

Considering integrated human settlements from a sustainable development perspective

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Preface

A rising tide lifts all boats

~ J.C. Dernbach ~

Dedication

With love, admiration and utmost affection, to Mom, Ronel van der Walt.

Your strength is never wavering.

Acknowledgments

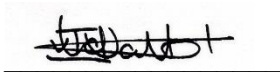
This dissertation would not have been possible without the encouragement, guidance and support of various people. I would like to show my gratitude through the following acknowledgments:

- Thank you to my Heavenly Father for the perseverance, ability and curiosity with which He has blessed me.
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- Andries “Chippie” Kruger, who have loved me patiently through all my quirky moments, bad moods and late nights, you are my strength. An epitome of hard work and persistence. I’m lucky to have you by my side.

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Declaration

I, Izaan van der Walt, hereby declare that this research for the degree, MSc in Town and Regional Planning, at the North West University, has not previously been submitted by me for the degree, at this or any other university; that it is my own work in design and execution, and that all materials from published sources contained herein have been duly acknowledged.

A handwritten signature in black ink, appearing to read 'Izaan van der Walt', is positioned above a horizontal line.

Signature

14 November 2018

Considering integrated human settlements from a sustainable development perspective

Abstract

The current housing complexities in South Africa refer primarily to the housing backlog and how to provide adequate housing without compromising on quality and affordability. A shift in housing provision has taken place as part of prioritising the concept of integrated human settlements within planning approaches, moving away from isolated, monotone housing developments towards the development of sustainable integrated communities. This study considered integrated human settlement planning from a sustainable development perspective and reflected on the three sustainable development spheres; economic integration, social dynamics and environmental planning to identify the drivers within each sphere relating to sustainable housing developments. The aim of this study was to consider integrated human settlements and current planning approaches, and how such could be enhanced by the sustainable development drivers to provide a sustainable housing solution for the South African context. The research comprised of a thematic literature investigation, a reflection on the role of government policy and programmes in support of sustainable development and integrated human settlements in South Africa and an empirical investigation that followed an inductive qualitative ethnographical research design to consider case studies of integrated housing developments as well as perspectives of purposefully selected professionals. The result of the research was interpreted to draw conclusions with regards to sustainable development drivers and the interface with current planning approaches. The study ultimately proposed a sustainable integration checklist to guide the planning of sustainable integrated human settlements as a planning solution to the current complexities associated with housing in South Africa.

Keywords: Sustainable development, Integration, Human Settlements, Mixed-use, Housing

Oorweging van geïntegreerde menslike nedersettings vanuit 'n volhoubare ontwikkelingsperspektief

Oorsig

Die huidige behuisingskompleksiteit in Suid Afrika verwys hoofsaaklik na die behuisingsagterstand en hoe om behoorlike behuising te bied sonder om kwaliteit en bekostigbaarheid in gedrang te bring. 'n Verandering in behuising het plaasgevind as deel van die prioritisering van die konsep van geïntegreerde menslike nedersettings binne beplanningsbenaderings, beweeg na die ontwikkeling van volhoubare geïntegreerde gemeenskappe en weg van geïsoleerde monotone behuisingsontwikkelings. Hierdie studie het geïntegreerde menslike nedersettingsbeplanning vanuit 'n volhoubare ontwikkelingsperspektief beskou en weerspieël op die drie volhoubare ontwikkelingsfere; ekonomiese integrasie, sosiale dinamika en omgewingsbeplanning om die drywers binne elke sfeer met betrekking tot volhoubare behuisingsontwikkelings te identifiseer. Die doel van hierdie studie was om geïntegreerde menslike nedersettings en huidige beplanningsbenaderings te oorweeg en hoe dit deur die volhoubare ontwikkelingsdrywers verbeter kan word om 'n volhoubare behuisingsoplossing vir die Suid-Afrikaanse konteks te bied. Die navorsing bestaan uit 'n tematiese literatuuronderzoek, 'n refleksie oor die rol van regeringsbeleid en -programme ter ondersteuning van volhoubare ontwikkeling en geïntegreerde menslike nedersettings in Suid-Afrika en 'n empiriese ondersoek wat 'n induktiewe kwalitatiewe etnografiese navorsingsontwerp gevolg het om gevallestudies van geïntegreerde behuising ontwikkelings te oorweeg sowel as die perspektiewe van doelbewuste geselekteerde professionele persone. Die resultate van die navorsing is geïnterpreteer om gevolgtrekkings te maak ten opsigte van die volhoubare ontwikkeling drywers en die koppelvlak met huidige beplanningsbenaderings. Die studie het uiteindelik 'n volhoubare integrasie-kontrolelys voorgestel om die beplanning van volhoubare geïntegreerde menslike nedersettings te lei as 'n beplanning oplossing vir die huidige kompleksiteite wat verband hou met behuising in Suid-Afrika.

Sleutelwoorde: Volhoubare ontwikkeling, Integrasie, Menslike Nedersettings, Gemengde gebruik, Behuising

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Definitions

Table 1: Definitions

Amenity	Any feature that provides convenience, comfort or pleasure (Dictionary, 2016). A useful feature or desirable facility of a place or building (Oxford, 2016).
Biodiversity	According to the IFC (2012:40) biodiversity is the variability of living organisms from all sources and the complexes they form part of, which includes the diversity in and between species and ecosystems.
Connectivity	Connectivity refers to the degree to which nodes are connected, enabling movement of goods and people (Killian <i>et al.</i> , 2005:11).
Conservation	The careful utilisation of natural resource to prevent depletion (Centre for Environmental Education, 2017:34).
Development	Development of integrated human settlements that provides access to employment and urban amenities in well located areas (National Department of Human Settlements, 2010:4).
Ecosystem services	These are services that are provided by the ecosystems that provides natural benefits to people. These include the following (IFC, 2012:40): • Provisioning services: providing food, fresh water, fibre, medicinal plants and timber. • Regulating services: surface water purification, climate regulation and carbon sequestration. • Cultural services: natural areas that are sacred and important for recreation • Supporting services: nutrient cycling, soil formation and production.
Equity	The quality of being impartial or fair (Centre for Environmental Education, 2017:34).
Facility	A place, piece of equipment or amenity provided for a specific purpose. Facilities [plural], services, buildings, equipment, etc. that are provided for a specific purpose or activity. (Oxford, 2016).
Housing	Physical components or structures of different shape, type, materials and size that are erected by mankind for protection, security and privacy from natural elements such as rain, wind and sun (UN Habitat, 1976:25).
Human settlements	They are places – small and large, informal and formal, rural and urban, where people live, work, learn and create (Kilian <i>et al.</i> , 2005:5). Human settlements refer to human communities - whether village, town or city – with provision of health serves, employment, food and education within a frame of freedom, social justice and dignity (UN Habitat, 1976:25).
Infrastructure	The complex network designed to deliver to or remove from houses certain goods, information, energy (UN Habitat, 1976:25).
Integration	An act or instance of combing into a whole (Dictionary, 2016). The process or act of mixing people who have previously been separated, usually because of religion, race, colour, etc. (Oxford, 2016).
Land use	The human use of territory for residential, recreational, economical and government purposes. The development patterns and intensity of uses in an area (Encyclopedia,2018).
Labour-intensive	Creating more jobs by using less machinery and using more people (National Department of Human Settlements, 2010:58).
Legislation	A law or set of laws that are passed by a parliament. The process of passing and making laws (Oxford, 2016).

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Mixed-income housing	A multi-family property or community that provides affordable housing for a variety of low- to middle-income families. Rates are based upon the average median income for the area, and are intended to be affordable for moderate, low and extremely low-income families. (Business dictionary, 2016).
Non-Renewable Resources	Natural resources that cannot be re-grown, remade or regenerated on a scale comparative with its consumption e.g. Coal, natural gas or petroleum (Centre for Environmental Education, 2017:35).
Policy	A course of action that is pursued and adopted by a political party or government (Dictionary, 2016).
Pollution	The IFC (2012:22) defines pollution as both non-hazardous and hazardous chemical pollutants in liquid, gas and solid phases. It further includes components such as pests, thermal discharge to water, pathogens, emissions, noise, radiation, nuisance odours, and vibrations, creation of visual impacts including light and electromagnetic energy.
Pollution prevention	Pollution prevention, according to the definition of the IFC (2012:22) does not necessarily mean the absolute elimination of pollutants and emissions but rather the avoidance where possible or subsequently the minimization thereof.
Public participation	This is the dynamic incorporation of people in the social, economic and political life of a country which ensures that the beneficiary is a participant in the collective decision-making process, especially in a field as complex as human settlements. This is necessary as the task is too great for governments to accomplish without using the skills, interests and ingenuity of the inhabitants and harnessing their untapped resources (UN Habitat, 1976:43).
Regulations	Authority's rule dealing with procedure or details. A rule or order issued by regulatory agency of government and having the force of the law (Marriam Webster Dictionary, 2018).
Renewable Resource	Natural resources that can be replenished by natural processes at a rate comparable to consumption e.g. wind or solar radiation (Centre for Environmental Education, 2017:35).
Residential segregation	Racial group separation in an urban space (Boustan, 2011:319).
Service	Services are defined in The Vancouver declaration (UN Habitat, 1976:25) as those that are required by a community for the fulfilment of its functions as a social body. This includes health, education, welfare, culture, nutrition and recreation.
Settlement planning	A process to achieve objectives and goals of national development through the efficient and rational use of the available resources. Plans should include adequate policies, clear goals, strategies and objectives along with concrete programmes (UN Habitat, 1976:15).
Social and Economic infrastructure	Basic facilities for economic and social activities. Social infrastructure includes community halls and parks where economic infrastructure would include taxi facilities and trading spaces (National Department of Human Settlements, 2010:48).
Sustainability	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED Brundtland Commission, 1987:41).
Sustainable human settlements	Well managed entities in which economic growth and social development are in balance with the carrying capacity of the natural systems on which they depend for their existence and result in sustainable developments, wealth creation, poverty alleviation and equity (National Department of Housing, 2004:11; National Department of Human Settlements, 2010:50).

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Thermal mass	The ability of materials to absorb heat energy. High density materials such as stone, tiles or bricks require a greater portion of heat energy to change the temperature and are considered to have high thermal mass where materials such as timber that are lightweight materials have low thermal mass. (The Sustainability Institute, 2009:14).
Unemployment	Unemployment can be defined as the people that are within the economically active population who does not work but are available and want to work and have taken active steps to find work (Provincial Department of Housing, 2004:23).
Uncontrolled urbanisation	A consequent condition of overcrowding, deterioration, pollution and psychological tension within metropolitan areas (UN Habitat, 197:3).
Urbanisation	Increased proportion of the population lives in urban settlements such as cities and towns (Potts, D. 2012:2).
Zoning	Zoning refers to and area or land with a specific use, characteristic, purpose or subject to certain restrictions (Oxford dictionary, 2015).

Abbreviations

Table 2: Abbreviations

BNG	Breaking New Ground
CEB	Compressed earth blocks
CEE	Centre for Environmental Education
CHA	Chicago Housing Authority
CoJ	City of Johannesburg
CSIR	Council of Scientific and Industrial research
DEAT	Department of Environmental Affairs and Tourism
DPCD	Department of Planning and Community Development
EPWP	Extended Public Works Program
GDHS	Gauteng Department Human Settlements
GLGH	Gauteng Local Government and Housing
HDA	Housing Development Agency
HOPE VI	Housing Opportunities for People Everywhere
IDP	Integrated Development Plan
IFC	International Finance Corporation
IRDP	Integrated Residential Development Program
MIG	Municipal Infrastructure Grant
NHBRC	National Home Builders Regulation Council
NMBM	Nelson Mandela Bay Municipality
NWU	North West University
PLA	Park and Leisure Australia
RDP	Reconstruction and development program
SA	South Africa
SRTS	Safe Routes to School
SWH	Solar Water Heaters
TBL	Triple Bottom Line
UK	United Kingdom
UK DETR	United Kingdom Department of the Environment, Transport and the Regions
UN	United Nations
USA	United States of America

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USDG	Urban Settlement Development Grant
WCED	World Commission on Environment and Development

Chapter 1: Introduction

1.1 Points of departure

Worldwide the provision of housing has been a problem due to government provisions which could not keep pace with the growing backlogs, resulting in quantities (but not quality) of units provided (Tomlinson, 2015:1), not comprising of the objectives needed to create safe, effective or sustainable neighbourhoods. Housing in South Africa has been no different with governing entities struggling to keep up with growing backlogs that was estimated at 1,5 million houses in 2014 with a yearly increase of 178 000 housing units (Wilkinson, 2014). Programmes such as the Reconstruction and Development Program (RDP) (National Department of Housing, 2004:16) provided a way for mass production of housing that once again lead to unsafe, unhealthy and ineffective environments.

In 2005 the South African cabinet adopted a comprehensive plan for the sustainable development of human settlements. This plan introduced a shift in housing development and includes more integrated human settlement developments in a sustainable manner (The Presidency, 2012:12) that provides more than just housing opportunities but allows for economic and social infrastructure investment (National Department of Human Settlements, 2010:52) that is in line with global trends for integrated developments.

This study considered integrated human settlements from a sustainable development perspective and identified the three spheres of sustainable development (economic, social and environmental) through theoretical sampling and considered their contribution towards creating sustainable integrated human settlement developments. The linkages between the three spheres were thus investigated to identify possible linkages and synergies to enhance the creation of integrated human settlements (National Department of Human Settlements, 2010:4). Development drivers were identified within each sphere as corresponding with sustainable development and integrated human settlements literature that enabled recognition of the linkages and influences between the spheres and allowed further identification of sustainable development objectives applicable to integrated human settlements.

Sustainable development with reference to the provision of housing is a global initiative with many nations of the world invested in improving the implementation. This study considered international and national regulations and policies in an attempt to identify the key drivers necessary to consider within a regulatory framework when dealing with sustainable integrated human settlement developments.

Sustainable development drivers were further identified through the empirical study based on practical implementations and current approaches within planning of settlements in order to produce a comprehensive sustainable integration checklist to guide planning of sustainable integrated human settlements to address the current complexities associated with housing in South Africa.

1.2 Problem statement

The current housing complexities in South Africa are mainly a result of the housing backlog and approaches to provide for such, without compromising on quality (National Department of Housing, 2004:16) or affordability. A major concern within South Africa that is currently driving the urgency to deliver affordable housing is the high rates of poverty and poor life quality of majority of South African residents (Trusler, 2009:9). Recently the concept of integrated human settlements was prioritised as part of planning approaches (National Department of Housing, 2004:11). It is questioned whether integrated human settlement planning is based on the objectives of sustainable development, or whether the core aim is to provide for the large housing demand within time and budget constraints. Based on theory of sustainable community planning; economic integration, social dynamics and environmental planning are critical issues to consider during planning for integrated human settlements. However, although the integration of these concepts is well defined in literature, the applicability in practise and supportive policy and legislative framework, are not evident. This study considered integrated human settlement planning from the perspective of sustainable development, reflecting on the three spheres of sustainable development, the enhancement of such, and specific elements to be included in a framework for planning integrated human settlements.

1.3 Primary research questions

This research aimed to address the following research questions:

To what extent is integrated human settlement planning based on the objectives of sustainable development?

Does the success and failure of one sphere of sustainable development influence the other two spheres, when considering human settlements?

Do South African government policy, legislation and programmes on human settlement provision consider sustainable development?

How can current planning approaches of integrated human settlements be enhanced with the objectives of broader sustainably thinking?

1.4 Aims and objectives of this research

This research aimed to:

- Investigate the concept of sustainable development and the interface with broader human settlement planning approaches.
- Investigate the concept of integrated human settlements within the current South African reality, referring to the different spheres of sustainable development.
- Investigate the current policy and legislative approach to planning of human settlements in South Africa, from a sustainable development perspective
- Investigate case studies of integrated human settlement developments internationally and nationally, in order to draw conclusions on the practical implementation of sustainable development objectives as part of human settlements planning.
- Capture the local interpretation of integrated human settlement planning and interface with sustainable development
- Propose a sustainable integration checklist to guide the planning of integrate human settlements in South Africa based on sustainable development objectives.

1.5 Method of investigation

1.5.1 Literature study

The literature study aimed to reflect on the concept of sustainable development and integrated human settlements and the alignment between the two concepts. Integrated planning approaches was considered within the understanding that merely providing housing will not be successful when wider issues such as local amenities and community support is ignored (Gray *et al.*, 2009:352).

In this sense, economic integration, social dynamics and environmental planning (The Sustainability Institute, 2009:1) were considered as emergent through theoretical sampling within the notion of sustainable development of integrated housing planning, to identify key drivers that could enhance alignment with broader sustainable development objectives. The drivers identified within this study were selected based on their inclusion within sustainable development and integrated human settlement development literature. The following were considered per sphere:

- The economic integration sphere considered methods to include all income groups through mixed communities (National Department of Human Settlements, 2010:354) and

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the importance of addressing employment creation and economic growth (National Department of Human Settlements, 2010:32).

- The social dynamics sphere focused on the role and importance of social facilities and amenities within integrated communities as well as social integration (Smith, 2002:6).
- The environmental planning sphere considered resource efficient planning (The Sustainability Institute, 2009:11) and development, along with the provision of open space as a basic element of community planning (PLA Vic/Tas & DPCD, 2013:1).

