anticipated through climate change include loss of biodiversity and integrity of ecosystems services through droughts, fires, high temperature and invasion of alien flora and fauna.

7.2 MOVEMENT ANALYSIS

Private vehicle movement remains the primary mode of transport, which means easy access to various public facilities but serves only wealthier residents. While pedestrian movement was previously considered a primary mode of transport in some areas, with average daily walking distances between 3.8km to 10km (Dewar & Louw, 2008), implementation of the new Go George public transport system during 2014 has significantly mitigated this movement pattern throughout the town.

7.2.1 Rail

Railway lines between George and the three main surrounding towns of Mossel Bay, Oudtshoorn and Knysna were completed during 1907, 1913 and 1928, respectively (Perception Planning,2015). While floods and subsequent landslides during 2006 and 2007 made the George to Knysna railway line inoperable, the gradual decline in use of rail in favour of road as preferred transportation mode for goods and passengers resulted in there being no scheduled passenger service to/ from George (Perception Planning,2015). Although operators Rovos Rail and the Union Limited (www.rovos.com) offer vintage train trips to the Garden Route, these are primarily aimed at the high-end tourism market only. The OuteniquaChooTjoe steam train offered leisure rides between George and Mossel Bay but closed in 2009 (Perception Planning,2015). While railway infrastructure linkages to industrial properties situated in George Industria as well as linkages to neighbouring towns Mossel Bay and Oudtshoorn remain, rail no longer significantly contributes to transport.

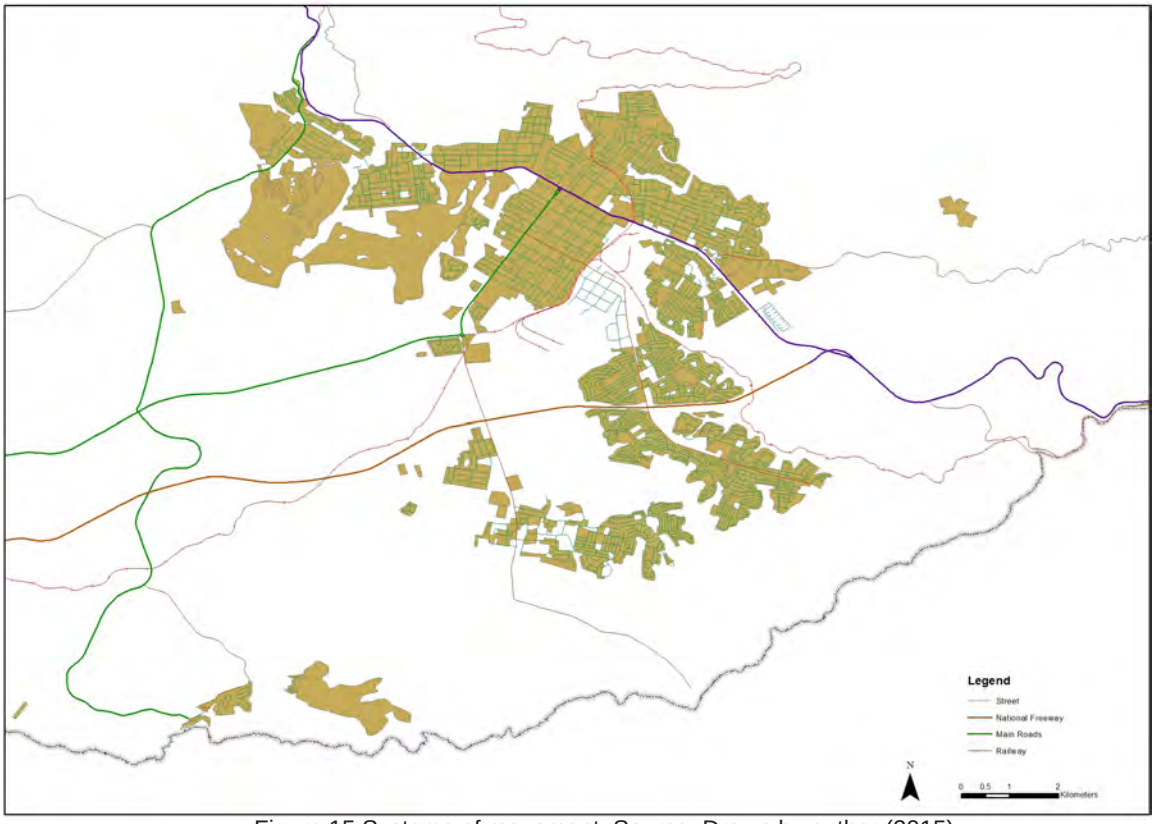

Figure 15:Systems of movement. Source: Drawn by author (2015)

Figure 16:New Go George bus typologies, ranging from Mini Buses to standard ones. Source: Go George (2015)

7.2.3 Vehicular movement

The primary movement routes through the study area include the Courtenay Street/ Knysna Road corridor (also connecting Blanco village via George Street), the York Street/ Beach Road corridor (connecting Pacaltsdorp) and thirdly the Nelson Mandela Boulevard (formerly Albert Street/ SandkraalRoad) corridor connecting Thembalethu to the town centre. One of the key challenges to achieving urban integration in George is the fact that the N2 National Road physically separates the town centre from the Thembalethu and Pacaltsdorp dormitory areas. While the current road network effectively creates a roughly triangular loop through York Street, Knysna Road and the N2, this circular route excludes Thembalethu and Pacaltsdorp as the respective access roads into these areas are not interconnected but rather abruptly ends within each said area.

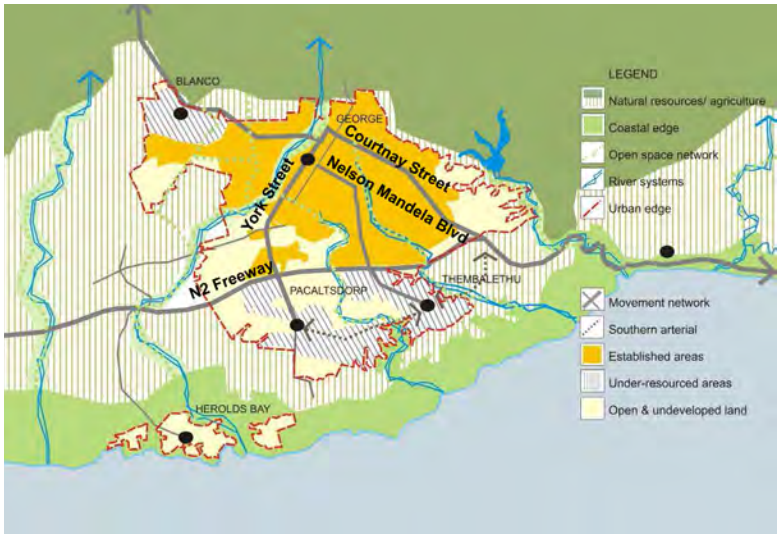

Figure 17:George's Existing system of roads.
Source: GSDF (2013).

7.2.4 Public transportation

Initially introduced during December 2014, the Go George public transport system has systematically been rolled out through much of the George municipal area. The service has already been expanded to some of the dormitory areas situated far from economic opportunities such as Blanco and Pacaltsdorp but at the time of writing its extension to for example Thembalethu and

Wilderness had not yet been implemented. While careful route planning had been done prior to introduction of the system, proposals for urban densification as articulated elsewhere in this report would necessitate re-evaluation and revision of the current route plan.

7.2.3 DEMOGRAPHICS

George municipality has the largest population in the Eden District, the population was estimated at 193,672 in the 2011 census, which represents a growth of 29.1% from 2001 -2011 (IDP 2013-2014). Predicting the anticipated population growth of a town is influenced through a range of variables such as birth rates, mortality rate and in-migration to mention a few. However, in order to calculate a population projection for George Municipality over a period of 20 years (i.e. until 2031), a geometric statistical formula was used (Jones, 2006) as described in further detail below.

Formula: Pt= Po x (1+r/100)t
Where: Pt= Projected Population
Po= Current Population
t= Time Period
r= Population Growth Rate

(Jones, 2006)

According to The Western Cape Provincial Department of Social Services (2014) South Africa will experience a general decline in population growth. Therefore, a rate of 0.86% per annum is used in this report to plan for the additional population who will reside in the municipality by 2030.
According to the above formula therefore, the growth scenario for George Municipality over the next 20 years indicates an increase in its population, with an additional 72,045 people.

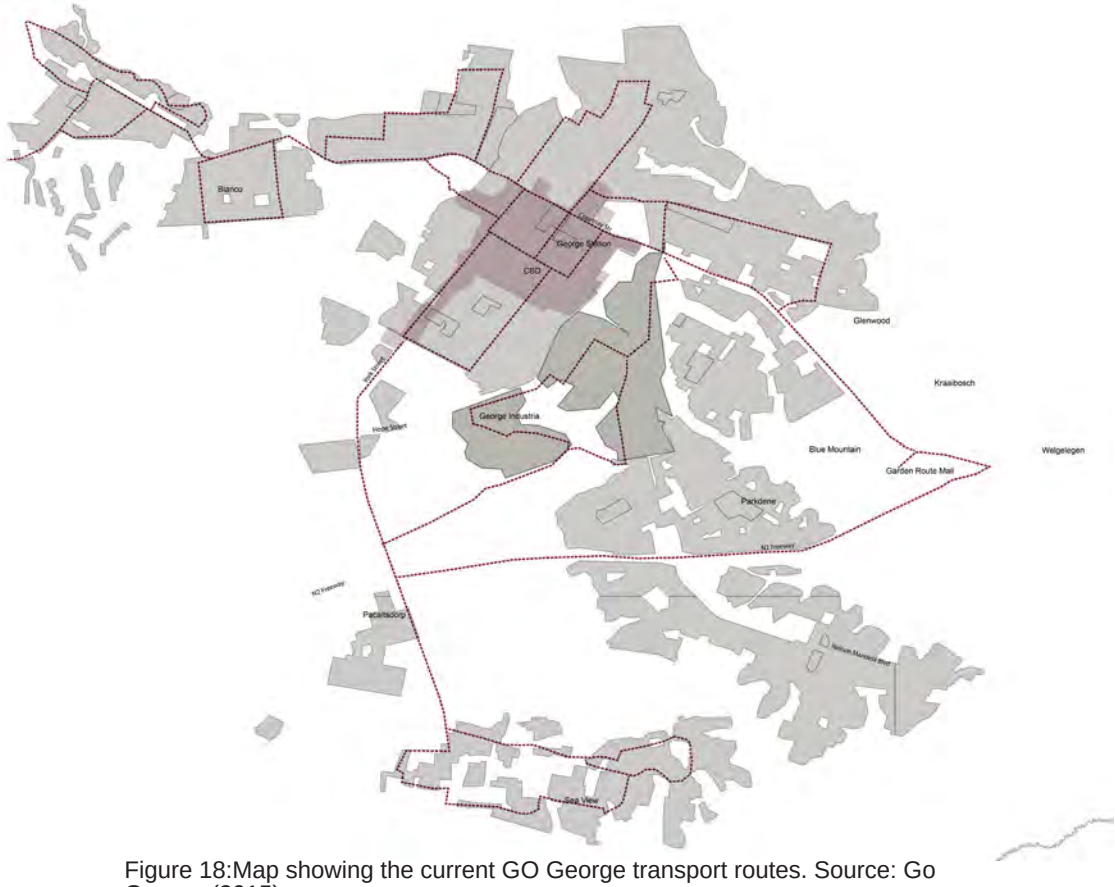

Figure 18:Map showing the current GO George transport routes. Source: Go George (2015)

Understanding racial groupings provides insight into changes in the human settlement and migratory pattern of a population. It provides valuable information for future and current demand for municipal services and the provision of government services such as health, education, housing and basic services (Table 1). For example, the demographic data below clearly emphasise the need for creating sustainable human settlements as opposed to traditional social housing development so often characterised by low density urban expansion.

	2001	% of Population	2011	% of Population
Black African	36999	27.3	54674	28.2
Coloured	68158	50.3	97632	50.4
Indian or Asian	352	0.3	924	0.5
White	29896	22.1	38135	19.7
Other	0	0	2306	1.2
Total	135405	100	193672	100

Table 1: Population groups according to race. Source: IDP (2014)

Demographical data for the period between 2001 and 2011 shows a significant growth in the Indian and Asian population, followed by the Black African and Coloured population groups (Table 2). What the data does not necessarily show is the fact that communities within the George municipal area remain mostly segregated and that little social integration has occurred.

	Black African	Coloured	Indian or Asian	White	Other	Total
2001	36999	68158	352	29896	0	135405
2011	54674	97632	924	38135	2306	193672
% Growth	47.7	43.2	162.5	27.5		43

Table 2: Population growth from 2001 to 2011. Source: Stats SA (2011)

8.4 WELFARE AND SOCIAL INFRASTRUCTURE

Social welfare of a local population relates to aspects such as how the community functions, support systems in place and whether said communities have access to sufficient services and opportunities

7.4.1 Income

Household income serves as an indicator of the standard of living of a particular community and informs as to the level of poverty experienced by communities, which should consequently have policy implications with relation to for example municipal indigent relief, poverty relief programmes and service tariff policies. In 2011 approximately 12.1% of households in George Municipality indicated that they earned no income and 39.6% reported to have an income between R1 – R38 200 p.a. This income category represents the largest concentration of households and therefore should have direct implications of land use management and spatial planning policies applicable to future development patterns in the municipality Stats SA (2011)

7.4.3 Poverty

Understanding the level of poverty and inequality in the George municipality provides statistical evidence that invention is required in specific communities within the study area. Two statistical instruments are internationally used to calculate the levels of poverty and inequality within a region: the first is the Human Development Index (GMPD,2013) which is a relative index that quantifies the extent of human development of a community. Therefore the closer the HDI is to one the greater the quality of life of the region (PGWC, 2011). The second is the TheGini coefficient which is a summary statistic of income inequality (0 is the case of perfect equality, and 1 which indicates high inequality (PGWC, 2011).

The poverty rate represents the percentage of people living in households with an income less than the poverty income whereas poverty income is defined as the minimum monthly income

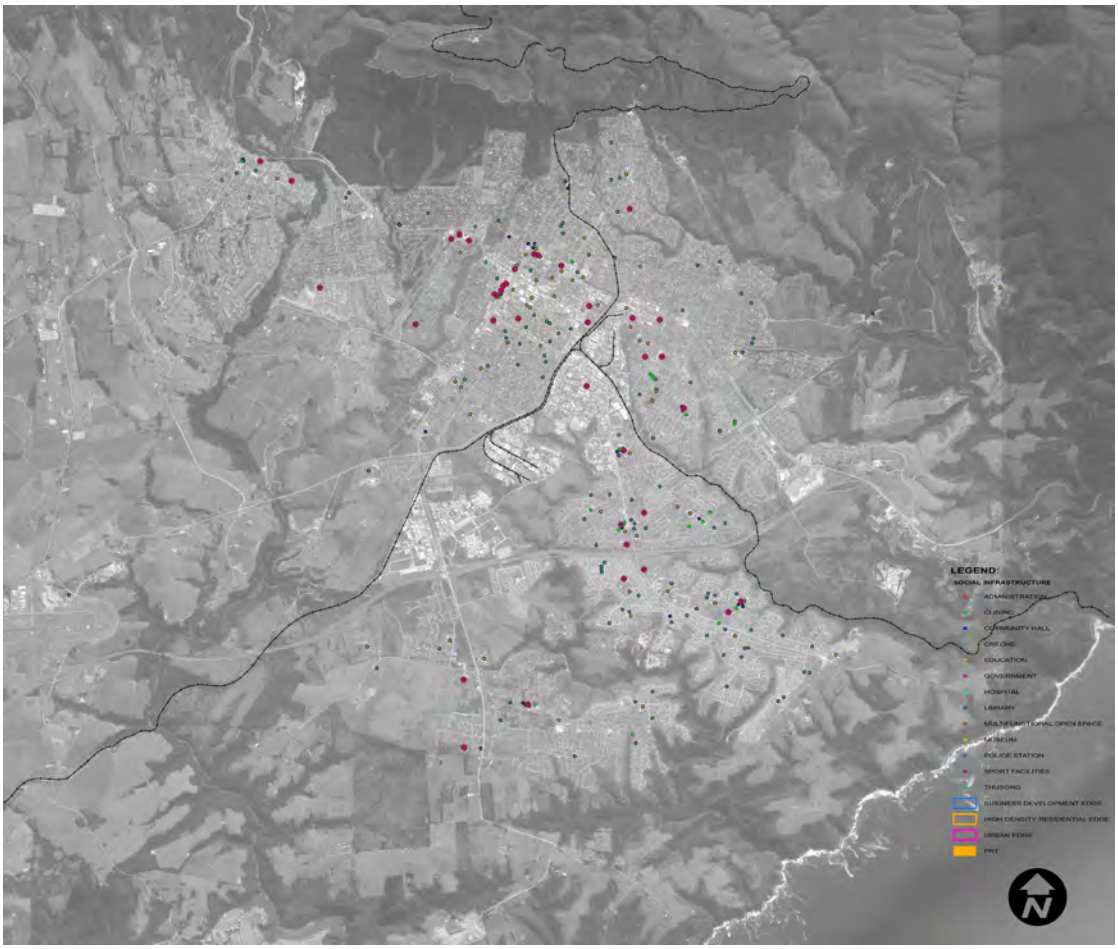

Figure 19: Social infrastructure mapping throughout study area (Source: DELplan,2014)

needed to sustain a household. The monthly income needed to keep a 1 person household out of poverty in 2010 is estimated to be R1 315, for a two person household it is R1 626 and for a four person household requires an estimated income of R2 544 per month. In 2011 approximately 12.1per cent of households in George earned no income while the percentages of the population living in poverty for the years 2001, 2007 and 2010 were 26.2%, 21.1% and 20.4% respectively(Western Cape Government Provincial Treasury, 2014).

7.4.4 Education

According to the George IDP (2013/2014), there were 39 schools in the George municipal area of which 4 were no fee schools. George has one school designated as a Daneledi school (i.e. with greater focus on mathematics and science as part of the schooling curriculum, in an effort to improve the proficiency of students in mathematics and science). With relation to tertiary education, the Southern Cape Further Education and Training College has two training facilities located in George Municipality since 2010. The Nelson Mandela Bay University based in Port Elizabeth has a satellite campus in George.

One way of understanding educational levels within the George Municipality jurisdiction area is through its literacy rate. Literacy is the ability to read and write, and the completion of a minimum of 7 years of formal education. According to the Western Cape Socio-economic profile (2014), the overall literacy rate for George was 83.4% in 2011. Though slightly above that of the Eden District's literacy rate of 82.6 per cent, it fell below that of the Province and therefore these literacy rates have implications for employment and income. Learner enrolment in George has increased marginally from 34643 in 2013 to 34807 in 2014 while the percentage matric passing rates over the years 2011, 2012 and 2013 were 86.9%, 90.1% and 89.2% respectively(Western Cape Government Provincial Treasury, 2014).

Educational programmes ranging cutting across primary school, secondary school and tertiary training should be focussed on reducing poverty and disparities, increasing financial stability and secure household income. In order for the quality of basic education in the municipality to be increased more schools and training facilities are required as this can be achieved through the building of new schools and upgrading of existing schools.

7.4.5 Healthcare

The health of an area population is a major determinant of the overall quality of life in such an area. This means healthcare services in the municipality is vital to achieve and maintain a high quality of life. A total of 20 healthcare facilities are situated in George, which include 9 fixed clinics, 3 community day centres, 2 satellite and 4 mobile clinics. George also has one district and one regional hospital; thus hosting a wide spectrum of healthcare facilities within its jurisdiction(Western Cape Government Provincial Treasury, 2014).

In 2013, the municipality indicated 3886 cases of Antiretroviral treatment (ART) patient load in the George jurisdiction area with an increase in 648 more cases in 2014.Malnutrition (either under- or over nutrition) refers to the condition whereby an individual does not receive adequate amounts or receives excessive amounts of nutrients. The number of malnourished children under five years in the Western Cape in 2014 was 1 087. For the Eden District it was 168 of which 39 were in George. Though George had the highest number of malnourished children (due to its size), the town's rate of 216 per 100000 persons were lower than the Eden District average rate of 319 per 100000 persons(Western Cape Government Provincial Treasury, 2014). The municipality's maternal mortality rate of 214 per 100 000 is considered extremely high – particularly so when compared to the provincial rate of 69 and district rate of 105.

7.4.5 Employment

According to 2011 figure, the George unemployment rate was 20.7%, which is slightly lower than the provincial unemployment rate of 21.6%. George Municipality's youth (15-34) unemployment rate, at 27.6%, is a few percentage points higher than the overall provincial unemployment rate, which appears to be a trend with other local municipalities in the Eden District(Western Cape Government Provincial Treasury, 2014).

Apart from grants provided through the national government agency, the South African Social Security Agency (SASSA), the municipality offers additional social support through its indigent policy, which makes provision for discounted rates on basic services such as water, electricity, sanitation, refuse and property rates. According to the Municipality, there are 14 345 households registered as indigents in 2012/13.

7.4.6 Safety

Safety within an area contributes to the quality of livelihood of its residents and is crucial for their physical and emotional well-being and well as that of business. Peoples' general impressions, as well as official statistics on safety and crime issues mould perceptions of areas as living spaces as well as places in which to establish businesses. According to the George IDP (2013/2014) the number of burglaries, murders and sexual crimes decreased between 2004 and 2014, though drug and alcohol- related crimes increased over the same period. The table below indicates reported crime incidents related to murder, drugs, property and sexual-related crimes over the period 2003 - 2010.

Crime category	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Burglary (residential)	1146	1412	1319	1378	1367	1360	1650	1682	1785	1835
Driving under influence	384	586	820	1086	938	914	807	731	710	611
Drug related crimes	1326	1641	1637	1823	2257	1991	2199	2200	2306	2586
Murder	79	100	100	87	90	73	70	62	62	60
Sexual crimes	450	394	392	366	338	400	498	459	512	501

Table 3: Crime within George Police Precinct (SAPD)

7.5 SETTLEMENT PATTERNS AND SERVICES

The town of George incorporates the former separate villages of Pacaltsdorp (situated ± 7km south of the George town centre) and Blanco (situated ± 5km west of the George town centre).

75.1 Transport Infrastructure

Transport infrastructure is fundamentally important for movement of people, goods and services as it connects different components of the region and in the George Municipality the main form of transport is by road. More detailed descriptions relating to the primary vehicular routes, modes of

transport and public transport within the George municipal area are discussed under “Movement Analysis”.

7.5.2 Service Infrastructure

George Municipality is responsible for the provision of basic services such as water, sanitation and electricity as directed by national government. In order for residents and businesses to have access to water and electricity, the municipality needs to provide the infrastructure to deliver these basic yet critical services while maintaining this infrastructure to ensure that its functions optimally at all times.

The primary source of potable water for the George municipal area is from the Garden Route Dam, situated within the catchment of the Swart River (“All Towns Study”, 2010). The supply area of the present water system covers the old George Area including Heroldsbaai, Pacaltsdorp, Wilderness (and surrounds), Hoekwil and Victoria Bay. The Garden Route dam is owned and operated by the George Municipality. In 2013, 96.1% of the population has access to potable water, which is higher than the District average which is cited as 95.2% (Western Cape Government Provincial Treasury, 2014).

While according to the “All Towns Study” (2010) the municipality’s waste water services plants are in good condition, existing capacity allocations have reached a point where further urban expansion would not be possible without significant expansion and/or upgrade of the primary waste water treatment plant (Kantey&Templer, 2015).As with most of the Eden District, George Municipality remaining landfill airspace is extremely limited and a regional solution toward landfill for solid waste is therefore currently being sought. In 2013, an estimated 87.9% of households in the George municipal area had access to basic sanitation, with the District average being 85.1% (Western Cape Government Provincial Treasury, 2014).

The availability and use of clean and sustainable energy sources are becoming increasingly important. Different energy sources also have other usage risks; e.g. health and safety risks especially in the use of paraffin and open flame usage. Household electricity access levels are generally good across the District, with George Municipality’s 2013 household access level at 91.0 per cent(Western Cape Government Provincial Treasury, 2014).

Refuse removal is considered an essential municipal service, aimed at curbing health-related problems, protection of the natural environment etc and the lack/ inadequacy of this service may lead to uncontrolled and unregulated waste dumping at inappropriate locations. Given the space constraints of landfill sites within the municipal area, as already mentioned, recycling is strongly encouraged and so, George municipality provides a recycling collection service in addition to normal refuse removal. In 2013, George Municipality’s household access level to refuse removal services was just above the District average of 86.5 per cent(Western Cape Government Provincial Treasury, 2014).

7.5.3 Housing

Access to adequate housing is cited as a basic right in the Constitution of the Republic of South Africa. According to information provided by Statistics South Africa Census 2011 and Quantec, an estimated 84.3% of households in George had access to formal housing in 2013. This figure

is roughly in line with the District average for the same year, with was 84.1% (Western Cape Government Provincial Treasury, 2014).

7.5.4 Economy

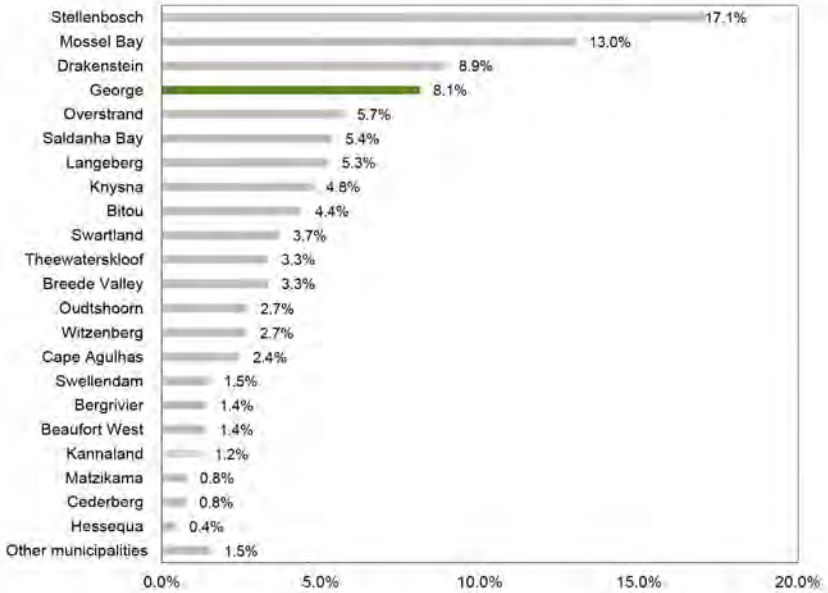

Figure 20:Municipalities percentage contribution to real GDPR growth and size of the region (Source: Western Cape Government Provincial Treasury (2014).