Accordingly, the housing policies, legislation and development programmes relevant to the South African environment was considered to determine if these documents support integration and sustainability within the development of human settlements (South African Cities Network, 2014). It further referred to important drivers that need to be considered within a regulatory framework to ensure that all three spheres are included to enhance sustainable development.

The concept of integrated human settlements was examined for providing such settlements, within the local South African reality. As such, the drivers of sustainable development were identified within current planning approaches to plan for integrated human settlements.

A history of South Africa's housing backlog was provided to emphasise the importance for the creation of well-functioning communities and how housing could be utilised as an instrument for the development of sustainable integrated human settlements (National Department of Housing, 2004:7).

1.5.2 Empirical investigation

A case study analysis was conducted to identify practical approaches that were followed in planning integrated human settlements to establish if sustainable development objectives were included and identifying which drivers as referred to in the literature were considered. For the international planning approaches, the study considered the purposefully selected case studies of Ireland and America that relates to social and economic segregation and how this was overcome with integrated housing developments. For the local planning approaches, the study considered the purposefully selected case studies of Nelson Mandela Bay, where integrated housing developments are still in planning phases and early implementation phase and the City of Johannesburg, where integrated housing development have been implemented and established.

The aim of the empirical investigation was to identify if the case studies included sustainable development objectives as part of their approach to integrated human settlement planning and what additional objectives could be identified. The intent was to identify from the sustainable

development objective list which drivers were considered in the implementation approach and if all three development spheres were considered equally important. Gaps were identified that will need to be addressed in order to improve the planning of integrated human settlements, and the overall sustainability thereof. This study then aimed to compile a comprehensive checklist to guide the planning and associated processes of sustainable integrated human settlements, based on literature and empirical findings, adopted to fit the local South African context.

To elaborate on the local approach to planning in South Africa, a questionnaire was sent to purposefully selected participants (experts) and professionals within the field of planning and developing integrated human settlements. Questionnaires were conducted according to the ethics guidelines of the NWU. Participants that were selected to partake in the research were informed of their anonymity and that their participation is voluntary and thus no remuneration would be received. As part of the questionnaire participants were asked question regarding the current implementation of integrated human settlements based on sustainable development objectives as well as the extent of South African policies and legislation considering and guiding developments. The sustainable development objectives were listed as compiled from the literature and case study analysis. Participants were asked to identify the objectives that are currently being considered important in planning integrated human settlements. The results of the questionnaire contributed to the refinement of the proposed sustainable integration checklist by considering what these experts regard as important objectives from a local perspective that would contribute to the successful creation of sustainable integrated human settlements within South Africa.

1.5.3 Analysis

Theoretical sampling was employed where specific thematic concepts were considered which enabled the emergence of the drivers linked to these themes that could guide planning of sustainable integrated human settlements. The three spheres of sustainable development were deconstructed to several drivers during the literature review to understand the major contributions towards achieving sustainability of the three spheres. During the case study analysis these drivers were used to guide the identification of sustainable development objectives that contributed to the overall success of the sustainable integrated housing development approach considered in the case studies. The objectives identified were used during the questionnaire data capturing process to further refine the sustainable development objective list based on the practical experience of experts and professionals in the field.

1.6 Delineation of the Study Area

This study is delineated to integrated housing developments within South Africa with the recommendations of this research aiming to inform local planning. To inform this research, international case studies of Ireland and America were also considered. Specific local case studies included Nelson Mandela Bay and City of Johannesburg, purposefully selected according to their development approach.

1.7 Limitations of the research

This study provided a critical analysis of the alignment between sustainable development and integrated development. Both these concepts are considered from a spatial planning perspective, but acknowledge that different perspectives do also exist, such as financial, population growth or migration impacts, but are not comprehensively included in this study.

Sustainable development and integrated development are complex concepts which can be interpreted in many ways hence they contain various drivers that are dependent on how the concept is understood and put into practice. This study considers the concepts from a spatial perspective that guided the drivers included.

This study researches the policy, legislation and programmes that are relevant to sustainable development and human settlements but are limited to those policies and legislation applicable to the spatial planning profession.

1.8 Structure of the dissertation

Theoretical investigation

Chapter 2: The concept of sustainable development

This chapter specifically focused on what is sustainable development. The theory was explored at the hand of the three spheres of sustainable development. Economic integration, social dynamics and environmental planning was each examined to get a better understanding of the compositions of each sphere and what drivers contributes to each individual sphere's success towards achieving sustainability.

Chapter 3: Human settlement planning

The approach to human settlement, the implementation and design thereof was addressed to better understand the influence that it can have on the provision of housing. The participation of the public in the planning process of these settlements was also included in this chapter.

Chapter 4: Sustainable integrated human settlements

The history of South Africa's housing provision was discussed to provide a better understanding as to why human settlement planning is important. Sustainable integration was a key discussion of this chapter as to how new housing developments can be integrated into the existing city structures and networks to ensure sustainable inclusion and connectivity. The linkages between the three spheres of sustainable development were examined more closely with practical examples to better understand the influence that they have on one another. The Triple Bottom Line was discussed. Providing a method to the practical measurement and monitoring while planning sustainable integrated human settlements.

Chapter 5: Policy and legislative framework regarding housing provision in South Africa

This chapter considered international and national regulations, policies, legislation and programmes with regards to the provision of housing and special reference to the creation of sustainable human settlements. Key drivers were mentioned that needs to be considered and included when dealing with and providing frameworks and policy for sustainable integrated human settlements. This chapter also identify if the national policies have any reference between the provision of human settlements and sustainable development.

Empirical investigation

Chapter 6: Empirical investigation: Practical implementation and considerations

This chapter gave an explanation of the research methodology used in the study and the data collection approach that was followed. Documentation analysis was used with the examination of four case studies, two international case studies and two national case studies. The case studies were selected based on their applicability on implementing integrated housing developments. The analysis of the case studies identified sustainable development objectives that were further used in a questionnaire to gather information regarding the practical approach to integrated human settlements and their sustainability. The questionnaires were sent to purposefully selected urban planning professionals, thereafter a statistical analysis was conducted to capture the data received which was then represented by graphs that allowed conclusions to be made.

Conclusions

This chapter considers the literature review, policy and legislative framework analysis and empirical investigation to draw conclusions in line with the research aims and objectives. Conclusions were based on the three spheres of sustainable development, the supporting drivers as well as sustainable development objects that was forthcoming from the literature and empirical sections of this research to enhance integrated human settlement planning approaches.

Recommendations

Following the conclusions, recommendations were made to address the current approaches of sustainable integrated human settlements. As final recommendation, this chapter proposes a sustainable integration checklist to guide the planning of integrated human settlements that will assist Urban Planners within the public and private sector, as well as related planning authorities to deliver sustainable integrated human settlements in the midst of the increasing housing backlogs in South Africa

Chapter 2: The concept of sustainable development

2.1 Points of departure

Defining sustainability in neighbourhood and settlement planning can be an arduous and confusing task in itself according to the Sustainability Institute (2009:1). Sustainable development as a viable, workable concept cannot be clarified by trying to understand the separate meaning of “sustainability” and “development” because once brought together each term will potentially affect the meaning of the other (Caldwell, 2001:1744). This chapter will aim to define the concept of sustainable development with specific relation to the development of residential communities.

Sustainable development may refer to sustaining a process and not a condition or in some context to the preservation of a steady state or relative status quo (Caldwell, 2001:1743). To understand the concept of sustainable development one must know what is to be sustained, how, by whom and for how long. Clear objectives and principles are needed to guide sustainable development. The most common goal of sustainable development is often focused on the improvement of quality of life; this may require undoing damaging effects of past developments, seeking qualitative change rather than material growth (Caldwell, 2001:1744). Definitions of sustainable development always refer to the complex interactions between the environment and various human systems (Thatcher, 2014:749).

With the focus on sustainable development, an important question that must be answered with every housing development is what about the end product does the client value, in order to identify how these developments can improve the client’s experience. For most construction companies and government agents it would be to deliver the product at the lowest capital cost and a timely delivery (Parkin *et al.*, 2003:21), delivering housing quick and cheap. The purpose of development for governing bodies, in the writing of Caldwell (2001:1740) may comprise a power-focused agenda to maintain a political regime. Developing houses are more than just the physical structure; it is about the community that is created that will improve quality of life for the residents that live there, who will in fact be the end user. It’s about the lifetime of the buildings, environment and relationships, and what the client (the residents) value, rather than the construction company or the governing agent. In the last few years the aim has shifted to focus on improving the sustainability and quality of housing provision (National Department of Human Settlements, 2010:1) rather than the quantity that is provided (Sustainability Institute, 2009:2) as emphasised by the National Department Environmental Affairs and Tourism (2008:6) within the National Framework for Sustainable Development in South Africa. It is not just about the quantity of housing units that are provided, but the quality as well.

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From a perspective of using resources sustainability, the historical past and recent South African housing developments in cities were undertaken in extremely unsustainable ways. The destruction of potentially productive land, extensive urban sprawl, low numbers of houses per kilometre of infrastructure line, increasing levels of material and energy use and rising waste output levels are just a few examples emphasising unsustainable development (The Sustainability Institute, 2009:11). This research employed theory-based sampling for the drivers that were identified that were directed by the concept of sustainable development and is considered an important feature of the inductive qualitative research process that allows the emergence of theory through purposeful selection on the basis of potential representation of theoretical themes (Davoudi *et al.*, 2016:5). Specific drivers were selected based on their inclusion within both sustainable development literature as well as integration of human settlements literature. This chapter will specifically consider sustainability within the three important spheres that influence neighbourhood planning and settlement development. According to the Department of the Environment, Transport and the Regions (DETR, 2000:7) sustainable development is the idea of providing quality of life by achieving economic, social and environmental objectives simultaneously. Economic, social and environmental sustainability will be investigated separately to get an idea of what sustainability within each of these spheres entails and how it can be beneficial to a sustainable housing development. Theoretical sampling provided a method of enquiry into certain sustainable development drivers within the initial spheres of sustainable development and was used to further inform the sustainable integration checklist as aimed by this study to enhance planning approaches for sustainable integrated human settlements within the South African Context. Table 3 below indicates the deconstruction of sustainable development summarising the drivers that is discussed in this chapter as emerged through the employment of theoretical sampling within the concept of sustainable development as well as integration of human settlements.

Table 3: Deconstruction of sustainable development spheres

Sustainable development		
Economic integration	Social dynamics	Environmental planning
• Mixed income communities • Employment	• Community integration • Social facilities and amenities • Education	• Energy efficiency • Resource sustainability • Open space planning • Land availability

Source: Own construction (2018)

2.2 Considering the notion of sustainability

A future that is sustainable, according to Caldwell (2001:1741), requires a reduction in the vulnerabilities to which society exposes itself. This defines then a basic principle of development where the risks to the life support systems of earth are reduced and can sustain the unimpaired community. In the opinion of the Centre for Environmental Education (CEE) (CEE, 2017:9) sustainability is a way of saying “the good life”, where an elevated level of ecosystem well-being can support an elevated level of human well-being.

Sustainable development has a more recent history (Thatcher, 2014:747) and is a concept that has many differing definitions (Caldwell, 2001:1739; Thatcher, 2014:747). This is a complex concept which can be interpreted in many different ways and hence it has more than one set of principles and the principles depend on how the term is understood and how it is put into practice (Caldwell, 2001:1739). These principles are derived from the particular interpretations of “development” and “sustainability”. Elements of the concept behind the term sustainable development such as history, geography, and economic factors vary among nations and so do their characteristics within a development concept (Caldwell, 2001:1741). For this reason, over time the meaning of sustainable development has evolved with its definitions varying with how the purpose and processes is understood at the time (Caldwell, 2001:1739).

The goal of sustainability has often been the preservation of human culture, society, institutions, social orders and landscapes, where cultural factors such as behavioural, religious, institutional and environmental have influenced the way in which sustainability is understood and implemented in human economic affairs, relationships and history, with their principles of development that changes as the concept is understood (Caldwell, 2001:1739).

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs is the most formal definition of sustainable development that was provided by the World Commission on Environment and Development (WCED) Brundtland Commission (1987:41; Caldwell, 2001:1739). This concept aims to protect the long-term value of the environment while maintaining economic progress and advancement (WCED Brundtland Commission, 1987:43, Emas, 2015:1). It recognises that natural resources need to be preserved to fulfil the human needs (Thatcher, 2014:747).

According to Glauser (2001:3; Thatcher, 2014:748; CEE, 2017:9) sustainable development can also refer to ensuring dignified living conditions by means of maintaining and creating the widest range of options possible for defining life plans freely. The fairness between the present and the

future generation must be taken into account when considering the use of economic, social and environmental resources.

Development can be described according to Caldwell (2001:1739) as a complex process of purposeful change in behaviours, institutions and attitudes within human societies. Where sustainability (Caldwell, 2001:1742), then implies continuity even though it requires certain qualifiers such as what should and can be sustained, at what quality and for what period of time.

In the WCED Brundtland Commission (1987:42) it was stated that in essence, sustainable development is a process of change, where institutional change, direct investment, the exploitation of resources and the orientation of technological development are all in harmony that will enhance the potential of meeting the needs and aspirations of the people both current and future.

Development in itself implies change, whereas sustainability is more commonly understood to allow for change in a steady state of continuing renewal. When these terms are joined, sustainable development might then be defined not necessarily as continuity of a condition or certain quality but rather of a process (Caldwell, 2001:1742).

With sustainable development a framework is provided for integration of development strategies and environmental policies (WCED Brundtland Commission, 1987:43, Emas, 2015:1) as well as a strategy for the improvement of life quality and economic stability within development (Caldwell, 2001:1739).

Sustainable development aims to promote harmony between humanity and nature as well as among all human beings and their activities (WCED Brundtland Commission, 1987:57). The WCED Brundtland Commission (1987:58) stipulated that there are certain requirements that can also be seen as goals that should underlie the action of development, but that it is the serenity with which these goals are pursued that will ensure a true change. The pursuit of sustainable development requires (WCED Brundtland Commission, 1987:58):

- A technical knowledge on a self-reliant and sustained basis and an economic system that will be able to generate surplus.
- A political system that ensures public participation in decision making.
- A social system that can ease tension and provide solutions for disharmonious developments.
- A production system that will respect and preserve the ecological base for development.
- A technological system that can continuously provide innovative solutions.

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- An administration system that has the capacity for self-correlation and is flexible.

Sustainable development furthermore requires values that encourage a consumption standard that is in line with ecological possibilities, but unfortunately many people still live beyond the world's ecological means (WCED Brundtland Commission, 1987:42). This extensive use and waste of critical resources must be limited to ensure a more sustainable approach to development. The Sustainability Institute (2009:4) argues that sustainability of settlements is based on:

- The promotion of social and economic development as well as promotion of education and human health.
- A balanced geographical distribution.
- Maintenance of cultural diversity.
- Maintenance of water, air, forest, soil qualities and vegetation standards to sustain well-being of future generations.
- Conservation of biological diversity and the sustainable use thereof.

The main features all the above definitions and explanations have in common is firstly; a desirable human condition, where the society is sustained by the people because it meets their needs and provides opportunities. Secondly, an enduring ecosystem condition where the ecosystem can maintain its capacity to support life and lastly, a balance between these two conditions along with a balance between present and future generations (CEE, 2017:9).

One of the greatest challenges for professional planners dealing with housing provision today lies in understanding sustainable development not just as a concept but in a practical sense as well (Parkin *et al.*, 2003:19). It is easy to list development drivers that are assumed in literature to result in sustainable development, but the difficulty lies in the how these drivers are put to practice. The CEE (2017:20) suggests that sustainable development principles are needed to provide a link between practice and theory. These principles would refer to abstract guidelines or rules that can be applied in order to achieve sustainable development. This requires that all drivers of development have to function in harmony to achieve the bigger goal of sustainability within development. Drivers identified within literature should be implemented in such a way that it considers the practical built environment to ensure successful execution of the theory. It is the professional urban planner that is responsible for understanding the theory of sustainable development and how to implement the guidelines to ensure that the implementation will result in a more sustainable outcome. Planning as a profession requires a mind-set that can consider all drivers that can influence development and finding ways to ensure that the development approach within cities does not compromise on any important facets and fits with the global initiative of

being more sustainable. To achieve this goal, sustainable development has been categorised into three spheres (CEE, 2017:12).

2.3 Sustainable development spheres

A major objective of sustainable development is the satisfaction of human need and their aspirations (WCED Brundtland Commission, 1987:41), meeting these needs within a housing development is challenging and can be better achieved if approached systematically. In “*A Better Quality of life*” a framework document, the United Kingdom Department of the Environment, Transport and the Regions (UK DETR) states that sustainable development is required to meet four objectives at the same time (UK DETR, 1999; 4, Parkin *et al.*, 2003:19)

- **Social progress** that will recognise everyone’s needs.
- Effective protection of the **environment**.
- The prudent use of **natural resources**.
- Maintenance of stable and high levels of **economic growth** and employment.