According to the Western Cape Government Provincial Treasury, 2014), George was rated as the fourth ranking non-metro municipality according to growth in size between 2000 and 2013, with Drakenstein, Mossel Bay and Stellenbosch having been ranked as 3rd, 2nd and 1st, respectively for the same period (see figure below). According to the Growth Potential of Towns Study, George as a town is classified as having very high growth potential as well as very high socio-economic needs(Western Cape Government Provincial Treasury, 2014).

7.5.5 Exchange

Exchange and retail activities should be planned in terms of access and convenience. Those activities are mostly located in York Street, Meade Street and Market Street as seen in Figure. They are arranged in hierarchy of convenience and access. The Garden Route Mall however offers greater variety and better vehicular access in terms of retail activities. The number of informal

traders and street vendors has increased in the past 10 years. They are located in the Central Business District and industrial area of George. Tensions still exist between formal and informal traders, particularly round the use of public spaces, pavements and squares.

CHAPTER

08

8 DESIGN INFORMANTS AND CONCEPTS

The urban planning principles are based on the principles which have been derived from an understanding of the analysis of the study area. The design informants offer opportunities and constraints which will guide future development.

8.1 THE IDEA OF PLACE

- The Study Area i.e the town of George is significant because of the social and historical significance attached to it, but also because of its unique biophysical characteristics, which define the character of the area. With these principles in mind, consideration has to be given before implementing design proposals:
- Its setting between Outeniqua mountain range and the sea (the “Genius Loci” of the study area);
- The physical geography and urban morphology;
- The identification of natural systems assets worthy of protecting.

8.2 SPATIAL OPPORTUNITIES AND CONSTRAINTS

The spatial development framework and precinct design have been further informed though an understanding of the spatial opportunities and constrains which are inherent in the study area. These are summarised as follows:

8.2.1 Spatial Opportunities

Economy

- The local economy is divided into 3 sectors: primary, secondary and tertiary;
- The town of George is an activity node located between Cape Town and Port Elizabeth, thus it plays an important role in regional financial and business services;
- Agriculture has strong backward and forward linkages to other sectors such as manufacturing (agri-processing), tourism (wine, events and accommodation). Agriculture has the potential to alleviate poverty through small- scale farming. An additional opportunity within the agricultural sector: responsible farming through participation in programmes such as the Biodiversity and Wine Initiative Agricultural soils of high productive value remain an opportunity for economic growth and job creation;
- The challenge is now to broaden the economic base and include appropriately scaled retail, commercial and possible office activity to strengthen the role of the study area in its larger context. Points of high accessibility and potential economic generators should be reinforced by boosting areas of existing economic activity. Recognising the opportunity of vacant land parcels that are strategically located can be a major booster in terms of economic prospect. The map below identifies vacant land within the study area. Strategically located vacant land provides a unique opportunity for development which integrates the urban fabric, as well as opportunity to improve functionality and efficiency of the study area;
- Climatic and soils conditions are suitable for intensive and extensive farming practices.

Infrastructure

- The town of George is made up of a hierarchy of smaller settlements, each with a specific role

and focus within the broader economy. The overall economy of George seems to reflect rapid but manageable growth patterns;

- The local accessibility of the study area is a significant opportunity and should be capitalised on. The key opportunities in this regard relate to, economic potentials resulting from linkage with major markets and surrounding regions, as well as good access for residents to major towns, jobs opportunities, health services and education;
- Since the study area is becoming an educational node (due to the presence of educational establishment like Nelson Mandela Metropolitan University) it can been seen as an opportunities to expand this concept to remote rural areas. As a result this will make the study area a well-recognized knowledge hub.

Environment and Tourism

- The town of George has been gifted with a unique landscape character of heritage/ cultural value, a superb natural landscape asset, and diverse terrestrial, marine and aquatic ecosystems (GMPD,2013) which means that capitalising on tourism and heritage and boosting the 'Green Economy' as a means to regenerate the town. Redressing the local municipality's as eco- tourism destination such as the George Botanical Garden and strawberry farms are opportunities for recreation and recreational space. Introducing formal programme of alien vegetation clearing along riverine corridors and conservation areas can provide opportunities to improve delivery of ecosystem services and increase employment.

8.3 CONSTRAINTS

Economy

- According to the GSDF (2013) the agricultural and forestry sector is currently declining and their contribution to the local economy is weak;
- Unemployment is currently one of the biggest challenges of the study area. The construction and property sectors are still suffering from economic recession;
- The informal economy is still under developed;
- Retail activity has declined due to the development of the Garden Route Mall.

Infrastructure

- The N2 freeway separates George urban core to Pacaltsdorp and Thembalethu. The spatial fragmentation also reflects the legacy of Apartheid modernism planning. Creating a more balanced and integrated socio-economy is a key element of the long term sustainability of the settlement;
- Public transport in the study area needs to be extended;
- Unsustainable use of natural resources ;
- Inadequate access to basic services, infrastructure and quality public amenities;
- Decay of social fabric due to crime and disputes;
- There is a dependency on social grants;
- Poor public linkages to surrounding towns;

Environmment and tourism

- Loss of biodiversity given the uncontrolled urban sprawl and agricultural expansion;
- River systems deteriorate downstream. The biggest challenge is seen to be balancing scarce

water supply with rising demand in a way that is equitable and equally divided between sustaining the ecological needs of the rivers on the one hand, and domestic, agricultural and industrial;
- Alien invasive vegetation along river corridor. Currently there is no formal removal programme in the municipality;
- Only one formal landfill site which serves the entire municipality;
- No riverine corridors are formerly protected;
- Low density and upmarket developments encroach on conservation areas;
- Some areas have high land value due to their close proximity to agricultural areas and conservation areas;
- Urban sprawl outside of existing towns.

8.4 SPATIAL DESIGN INFORMANTS

Spatial design informants are influenced by opportunities and constraints. They are a frame of reference within which future design decisions can be made during later design phases.

9 George Spatial Development Framework

This chapter consists of a proposed spatial development framework of the town of George. The proposed SDF includes the presentation of various conceptual layers which will inform the outcome of the proposal. Also, the 'package of plan' approach will be used as a guiding tool to help the reader to understand the design process.

9.1 PURPOSE OF THE PROPOSED GEORGE SDF

The proposed SDF for the study area tries to achieve the following sets of objectives:
- Increase density and urban intensity by introducing dense mix- use infill development in the George CDB and mix use development in the new proposed human settlements.

Ecological Sustainability
- The proposed SDF aims at protecting and conserving the CBA's which frames the town of George.

Accessibility
- The proposed GSDF will seek to create a dense "village- like'' environment, which is pleasant, integrated with the existing surrounding areas and legible. New NMT routes and public transport system will be developed.

Economic Sustainability
- The proposed SDF will create new retail and exchange nodes of activities to balance and redistribute potential new investment. The intention is to attract new developments and investors in the study area.
-

Choice
- The proposed SDF will aim at creating a choice of different dwelling typologies and choice of

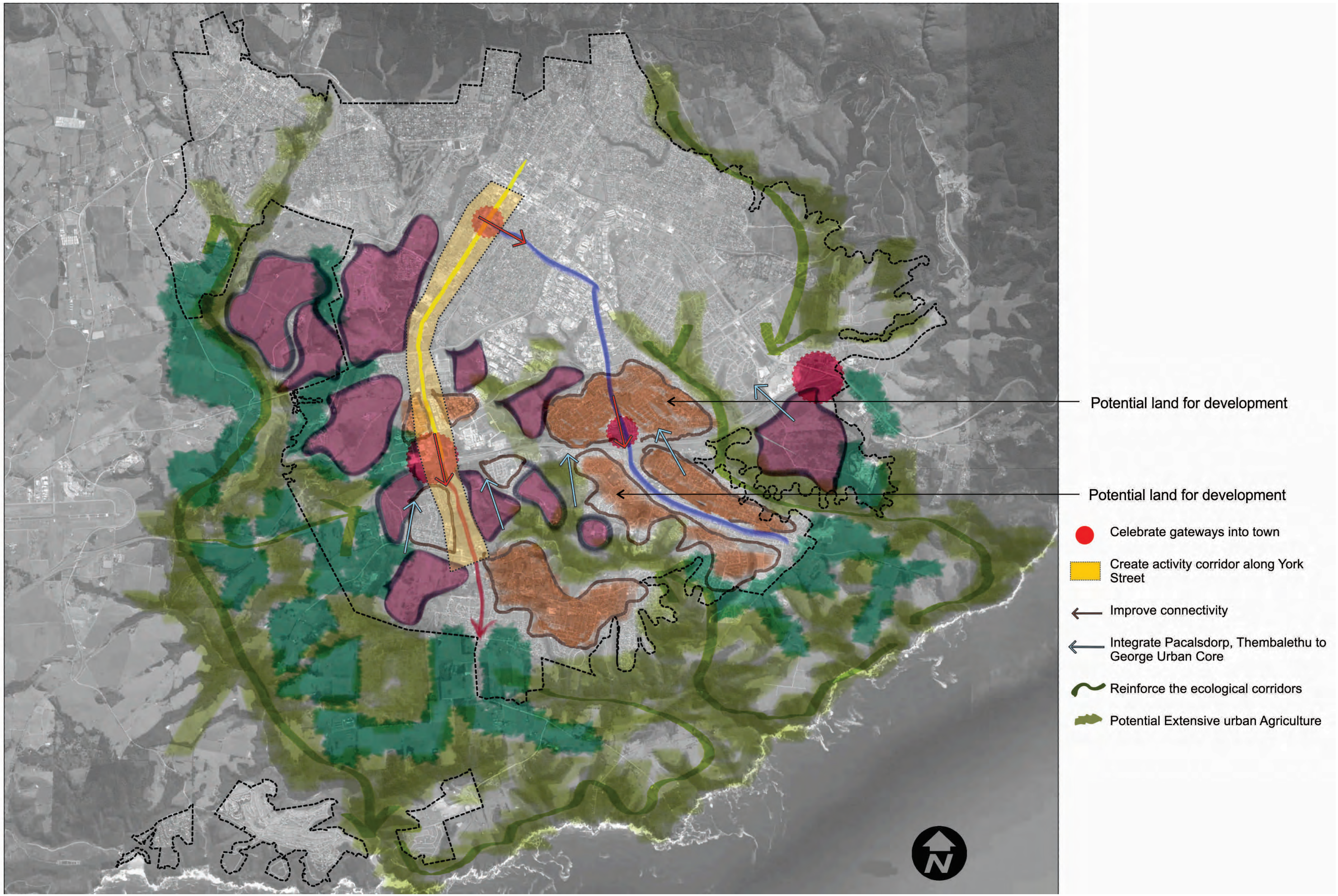

Figure 21:Opportunities Map. Source: Adapted from GIS (2015)

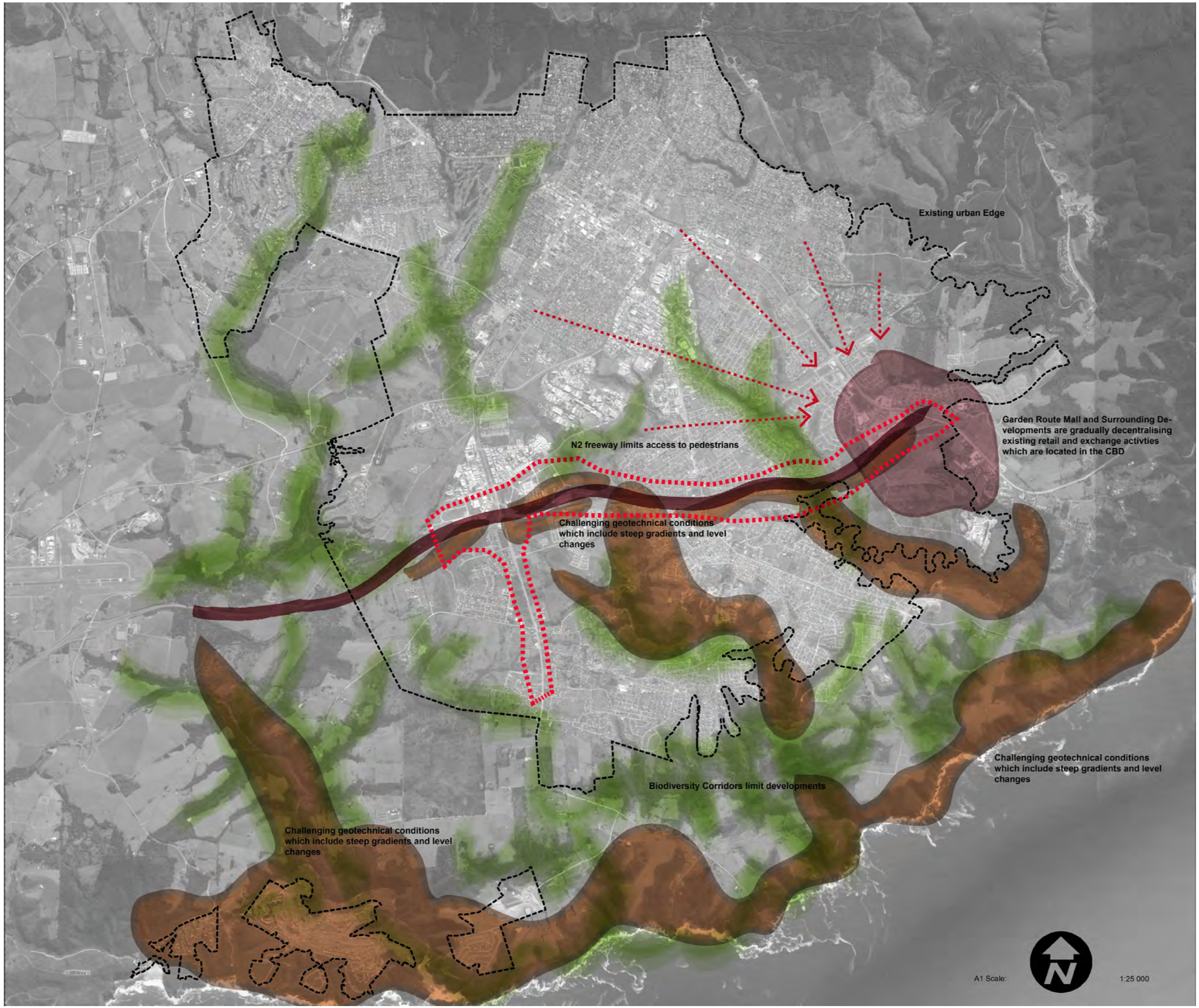

Figure 22:Constraints Map. Source: Adapted from GIS (2013) drawn by author (2015)

CHAPTER

09

access to commercial and retail activities.