These four objectives conceptualise sustainable development as having three dimensions that are often in theory depicted by overlapping spheres, an economic (growth), environmental (conservation) and social (equity) sphere (Parkin *et al.*, 2003:19; CEE, 2017:12). The Three Pillar Basic Model or also more commonly known as the Three Circles Model is one of the most well-known diagrams showing three interlocking circles, as indicated in Figure 1 below (CEE, 2017:12). The small area where all three spheres overlap is characterised as the ‘triple bottom line’ and represents theoretical sustainability (Parkin *et al.*, 2003:19) which calls for a balance between the three spheres (Thatcher, 2014:748). Alhaddi (2015: 6) states that sustainability and the triple bottom line are used in literature as two related constructs. Glauser (2001: 3) referred to these three spheres as the target dimensions which are specified in greater detail. The postulates are of significance when considering indicators to define the three target dimensions.

These characterisations of economic, environmental and social helps to clarify the nature of the challenges that are associated with human settlements, but they do not help with the further understanding of the practical challenges (Parkin *et al.*, 2003:19). These challenges can be overcome when each sphere and its challenges are understood separately. Knowing what the linkages are where the spheres overlap can help to eliminate areas where developers are most likely to compromise on important drivers that are crucial for the spheres to achieve its sustainability potential and strengthen the ties between spheres. The economic and environmental spheres are fairly explained straightforward in theories of sustainability. It is the social sphere that proves difficult. The sustainability Venn diagram used by Parkin *et al.* (2003:19)

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illustrates the complex linkages between the three dimensions. Figure 1 below represents the Concentric Circles Model of sustainable development depicted in a Venn diagram and the triple bottom line:

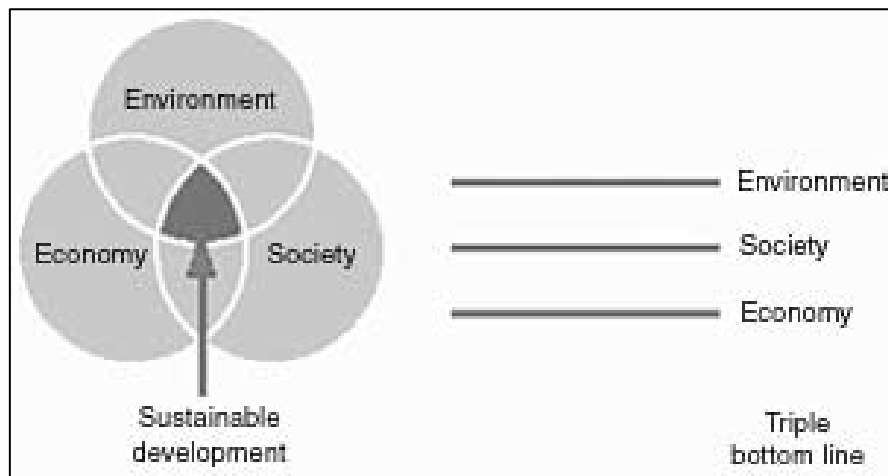


Figure 1: Sustainable development Venn diagram and triple bottom line

Source: Parkin *et al.* (2003:19)

In response to the three circles model, a nested model was introduced representing the relationship that exists between the different dimensions, the ecosystem, encapsulating the circle representing people and in turn encapsulating the circle representing the economy. Figure 2 depicts the nested diagram illustrating that all subsystems within is dependent on a healthy ecosystem (Thatcher, 2014:750)

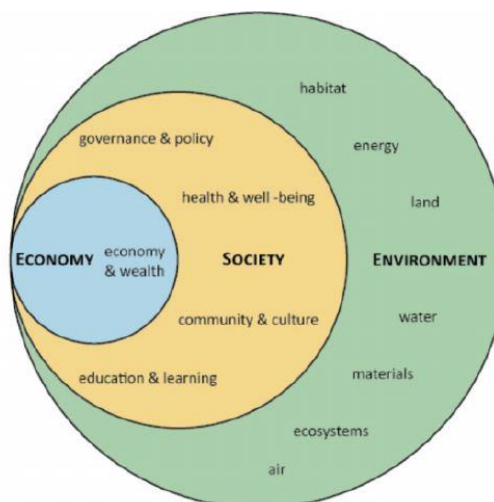


Figure 2: Sustainable development nested model

Source: Strashok *et al.* (2010:12)

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The success of the model is only considered complete if each individual subsystem has achieved internal success and addresses the concerns regarding the interdependencies between the subsystems or drivers (Thatcher, 2014:750).

MONET (Monitoring of Sustainable Development), is a project that aims to determine the sustainability of Switzerland's developments by using objectives and indicators that are specific to Switzerland's conditions. The United Nations' Commission on Sustainable Development (CDS) system was not entirely suitable, and inadequately covered the critical areas and factors for development in Switzerland (Glauser, 2001:2). It is essential that objectives are applicable to the conditions of the specific area in which development is undertaken. As mentioned by Glauser (2001:3), as part of MONET, referred to the three spheres as target dimensions within their implementation of "sustainable development" within MONET as seen below in Figure 3. The target dimensions are further deconstructed into drivers to better explain the dimension compositions and influences.

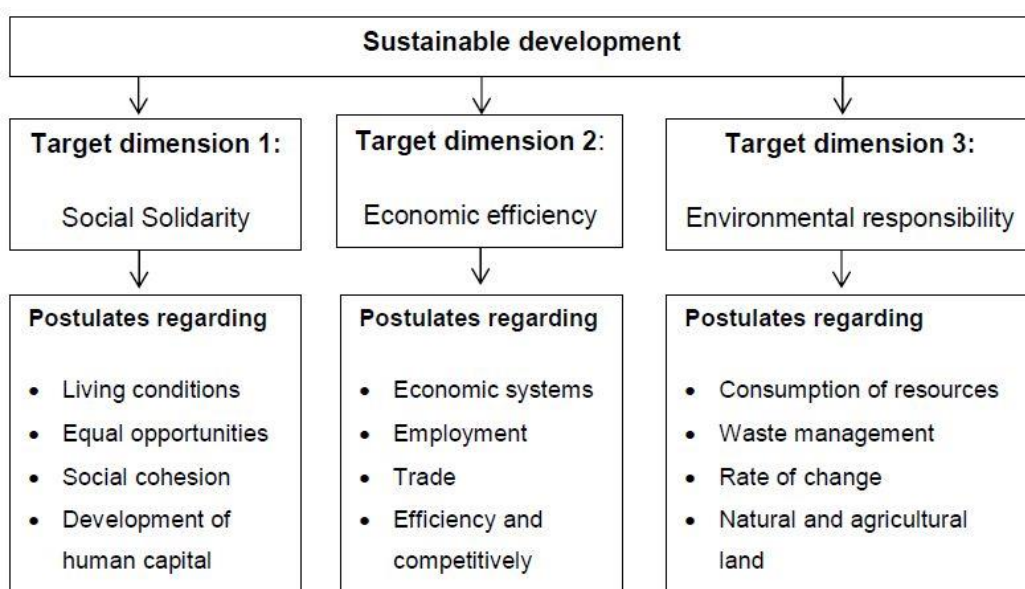


Figure 3: Implementation of "sustainable development" in MONET

Source: Glauser (2001:3)

Some indicators of sustainable development according to the CEE (2017:16) are different from the traditional indicators of social, environmental and economic progress. The traditional indicators such as GDP growth, unemployment rates, asthma rates or water quality measures can change in one part of a community as if they are independent entirely from other parts. Sustainable development indicators on the other hand reflect the reality of the three different segments or spheres that are tightly interconnected. As a change within one segment will affect

the extent to which another can achieve its full sustainability potential, thus emphasising the importance to understand the linkages between the three sustainable development spheres as to strengthen them. An indicator system that is clearly structured with a topic orientated approach (Glauser, 2001:3) is needed to clearly define the sustainable development factors specific to the target area.

The National Framework for Sustainable Development in South Africa argues that if the current generation allows the degradation of economic, social and environmental assets, it will result in an unsustainable future (National Department Environmental Affairs and Tourism, 2008:6) This study aimed to investigate concept of sustainable development through the deconstruction of the concept of sustainable development as relating to development of neighbourhoods within South Africa as the need for growth in the developing world is greater than ever (DETR, 2000:7). The National Framework for Sustainable Development in SA highlights the focus of the strategic framework on achieving the inter-related goals of sustainable development as relating to the economy, society and the environment (National Department Environmental Affairs and Tourism, 2008:7). Sustainable development is defined according to the framework as the integration of economic, social and environmental elements into decision making, planning and implementation processes to ensure that development will serve present and future generations (National Department Environmental Affairs and Tourism, 2008:14). It is essential that a way is found to meet people's needs, aspirations and expectation that also ensures harmonious development through economic integration, social dynamics and environmental planning (DETR, 2000:7).

2.3.1 Economic integration

In the Vancouver declaration by the United Nations (UN Habitat, 1976:4) the UN conference stated as part of the general principles that economic development should lead to the satisfaction of all human needs, as proposed by Maslow's hierarchy namely (Aruma & Hanachor, 2017:15): physiological needs, safety needs, belonging needs, esteem needs and self-actualization needs, and that it is a necessity for achieving a better quality of life, provided that it contributes to an equitable distribution of benefits among the people. The provision of settlements should include a mixture of typologies for different income groups as well as provide opportunities for employment in close proximity to residential households to increase people's aspirations towards homeownership, investment in their community and contributing to the economic growth of their area. The delivers of 1) mixed income communities and 2) employment were further explored to identify the critical objectives within the broader sphere of economic integration. The drivers as identified through theoretical sampling was directed by the concept of economic integration (Davoudi *et al.*, 2016:5). These drivers were included based on the twin challenges of poverty and unemployment in South Africa as highlighted in the National Framework for Sustainable

Development due to citizens in SA not sharing in the benefits of economic growth (National Department Environmental Affairs and Tourism, 2008:13). Many SA citizens are struggling to find affordable housing and decent employment to enable them to improve their life quality which emphasises the core concept of the study.

2.3.1.1 Mixed income communities

The concept of mixed income neighbourhoods has long been a goal for more progressive planners that seek to promote a mix of housing options in a single neighbourhood (Smith, 2001:5). The income mixing within development can in the opinion of Popkin *et al.* (2004:22) have great economic benefits for the community. According to Tach (2009:13) the stability of economically diverse communities hasn't yet been the explicit focus of research. Many diverse communities are established due to diversity of design. Institutional structures are developed, and a social commitment is made that maintains the ethnical diversity of the community. Diversity by circumstance refer to those communities that are diverse due to the economic and social circumstance of the metropolitan area.

Only in recent years has mixed income communities became a more preferred way of approaching housing developments by providing for a variety of typologies that suits different income levels (Smith, 2002:1). The Presidency (2012:12) referred to the Integrated Residential Development Program (IRDP) that allows for the construction of varies typologies and tenure types to bring about the integration of economic classes, races and mixed land uses through the establishment of mixed income neighbourhoods. The Provincial Department of Housing (2004:43) established the approach to provide social housing in their five-year strategic plan as a response to provide tenure options that are more affordable to a wider range of residents by providing housing developments which accommodated mixed incomes. This approach according to Smith (2002:2) should be adopted carefully. Consideration should be given to factors of community context such as the number of units being provided as well as the financial aid available to the residents. The evaluation is crucial in deciding what mix of incomes will be feasible in a certain environment.

Smith (2002:3) is of the opinion that mixed income developments are extremely diverse. They include not only many different typologies of housing but is also located in a range of markets and offers both rental opportunities and home ownership. As a result, the integration of poor families has become a key goal of SA's housing policy by promoting lower income families to move into middle income neighbourhoods and including mixed income households within new housing developments.

It is noticeable in existing neighbourhoods where the government attempted to create mixed income communities, in the hope of eradicating poverty and disintegrating poor neighbourhoods by relocating poor residents to higher income communities, that the residents respond, as Tach (2009:8) explained, with either competition or accommodation. The influx of new residents in a neighbourhood can lead to conflict or the withdrawal of the original residents. The goal of relocation programmes would be to ensure that the extent of the withdrawal does not cause the higher income neighbourhood to deteriorate to one of poverty but to ensure that the new residents are rather uplifted to the same level as the original population. These programmes require extensive research to ensure that successful absorption takes place. Other methods that were suggested was to demolish public housing units and replacing them with new units that are better integrated in the surrounding networks and that will serve a wider range of households from the start rather than introducing mixed income residents to an existing community (Smith, 2002:8).

This mixed income approach has an important role in ensuring higher quality housing being built and to an extent the decentralisation of poverty (Smith, 2002:2). The stigma regarding poor quality housing has to be removed by ensuring that mixed income developments maintain high standards from the start of construction (Smith, 2002:11). It is suggested that quality and design should be focused on what will be acceptable to high income residents and not on what the low-income earners will be satisfied with.

In many literature studies regarding neighbourhood change, mixed income neighbourhoods are considered to some extent the midpoint in a process of change that can be driven by the quality and differing housing typology (Tach, 2009:10). The construction of new housing in poor neighbourhoods can attract higher income residents to the area that are willing to invest in the neighbourhood and its upkeep which inspire less affluent neighbours to do the same. Higher income and more well-adjusted neighbours can be seen as role models in mixed income communities by helping the lower income residents to become more self-sufficient and less dependent upon government assistance as well as encourage a “work culture” amongst lower income residents and provide a wider range of opportunities. However, to have a successful influence, elevated levels of social interaction between the residents in the community are needed (Smith, 2002:9; Popkin *et al.*, 2004:23).

Very little theoretical and empirical examination has been done on economically diverse neighbourhoods (Tach, 2009:2) but since the early 1990s housing policies have been supporting and encouraging the development of communities that consist of housing for a range of incomes to support the upliftment of poor communities. It is the view of Smith (2002:2) that there is enough evidence in practical observation to support the importance of living in healthier mixed income communities in breaking the cycle of poverty.

Communities where economic segregation is low, which is an indication of high-income mixing occurring (Tach, 2009:5), can be considered as being more sustainable. This approach is viewed as a means of alleviating the affordable housing shortage more efficiently due to better quality living environments being provided (Smith, 2002:1) but the mixed income approach to development of housing cannot be seen as the “silver bullet” to address the shortage of housing nor poverty in nation. It does however seem to be more effective in producing quality housing and overcoming community barriers (Smith, 2002:36).

Higher income residents are often associated with better maintenance and management of their housing environment over time which creates healthier social environments with better schools and other services (Popkin *et al.*, 2004:22). Neighbourhoods that are more economically diverse was found to have several benefits. Benefits such as healthier environments due to investment in gardens and refuse removal. It also includes lower crime rates (Tach, 2009:35; Smith, 2002:1) due to higher income neighbours that are associated with “safer” neighbourhood conditions because of better security and the potential of opportunities for employment within security, gardening and refuse removal. According to Smith (2002:1) in theory the mixed income approach to developments can reduce social ills such as crime or unemployment rates while providing opportunities for households with lower incomes to gain access to neighbourhoods that are better, safer and allows for building relationships with higher income families and expanding social networks. It therefore not only reduces the negative behaviour but also intends to encourage positive behaviour and life changes for the lower income families (Smith, 2002:23).

2.3.1.2 Employment

Increasing the economic productivity within neighbourhoods and creating new employment opportunities would contribute to the economic stability of the area (UN Habitat, 1976:19). Unemployment can be defined as the people that are within the economically active population who does not work but are available and want to work and have taken active steps to find work (Provincial Department of Housing, 2004:23). When new communities are developed, according to The Vancouver declaration (UN Habitat, 1976:22) special attention should be given to the integration of the community with national and local plans with regards to the distribution of employment and ensuring access to all members of the community as well as surrounding communities.

Economic integration relies strongly on equality of employment opportunities. These economic opportunities should be created to be conducive to full employment within safe and healthy conditions, and where men and woman of all ethnic groups will be fairly compensated for their labour (UN Habitat, 1976:4). Despite the creation of employment within large city centres, the

amount of jobs needed for the country's population will remain insufficient and therefore the creation of employment alone will not be sufficient to create a sustainable cycle within communities. Killian *et al.* (2005:18) noted that entrepreneurial skills are needed to be competitive and that it is estimated that the informal economy present a large percentage of the country's labour force indicating that home based spaza retailing or street trading can become much more than a temporary safety net for the unemployed if they can be trained how to use their skills for job creation. The concern is that employment opportunities are available but that the applicants have insufficient or no training within the field and thus cannot be hired for the job.

Development of new settlements can generate employment in using labour intensive construction in areas where human resources are abundant to help create housing developments. New skills can be used by the residents to create permanent employment opportunities for themselves and be used for settlement improvements and maintenance once the development has finished (UN Habitat, 1976:27). By creating these opportunities for local residents to work together social segregation can also be addressed.