9.2 CONCEPT

Unlike a spatial concept with may indicate the design of spaces or buildings (as often depicted in architectural concept drawings or precinct concepts), the concept for the proposed SDF is abstract and therefore provides a framework which will guide future development and movement systems. The concept is consequently flexible, adaptable and layered.

9.3 THE SDF UNPACKED

- Conservation of biodiversity systems as structuring elements;
- Hierarchy of institutions;
- Proposed activity corridor
- Proposed movement systems
- Proposed public transport system
- Proposed Pedestrian Movement
- Proposed educational institutions
- Indications of land- use
- Density
- Plan for the study area and identification of precinct.

9.4 THE CONCEPTUAL GRID

The development of the proposed George SDF is based on a 270x270 metre conceptual grid, which provides a structuring starting point as seen in figure below.

The conceptual grid prepares the framework for the establishment of the proposed superblocks, which are defined by higher order movement networks. The latter are vehicular movement generators tied to the N2 Freeway, York Street and Nelson Mandela Boulevard. The intersections of the movement generators are hence good opportunities for public activities and economic nodes. The superblocks follow a system of variations of 20 metres for the higher order movement system and 10 metres for the internal streets, which then create a 70x70 metre internal block. This as a result, produce a finer and mix-use grain of uses and activities, better functioning of circulation patterns and favourable conditions for choice, permeability and access (Dewar, 2000) the most efficient and relatable type. The blocks of 10 cities were analysed. It was discovered that larger blocks create an inconvenience circulation patterns for pedestrians but a convenient circulation routes for vehicles. Smaller blocks produce finer grain of activities, NMT circulation and places of interaction. According to Siksna (1996), a 60 to 70 metre block creates a finer mesh and is optimal for pedestrians, whereas a 200 metre block is a very coarse grain which is favourable for cars but inconvenient for pedestrian (Siksna,1996).

9.5 CONSERVATION OF BIODIVERSITY SYSTEM AS RESTRUCTURING ELEMENTS

The concept for the proposed GSDF defines biodiversity areas as structuring elements. The

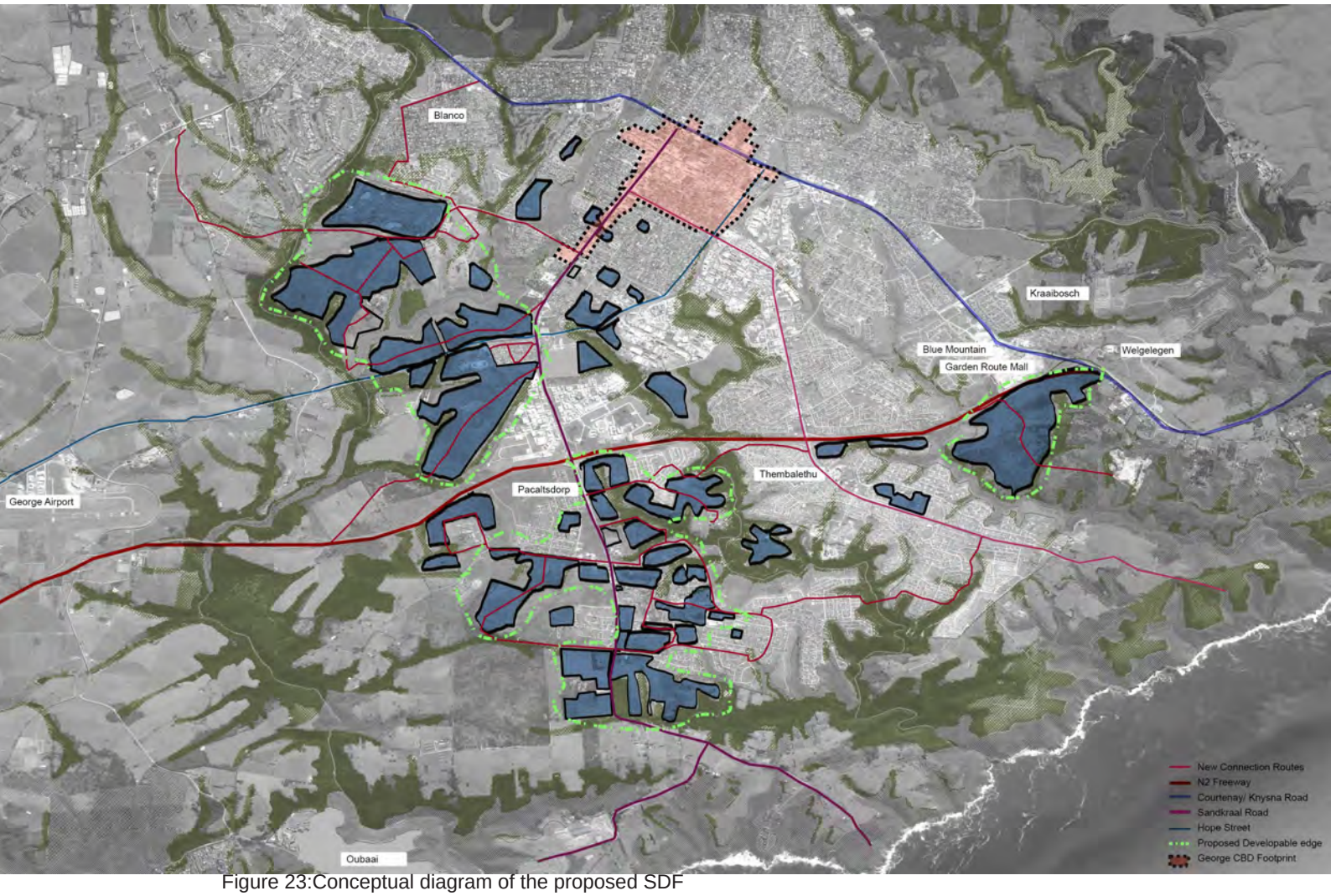

Figure 23:Conceptual diagram of the proposed SDF

biodiversity constraints seen in map allocate available land for development. The the extensive agricultural lands tie in with the biodiversity corridors and frame the proposed settlement. The aim is to provide a soft natural edge around each settlements. As said previously, George is surrounded by natural systems of high significance and important that it should be preserved. Biodiversity corridors will connect the existing CBAs and protected areas to the new ones. Areas for active and passive recreational areas such as sports fields and urban parks will be located along these corridors.

9.5.1 Urban Farming: Typology

Farm typologies that will be used as soft edges around settlements:.

Back Yard Garden:

- Managed by a private homeowner
- All production will be provided by the landowner/user within the property boundaries. This production is possible at many scales. An entire private yard could be used to produce food;
- The type of production and items being produced are dependent on the homeowner. Chickens, fish, and/or fruit and vegetables could be produced or managed;
- These activities could be primarily within a greenhouse, a plot or multiple of pots, raised beds or a combination of these and others.

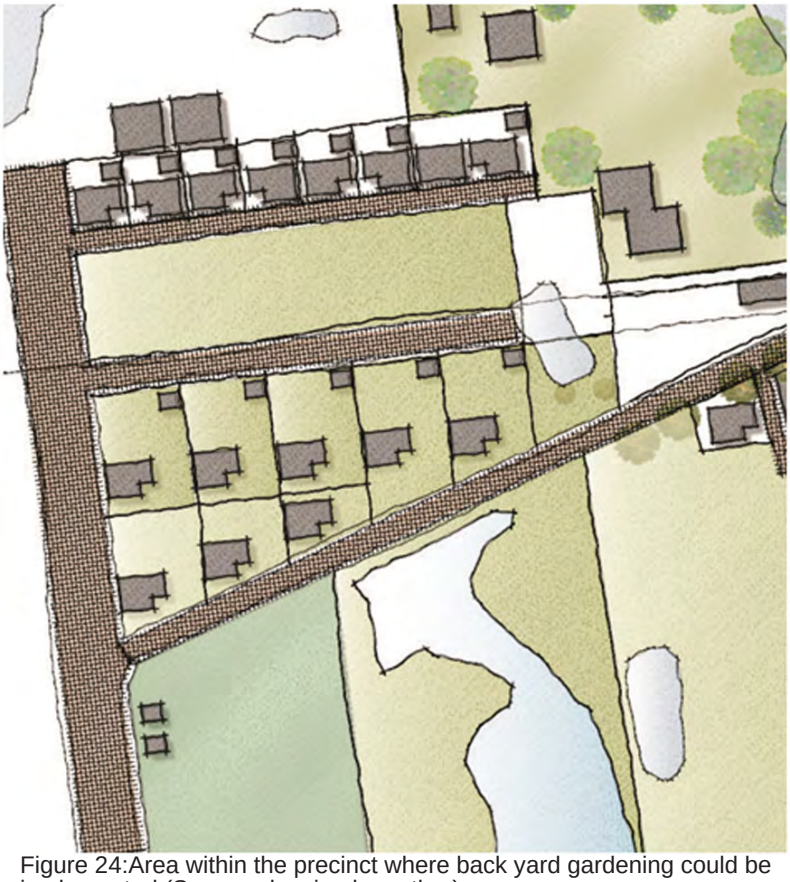

Figure 24:Area within the precinct where back yard gardening could be implemented (Source: drawing by author)

Figure 25:Example of typology of Urban Orchards (Source: drawing by author).

Small Plot Intensive Farming is an innovative way that homeowners can use in their garden for food production, without the work involved in gardening. This strategy utilizes multiple homes and empty lots for food production, each being cared for by one full-time urban farmer (Agri-spaces, 2014).

Urban orchards: Planting fruits can be done by individual community groups on small sites or on integrated common land (Agri-spaces, 2014).

Community gardening: where a local charity sets up a large garden (municipal plot) and any person who helps with the garden is able to take a portion of the harvest. Through either method, the surrounding community greatly benefits from heightened social connection and communal food production. This strategy has proven to be successful because it develops effective strategies to ensure active community participation at all stages of the process with continuous revision adaptation as residents provided feedback. Secondly, it achieved credibility and trust from the community involved which was fundamental to its success.

Roof top gardens: this process installs food producing plants on flat roof structures. This process is most appropriate for newer structures but roof top gardening can rejuvenate unused buildings if lands or backyards are not available for agriculture. (Agri-spaces, 2014).

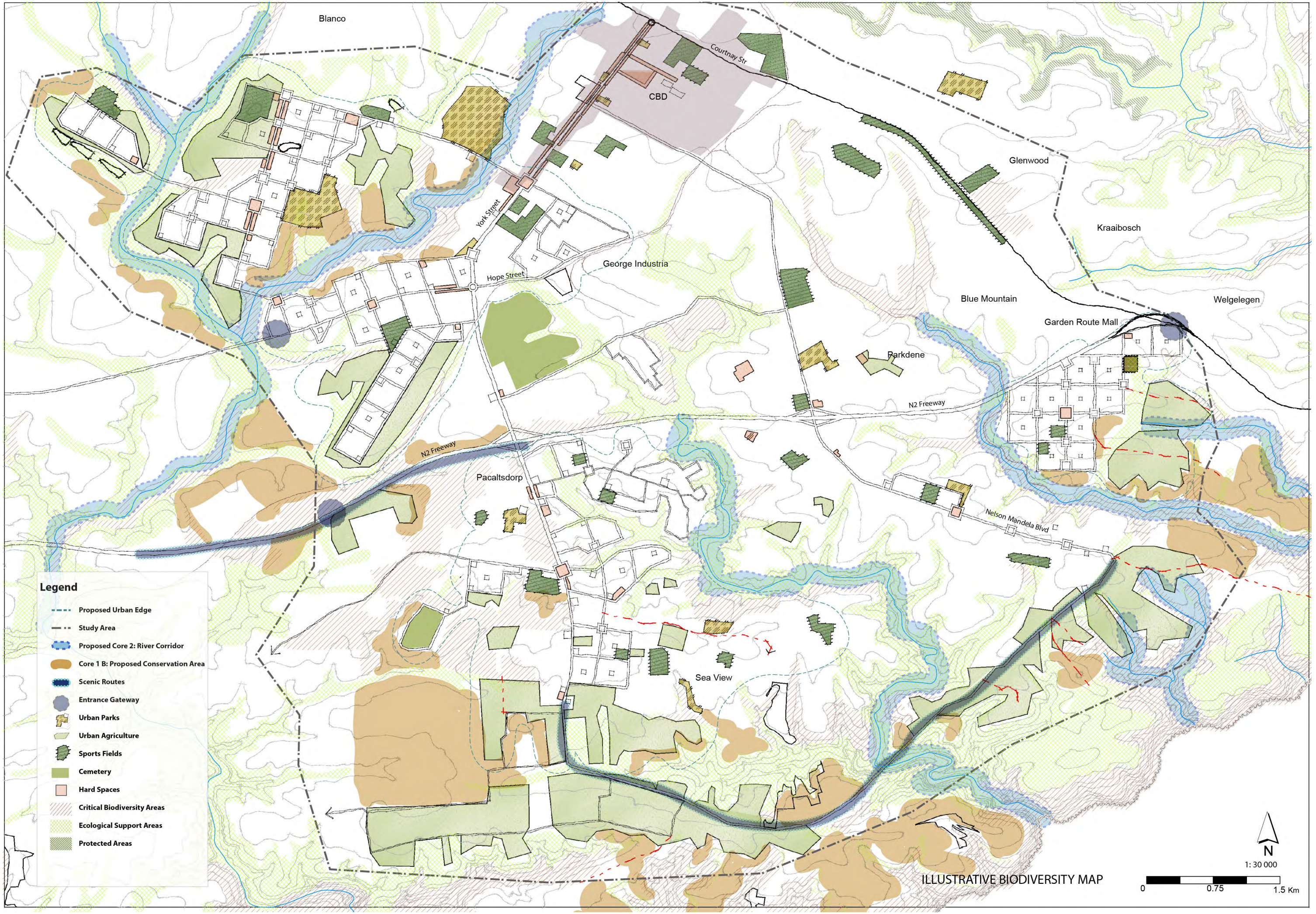

Figure 26:Illustrative Biodiversity map. Source: drawing by author).

9.5.2 Objectives

The objectives of this framework are:

• To ensure that the critical biodiversity of the municipality is protected from current and future degradation;

• To ensure that the state of natural biodiversity ecosystem of the municipality is improved to ensure the

long–term functionally of the ecosystem;

• To ensure that the entire natural biodiversity ecosystem continues to play an integral role in the functioning of the municipality.

9.5.3 Strategies

This section has also been presented into three themes namely 'Keep intact zones', 'Develop with care zones' and Develop with care zones, with conditions' (GMPD,2013).

Keep Intact Zones:

• Prevent development/ use of land that could compromise conservation areas;

• Informal protection areas should be considered for declaration as formal protection areas;

• High water yield areas to be considered for declaration as mountain catchment;

• Develop visual guidelines for areas with proclaimed heritage sites, scenic routes and areas of outstanding aesthetic;

• Ensure that valuable agricultural land isn't developed for other uses as they have water rights attached

to them;

Develop with care:

• Artificial wetlands: avoid development in these areas.

• Vulnerable ecosystems:

• Threatened animal and plant species

• Ecological corridors

• Land within 100m of wetlands to ensure that development in a buffer zone does not impact of the natural

system

• Dry land agricultural areas where the latter should be retained as it is important for food security.

• Grade 2 and 3 heritage resources to develop with care. Protect the aesthetic value of heritage resources

and scenic routes

Restrictive conditions

• Areas below 1:50 flood line to avoid placing people and development at risk from flood.

9.6 DEVELOPMENT OF PUBLIC SPACE SYSTEMS

The next step for the design and implementation of any new human settlement is the allocation of public spaces. “A hierarchical system of public spaces should form the main organising structure of urban settlements- as opposed to vehicular moment channels dictating settlement structure” (Behrens & Watson, 1996: 67). Figure 72 below shows the placement of public spaces, allocated within the 270 metres suberblocks. The placement of the public spaces were done according to a hierarchical order: Primary public spaces are located at the major intersections of primary activity routes; the secondary public spaces are located along the higher order movement systems while the tertiary public spaces are located at the intersection of lower order movement systems.

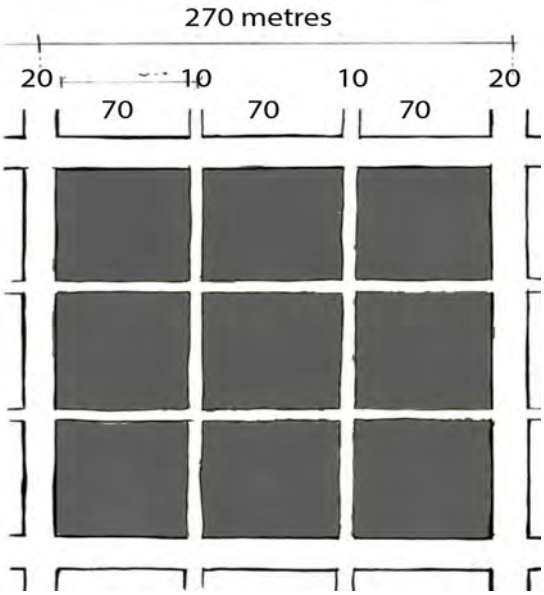

Figure 27:Urban Block dimensions. Source: Dewar & Louw, 2008)

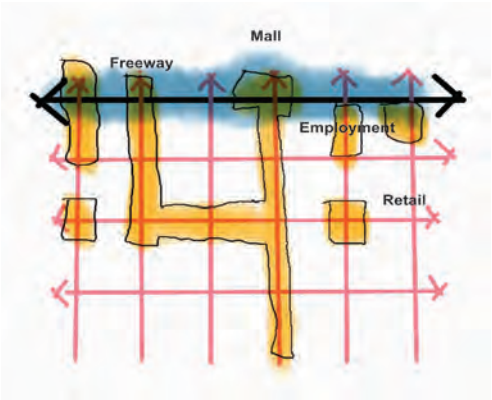

Figure 29:The spatial structure of settlement planning in George. Source: Drawn by author (2015)

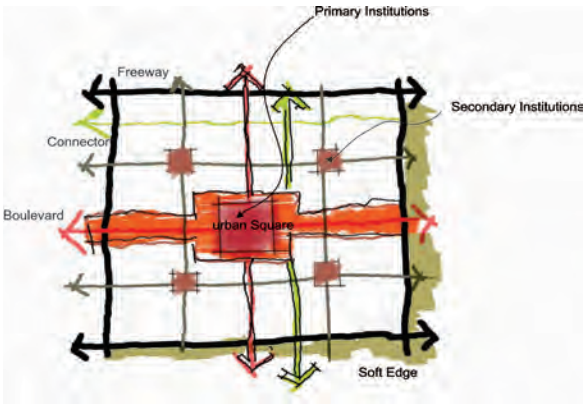

Figure 28:Elements of Public Spaces. Source: Drawn by author (2015)

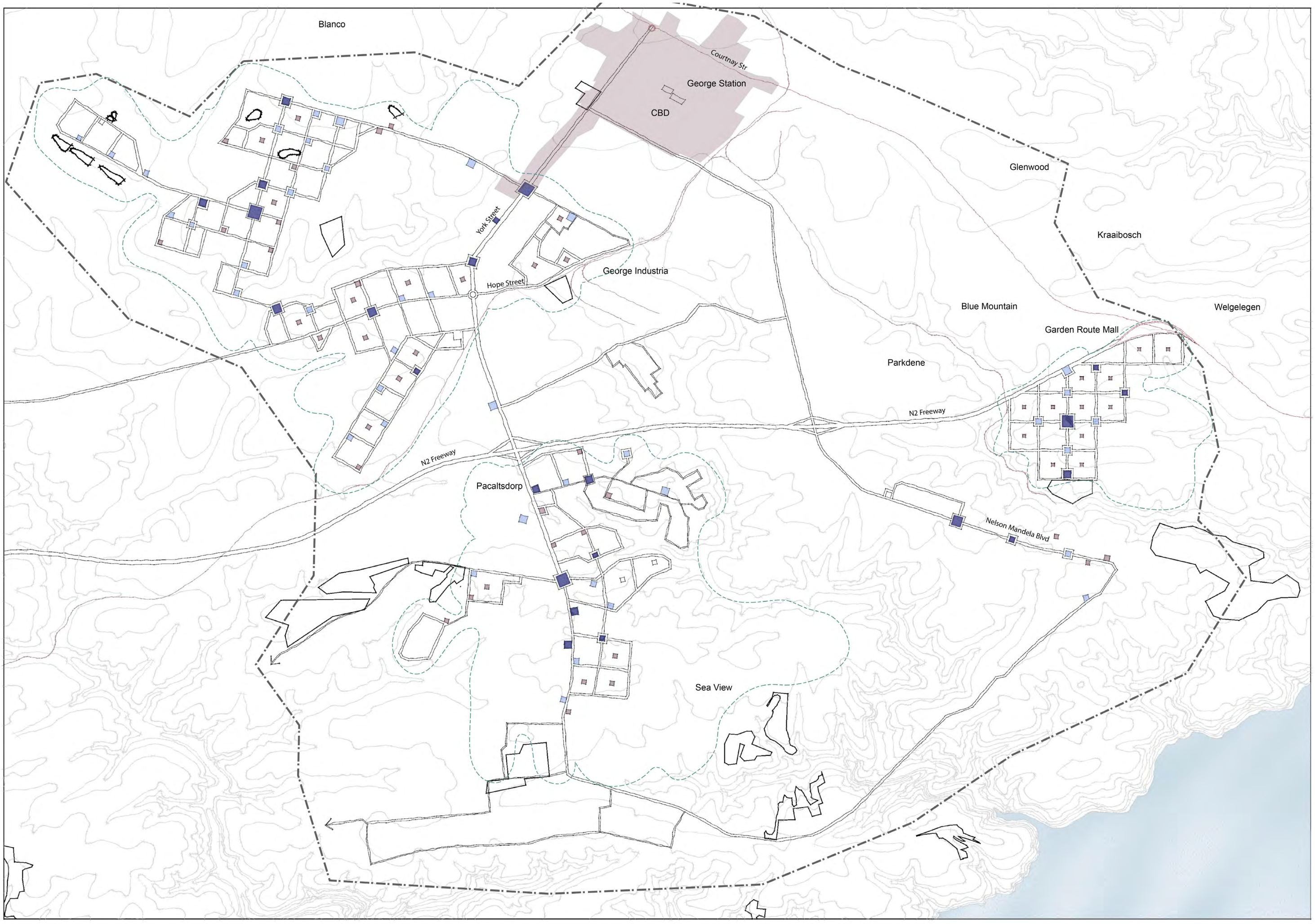

Figure 30:Hierarchy of Institution map. Source: drawn by author (2015)

9.7 PROGRAMMING OF THE SITE

The required public facilities according to the CSIR identified in this section, are located into the three proposed settlements.

SETTLEMENT 1

Education:
Primary Schools: 4
Secondary Schools: 5
Tertiary Institutions: 1
Resource Centres (Library and Computer Centres):1

Healthcare
Clinics: 3

Civic
Community Centres: 1

Administrative
Post Office: 1

SETTLEMENT 2

Education:
Primary Schools: 3
Secondary Schools: 3
Tertiary Institutions: 1
Resource Centres (Library and Computer Centres):1

Healthcare
Clinics: 2

Civic
Community Centres: 1

Administrative
Post Office: 1

SETTLEMENT 3

Education:
Primary Schools: 3
Secondary Schools: 3
Tertiary Institutions: 1
Resource Centres (Library and Computer Centres):1

Healthcare

Clinics: 2

Civic

Community Centres: 1

Administrative

Post Office: 1

Figure 31: Indications of Hierarchy of settlements

The map above shows the hierarchy of new settlements within the study area. Settlement 1 will be used as the precinct later on in this report.

9.8 ACTIVITY CORRIDOR

York Street,is proposed to be an activity corridor. It contains an urban square, hard open spaces and markets. The activity corridor will connect to the primary civic nodes as seen in figure 32. The civic nodes will include public facilities such as shops, restaurants, cafe, banks amongst others.