2.3.2 Social dynamics

According to Palla *et al.* (2009:1) the dynamics of a community is the most complex sphere to understand within community development or the provision of housing. The social dynamics between the residents can change frequently and no set methods exist to ensure that everyone in the community will get along or become friends or even want to be part of the social environment. The challenge when creating communities are to facilitate these social interactions in an attempt to strengthen the community bond and integration. This attempt can be supported by the drivers of 1) community integration, 2) social facilities and amenities, and 3) education as explored below to distinguish objectives within the sphere of social dynamics as identified through theoretical sampling that is directed by the concept of social dynamics (Davoudi *et al.*, 2016:5). The drivers were selected due to the South Africa apartheid legacy. This requires a focus on integrating communities of different race, societies, culture and languages to address the inequalities (National Department Environmental Affairs and Tourism, 2008:61) by providing facilities and amenities that will encourage social behaviour. The provision of education facilities and formal school structures also increase social behaviour within communities but more importantly address the inequalities linked to access to education (National Department Environmental Affairs and Tourism, 2008:85). These drives add value to the social dynamic sphere by addressing segregation within special planning approaches in an attempt to address the fragmented legacy of apartheid.

2.3.2.1 Community integration

Segregation has over the last three decades become a taboo within the environment of housing development. Government's allocation policies are strictly focused to overcome segregation within housing developments and aims to correct past mistakes such as the apartheid legacy that in many ways still affect today's cities within South Africa (Trusler, 2009:21). New policies that guide housing developments aim their focus on regions that merit special attention with regards to the poor housing conditions. Issues within regions that lagged behind within development, today have a significant role in determining the housing structure systems that are provided (Gray *et al.*, 2009:338). In most parts of the regions that were less well-off and where housing was insufficient a need emerged for government subsidised housing to be delivered within a more integrated settlement structure (Gray *et al.*, 2009:339).

A policy document known as "*A Shared Future*" was launched in Northern Ireland that outlined a commitment to mixed housing communities that can provide a choice to its residents in terms of cost, environment, social status and typology. The policy aimed to encourage a move towards integration of communities and away from polarisation (Gray *et al.*, 2009:337). It highlighted the importance of supporting and developing mixed communities and identified methods that will be able to aid in the maintenance and the creation of such mixed communities. This policy document articulated the goal of the government as being able to establish a normal civic society over time where all individuals are equals and treated the same, a society that respects diversity and equity and gives recognition to interdependence (Gray *et al.*, 2009:340). The integration of a community should aim to avoid social problems with special consideration of social isolation and segregation between the residents (UN Habitat, 1976:22).

The areas of development within "*A Shared Future*" were stated as communities where residents of all backgrounds can work, live, play and learn together while protecting and supporting the existing areas (Gray *et al.*, 2009:341). Gray *et al.*, (2009:341) emphasised that governments that are committed to promoting integrated mixed housing schemes should focus on areas where it is desirable, safe and practical as well as on ways to achieve controlled segregated areas.

People's tendency to segregate into groups has resulted largely from the mistrust that exists between communities and the threat of danger and violence in many informal settlements (Gray *et al.*, 2009:339). Gray *et al.* (2009:337) explains that segregation within communities is in many ways a function and result of the residents' preference. This segregation is not necessarily undesirable and does to some extent provide cultural preservation and security (Gray *et al.*, 2009:338). The extent of segregation that is seen today still is due to a spontaneous reaction of residents to feel that they belong or fit in with their community, which is easier in an environment

where the same beliefs, cultures or living standards are held. For this reason, Gray *et al.* (2009:349) stated that it cannot be assumed that integration of residential areas will result in increased interactions between the residents of diverse backgrounds.

Recent research has indicated that adopting an approach that will facilitate a mixture of social backgrounds within communities are more difficult than was believed due to households that preferred and actively chose to live among residents that have the same background (Gray *et al.*, 2009:339). Facilitating this mix can be sustainable if a balanced mix can be found where residents can still relate to neighbours with the same background or social status and be able to accommodate those groups that differ. Highly segregated communities in most instances are considered to be more unsustainable both economically and morally but to have segregation to some extent is preferable (Gray *et al.*, 2009:339). This approach will still allow small segregated areas of same households where people will feel that they fit in, but in the bigger picture it forms small clusters that are grouped together by shared spaces.

It was argued by Gray *et al.* (2009:350) that a shared sense of place will develop common goals and shared visions for residents in an area that will help to move away from a “them and us” attitude. Forging unity between different groups will create a sense of belonging and help ease tension. By ensuring that the neighbourhood has access to shared spaces or facilities will contribute and facilitate the social bonds that exist between the residents.

2.3.2.2 Social facilities and amenities

The development of communities is especially dependent on the relationships that are formed between the residents. Developers who are aiming to create truly sustainable housing developments aim to increase social activities and interactions between residents by providing social amenities and facilities within the area to be utilised by the residents. According to Gray *et al.* (2009:350) a community can only be regarded as truly mixed if there are social interactions between different income groups.

Social interactions within housing developments are determined by the residents. The locality and nature of the development is a determinant of the connections between the communities and the individuals who live there and how they are formed and maintained (Gray *et al.*, 2009:343). These connections are formed when residents share common interest or frequent interactions that can be facilitated by social facilities and amenities.

Within a housing development where the social environment contributes largely to the resident's experience of the development as well as their quality of life, it is important that the cultural heritage of all residents is preserved as an integral part of the unique identity (UN Habitat, 1976:5)

of each development. Special attention must be given to the provision of facilities, amenities and services within a community to improve the neighbourhood development and the housing experience (UN Habitat, 1976:23).

In many neighbourhoods over the past few decades it was seen that service delivery and the establishment of community facilities has been duplicated for communities that live side-by-side as communities did not integrate the uses of such services or facilities. Examples are available for issues that existed within service delivery, resource allocation and policy decisions due to the conflict of segregation (Gray *et al.*, 2009:342). These issues are aimed to be resolved with an integrated approach where the key would be shared amenities, services and resources.

A high priority should be the provision of opportunities for the pursuit of recreation and leisure in communities by providing adequate open spaces and facilities to be used to strengthen these community ties (UN Habitat, 1976:38) through the production of neutral spaces that links approaches of conflict resolution and community development (Ireland Housing Executive, 2007: 7).

The level of integration within a community is in some forms also measured by the extent of social interactions and the friendship bonds between residents of diverse groups when making use of public facilities (Gray *et al.*, 2009:348). As mentioned earlier integration of residents by means of mixed housing schemes does not necessarily lead to increased interactions, relationships have to be developed which can be facilitated by community facilities and shared spaces as well as social events such as school functions or local markets as Gray *et al.* (2009:351) suggested but it is also important that conflict between residents must be managed carefully to keep relationships intact (Gray *et al.*, 2009:349).

When living in segregated communities it is also often seen that activity segregation becomes more prominent, where social groups tend to segregate themselves at non-residential places such as schools or work places it is then more likely to lead to conflict by fostering division and hostility (Gray *et al.*, 2009:343). When dealing with such situations it is always important that sensitivity is central to all actions that are taken and that these actions are monitored regularly in order to be proactive with solutions to emerging problems (Gray *et al.*, 2009:351).

Gray *et al.* (2009:347) mentioned that a common theme with mixed neighbourhoods is the importance of natural shared spaces where the physical environment can facilitate interaction. Areas that were identified included community centres and youth facilities, daycare centres and schools, clubs, shops, bars and restaurants, and parks or playgrounds. It was also identified that in areas where these facilities were not available or strongly identified with only one community

group, there were less opportunities for social mixing within a safe context as well as lower levels of integration. It has also been found through evaluation that mixed income housing developments offers more amenities to cater for the diverse community making more opportunities possible for social interactions (Popkin *et al.*, 2004:22).

The provision of facilities and services within a housing development is also important when considering that by focusing on integrated communities and moving away from segregated service delivery it can be more efficient, leading to better health care, education, employment opportunities and human development. Service provision and adequate infrastructure can improve the social environment of residents within a housing development as it can help prevent disease related to inadequate sanitation and water supply. Many diseases can be controlled not only by therapeutic interventions, but also simple development solutions related to water and sanitation. A report by the WCED Brundtland Commission (1987:93), "*Our Common Future*" used the number of water taps with running water near a community as an indication of their health rather than the number of hospital or clinic beds available which gives a clear idea of the importance of basic services as well as shared services to ensure resource availability that can be invested in social facilities and amenities.

2.3.2.3 Education

An important part of the social dynamic within a community that merits more investment, the WCED Brundtland Commission (1987:96) argues, is education. Education has to be accessible and a priority to all residents to ensure that the community can grow in their knowledge of being self-sufficient and have the capacity to make informed decisions regarding their living space. Popkin *et al.* (2004:5) suggests that income mixing within housing developments goes hand in hand with improvements in schools. The strategy is that better schooling systems will attract higher income residents to the area that is willing to invest in their community and in turn improve the well-being of lower income families.

Places of education contribute largely to the social environment within a community as children are more eager to interact with peers regardless of their background, but this does not only include schools. Centres where adults can learn new skills or learn how to become a more sustainable community, protecting the environment and using its resource efficiently is also part of increasing the social interaction and participation within a community.

South Africa is currently faced with an education sector that poses great challenges. The main concern is the inadequate facilities and resources that are available making quality education difficult especially in rural areas and areas of lower average incomes (Killian *et al.*, 2005:16). In

addition, the high percentage of unqualified teachers causes further concern as it is these areas that are in need of appropriate skill development and education to improve their current life quality (Killian *et al.*, 2005:16).

According to the WCED Brundtland Commission (1987:96) sustainable development required both male and female enrolments to be increased from current statistics as it has become clear that female enrolment rates are much lower than those of the males due to cultural perspectives of “stay at home wives” or “male provides”. Education has to be seen as something that everyone in the community needs, not only on the basis of schooling but also specific job training and skill transfer. A crucial driver that will assist in the increasing economic potential of a settlement is the assurance that the residents are properly trained and educated to become productive member of their community.

Providing the required facilities are only the beginning as it is the relevance to local conditions and the quality of the education and training that must be improved. Curriculums and course work must be developed, and teachers trained to educate students about local conditions such as conservation of wetland areas within their city or deforestation and erosion and how to prevent it within their community, it should include basic health education to prevent diseases. These education systems should aim to provide comprehensive knowledge cutting across natural and social sciences and the humanities, providing an understanding of the interaction between environment and development, between human and natural resources (WCED Brundtland Commission 1987:96). Education should also include the consideration of alternative energy efficient solution to help communities not only save on resources used but also protect natural environments.

2.3.3 Environmental planning

Sustainable development in terms of the environment is to ensure the long-term stability of the environment (Emas, 2015:2). Creating an environment that can sustain itself is dependent on the drivers of 1) energy efficiency, 2) resource sustainability, 3) open space planning and 4) land availability as emerged through theoretical sampling (Davoudi *et al.*, 2016:5). The National Framework for Sustainable Development in SA stipulate the importance of ensuring the efficient usage of resources and alternative resources to limit depletion of natural scares resources by preventing pollution and degradation of ecologies, sustainable use of resources and conservation (National Department Environmental Affairs and Tourism, 2008:86).

The provision of quality natural open space is emphasised in an attempt to reduce degradation and loss of natural habitats (National Department Environmental Affairs and Tourism, 2008:67)

as well as promoting the provision of public spaces while ensuring that available land in cities are used according to potential to improve accessibility and preventing urban sprawl (National Department Environmental Affairs and Tourism, 2008:39). This study considers spatial planning which depends on the natural environment and its limitations therefore effective planning is required to guide human activities and development in order to reduce the impact but also to provide a healthy natural system that supports economic and social growth.

2.3.3.1 Energy efficiency

An increased awareness of the consequences has led to the agreement that humankind now has a responsibility to guide and determine the future of the environment (Caldwell, 2001:1740) to ensure a sustainable production of usable energy sources.

Daily survival depends on energy (WCED Brundtland Commission, 1987:141). Choices of alternative energy use should be considered within every housing development with the impact of current dependencies on sources of energy that are known to be hazardous and their impact on the environment (UN Habitat, 1976:26). Future developments are dependent on the long-term availability of sources that are safe, environmentally sound and dependable (WCED Brundtland Commission, 1987:141) but at present no single solution is able to meet this future need.

Currently the main energy source as mentioned in the WCED Brundtland Commission (1987:141) are fuels such as gas, oil, coal, and wood that can provide power for heating, cooking, manufacturing, transport and mechanical work. The use of primary energy as generated from solar, water or wind power is being wasted in many countries due to inefficient equipment or design that is currently used to convert the energy into electrical power, making the process too expensive for most developing countries (WCED Brundtland Commission, 1987:141).

All variations of energy sources, renewable or non-renewable, can contribute to the future energy mix but each has an economic, environmental and health cost, risk and benefits. The choice of sources then implies that both an energy and environmental strategy must be considered (WCED Brundtland Commission, 1987:142).

When considering sustainability in regard to energy use the following key elements have to be considered (WCED Brundtland Commission, 1987:142):

- Energy efficient and conservation measures to minimise the waste of primary resources.
- A sufficient growth in energy supply to meet the needs of residents.
- Protection of biosphere and preventing pollution.
- Public health and recognising the problems of risks to safety inherent in energy sources.

Considering integrated human settlements from a sustainable development perspective

In a more practical implementation the utilisation of energy should be given special consideration in the choices of technologies and designs used for the development of communities (UN Habitat, 1976:29). The following suggestions are contained within literature of using energy more efficiently:

- Energy consumption can be reduced by changes in land use planning and building designs.
- Appropriate transportation systems including public transportation can also contribute to reducing energy use with particular reference to fuels.
- Developing and identifying new sources of energy. Promoting more energy efficient resources, for example by promoting innovative approaches in design.
- Adapting techniques for production of building and construction materials, the operation of buildings with lower energy requirements while taking into account the maintenance cost as well as social and environmental considerations.
- Emphasise the use of renewable resources over non-renewable resources.
- Design and use systems that is less susceptible to power failures.
- Develop and implement small scale power generators, systems more appropriate for water supply including solar and geothermal energy and heat pumps as appropriate.

These implementations are in many ways achievable but practical implementation for third world countries are more strained by budget to achieved this. Small additions can make a difference to ensure a better and energy efficient development process for example, that in housing developments measures must be in place to protect water sources from pollution and to promote the efficient use as well as reuse of water to minimise the environmental impacts (UN Habitat, 1976:34). According to The Sustainability Institute (2009:11) no provisions were made for the fact that resources of energy and water in cities is facing depletion and the infrastructure systems that are being overloaded.

Changing the patterns of how energy can be used for the better will require new policies within the urban development sector as well as within housing designs, industry location and transportation systems (WCED Brundtland Commission, 1987:53). The Sustainability Institute (2009:12) argues that it is critical that more sustainable design criterion must be followed along with appropriate use of technologies in settlement roll-outs.

With ecological design the current state of resource and energy consumption can be reduced within the built environment through the assistance of technologies which are low cost and focused on sustainable resource usage (The Sustainability Institute, 2009:13).

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Ideally housing programmes in South Africa should, according to The Sustainability Institute (2009:12) strive to:

- Provide quality, safe and well-located housing for the poor.
- Comply with policies of density.
- Utilise modern technologies and design features, as enforced by bylaws, that will reduce the amount of energy, material and water usage that each house needs over its life cycle.
- Intervene in agricultural food change by encouraging localised food supply and small-scale fares.

Energy efficiency can only be implemented within the design of housing if the knowledge is used by the professional team appointed. The design methods within a built environment can only become valuable assets if the necessary resources are available, when developers actively aim to improve their sustainability measures within houses and when the community have sufficient knowledge as to why certain methods will be more cost effective over the long term and its impact on their natural environment. For this to be successful the use of natural resources has to be better understood.

2.3.3.2 Resource sustainability

It was mainly found that there are three conditions that make up this sphere's sustainability which is primarily focused on the resource base. This will lead to the outcome that housing and the environmental systems will be in a sustainable relationship if resource usage can be expressed as (The Sustainability Institute, 2009:8; Alhaddi, 2015:7):

- The rate at which renewable resources are used should be less than the rate at which they regenerate.
- The rate at which non-renewable sources are used should be less than the rate at which they can be replaced by sustainable renewable resources.
- The rate of pollution must be less than the potential of the environment to absorb and process these emissions.

Sustainable development has in recent years reached a growing awareness for the need to address environmental problems of climate change and global warming that is primarily driven by human activities, resource depletion and emissions (The Sustainability Institute, 2009:3).

All basic resource that are required for living comes from the earth, while development in itself requires the extensive use of these natural resources according to the CEE, (2017:8). Pressure is place on these resources when people lack alternatives (WCED Brundtland Commission,

1987:52). Most common resources that are made available for the development of housing can be considered as less expensive but more damaging. The need for alternative solutions is evident but such alternatives are mostly too expensive for developers to consider in the mass quantities that are needed, still cities will have to start recognising and accepting the ecological limits with respect to resources such as food supplies, energy, water and biodiversity (The Sustainability Institute, 2009:12). According to Emas (2015:2) the concept of conserving and using resources more sustainably would be to consider the long-term stability of the environment by seeking alternative resources that can assist to lighten the demand on current resources that are depended on within development. Resources that are available to improve quality of life is limited compared to people's needs and are often misallocated (UN Habitat, 1976:14). Sustainable allocation requires the mobilization of additional resources and the planned use of scare resources.