Blanco
Courtnay Str
George Station
CBD
Glenwood
Kraaibosch
York Street
George Industria
Hope Street
Blue Mountain
Welgelegen
Garden Route Mall
Parkdene
N2 Freeway
N2 Freeway
Pacaltsdorp
Nelson Mandela Blvd
Sea View

Legend

- Proposed Urban Edge
- Study Area
- Propsoed Activity Corridor
- Gateways

N

1: 30 000

IDENTIFICATION OF ACTIVITY CORRIDORS MAP

0 0.75 1.5 Km

Figure 32:Identification of activity corridor

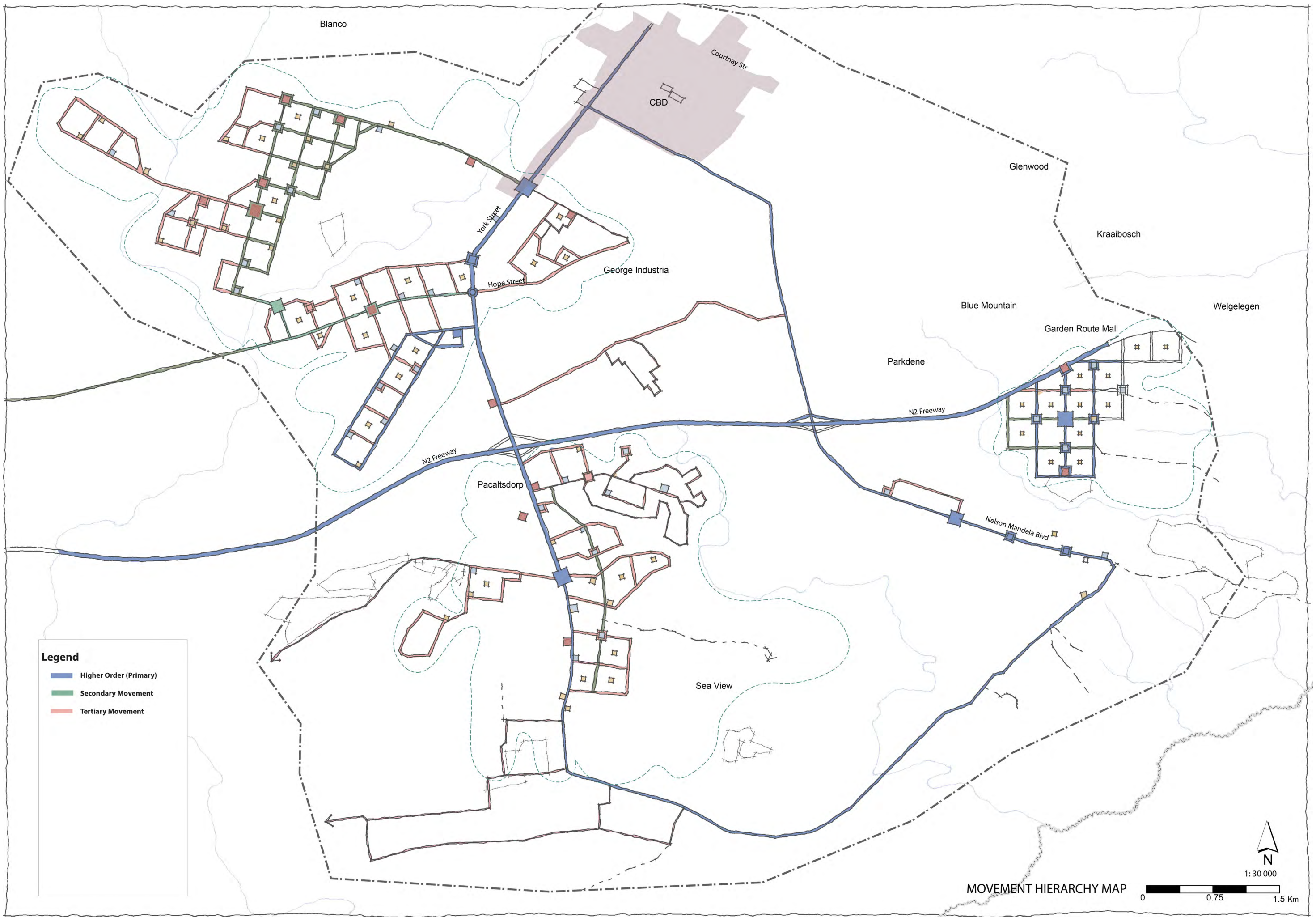

Figure 33:Identification of movement hierarchy. Source: Drawn by author (2015)

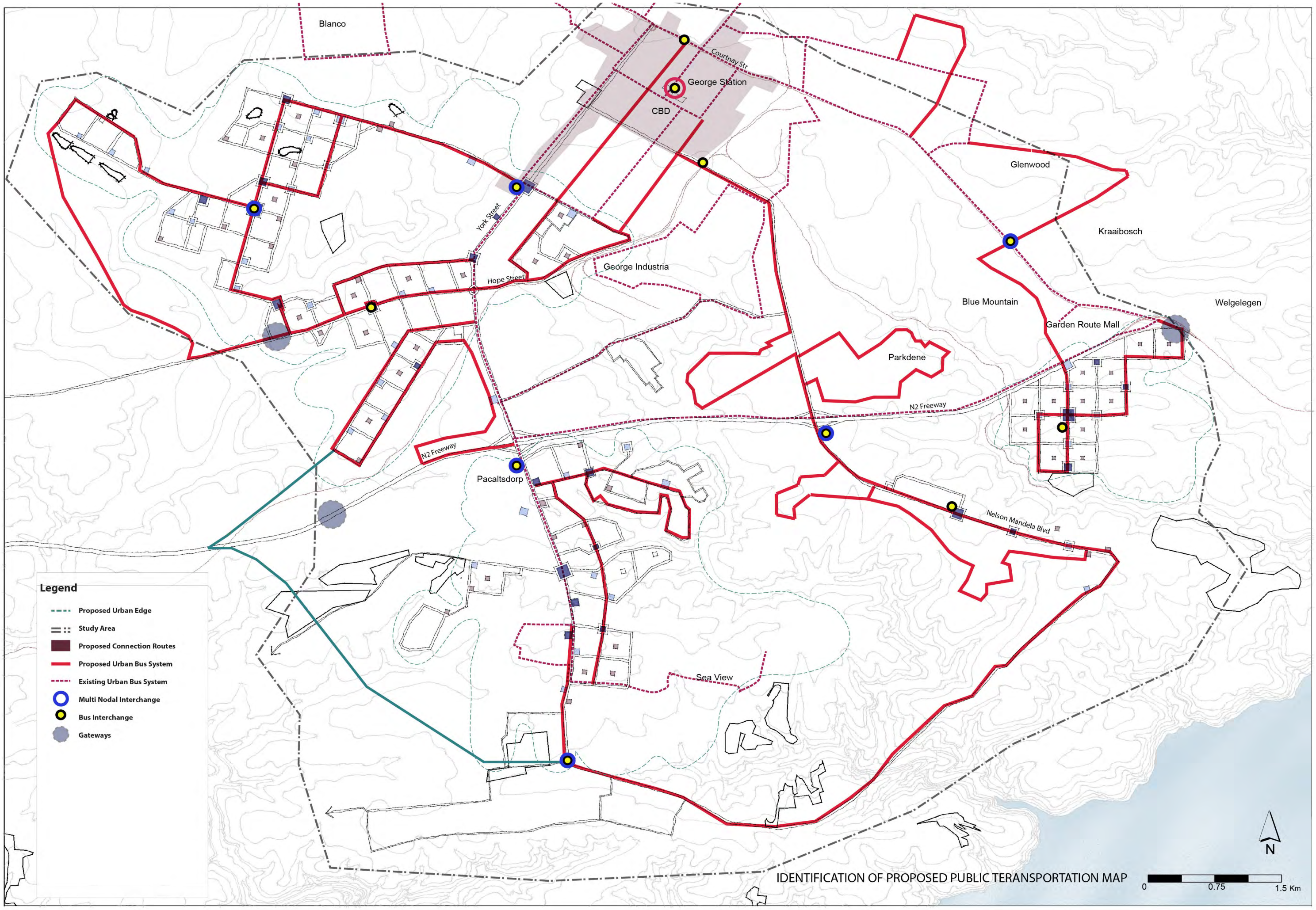

Figure 34:Identification of public transport system map. Source: drawn by author (2015)

9.9 TRANSPORT AND ACCESS

The Primary movement system will link York Street to the settlement of Pacaltsdorp which then connects to Thembalethu . The primary movement system will carry high level of vehicular traffic and public transport. Also, it is assumed that most trips within the study area will come from surrounding neighbourhoods. This system of loop provides an important link to the communities and full-fills the performance criteria of choice and access as discussed previously. Secondary movement routes will extend from the primary institutions. The primary movement routes will allow for one lane of traffic in each direction as well as on- street parking. The secondary movement and tertiary movement system will use the same principle of one lane traffic in each direction, but will be of narrow width.

On the 'Identification of Public Transport System Map', new Go- George bus routes will be implemented within the new settlements. The public transport system will promote north- south linkages, between the new settlements, Pacaltsdorp and Thembalethu. For the public transport system to run successfully and for it to be accessible to the public, Multi- nodal interchanges will be placed at key locations. Activities such as retails, commerces and other public institutions will be located around the interchange nodes.

The purpose of the pedestrian movement concept (Figure 35) is designed to achieve a high level of accessibility and amenities for pedestrians and cyclists. All roads designed will encourage walking and cycling. All activities will be located within a radius of 1km or less. A key component of the pedestrian and NMT routes will be their connection to existing areas within George. They will connect all areas using a system of corridors and routes, linking homes to workplaces, to educational facilities etc.

9.11 OPEN SPACES AND SPORTS

Open spaces and sports fields are important to create a healthy and fit community. Sports activities will act as a social catalyst that will bring the community from different background and social classes together. For the new GSDF, it is required that the existing sport facilities will be shared to other institutions. Furthermore, sports clubs will be located close to the public open spaces and educational institutions.

10.11 URBAN SQUARES

The role of the public squares in the GSDF will promote creativity, social interaction and public life. The proposed squares will hold activity centres, and other mix- use spaces, that will bring a sense of enclosure and comfort to the pedestrians using them. The public squares will hold a combinations of use such as open markets, concerts and other experiences for the visitors and residents as they move through the new settlement. The dispersal of hard and sort open spaces will ensure a range and choice of activities, which will be within walking distance to transport interchanges and residential areas.

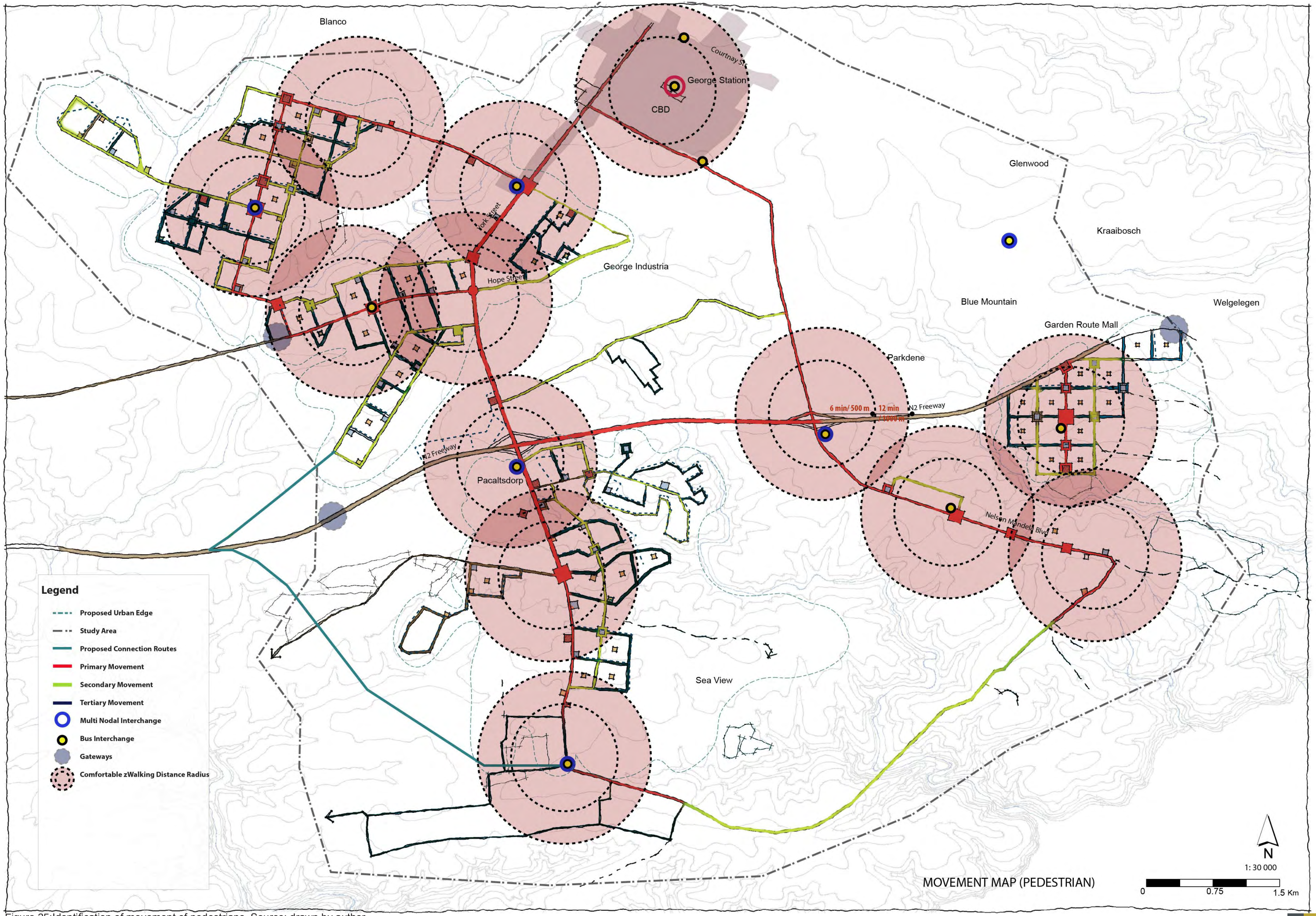

Figure 35:Identification of movement of pedestrians. Source: drawn by author (2015)

10.12 COMMUNITY DEVELOPMENT

The proposed GSDF will include a broad range of infrastructure and built facilities for the residents and visitors. As calculated previously, using the CSIR guidelines and regulations, the facilities will include clinics, hospitals, educational institutions, health centres, sport clubs, libraries and art centres. Thee facilities will provide services to the local and regional catchment areas and will be focal points to the economic growth and social activities of George. The new facilities will compile with performance categories, discussed previously.
Furthermore, the facilities should incorporate key principles as follow:
All facilities should be located within a radius of more or less 1 km in a proximity to nodes and activity centres.
The facilities should be integrated to the surrounding existing areas.
Co- location should be promoted, which enables share use of facilities by different institutions, residents and visitors.