Killian *et al.*, (2005:4) in their human settlements report as part of the National State of the Environment Project stated that unsustainable settlements lead to ecosystem degradation through consumption patterns and the production of pollutants and waste. Technology and science have a significant role to play in shaping sustainable settlements by using the ecosystems that they depend upon effectively while minimising pollutants (The Sustainability Institute, 2009:4). The quality of the environment can be preserved when developing housing; pollution should be prevented by minimising generation of waste and effectively managing waste that cannot be recycled or used for other purposes (UN Habitat, 1976:34). It has been theorised that pollution can be a sign of insufficient resource usages, improvements that reduce pollution in the production process provide opportunities for both the environment and the economy as all materials will be effectively used (Porter & van der Linde, 1995: 219; Emas, 2015:1).

Constricting resource use is in the best interest of society and it should be the aim of the government to consider and protect natural and environmental resources on which current and future developments depend. The connection between development and the environment provides a powerful rationale for environmental protection as any other approach would defeat the intended purpose (Dernbach, 1998:20; Emas, 2015:1). The foundation of sustainable development lies with the inherent interdependence that exists between the long-term stability of the economy and the environment (Emas, 2015:2). The Sustainability Institute (2009:4) argues that transport, consumption and production processes should be managed in ways that conserve and will protect the resource stock while drawing upon them.

The disparities in economic and political power are sometimes responsible for problems such as environmental stress or resource depletion. In most instances the people who bear the burden of water and air pollution are poor and unable to complain effectively to stop large industrial

companies, or forests are destroyed due to excessive tree felling for firewood when there are no alternatives for the people who live there when cooking (WCED Brundtland Commission, 1987:44). Once these disparities are neutralised or becomes less, then there will be a decrease in the depletion of natural resources. The link between economic stability and environmental resource usage are evident, when people are more economically stable they have the opportunity to use alternative renewable resources such as solar energy for electricity to cook food instead of burning wood and destroy forests or use tap water to wash clothes rather than doing washing in a river and polluting water with chemicals.

Ecosystems tend to be simplified by development and their diversity of species reduced. The loss of these species can limit future generations' options and for this reason the conservation of animal and plant species are required for development to be sustainable (WCED Brundtland Commission, 1987:43). Methods to sustain the natural environment with housing developments depend on the provision of open spaces among the total land uses as well as the availability of useable land for development. The amount of quality open spaces can help to contribute to the conservation of these critical ecosystems.

2.3.3.3 Open space planning

The land use specialist Jim Gibbons (Gibbons, 1998:1) wrote a statement that many environmental specialists found ridiculous: "major advancement in land preservation occur as a result of development". He explained that if you think about it, for most developers, time is money and that they would rather accept restrictive conditions and regulations to their development with the perspective that they will give a little to gain a lot. Therefore, they are willingly dedicating land, negotiating design and landscape alternatives that will preserve land within their development to be utilised as open space, resulting in more land ending up being preserved as natural areas due to development that takes place. Unfortunately, Gibbons states that many governing bodies are reluctant to ask for open space dedications because they have no overall plan or funding for maintenance for these areas. Hence these potentially valuable areas are then viewed as undesirable and pose liability and security problems if not forming part of a deliberate implementation plan (Gibbons, 1998:2).

Open space and parks are referred to by the City of Melbourne (2012:22) in their open space strategy as public or privately-owned land that is set aside primarily for recreation, passive outdoor enjoyment, natural conservation and public gatherings. It further also includes sporting venues and gardens to create a range of different opportunities and experiences for the user.

The developers can improve designs of new townships by including open space of a certain type to ensure the use will have a positive contribution to the community and its sense of place. Open spaces provide a broad range of health, social, economic and importantly environmental benefits to the community and the individual within housing developments. It is an essential ingredient for the enhancement and improvement of the quality of life and the liveability within the area (PLA Vic/Tas & DPCD, 2013:3). Other benefits include, property values next to open space increases to produce increased property tax revenue. Furthermore, open space attracts visitors, where tourist expenditure can significantly contribute to local economy as well as employment creation through maintenance. Gibbons (1998:2) therefore argues strongly that open spaces are a positive land use and that communities should encourage the use.

The provision of open space is an essential component of community life and therefore a basic element of community planning. Open space supports a spectrum of activities and interactions between residents and nature, but it also sustains critical environmental functions (PLA Vic/Tas & DPCD, 2013:1). The quality and the amount of open space is one of the major contributory elements to the liveability of communities (City of Melbourne, 2012:23). Open spaces contribute to the social connectedness of the residents, their mental and physical health and well-being as well as acts as a mitigation measures for urban heat. Open space further also contributes to natural storm water management and the reduction of noise and air pollution (PLA Vic/Tas & DPCD, 2013:3), which have economic benefits as less formalised and constructed methods are needed for the management of storm water, noise and air pollution within housing developments when sufficient open space is provided.

Increasing densities, resource depletion as discussed above, climate change and population growth emphasise the importance of providing quality open spaces. Easy access to these well designed and more diverse open spaces can, according to PLA and DPCD (PLA Vic/Tas & DPCD, 2013:3), assist in managing the impacts of these challenges but also enhance the benefits that are provided. To ensure that maximum potential is achieved with the provision of open space the design and planning has to be thorough.

Gibbons, (1998:3) made a quite fitting observation regarding developers when it comes to the planning of open spaces. He noticed that many developers do not deliberately plan for open spaces. They plan for specific residential erf sizes and amenities to be provided and wherever there is oddly shaped erven left or pieces that they can't use due to some constraint the erf has it then gets assigned as an open space. Gibbons, (1998:3) said that he believed that to create order and well-designed open space, the solution must be found in comprehensive land use planning process.

The planning of new open spaces according to the City of Melbourne (2012:229) in their open space strategy has to occur early in the planning process as it has to consider and evaluate all the existing open spaces to firstly clarify if these spaces aren't already adequate or if upgrades are needed. Then only will new land be set aside for open space that is connected throughout the design. Upgrading existing or creating new open space can be uncomplicated if the needs of the residents is taken into account. To ensure that most of the needs can be provided for in the limited space available a few simple design solutions can be used to increase the capacity, this will be discussed in the following chapter.

According to the City of Melbourne (2012:28) the development industry is responsible to deliver well designed and conveniently located open space. They should make improvements to the function of the existing open spaces by ensuring diversity and multiple uses or add additional open space with new functions. It is also the responsibility of the developer to pay open space contribution to the local authority towards the additional land areas that have to be maintained or provided with facilities depending on the specific use of that open space (City of Melbourne, 2012:229; PLA Vic/Tas & DPCD, 2013:44).

2.3.3.4 Land availability

Land is a limited resource and it is imperative that the continued loss of valuable natural areas is prevented (UN Habitat, 1976:42; PLA Vic/Tas & DPCD, 2013:9). The availability of land to be developed as housing is even more limited when considering the competition between alternative land uses that are complex as well as finding well located land at the right price that is suitable for human settlement development (National Department of Human Settlements, 2015:21).

Often the land that is available for development has many physical constraints. The knowledge of the land potential is then an essential part of the planning proses. Building a solution to these potential problems or constraints into the planning phase provides better long-term outcome (PLA Vic/Tas & DPCD, 2013:9).

The difference between land capability and suitability has to be understood. Land suitability is the evaluation of how suitable the particular site is for a particular use which depends on the land capability which is the capability of the site to support the particular use based on factors such as proximity to population centres, environmental constraints, attractiveness of the landscape, culture and heritage values and especially consumer demand (PLA Vic/Tas & DPCD, 2013:9). For instance, the issue of location when providing housing, infrastructure and services to meet the needs of the populations is extremely important (UN Habitat 1976:26). The site may be physically suitable for the use of housing but if it is located on the fringe of a big city with no

connection to infrastructure, service, employment or transport and weak prospects of integration (National Department of Human Settlements, 2010:45) then the site capability is not sufficient for housing as the residents will be isolated. The location is also influenced by the land price and therefore settlements are not commonly found within the inner city where land prices are high as this restricts the developer to deliver affordable housing, thus contributing to the exacerbated urban sprawl (National Department of Human Settlements, 2015:7).

The development and provision of housing, social justice and health conditions for residents can only be achieved if available land is used in the interest of society as a whole. Land use is determined by long term interests of the community since the location of activities and other specific land uses have long lasting effects on the structure and pattern of human settlements (UN Habitat, 1976:38).

One of the most important resources of every country is land. It is a fundamental element that has to be regulated and the uses thereof plan efficiently (UN Habitat, 1976:5). Land as a natural resource is fundamental to the social and economic development of people within a country (UN Habitat, 1976:39). The integration of the society is depended on the connection to the city, the economy is strengthened by employment opportunities and better transportation networks, the environment can actively be protected and investment efforts to preserve key agricultural areas are more effective. It is the government's responsibility to exercise complete authority over available land with a view to freely plan and develop human settlements within the boundaries set out for development as an approach to agricultural preservation and maximising use of existing service by densifying already serviced areas. This includes identifying land that is affordable and transit-orientated (National Department of Human Settlements, 2015:50).

Efforts should be made to reclaim and preserve land for agricultural and housing development purposes without upsetting the balance of ecological systems (UN Habitat, 1976:42). Therefore, when choosing land for development it should be considered carefully.

Land use planning will enable communities to direct their growth to areas that are more capable of supporting it. The statement of how, when and where communities will grow and be located should be clearly set by policy process so that a concise guide is provided to the local officials and developers (Gibbons, 1998:4).

2.4 Conclusion

This chapter focused on understanding sustainable development by defining and understanding the term “sustainability” and “development” separately in order to understand the combined definition. Development was understood to imply change and sustainability referring to the steady

state in which these changes occur. Referring to sustainable development then implies continuity of these changes over time and generations.

It can be concluded that changing quality of life and community growth require a change in the approach to development efforts so that it takes into account all the effects on every driver involved in development of residential areas (WCED Brundtland Commission, 1987:49). To do this the three pillars basic model was presented as three spheres of sustainable development that illustrated their overlapping character clearly which made it possible to understand each driver that contributes to each sphere in order to address each sphere in a way that benefits all three. Each sphere was discussed separately and highlighted several supporting development drivers and their contribution to sustainable development. The drivers were identified based on a thematic literature investigation being employed.

In this chapter it was recognised that economic and social development can only take place if the environment offers the necessary resources (CEE, 2017:13). There are various drivers to be considered collectively, as identified through the theoretical sampling employed in this chapter and presented in the below table. The drivers identified and discussed is emergent within both sustainable development and integrated human settlements development literature. Table 4 captures the three spheres of sustainable development and the development drivers that these spheres consist of in contributing to the development of more sustainable housing provisions.

Table 4: Sustainable development drivers identified from theoretical sampling

Sustainable development spheres	Drivers of sustainable development	Consideration for inclusion of drivers
Economic integration	• Mixed income communities • Employment	Drivers that increase economic growth within the community and for individuals. Allowing for an inclusive community that consists of a range of income groups to be present.
Social dynamics	• Community integration • Social facilities and amenities • Education	Drivers relating to increased social activities, skill development and improved participation.
Environmental planning	• Energy efficiency • Resource sustainability • Open space planning • Land availability	Drivers focused on environmental conservation, successful provision of natural areas and maximising developable areas.

Source: Own construction (2018)

Figure 4 depicts a three-tier flow chart of sustainable development, deconstructing the spheres to drivers as presented in the table above. Based on the findings of this chapter it can be suggested that if sustainable development can be deconstructed to its simplest individual form it can be easier to understand sustainability within development and how it can be achieved.

Considering integrated human settlements from a sustainable development perspective

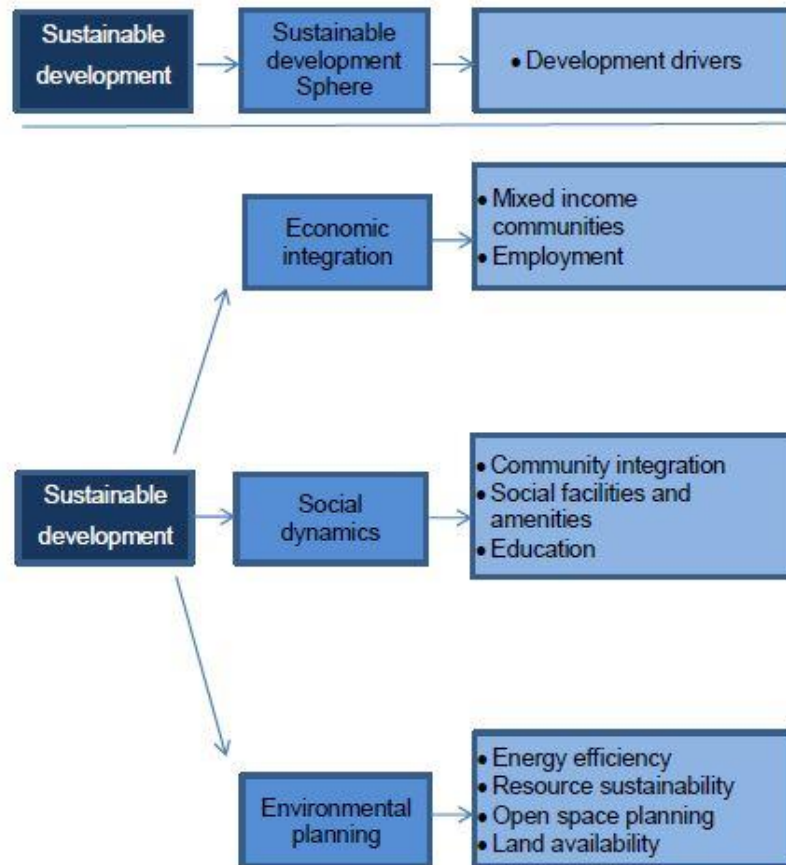


Figure 4: Sustainable development three tier flow chart

Source: Own construction (2018)

This study aims to further identify the sustainable development objectives that are included in the literature review of sustainable development in order to produce a comprehensive list of objectives as identified within each driver to further deconstruct the sustainable development spheres to their simplest form of understanding.

The following chapter will discuss the importance of human settlement planning and their creation guided by the sustainable development drivers; reflecting design aspects to be considered when planning housing developments as well as the importance of public participation to ensure a sustainable approach to the provision of housing.

Chapter 3: Human settlement planning

3.1 Points of departure

In this chapter the concept of human settlements will be explored and will aim to outline the importance of planning these settlements to provide for all the needs of the residents in the pursuit of creating sustainable and functioning communities in an integrated way.

The conditions of human settlements, particularly those in developing countries, have long been a concern for the nations of the world according to The Vancouver declaration (UN Habitat, 1976:2). At the United Nations Habitat conference on human settlements it was recognised that living conditions for vast numbers of people were unacceptable and that concrete and positive action has to be taken at international and national level to find and implement solutions to prevent these serious conditions from deteriorating (UN Habitat, 1976:2). Despite the fact that strides have been made in the delivery of housing, the current human settlements patterns in South Africa like many other developing countries remains dysfunctional (National Department of Human Settlements, 2015:6).

Settlement planning should be modelled based on indigenous values that ensures that national objectives and goals are reflected, with particular consideration for social justice, economic self-sufficiency, employment opportunities and cultural relevancy (UN Habitat 1976:17).

The Vancouver declaration (UN Habitat, 1976:26) states that many vital decisions are taken in the early stages of the development process, at the planning phase, but their impacts are more far reaching in terms of future use, such as employment generation, income distribution, environmental, cultural and social impact. The aim of any design for human settlements needs to be providing residential areas closer to employment, with access to public transport networks, services and the efficient use of infrastructure (National Department of Human Settlements, 2015:24). This chapter will consider the influence of the participation of the public within the planning and design of these settlements to ensure a move away from historic methods and influences.

It is important that human settlements must be seen as an object and instrument of development (UN Habitat, 1976:4) to create community orientate neighbourhoods.

3.2 Importance of human settlement planning

The provision of housing is recognised as one aspect of providing a community. Housing as a concept should be seen as embracing construction and planning and not just as building a house,

but to plan for a community life. Within the community it should include provision for living space, work, shops, social relationships, education and health services for families to create a quality environment (UN Habitat, 1976:26; National Department of Human Settlements, 2015:26). The human settlement concept was based on this foundation.

Human settlements can be summarised as a variety of housing typologies and mixed tenure along with the provision of mixed-use sites that are serviced for non-residential uses, that is essential to the creation of human settlements (The Presidency, 2012:12; National Department of Human Settlements, 2015:25). Housing that is connected to infrastructure and has access to provision of services can be defined as human settlements. They occur at different scales from a small cluster of dwelling units, a neighbourhood, village, town or even a metropolis. The connections that are formed between these different scale settlements are referred to as infrastructure networks and can also be defined at a regional, national or international level (UN Habitat, 1976:25).

Planned settlements take place within a legal land tenure framework mostly characterised by the planned provisions of services and infrastructure (Killian *et al.*, 2005:5). This planning largely aims to satisfy all basic needs, such as employment, education, basic health services and housing within a single integrated community environment. The improvement and full satisfaction of these needs are a prerequisite when considering the notion that the quality of life is determined by the conditions of the human settlements which is largely based on the quality and availability of housing, infrastructure, services and opportunities (UN Habitat, 1976:25).

Housing infrastructure and services is the basis required for the functioning of a community (National Department of Human Settlements, 2015:26) and is not only essential to meet basic needs of the residents, they are also tools to improve living conditions, give character to the settlements, achieve social justice and create employment and other social opportunities (UN Habitat, 1976:27).