10.13 HEIGHT BULK AND MASSING

The height, bulk and proposed structures is a guiding principle to enable public spatial structure and activities. The height of the proposed buildings is a matter of density. Density on the other hand is influenced by land use, surrounding scenic views, existing built fabric etc. The highest density will be placed along primary movement routes and institutions, the medium density as seen in Figure 38 will be located along areas of mix use activities.

10.14 LAND USE INDICATIONS

Figure 40 indicates land- use allocations for the proposed GSDF. The proposal will include mainly mix land- use opportunities. Mix- land use institutions incorporate public spaces, high building densities, commercial, office, retail and residential.

10.15 HOUSING TYPOLOGY

In terms of residential development, the study area is suitable for dense to medium density (2 to 3 storey) semi-detached residential units (see Figures 3 to 5), to achieve a net density of approximately 30 du/ha. Figure 37 and 38 shows existing similar typologies located in Cape Town, to illustrate that the proposed typology would not impact negatively on the residential character of the area. Various plot types should be considered in order to suit the needs and preferences of different households.

Figure 37:Typology (Source: Author) and Precedent (Source: studiomk.co.uk)

Figure 36:Figure 3: Residential Typology Precedent (Source: www.rackheatheco-community)

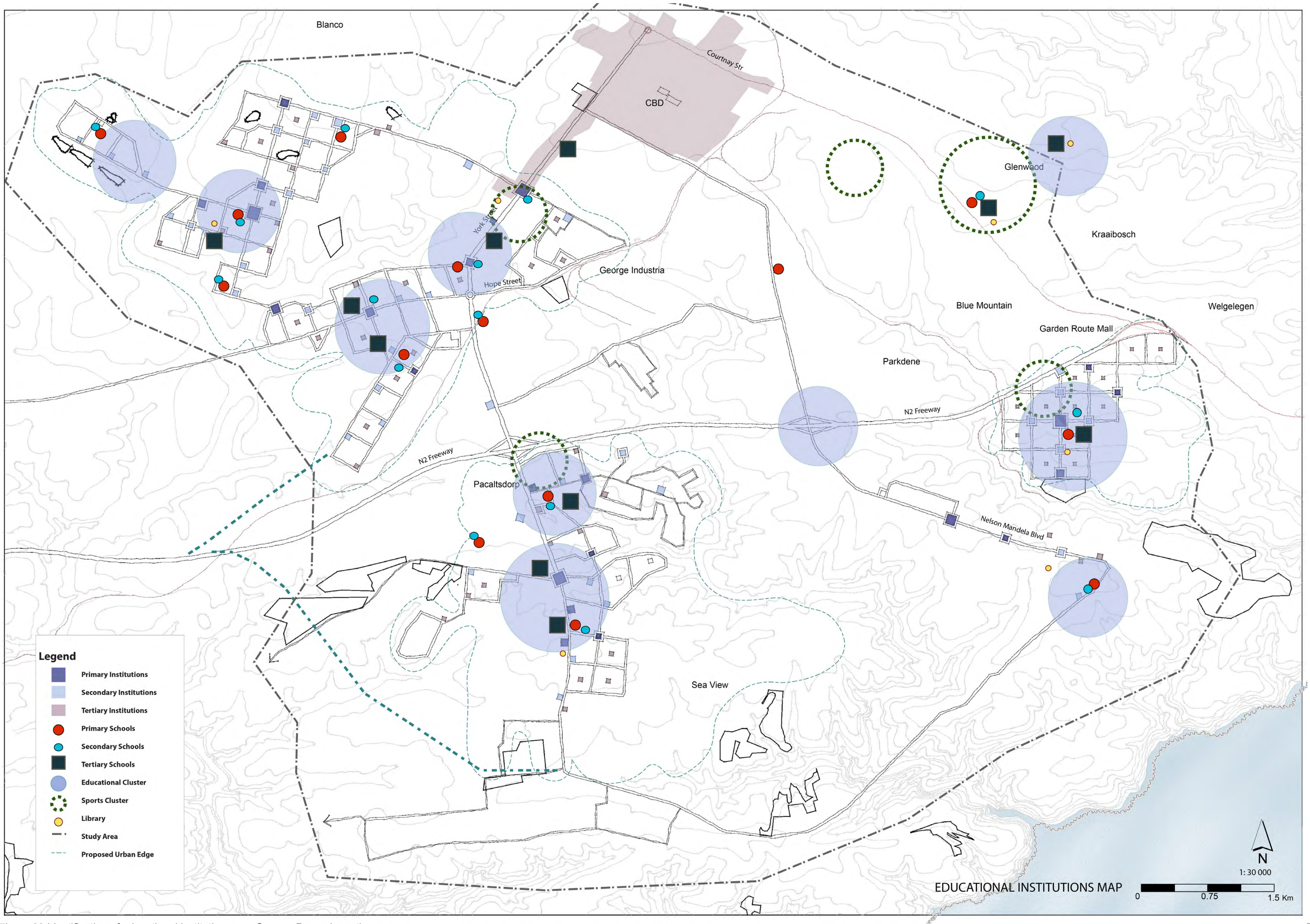

Figure 38:Identification of educational institution map. Source: Drawn by author (2015)

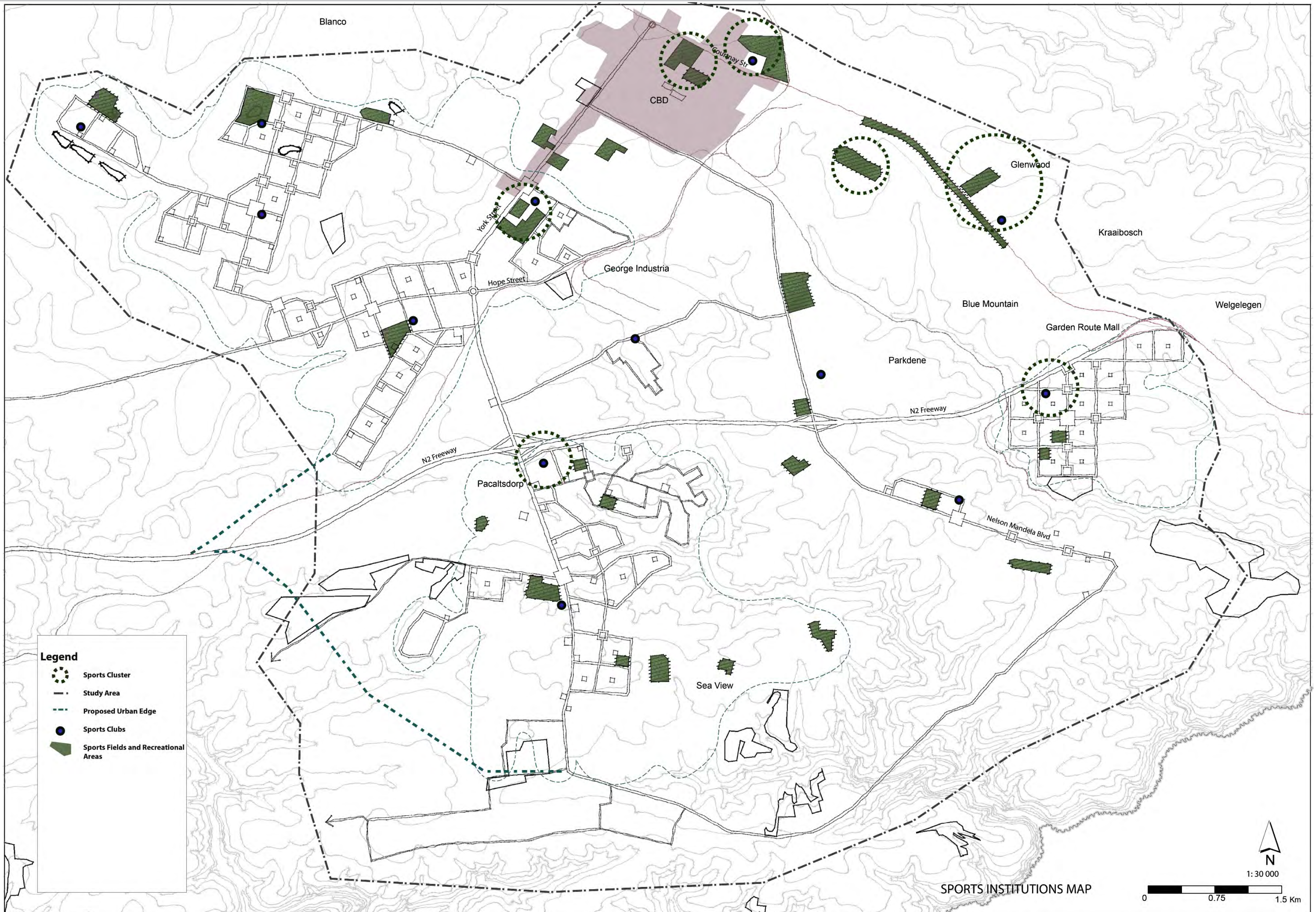

Figure 39:Identification of sports institution map. Source: Drawn by author (2015)

Figure 40:Identification of Land use Source: Drawn by author (2015)

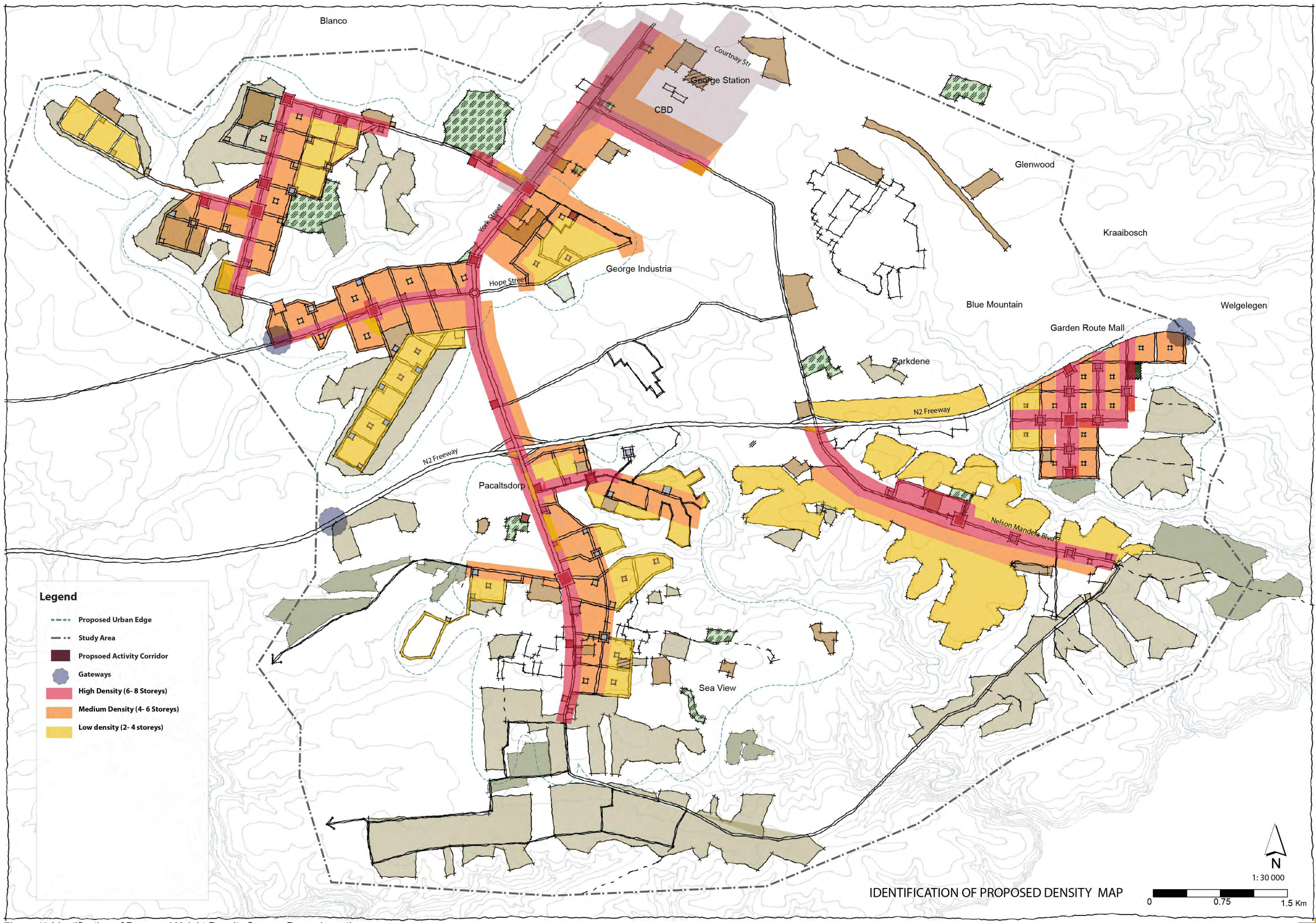

Figure 41:Identification of Proposed Height Density Source: Drawn by author (2015)

CHAPTER

10

10 DETAILED PRECINCT DESIGN

This section introduces a detailed precinct framework located within the study area, i.e the town of George. The precinct follows the structuring system guided by the proposed GSDF. The 'package of plan' approach was used to present the layers that make up the precinct design.