The pursuit of socio-economic opportunities and the planning of physical and social structures should be realistic, based on current needs and not be determined by the availability of resources to implement them (UN Habitat, 1976:18). Even if resources are available alternative renewable solutions should be considered. When considering alternatives, the evaluation must be based on criteria that reflect environmental and social values, national priorities and development objectives to stimulate the shortcomings in the surrounding area as well as fulfil the need within the planned human settlement.

Housing, services, facilities and infrastructure are principal components of human settlements. They are economically, socially, environmentally, physically and culturally interrelated and even

though it might not always be possible to supply them simultaneously, they will definitely be less appropriate and costlier if they are planned and provided in isolation (UN Habitat, 1976:27). These components should be planned in an integrated way with the placement of housing typologies and provided in an order that is appropriate to the circumstance of its surroundings.

3.2.1 Human settlement design

Neighbourhoods are seldom designed with a view to long term economic, social and environmental sustainability by the planners. Financial constraints and the apartheid spatial construct often overrule an integrated approach to holistically designed neighbourhoods (The Sustainability Institute, 2009:1) proving a challenge for the planners to change the physical environment through design to ensure a more sustainable and community orientated approach.

It is thus important that most planning decisions occur at an individual settlement level which is oriented to solve problems that are derived from the relationship between economic, environment, political and social context in a continuous process of adjustment and change within that settlement to ensure that the settlement can function independently (UN Habitat, 1976:16). Design is then focused on the combination of these spheres by ensuring that each individual driver is addressed in a manner that will not cause other spheres to compromise on quality. The National Department of Housing (2004:16; National Department of Human Settlements, 2010:53) introduced incentives and measures to include design professionals at the planning and project design stages to ensure environmentally sufficient and sustainable settlements production outcomes. Development guidelines for designers and regulations to achieve sustainable and environmentally sufficient settlements must be produced and aimed to promote the development of houses of a dignified size to support morality of society. The Council of Scientific and Industrial Research (CSIR) produced guidelines for human settlement planning and design to assist in creating sustainable human settlements with thriving communities (CSIR, 2012a:5).

Planning in particular must aim to further consider the following (UN Habitat, 1976:20):

- The designation of land use patterns.
- Location of main activities with special attention to their relationship.
- Systems and infrastructure networks required to link activities on the basis of environmental impact, economy, convenience and safety.
- Recognising the need for direct and phased development through the timely provision of concentrated services and infrastructure, and the delaying of such provisions in areas not yet suitable for development.
- Eliminate economic and social segregation and personal isolation and alienation.

- Formulation of economic and social development programmes.

In achieving the environmental and socio-economic objectives of human settlement development, high priority must be given to the physical planning and design processes which considers various planning approaches and the transformation of general and broad goals into design solutions. According to The Vancouver declaration (UN Habitat, 1976:8) the comprehensive and sensitive design methodologies relates to particular circumstances of space and time must be pursued.

Thinking about the influence of each sphere of sustainability and considering the impact on the final outcome of human settlements can lead to changes in the planning and design stages that will assist in delivering across the board on sustainable development and contribute to reaching the triple bottom line as referred to in Chapter 2 (Parkin *et al.*, 2003:20).

The design process of such human settlements is complex, and a lot of various drivers have to be considered. As mentioned the three spheres of sustainable development consists of some of the main drivers that has to be considered within the planning and design phase of human settlements. Many human settlements are characterised by disparities in living standards and according to The Vancouver declaration (UN Habitat, 1976:13) reflects inadequate planning which is what needs to be rectified with proper planning through the human settlement approach.

Human settlement planning approaches aim to include residents of all income levels within a single community. The provision of a range of housing typologies and associated financial assistance programmes will allow different income residents to be housed within a single settlement.

The design of these different typologies should aim to achieve an “income blind” approach to make the income gap between residents less distinctive by having some similarities between typologies while keeping the individuality of each building (Popkin *et al.*, 2004:20). By having design similarities in design can create a feeling of inclusion amongst residents and take away the distinctive recognition associated with low income neighbourhoods. Ideally, residents should not be able to distinguish between housing units that are associated with higher or lower income groups. The quality of design and construction with better amenities (Popkin *et al.*, 2004:20) should be on a standard that is acceptable to high income earners rather than on what low income earners will be satisfied with. The approach must be aimed to attract all income level earners and giving low income earners a better-quality living space.

Encouraging interaction between different income residents can also be achieved in the opinion of Popkin *et al.* (2004:20) by avoiding the placement of large concentration of poor residents within one part of the housing development by designing the township layout to include a

calculated number of low-income units or making sure that the low-income units are well distributed throughout the development.

Integrating lower income earners within human settlements that provide quality living space will affect the social confidence of those residents and make them more willing to participate in the community. This integration can be achieved by broadening the range of state financial assistance through housing subsidies or development grants that will allow delivery of housing at reduced costs making them more affordable.

The design of human settlements can further include opportunities for lower income residents to earn higher incomes in several ways. The design can integrate employment opportunities through the provision of areas for business activities such as shopping areas near residential areas (Koen & Theron, 2010:12). The provision of other functions such as education facilities or health facilities also provides employment opportunities for the residents of the created human settlement. The urban planner is responsible for the creation of such opportunities by ensuring enough space is allocated within the design to accommodate the vision. The placement of these uses needs to be considered carefully and be agglomerated to ensure the livelihood of all the business and functions of that community as the residents tend to travel to a single area to conduct their business.

A consideration within design can also include opportunities for business to be operated from a home. The perception of living in mono-residential areas may to some extent still be perceived as desirable, but this desirability dates to a time when vehicles have just become popular and people were showing their wealth by being able to drive further to suburban areas (Bousquin, 2017:3). This perception has drastically started to change (Alvarez, 2017:2). A specific design referred to as a “live/work” is a concept that is gradually coming back into design principles (Alvarez, 2017:1). Live/ work can be defined according to Delaware Valley Regional Planning Commission (DVRPC, 2004:1) as a unit or building that provides distinct spaces for occupants to reside and having their business in the same building.

The advantages of this are that a better balance can be reached between one’s personal life and professional life. Proving ideally for residents with children since the parents will be part of the everyday experience of their child whereas with current trends are that people work from 9am to 5pm in an office (Bousquin, 2017:3), including travelling time they often don’t get to spend enough quality time with their children and loved once, or just having an engaged social life (Alvarez, 2017:2). Live/Work poses a viable mixed-use option that can strengthen the economic and social relationship structure within a human settlement (DVRPC, 2004:58).

Within human settlement design the “Live/Work” design can be considered as double storey building providing business opportunities at the bottom and residential on the top floor. This allows entrepreneurs to operate their business from home as well as provide easy access to the surrounding residents. These business opportunities can include a spaza shop, hair dresser, day care facility and the like. For multi-story buildings it can consist of multiple uses such as restaurants and shops on the bottom floor, office space on the second floor and residential on the top floor creating complete mixed-use area with multiple economic benefits (DVRPC, 2004:3).

It is essential that even though new opportunities are created within the human settlement that serves the community that the development itself is still integrated within the larger city network and still provide easy access to additional opportunities of employment. It is therefore also essential that transportation is cost efficient. Residents can utilise their limited incomes more effectively if transportation opportunities are less costly with shorter commuting times. Alternatively, another option for human settlements will then be to support more employment for residents within walking distance from their homes or implementing live/work concepts where commuting then becomes non-existent (DVRPC, 2004:3).

The same principle applies to facilities for social use. Planners must consider different land uses integrated within the settlement to provide employment in maintenance or service sector such as jobs associated with health and educational facilities. This will lead to a design form of a combined settlement that functions as a town on its own by providing all the necessary functions that a community may need.

Popkin *et al.* (2004:20) suggests that in housing developments where different income groups are present it can be useful to employ an “income-blind” design approach where units have the same appearance from the outside and blends in with the surrounding construction features. When differences in typologies are noticeable it can result segregation of residents. Highly segregated communities are considered to be more unsustainable both economically and morally. However, to have segregation to some extent is preferable (Gray *et al.*, 2009:339). This integrated approach will still allow small segregated areas of similar characteristic households where people will feel that they fit in. The creation of these pockets or clusters of similar characteristics such as income, culture or religion provides a sense of belonging and inclusion within a larger integrated area. Popkin *et al.* (2004:5) is of the opinion that micro-neighbourhoods can be created by merely reconfiguring the streets and include proper landscaping with sidewalks that would open up the housing development to surrounding areas and encourage people to walk around and be active. This will also lead to increase security by natural surveillance and better connectivity of open spaces as the best security will always be as many eyes possible watching and knowing your neighbourhood and neighbours (Koen & Theron, 2010:11).

The designing of settlements must be aimed at providing living environments where identities of individuals, societies and families are preserved, where there is adequate means of maintaining privacy, but still the possibility of face-to-face interactions that is essential when providing housing in a community orientated way (UN Habitat, 1976:8).

The development and protection of city centres are a high priority when designing or rethinking mixed communities. It must ensure safe shared spaces, reduce tension at interface areas by encouraging communication and sharing resources as well as protecting existing areas. The design must aim to support relations through diversity and the understanding of cultural difference and histories (Gray *et al.*, 2009:340).

Generating opportunities through intensification (CSIR, 2012b:2) and providing higher unit densities provides increased opportunities for interactions and an increase in local demand for services and goods. Human settlement design addresses this demand for services by offering a diversity of uses, thus a choice of places, activities and lifestyles. To achieve this successfully planners and designers need to understand that human settlements are more than the grouping of shelter, work places and people. The diversity of the characteristics of human settlements that are reflected in cultural and aesthetic values must be encouraged and respected (UN Habitat 1976:8). If communities are expanding, places of worship, for example should be provided in order to satisfy the religious and spiritual needs of the different groups and cultures that live there. The same should be considered for the types of educational and community facilities that are needed.

Religious facilities, according to the CSIR (2012c:9) are of great significance in a community. Using these religious buildings to define neighbourhoods by associating them with significant natural landscapes can emphasise their symbolic importance and shape lasting impressions (CSIR, 2012c:4). Education facilities on the other hand need to be placed more deliberately to be accessible and able to serve a broader community by being placed close to public transportation routes and intensive urban activities (CSIR, 2012c:9).

The CSIR (2012d:2) differentiate between different order of services. Lower order facilities should ideally be located closer in proximity to each other and higher order facilities further from each other. Religious centres such as churches, synagogues and mosques are considered low/ middle order facilities. Being located closer they can service a diverse neighbourhood without residents having to travel far to reach their preferred facility. The CSIR (2012d:15) suggests a 20minute travel time to reach such facilities. Education facilities are distinguished between a crèche (lower order) with a 10minuts travelling time, primary school (low/middle order) with a 20minuts travelling time, secondary school (middle order) with a 30minuts travelling time and tertiary facilities such

as universities and colleges (higher order) which are regional scale facilities and not planned for specific living environments. When designing a human settlement consideration is needed when placing these facilities. Multiple lower order facilities can be present in a single settlement given that the population it services will be able to maximise the use of all the facilities. For this reason, higher order facilities such as universities are located further apart to ensure a wider area and population is served.

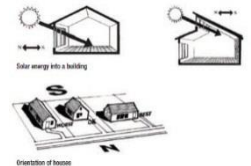
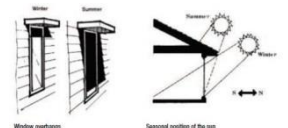
The geographical distribution of health care services needs to be more balanced when considering the placement of such facilities within the design of a human settlements. Medical and health facilities need to be places close to public transportation, making them easily accessible and close to places of regular gatherings (CSIR, 2012c:9). These can include combining medical uses with education facilities as preventive functions such as nutritional programs and inoculations are more easily administered, thus reaching children which are considered the most at-risk part of the population first. Health facilities are divided between clinics (middle order) and hospitals (higher order) (CSIR, 2012d:2) that need to be planned for in a settlement and have specific areas dedicated to their development. A thorough investigation is needed to determine the size and placement of these facilities to ensure that the inadequate distribution is evened out by being cautious of over-supplying and wasting resources. These health facilities such as public hospitals and clinics can, according to Killian *et al.* (2005:15) further provide employment and training to the residents of the human settlements.

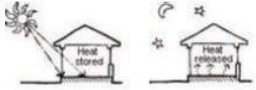
The CSIR (2012d:14) further also provides design and placement guidelines for additional public facilities such as libraries, recreational centres, post offices, police stations, cemeteries and fire stations.

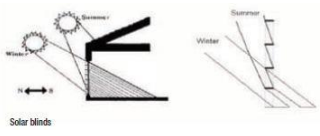
When planning for new human settlements high priority is given to the promotion of creative and optimal conditions of human coexistence (UN Habitat, 1976:9). This then implies the close interconnection of different urban functions, the creation of well-structured space that is on a human scale, chances for human encounters, relief from psychological tension due to overcrowding and chaos and the elimination of design concepts that can lead to human isolation. Planning and design at a human scale will most likely contribute to social and personal relationships within the settlements (UN Habitat, 1976:16). Considering the full benefits that can be exploited from all the spheres mentioned in the previous chapter, they can only be incorporated if they are designed and planned for within the human settlements from the start (Parkin *et al.*, 2003:121). Forcing developers to include more expertise within the design and planning phase of human settlements will lead to developments that are inclusive of all sustainable development considerations (Bousquin, 2017:4).

Designing human settlements can be challenging especially when considering all the environmental conservation drivers, resource and energy usage as well as improving environmental quality. There are some criteria that can be useful when designing houses to maximise its sustainability and decrease its demand on resources. When considering that human settlements consist of a substantial number of houses and other buildings, and the demand it would have on resources to provide enough water, heat and electricity for each house then it becomes clear that small design implementations for buildings can have increased contributions in terms of using resources more effectively. These design criteria as listed by The Sustainability Institute (2009:12) are summarised in Table 5 below:

Table 5: Design criteria for environmental sustainability within the built environment

Design criteria	Methods	Explanation	
Thermally efficient design	1. Placement and orientation of windows	1. Allowing solar energy to enter a building is a natural way of controlling the temperature within a building. Heating the building in the winter and keeping cool in the summer. This includes for instance designing houses to face north in the southern hemisphere and then ensuring that northern windows are larger to improve heat gain during winter while south facing windows should be smaller to prevent heat loss during winter. This is illustrated in Figure 5 to the right.	 Figure 5: Angle of solar energy entering a building and orientation of house Source: The Sustainability Institute (2009:13)
	2. Window overhang	2. Designing an appropriate overhang above the window will regulate temperatures in buildings. As the sun changes position in the sky, the overhang will block rays in summer but allow them to enter in winter as illustrated by Figure 6 to the right.	 Figure 6: Window overhang and position of the sun Source: The Sustainability Institute (2009:14)
	3. Thermal mass	3. Thermal mass to be used correctly to average the day/night temperatures and so increase comfort and reduce energy	

		costs. This means having appropriate glazing, shading, isolation and thermal mass. In winter thermal mass absorbs heat during the day and radiate the heat into the house at night, in summer the thermal mass will cool down due to low temperatures or night breeze and during the day low temperature thermal mass keeps house cool by absorbing energy from the room. This is illustrated in Figure 7 to the right.	Winter  Summer  Figure 7: Effect of thermal mass on building inner air temperature Source: The Sustainability Institute (2009:14)
Sustainable building materials	1.Lower CO² emitted 2.Materials	1. Five to ten tons of cement is used for the average middle-income house during the building process and for every ton of cement manufactured a ton of CO² is released. 2. Thermally efficient, structurally sound, low carbon and inexpensive building materials include hemp, adobe, cob, brick, thatch, stone and other recycle materials. 'Low cement' options include compressed earth blokes (CEBs).	
Energy efficiency	1.Ceilings 2.Isolation	1. Celling installation reduces expenditure on Indore heating due to limited heat loss through the roof and so also reduces energy usage. Improvement in air quality and internal temperatures and there for health quality. 2. Reduces heat flow in and out of house and therefore reduces energy use.	

	3. Sky lights 4. Solar blinds 5. CFL bulbs	3. Windows in roof to admit light into the room to reduce costs of energy used as well as cost spend on lighting systems. Sky light designs include transparent roof plates, plastic domes with circular ducts connected to the room and glass windows. 4. In place of window overhang the solar blinds blocks summer sun and let winter sun through. These fixed blinds let sunlight through the horizontal strips and does not block the view as they are never closed or adjusted. Figure 8 to the right illustrates solar blinds. 5. Energy efficient lighting is cost effective and reduce energy usage to contribute to improving energy security.	 Figure 8: Solar blinds Source: The Sustainability Institute (2009:16)
Renewable energy options	1. Solar water heaters 2. Sustainable water and sanitation 3. Waste minimising and recycling	1. Solar water heaters (SWH) can replace non-renewable sources to heat water, it saves time and is financially viable. 2. Water efficient measures can include low flow fixtures in sinks and baths, dual flush systems in toilets, water recycling and harvesting rain water. Grey water recycling to provide nutrients for greening and agriculture production. 3. Recycling and waste separation creates jobs. Organic materials can be separated for compost purposes.	

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		Recyclable materials to be sold and reused.	
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Source: The Sustainability Institute (2009)

The table above summarise design criteria for buildings specifically but considering the neighbourhood design or township layout can also have an impact on the environment and therefor have to be conscious of the resources that are used. The distribution of open space throughout the city with natural features such as large trees and planted surfaces which can absorb moisture will assist in offsetting some impacts of urban heat. In large built up environments these areas are crucial as it also promotes health and well-being by creating a calmer environment that helps relieve the effects of stress. The effect of the natural features such as large canopy trees will also assist in the increase of the biodiversity and habitat improvements along waterways (City of Melbourne, 2012:29).

A clear approach to defining and classifying open space is important to ensure the planning and design process of open spaces adheres to its original intent (PLA Vic/Tas & DPCD, 2013:4). The creation of open spaces should be based on clear objectives that state the intent, direction and purpose of the open space. For example, Gibbons, (1998:8) suggest that a good objective might be to assemble corridors as opposed to scattered parcels, or to protect threatened and critical habitats or even to maintain the natural drainage ways. Other objectives can also include providing access to natural landscapes while retaining their unimpaired qualities in order to protect the ecosystem at work (UN Habitat, 1976:38).

Open space must be accessible (Gibbons, 1998:12). Practical examples of objectives in the planning of open space can include the provision of open space within walking distance for the majority of the community. The City of Melbourne (2012:26) stipulates a 300m walkable distance to be used for local open spaces and a 500m walkable distance for state, capital and regional city open spaces. Major routes and railways are barriers that limits walkable access to these open spaces. The main goal would be to achieve this objective by increasing green strips that connects the entire neighbourhood and finally the entire city. This can be done by 'filling the gap'. Providing smaller open spaces and utilising wider road reserves so that residents do not have to cross major roads to access open spaces City of Melbourne (2012:28).

Determining the quantity of open space that is needed in an area is based on the different provision standard and ratios used as tools when designing. The PLA and DPCD (PLA Vic/Tas & DPCD, 2013:52) suggests that legislation and guidelines have to specify the requirements that have to be complied with and that is usually expressed in 4 different methods:

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- calculated as a percentage of the total amount of land i.e. 6% of nett developable land.
- calculated based on the amount per capita i.e. 2 hectares per 1000 people for active space or 5 hectares per 60 000 people for built facilities.
- calculated based on the distance from a given point i.e. open space within 400m of 95% of dwelling houses.
- calculated based on the area size or type i.e. 8 hectares minimum for local open space and 30 hectares minimum for regional open space.

In Johannesburg South Africa according to schedule 2(1) of the City of Johannesburg(CoJ) Municipal by-law 2016; read with the provisions of the Spatial Planning and Land Use Management Act (SPLUMA) (16 of 2013) (CoJ SPLUMA By-law, 2016:66) the amount of open space provided within housing developments are calculated as “ $a \times 24m^2 + b \times 18m^2$ ”, in which formula “a” represents the amount of residential units that is erected on the property which zoning within the relevant Town Planning Scheme does not exceeds 20 dwellings units per hectare, and “b” represents the amount of residential units that is erected on the land which zoning under the relevant Town Planning Scheme is in excess of 20 dwelling units per hectare. This calculation then provides the size of the open space that is needed within the housing development to fully support the residents’ needs which the developer can then breakdown into smaller and more manageable sizes and be placed strategically within the development to ensure comfortable access and connectivity to all the residents throughout the development.

The PLA and DPCD (PLA Vic/Tas & DPCD, 2013:46) further suggest the following solutions when designing open spaces:

- Installing solar powered lighting to extent time available for usage while limiting electrical usage in areas where children will play.
- Installing synthetic playing surfaces in water scares area to extent lifetime.
- Use removal goals and multiple line markings to allow different uses and accommodate divers sport options.
- Passive surveillance and open space frontage to surrounding residents and roads.
- Path construction details such as crossovers, material finishes and widths.
- Linkages to other open spaces and activity hubs.
- Limiting barrios and other obstructions such as busy roads by creating save crossings or pedestrian and cycling lanes to ensure safe and easy access to open space.
- Creating the perception of safety by avoiding isolated alley ways and corners in design.

3.2.2 Public Participation

An advantage of human settlement planning is the inclusion of the public opinion. The creation of such settlements requires integrated and coordinated action and participation from a range of stakeholders that includes the public sector, private sector and governing officials (National Department of Human Settlements, 2010:41). The planning process of human settlement should be designed to allow maximum public participation (UN Habitat, 1976:45) to create a people centred approach towards the development of human settlement (National Department of Human Settlements, 2010:42) where the residents can have input in the environment that they will be living in to allow the urban planner a full understanding of the needs and priorities of the settlement that is being planned. These plans must be inclusive, promote capacity for participation and integration of expertise to ensure sustainable human settlement planning (Kutesa, 2015:18).

Particularly in the low-cost housing sector, the transition to practises that are more sustainable will be difficult (The Sustainability Institute, 2009:1) Governing bodies, community members and especially the built environment professional all have a vital role in making these shifts towards sustainable neighbourhoods and human orientated settlements.

An effective action of human settlements will require as a prerequisite a co-operative effort of the government and the residents as the magnitude of planning these settlements are too great for governments to act alone. Citizen participation is seen as an integral part of decision-making process by the UN conference as stated in The Vancouver declaration (UN Habitat, 1976:43) as the citizens must be provided with the opportunity of involvement in the decisions that will profoundly affect their lives. The human settlements process should be participatory allowing effective responses to priorities and provide opportunities to local residents to contribute their labour, skill, creativity and resources (National Department of Human Settlements, 2010:42).

Meeting basic needs to improve quality of life in human settlements require critical choices in the utilisation of available resources, allocation of resources and the harnessing of new ones and this cannot be effective without the involvement of the people who will be affected by such decisions (UN Habitat, 1976:44). Human settlement planning has often in the past lacked realism which fails to account for resource limitations and often wastes the few resources that are available. The planning of human settlements should be based on realistic assessment and management of resources available for development based on the current needs of the community (UN Habitat, 1976:18) and allow for the creation of possibilities for effective participation by all the residents in the planning, management and building of their settlement in a way that will result in community integration (UN Habitat, 1976:4).

Bringing the professional urban planners and the planning process of human settlements in contact with the people will ensure a direct approach to skill transfer as well as a hands-on approach to satisfying their needs (UN Habitat, 1976:17) by creating spaces that are inclusive and fully integrated with the city network and opportunities based on the input of the community. This can be especially favourable in lower income environments where the construction of settlements provides opportunities for skill transfer and employment of the community but with the high percentage of uneducated and unemployed citizens in informal settlements it is important to utilise the most effective means of communication for the exchange of expertise and knowledge while creating new human settlements (UN Habitat, 1976:4) to ensure maximum potential and growth.

3.3 Conclusion

This chapter considered the concept of human settlements and why it is important to plan the provision of housing in a more integrated and community orientated way that can address the needs of the residents it serves. The previous chapter discussed the development drivers within each sphere:

- Economic integration - mixed income communities & employment.
- Social dynamics - community integration, social facilities and amenities & education.
- Environmental planning - energy efficiency, resource sustainability, open space planning & land availability.

These drivers were also guiding the design considerations as discussed in this chapter with specific reference to the economic, social and environmental influences that design have within a human settlement.

The chapter concluded that planning of human settlements should remain flexible to adapt to changing conditions and priorities (UN Habitat, 1976:16; Gray *et al.*, 2009:351), creative planning should however consider options, be anticipatory and simulative. It should be based on the best available information of social, demographic and economic trends to ensure all needs of residents are met.

It is emphasised that if the improvement of the quality of life within human settlements is to become a reality, the housing that is provided should be in close proximity to employment, education and clinics (UN Habitat, 1976:26). Planning these settlements should improve quality of life for all the people with respect for their cultural, indigenous and social needs (UN Habitat 1976:16).

The design approach of human settlements was contemplated in this chapter and considered the three spheres and their supportive development drivers, to be brought together. When human settlements are designed, the chapter concluded that special attention need to be given to placement of settlements in relation to facilities such as schools as well as designing to protect the environment and improve social relationships.

As explained the design of human settlements consists of all the spheres coming together in harmony in just the right balance. To achieve this all professional opinions has to be considered. This includes the urban planners, architects, engineers, and environmentalists, social scientists as well as the public opinion. The Sustainability Institute (2009:1) argues that it is therefore crucially important that the fragmented approach to educating these professional in isolation from one another has to change to ensure that they see settlements holistically as integrated, resource efficient, economic and social systems that are embedded and dependent on their natural ecosystems. For professionals to further improve their design they have to consider public input to understand the needs of those that they are planning these settlements for.

A goal of development policies has become the participation of the residents in creating their own communities based on their needs which contributes largely to the sustainability of the overall community as it affects the quality of life that residents will experience within housing developments. Through the deliberate planning and design consideration for human settlements it is possible to achieve sustainability with the inclusion and consideration of the drivers within approaches. The drivers of sustainable developments guide the integration of human settlements as the drivers provided can be considered as overlapping for both sustainability and integration.

The following chapter will focus on South Africa's history in providing housing and why it became important to move towards more sustainable methods of creating communities. An overview will be given of the historical and current housing situation within South Africa and examine sustainable integration of human settlements within the three sustainable spheres. Furthermore, the success of these human settlements depends on the quality of the settlement which is dependent on the success of each sustainable sphere and to what extent sustainability can be reached within each sphere. The linkages between each sphere and the influence they have on one another will be considered. Practical examples will highlight these linkages that can contribute to the failure or success of each sphere.

Chapter 4: Sustainable integrated human settlements in South Africa

4.1 Point of departure

This chapter aims to provide a background of the history of South Africa's planning and provision of housing opportunities to emphasise why human settlement planning became important in SA. It focusses on the removal of the distortion that characterised the apartheid planning through moving towards integrated urban settlements (Killian *et al.*, 2005:4) aiming towards a more sustainable planning perspective in the consideration of the three spheres that guides integrating human settlements.

According to the UN habitat conference on human settlements (UN Habitat, 1976:2) the problems that are facing human settlements are not isolated from the economic and social development of countries, these problems influences the growth of countries and can hinder development if not addressed. These problems can be addressed effectively within each sphere of sustainable development; social dynamics, economic integration and environmental planning by addressing each driver that makes up these spheres individually.

It is important that the relationship between natural systems and housing developments is understood as housing is embedded in a set of natural systems that are provided from those systems' key eco-system services. This should also be taken into account according to The Sustainability Institute, (2009:7) when planning and building these settlements by making environmental sustainability a priority within development that cannot be ignored. The environment provides a base for socio-economic growth to be possible, where this growth can be reinvested to ensure a healthy environment.

An objective when considering sustainable integrated settlements that is focused on housing provision is that the developments should be defined as a qualitative improvement to the environment, economic growth and the social relationships and especially the human life quality (The Sustainability Institute, 2009:8), emphasising a strong link between each. This chapter will consider those links and the influences towards sustainable development as a summary of sustainable integration. The chapter will also conclude a monitoring system aimed at achieving sustainability within projects of human settlement development and their day to day operation.

4.2 South Africa's housing provision history

The National Department of Housing (2004:3) are concerned about the dramatic change that has occurred over the past decade in the demand for government assisted housing and the fact that the need for infrastructure, housing and services are nearly always greater than the local

authority's capacity to provide them (UN Habitat, 1976:26; Killian *et al.*, 2005:4). With an increase in the number of households by 30% in 2004 already (National Department of Housing, 2004:3) many metropolitan areas are facing the problem of uncontrolled urbanisation with associated pollution, overcrowding and deteriorating conditions (UN Habitat, 1976:3). The bigger issues brought by urbanisation is the delivering of basic services and needs such as housing, clean water, electricity, waste removal and sanitation (Killian *et al.*, 2005:4).

In provinces such as Gauteng, KwaZulu Natal and the Western Cape where the population growth rate in 2004 (National Department of Housing, 2004:3) was twice the national average, these growing population rates also meant an increasing labour force even though the rate of employment creation is not able to accommodate this increase leaving more people without an income or ability to provide for themselves. Today still this is a leading cause of the increasing unemployment rates that adds pressure to house hold incomes (National Department of Housing, 2004:3). These high rates of unemployment, the changing pace of urbanisation and the increase in household formation has caused the provision of housing and services to lack behind even further causing housing backlogs to increase dramatically in cities (Killian *et al.*, 2005:4).

Since 1994 SA has provided over 1.5 million houses and approximately 6 million people benefited from subsidies where, depending on the province, between 28% and 54% of these subsidies that were approved were awarded to women headed households (Killian *et al.*, 2005:20). Within this timeframe informal households living in shacks have increases by 5.8% despite the increase of 7% of households that was granted with formal housing. The provision of these vast numbers of housing units that had to be provided has resulted in lacking quality due to the pressure arising from those on waiting lists as they often live in unacceptable conditions. This resulted in planning processes giving way to crisis management (McVerry, 2008:21).

The government drastically tried to provide for these needs and to start supporting those who could not afford housing by putting systems in place such as the subsidies programmes within the housing environment to provide housing that would help alleviate those that have economic constraints. The National Department of Housing (2004:4) confessed that unfortunately it was also true that a large number of subsidised houses that were built in the past did not become valuable assets for the poor living there and in addition became a liability to municipalities due to the inability of the recipients of such subsidised housing to maintain the units, pay taxes and utilities for municipal services.

Many housing structures in SA especially informal settlements can be classified as being inadequate (National Department of Housing, 2004:3) and too often it is seen that the conditions in housing developments deteriorate rapidly (UN Habitat, 1976:52). In most housing

developments over the past few years this deterioration has been a result of poor management and the underutilisation of existing resources, infrastructure and facilities. The planning aspect of these developments was insufficient, and the focus was mainly on the number of housing units that could be rolled out. The Sustainability Institute (2009:1) suggested that often settlements are designed and constructed to squeeze as many low-cost units and as much infrastructure as possible out of a limited budget. This results in the exclusion of renewable energy options and solutions, waste recycling, energy and water efficiency and lacks proper designs which would have resulted in significant cost savings over time for households and municipalities as well as reduced environmental impacts and other externalized costs that could have contributed to the settlements becoming more viable assets.

Township planning in SA has predominantly been based on old approaches of housing design and infrastructure planning as well as a lack of integration between different governing sectors (The Sustainability Institute, 2009:1).

Under the apartheid approach such planned settlements were constructed on fringes of towns or cities with only basic services and were isolated from city networks (Killian *et al.*, 2005:6). A reason for unsuccessful housing developments has long been argued to be due to the lack of well-located and affordable land being available that can be utilised for low cost housing (National Department of Housing, 2004:4). Due to the non-market housing units that are mostly associated with households with high levels of unemployment and low incomes it is difficult to find well located properties that is integrated into a city system that is affordable for developers with the help of government subsidies (Gray *et al.*, 2009:343). As a result, many SA housing provision programmes and agencies focus on extending existing communities that is often located on the urban periphery as was the apartheid planning approach and design of cities which limited integration to the city network and generally lacked the qualities that is necessary to enable a decent quality of life (National Department of Housing, 2004:4).

Another factor that contributed to South Africa's housing backlog is that in the past the withdrawal of large construction companies in the state assisted housing sector due to low profit margins has caused further decline in provision of housing and has left gaps in construction, financial and project management, and subsidy administration. The struggles to fill these gaps are largely due to the insufficient delivery capacity, administrative and technical expertise or access to bridge financing of emerging contractors (National Department of Housing, 2004:5; Trusler, 2009:19).

In the hope to provide better living conditions the focus has shifted towards human settlements with the aim on integration as well as sustainability. The goals are creating neighbourhoods where people can live, work and create. These places can be large or small, rural or urban, formal or

informal (Killian *et al.*, 2005:5). Human settlements can also differ by multitude of factors such as location, size, topography, management status and proximity which all contributes to the uniqueness and character of each settlement. All settlements strive to integrate the provision of housing with provision of services, infrastructure, amenities and other opportunities such as employment with the overall aim to improve living conditions and life quality of its residents.

4.3 Sustainable integration

SA's national policy framework defines sustainable development as integration of economic, social and environmental factors into decision making, planning and implementation to ensure that development serves present and future generations (The Sustainability Institute, 2009:4)

Through the creation of better-balanced communities that blends different amenities, social groups, housing typologies and occupations (UN Habitat, 1976:7), the elimination of racial and social segregation is possible which is essential for more sustainable integration to occur. New projects must be supported with the focus to encourage social and residential integration with particular attention on creating mixed communities by facilitating an increased choice for residents with regards to their living environment and creating new opportunities for all ages, culture, race and gender (Gray *et al.*, 2009:346).

A popular view that was noted by Gray *et al.* (2009:341, Darby & Knox, 2004:19) was that a strong need became evident amongst residents who were interested in relocating, towards moving to more integrated societies. Shared living was considered to be aspirational, but many argued that a future goal should not be one of total integration as residents still value single identity areas to some extent. The argument led to the conclusion that the vision going forward with integrated human settlements to ensure sustainability in future should be one of increased integration and reduced segregation but also realising that segregation due to personal preference will always be present. As a result, some theory suggests the creation of smaller, similar identity clusters within the larger mixed community of human settlements.