10.1 PURPOSE

The precinct framework which is a finer- grained design framework, will incorporate urban design principles to produce a safe and comfortable place for the residents and non- residents.

10.2 VISION

The precinct framework will be driven by a strong sense of community, recognition of its rich and diverse environment, and the long-term sustainable management of its natural resources. The area's social values and environmental wealth will be secured and balanced with opportunities for strong economic growth. The opportunities generated by both the agricultural and mix- use activities will be captured to enhance the study area's resilience to economic variability, enhance service delivery and advance the communities' early response to the potential effects of climate change. Healthy and liveable communities will work together with regional partners, adapt positively to the pressures of rapid growth, and maintain and enhance their cultural identities.

10.3 LOCATION OF THE PRECINCT

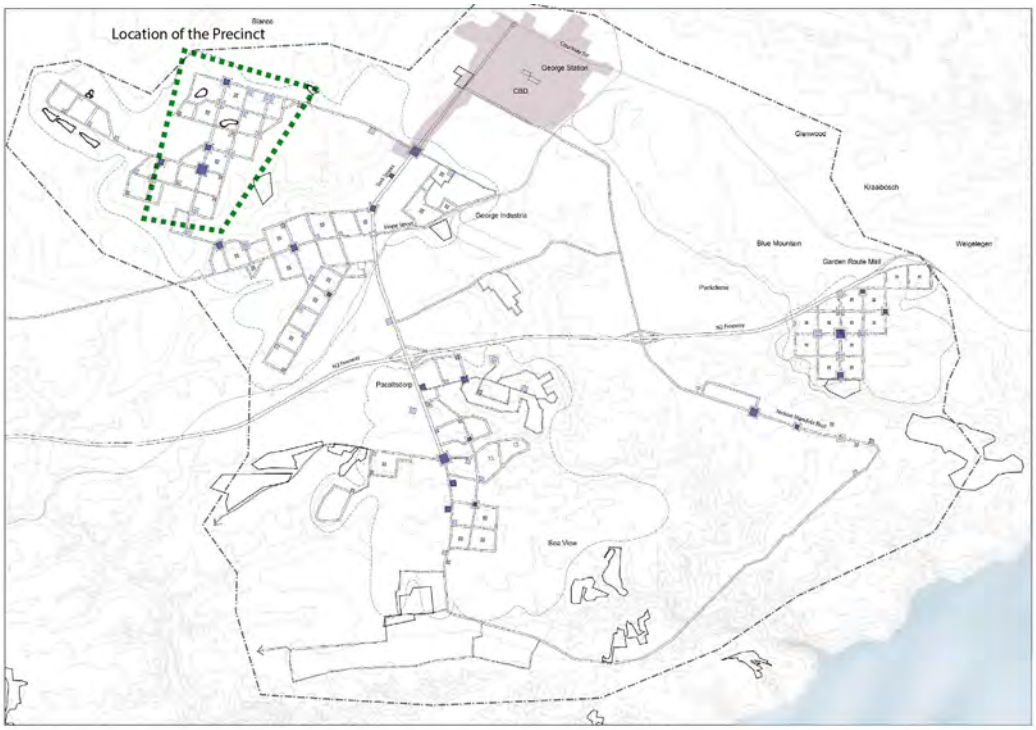

Figure 42:Precinct area within the development proposal. Source: drawn by author (2015)

Figure 43:Proposed Precinct Framework.
Source: drawn by author (2015)

10.4 STRUCTURING ELEMENTS

The precinct framework shares the same approach of structuring element as the proposed GSDF. The 270 x 270 metre superblocks are used, and framed by movement routes and extensive agricultural practices. It corresponds to the catchment of 12 minutes walk from the centre which is the public square to the soft edges. This structure places the majority of public activities and households within pedestrian access.

10.5 DESIGN PRINCIPLES

The principles informing the design of the precinct aim for the following goal:
Equal, efficient and accessible public transport systems, interchanges and routes;
Offer residents and visitors a unique sense of place;
Equal standards of educational and health facilities;
High concentration of mix- use densities, that will enable activities at any day or night.

10.6 INDICATIVE LAND- USE

Mix- Use development will be located at the centre of the precinct. This will enable more equal access to facilities and services. With time, the highest concentration of public activities will emerge from the centre of the precinct. The primary movement route will incorporate retails, shops, cafes, banking facilities, civic centres etc.

11 IMPLEMENTATION

This section explains the overall implementation of this document for the proposed George Spatial Development Framework. It starts with the introduction of the short– tern, medium– term and long– term interventions of the strategies and policies required for the municipality. However the staging of the proposed precinct will depend on the following principles:

- The staging should ensure that the needs of the community is fullfilled and the biodiversity is preserved.
- The staging of the precinct should ensure that the development of land is accompanied by provisions of infrastructure and services to meet the needs of the community.

11.1 SHORT– TERM INTERVENTION

The short– term implementation strategy of this document is linked with the current planning documents of the George Municipality. such as the IDP. This phase requires capital contribution from the local municipality and stake– holders. This intervention deals with the different layers of the proposed GSDF. Secondly the short– term intervention focuses providing and improving basic health and educational facilities and recruiting professional practitioners. Collaboration between the local municipality and other district and provincial department is essential. Lastly the short– term intervention will implement a tourism– led strategy where the municipality will collaborate with different sectors of the George Municipality to identify appropriate solutions to boost the tourism sector. The tourism sector can work in conjunction with the informal sector.

12.2 MEDIUM AND LONG TERM INTERVENTION

The medium and long term intervention will require significant capital contribution from the local municipality and private stake holders. The medium/ long term intervention focuses improving transport infrastructure such as upgrading the vehicular and NMT movement systems, building new taxi ranks and reinforcing existing connections to surrounding settlements. The constructions of libraries, schools and clinics will be a major objective of the long term intervention.

12.3 KEY PROJECTS 1: (TO BE IMPLEMENTED IN THE NEXT 5 YEARS)

Establishment of management zones will be the first key project that must be implement. The objectives are to conserve and protect the natural system of the study area. The high dependence on ecosystems and their services to all social and economic sectors in the town of George makes biodiversity it of high importance. This document includes the biodiversity into the spatial planning of the municipality through the following:
Using the CBAs with the Province of Western Cape to categorise land use;
Areas within or close to CBAs must require protection categories such as Core 1, Core 2, and Buffer zones.;
Providing guidance on activities and development are sustainable from a biodiversity perspective.

12.4 KEY PROJECTS 2

The second key project that needs to be implemented is the upgrading of educational facilities and sport facilities in the study area which will then follow by the construction of new primary, secondary and tertiary schools. Transforming the study area into a knowledge and recreational hub is a main objective. The aim of this objective is to reduce disparities, poverty and low literacy and skill level.

13 CONCLUSION

The town of George comprises of significant biodiversity, tourism and economic assets that require expansion, conservation and protection. The conservation of its natural assets will help to maintain the performance of the municipality while the tourism asset will contribute to its economic growth. Issues have been raised concerning spatial fragmentation and separation of settlements. Therefore this dissertation which articulates an SDF and a precinct framework seek to understand how spatial intervention in the town of George can be used to redress spatial fragmentation and separation. The outcomes of this understanding include the following:

A spatial development framework for the town of George'

A site analysis of the study area which informs the proposed SDF and precinct framework;

The SDF for the study area which includes open space systems, proposed movement routes etc.

And finally, a proposed precinct framework

14 REFERENCES

Agriculture, W. (2015). *CapeFarmMapper*. [online] Gis.elsenburg.com. Available at: http://gis.elsenburg.com/apps/cfm/ [Accessed 23 Oct. 2015].

Agri-spaces.eu, (2015). *Agri-Spaces.* [online] Available at: http://www.agri-spaces.eu/ [Accessed 23 Oct. 2015].

Atkinson, D., & Marais, L. (2006). *Urbanization and the future urban agenda in South Africa.* In R. Tomlinson, U. Pillay, & J. du Toit (Eds.), Democracy and delivery: Urban Policy in South Africa,HSRC Press, Pretoria:(pp. 22–49).

Beherns, B. & Watson, V. (1996) *Making Urban Place: Principles and Guidelines for Layout Planning Contemporary Policy Issues.* UCT Press. Cape Town. Creda Press.

Brundtland, G. (1987). *Our Common Future Call for Action*. Envir. Conserv., 14(04), p.291.

Department of Constitutional Development and Planning, (1982). *George Guide Plan*. George, pp.2-53.

Dewar, David and Louw, Piet (forthcoming). 'Part 1' in Untitled Book. Unpublished.

Dewar, D., Louw, P. and Povall, M. (2012). *Spatial Development Framework Training Materials.* Module 2: Constructing a Terms of Reference for a Spatial Development Framework. Pietermaritzburg, pp.1-47.

Dewar, D. 2000. *The Relevance of the Compact City Approach: The Management of Urban Growth in South African Cities* . In: Burgess, R. eds. 2013.Compact Cities Sustainable Urban Forms for Developing Countries. E. & F.N. Spon, London.

Dewar, D., & Todeschini, F. (2004). *Rethinking Urban Transport after Modernism*. Ashgate.

Dewar, D., & Uytenbogaardt, R. S. (1991). *South African cities: A manifesto for change*. Urban Problems Research Unit, University of Cape Town.

Dresner, S. (2008). *The principles of sustainability*. 1st ed. London: Earthscan Publications.

Drewes, E. and Van Aswegen, M. (2013). *National planning in South Africa: a temporal perspective.*Town and Regional Planning: SAPI Planning Africa Conference 2012 special issue on:" Growth, democracy and inclusion: Navigating contested futures", 62(1), pp.21-68.

Evans, P. (2002). *Livable cities?*. 1st ed. Berkeley: University of California Press.

Erikson P J (2008) *What Is the Vulnerability of a Food System to Global Environmental change?* Ecology and Society, 13 (2): 14.

George Municipality Planning Department, (2013). *George Spatial Development Framework*. [online] George, pp.5-79. Available at: http://www.george.org.za/file/george_sdf_may_2013.pdf [Accessed 25 Oct. 2015].

Harrison, P. and Todes, A. (2014). *Spatial transformations in a ˜loosening state": South Africa in a comparative perspective.* Geoforum, (61), pp.148-162

History of George. (2015). Interview

Ipcc.ch, (2015). *IPCC - Intergovernmental Panel on Climate Change.* [online] Available at: http://www.ipcc.ch/ [Accessed 27 Oct. 2015].

Joseph, S. and Karuri-Sebina, G. (2014). *From Housing to Human Settlement: A city perspective.*

le Grange, L., Dewar, D. and Louw, P. (2004). A Spatial Design Concept for Klipfontein Corridor. Cape Town, pp.4-80.

Lenzen, M. and Murray, S. (2003). *The ecological footprint--issues and trends*. ISA research paper, 1, pp.1—3

Louw, P., Dewar, D. and Shand, N. (2008). *George Mobility Study: Locational Assesment Of Sites For The Inter-city Bus Terminus And Proposed Provincial Office Complex.* pp.3-20.

Provincial Government Western Cape. (2011). *Department of Social Development Annual Report.* Available at http://www.capegateway.gov.za

Rottle, N., & Alberti, M. (2008). *Climate Change and Place. Places*, 20(2).

Shatkin, G. (2007) *Global cities of the South: Emerging perspectives on growth and inequality.* Cities 24(1):1–15

Siksna, A. (1997). *The Effects of Block Size and Form in North American and Australian City Centres.* Urban Morphology, [online] 1, pp.19-33. Available at: http://www.urbanform.org/online_unlimited/um199701_19-33.pdf [Accessed 24 Oct. 2015].

Soja, E. and Kanai, M. (2007) '*The urbanization of the world*', in R. Burdett and D. Sudjic (eds) The Endless City, pp. 54–69. London: Phaidon Press.

SouthAfrica.info Brand South Africa's information gateway to South Africa, (2013). *South Africa 'two-thirds urbanised'*. [online] Available at: http://www.southafrica.info/ [Accessed 20 Oct. 2014].

Statistics South Africa. (2011). 2011 Census Data. Available at http://www.statssa.gov.za/timeseriesdata/

Steenkamp, C. (2004). *Urban Regeneration in a South African Context.* Masters. Potchefstroom University of Christian Higher Education.

Steenkamp, L. and Winkler, T. (2014). *Linking Spatial Planning and Land Use Management in the City of Cape Town: The Case of the Package of Plans*. Urban Forum, 25(3), pp.335-353.

Todes, A. (2013). *Spatial Targeting: Lessons from South African Experience.* Background Report for the Workshop on Spatial Targeting, 3-4 October 2013.

UN Habitat (2009) *Planning Sustainable Cities*, Global Report on Human Settlements 2009.

Urban LandMark (2010): *Voices of Developers and Municipalities - Creating more inclusive cities through cooperation*.http://www.urbanlandmark.org.za/downloads/booklet_vdm.pdf

Urban Land Markets in Southern African Cities Sheet. (2011). Urban LandMark, pp.1-10.

Warnich, S., & Verster, B. (2005). *The answer is: corridor development, but what is the question?.* SATC 2005.

Western Cape Government, (2009). *Western Cape Spatial Development Framework. Settlement Restructuring: An Explanatory Manual.* Cape Town, pp.1-130.

Western Cape Government, (2015). *Settlement Restructuring Strategy.* George, pp.5-42.

Western Cape Governrnment, (2015). *Western Cape Provincial Spatial Development Framework*. Cape Town, pp.6-93.

Western Cape Government, (2015). *Settlement Restructuring Strategy.* George, pp.5-42.