In most instances a vital component in creating and sustaining relationships within human settlements are dependent on the length of residence and the level of connections formed between residents (Gray *et al.*, 2009:347). The relationships between the residents are facilitated and strengthened by similarities between the residents. For this reason, smaller clusters of similar identities are suggested within the larger mixed communities where people will have common interests and goals.

The argument that is most supported in theory of sustainable housing developments is that the ongoing economic, social and environmental cost of physically maintaining a human settlement

and its necessary services that supports the residential function must be affordable to all the stakeholders; the governing entity and especially the households as affordability will always be a common goal between (The Sustainability Institute, 2009:9).

The integration of the city infrastructure networks with human settlement development will further facilitate the affordability of providing human settlements as well as improved access to services and opportunities for the residents (UN Habitat, 1976:33). Integration of infrastructure such as public transport within human settlements will ensure easy access for lower income residents to opportunities provided within the city network. Within SA the majority of people are dependent on public transport for their daily commute to and from employment. These transportation systems are essential to increased connectivity and is the backbone of the country's socio-economic activities by enabling the movement of products and people (Killian *et al.*, 2005:13).

Human settlements that are planned with sustainable integration in mind would typically (UN Habitat, 1976:19) be areas that would reflect ecological and socio-economic relationships as envisioned with the three spheres which aided in the provision of economical facilities and services as well as the inclusion of all residents. The National Department of Housing (2004:11) defines sustainable human settlements as entities that are well managed in which social development and economic growth are in balance with the carrying capacity of the natural systems on which they depend for existence and resulting in poverty alleviation, wealth creation, sustainable development and equity.

4.3.1 Linkages between sustainable development spheres in local context

In the Post-2015 Development Agenda Kutesa (2015:11) states that it is important to recognise the link between relevant processes in the fields of economic, environmental, social and sustainable development. An important rigidity of present development that has to be overcome is the tendency to deal with one sector or industry in isolation and failing to recognise the inter-sectorial linkages (WCED Brundtland Commission, 1987:55). These linkages provide valuable information regarding the complexity of integration and the critical balance that has to be maintained to ensure sustainable integration within development.

Inter-sectorial connections lead to the creation of certain patterns of interdependencies that is rarely reflected in the way development policies are set. Sectorial institutions and departments tend to pursue their own objectives and to treat their impacts on the other sectors as side effects. Certain sector departments will only take into account other sector issues when compelled to do so. For development to be sustainable the fragmentation of responsibilities in different sectors has to be overcome (WCED Brundtland Commission, 1987:56). This will be easier to address

with the support of informed governing sectors instructed to deal with integration of development policies and programmes and the liaison needed to guide their decision making.

It was found that there is a fundamental relationship among the distribution of the population and their social preferences, economic activities, environment, and the pattern of human settlements (UN Habitat, 1976:12). Kutesa (2015:2) stated simply in the Post-2015 Development Agenda that there cannot be sustainable development without peace and no peace without sustainable development. This leads to the question, how peace and sustainable development can be achieved and ultimately leading to the formulation of linkage that can strengthen sustainable development. These linkages are explored below in their connection to each other and to human settlements.

4.3.1.1 Socio – Economic

The establishment of an equitable and just world economic order is essential as emphasised in The Vancouver declaration (UN Habitat, 1976: 3) for socio-economic improvement and development of human settlements. A persons' economic status influences their social status and behaviour. Their social preferences determine how their income is spent or the type of employment that they seek. The one will always determine and guide the other. The same is applicable within development and how human settlements are created. This is also true for the South African context that needs to be kept in mind while planning human settlements. Social economic linkages in development can be complex with a delicate balance (WCED Brundtland Commission 1987:82) for example:

- The WCED Brundtland Commission (1987:82) report explains that positive economic development generates resources that are used to improve social standards of health and educational facilities provided and their improvements. These improvements to health care reduce both mortality and fertility rates, but this on the other hand means that higher population growth rates eat into surpluses available to be invested in social development which can then hinder the further improvements of health and education facilities. Investment in educational facilities leads to better educated residents able to earn a higher income by being eligible for better job opportunities and contributing to economic growth. Healthier and educated residents play an important role in growing the economy.
- Gray *et al.*, (2009:342) commented on a report done by Deloitte in 2007 that attention has to be drawn to the unsustainable cost of segregation in South Africa due to duplication in service delivery of communities living side-by-side. Integrated communities share service delivery and resources making them more sustainable due to reduced installation costs as well as socially more acceptable. The costs of service provision associated with social

preferences of living in integrated communities are then less if people are willing to compromise to share services and other social facilities. Cost saving on installation of services can be invested in the provision of additional social and economic services.

- The introduction of more economically stable households in a neighbourhood can be beneficial for lower income residents in the area as higher income residents in a neighbourhood tend to be associated with a better social reputation and access to more shops and services, schools with a balanced intake, less crime due to better security systems around houses, broader social networks and aspirational peer groups (Gray *et al.*, 2009:349). The introduction of mixed communities has especially shown that it can assist in stabilising areas that are particularly vulnerable to poverty and crime by creating more desirable condition (Gray *et al.*, 2009:349). The challenge is that higher income residents are less willing to move to less stable neighbourhoods due to the higher crime rates associated with lower income residents. Integrated human settlements aim to remove this perspective.
- Socio-economic activities are supported by effective transportation systems with increased connectivity as it enables the movement of products at lower costs as well as limit travelling time for workers and increase social well-being if more time is available for spending with family or friends (Killian *et al.*, 2005:13).
- Facilities and amenities such as schools, churches and even shops all provide opportunities of employment for residents of the area. Such facilities contribute to the economic growth of the area as more jobs can be created in the operation and maintenance of such facilities.
- Income integration within SA neighbourhood has seen many benefits where residents of higher income groups have been able to mentor and inspire lower income residents to work harder to achieve a higher income level.

4.3.1.2. Economic – Environment

Every ecosystem everywhere on earth cannot always be reserved intact. Development and economic growth mostly require changes in the physical ecosystem which is not necessarily unwanted if the exploitation is planned and takes into account the effects on water regimes, soil erosion and other generic losses (WCED Brundtland Commission, 1987:42). Planning for the environment can lead to cost saving in development by incorporating the areas that needs to be protected rather than finding solutions to rectify a problem.

The compatibility of environmental and economic objectives should not be lost in the pursuit of developmental gain or have little regard for the impact on other drivers. There should not just be

a blind faith in science's ability to find solutions in the aftermath but rather that natural precautions such as conservation and resource limitations be implemented from the beginning of a development rather than be ignorant of distant consequences of present decisions that will greatly affect the future outcomes (WCED Brundtland Commission, 1987:55). The link between economic and environment is clearly and easily identified and can be managed if it is understood:

- The state of the economy will influence food availability as a drop-in market price of meat for example may force farmers to slaughter more animals to maintain incomes. The environment influences the economy as a draught may cause meat prices to hike as farmers need to buy feed for animals if nature does not provide enough leading to farmers only slaughtering a few animals for meat just to sustain production over time (WCED Brundtland Commission, 1987:49).
- Conservation and protection of the quality of agricultural land and forests in SA will improve the prospects of continued agricultural developments and food production over the long term which will improve the economic conditions of the country (WCED Brundtland Commission 1987:55) through exports and trade of better-quality products. Destruction of agricultural land and deforestation will cause a decline in the product output.
- Planning for natural open spaces within South African cities include considering the creation of agricultural areas. Setting aside additional land for agricultural purposes will contribute to food production and create opportunities for local small-scale farmers to earn an income.
- Developers have to invest in the quality of the natural environment and try to minimise pollution when human settlements are developed. Healthy environments have a direct link to the health of the community that resides there. A more active outdoor lifestyle and less illness results in a more productive community that contribute to the economy development of that community. Salaries can be invested in the upkeep of natural open spaces or by supporting local businesses. This becomes a strong positive cycle which is dependent on the environmental quality. Unfortunately, it can also become a negative cycle as polluted natural resources such as water or air can cause health issues, for example cholera and respiratory illness. This affects the productivity of the community if residents cannot work due to illness and leads to lower incomes that can be invested and more money spent on medical treatment meaning the investment in the upkeep of the environment is less and therefore pollution increases as the problem cannot be contained (WCED Brundtland Commission, 1987:55).
- The provision of adequate infrastructure can aid in providing communities with access to better quality of natural resources such as clean water which especially in SA is essential within informal settlements. Infrastructure to purify water and provide individual water

connections to each individual household can be very expensive. Without the necessary infrastructure health risks are imminent which directly affects productivity and therefore household income but also leads to expenditures on medical treatment that people can't always afford (Trusler, 2009:26).

- Energy efficiency shows cost effective results (WCED Brundtland Commission, 1987:147). Investment efforts can be more focused on the supply of highly efficient, fuel-saving, environmentally friendly end-use equipment within communities and housing units to save energy. In this way energy services can be provided at reduced levels of primary energy production (WCED Brundtland Commission, 1987:146) leading to decreased rates at which natural resources are depleted and used for energy production.
- The International Finance Corporation (IFC, 2012:22) suggests that a growth in economic activities and urbanisation increases pollution and depletion of resources. As economic activities grow, and production rates increase to sustain the growing population in urban areas more resources are being use at rapid rates. The production cycles are unsustainable and once resources are depleted alternatives will be needed to sustain the demand at a higher cost. It is suggested that alternative solutions are investigated to sustain economic growth while minimising use of resources.
- During periods where economic growth is slow anything that is viewed as hindering the development of the economy tends to be fair game for attack (Gibbons, 1998:1). Natural open space is seen as area to be developed to help stimulate economic growth again. This is believed to be the short-term view of many developers as well as economists. For the environmentalist these rash decisions mean more money spent over the long term as developments with limited natural open spaces will at a later stage present problems such as health issues, degradation and depletion of resources but also an increase in expenditures to the developer as they will need additional investment to rectify these issues and provide facilities to compensate. A plan of action has to be established and enforced that balances the preservation need of the environmental specialist with the need for economic development as set by the economist.
- Open space offers affordable opportunities for recreation within human settlements and therefore contributes to the overall liveability. Less money has to be spent on driving to and accessing places for entertainment or exercise (PLA Vic/Tas & DPCD, 2013:3) if open space is provided within the proximity of the residents it can be used for such activities.
- The provision of open spaces is a significant source for employment for the local community through the maintenance thereof and also provides a space that attracts visitors when community events are held there which provides exposure for local business in the area (PLA Vic/Tas & DPCD, 2013:3).

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- Natural spaces further also contribute to natural storm water management and the reduction of noise and air pollution (PLA Vic/Tas & DPCD, 2013:3), reducing constructing cost set aside for the management of storm water as well as air and noise pollution infrastructure and mitigation measures.
- The creation of natural open space areas that need to be maintained and conserved provides employment for residents.

4.3.1.3. Socio – Environment

Spending time outdoors and in nature is considered a great stress relief and has many health benefits. Having a healthy and active community can be encouraged through the provision of natural environments that encourage people to be outdoors. South African neighbourhoods have a distinct culture of enjoying the outdoors and socialising with neighbours on the street as they pass by. Encouraging these behaviours is essential as it provides additional benefits to increase the social and environmental integration within settlements.

- Clean air and water which is components of a healthy environment are considered public goods and thus it is the communities that are responsible for maintaining the provision and quality of these goods (Emas, 2015:2). Education within communities, not only within schools for children but for adults as well, needs to focus on the natural environment and the resources that it offers to the community such as clean water and air. It is essential that the community is taught how to use the resources responsibly, what alternatives can be used and what the consequences are if resources are depleted and natural environments polluted.
- Open space contributes to the sustainability of a community as it improves the well-being and health of the residents as well as encourage participation from the residents and therefore also increased social relationships. Natural spaces provide opportunities for cycling, jogging and participating in informal sports with friends while improving fitness. It also relieves stress and provides a place where people can escape the built area and relax while enjoying the shade, greenery and natural cooler spaces (City of Melbourne, 2012:28; PLA Vic/Tas & DPCD, 2013:3).
- Social benefits that strengthens the link between the social and environment sphere can also include the fact that open spaces contribute to building stronger communities by providing opportunities for residents to connect and come together for ranges of activities which enhances the opportunities for social cohesion and inclusion, strengthening community ties (PLA Vic/Tas & DPCD, 2013:3).

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- Development of human settlements does to some extent cause environmental areas to be more vulnerable due to pollution caused by development. Environmental pollution causes health risks to residents and undermines human well-being. Special care must be taken to prevent pollution of natural areas and maintaining good conditions as this will also extent to better human health due to outdoor activities increasing (Killian *et al.*, 2005:33).
- Development activities affect environmental quality of the area due to waste being dumped, polluted water sources and air pollution which increases health problems. Conversely, the lack of development also affects health conditions due to insufficient services and access to clean resources. The balance between development to provide better health conditions and implementing development in such a way that environmental conditions stays in good condition is difficult to calculate (Agenda 21, 1992:31).
- Considerations of location and land availability for the development of human settlements have a social responsibility implication. Locations on urban periphery that are removed from employment, social and economic opportunities will mean that residents will spend more time away from home, travelling to and from opportunities as it is currently seen in South Africa within informal settlements. For lower income residents the cost of being located away from urban opportunities constrains the quality of life even further as little time will be left to spend socialising with family and friends (Trusler, 2009:29).

The links that exist within each of these three spheres can be discussed and contemplated from various perspectives and every human settlement development can introduce different drivers to the spheres that need consideration. Links between the drivers will be strengthened when the connection between each driver is understood and dealt with at that single connection level. If sustainable development can then be deconstructed to represent each of the individual drivers it can be considered that achieving a level of sustainability for each driver is possible as each driver can be dealt with individually based on its applicability to the human settlement. Then considering that if a balance can be found between trade-offs of different drivers and that balance is maintained that the link between the drivers will be strengthened. Resulting in the spheres achieving several links between different drivers that strengthens the connection formed between the spheres. With each link that is achieved within the spheres it can be visualised as the spheres moving closer and eventually start overlapping resulting in a triple bottom line being achieved.

4.4 Triple Bottom Line

The extent of sustainability or integration is often difficult to measure. For human settlements, integration can be assumed based on social interactions between residents of different backgrounds, incomes or social status. Integration can be measured based on the distance

between residential areas and amenities or employment opportunities or even based on the connectivity of the settlement with the city infrastructure and economic network. The challenge is measuring the sustainability of human settlements. The preceding section highlighted some of the drivers of each sphere and how they relate and influence each other. It was seen that the links between the drivers need to be balanced and if balanced that they can lead to an acceptable level of sustainability being achieved within a sphere, but how can this be determined or measured. In Chapter 2 the triple bottom line was referred to as theoretical sustainability depicted by the small area where all three the sustainability spheres; economic integration, environmental planning and social dynamics all overlap as illustrated in Figure 1. The Triple bottom line (TBL) concept, introduced by John Elkington (Slaper & Hall, 2011:2), has grown over the last few years and evolved into more than just a diagrammatic illustration of theoretical sustainability but into an approach attempting to measure and monitor sustainability and becoming an influential approach all over the world (Berkovics, 2010:13).

The TBL captures the essence of sustainability according to Slaper & Hall (2011:1). It measures the impact of the human settlement development organisation's activities as well as the human settlement itself on the world. Taking into account the human, social and environmental capital and both shareholder values and profitability.

The TBL concept consists of the three spheres as explained: economic integration, social dynamics and environmental planning. The construction of the TBL concept is explicitly based on the integration of these three spheres and it is this integration that is the basis on which the TBL framework is structured (Alhaddi, 2015:6). These three dimensions or spheres are more commonly referred to as the three Ps: Profit, People and Planet (Slaper & Hall, 2011:1; Alhaddi, 2015:6). The TBL is illustrated in Figure 9 below with short descriptions of the 3Ps and their shared zones:



Figure 9: Triple bottom line 3P spherical illustration

Source: Alhaddi (2015:6)

Naturally (Slaper & Hall, 2011:1), the 3Ps do not have a common unit of measurement as one cannot calculate the right price for the loss of endangered species or wetlands thus presenting the problem of how sustainability can be physically measured within human settlements. For this reason, it is necessary to understand what each of these spheres consists of to better understand the complexity of the measurement. This measurement has various different forms. The most common form that some companies and organisations have adopted is the TBL sustainability framework which typically correlates with traditional reporting frameworks with the additional inclusion of environmental and social drivers which are difficult to assign appropriate means of measurements. The TBL framework aims to provide a method for measuring the performance and success of human settlement integration relating to their development based on the three spheres (Alhaddi, 2015:6).

Slaper & Hall (2011:1) suggested an index but the problem they encountered was how the spheres will be weighted. Would each sphere have an equal weight and what about the sub-drivers, of which the spheres consist, will they be weighted equally? Is one driver more important than the other, and who decides this? Based on the work of Alhaddi (2015:6) the TBL should place equal importance on all three spheres. Slaper & Hall's (2011:1) solution was to measure each driver as a standalone and subsequently the combination of the three spheres can be considered to depict a clear indication of the combined efforts to reach a state of sustainability as

well as a level of integration that can be sustained. There is no universal standard method for measuring each sphere which in their opinion is a strength as it enables the user to adapt the framework based on the needs at hand, either for the development company, different human settlement projects or even policies. The TBL can be project specific by measuring the effects of a specific project for a specific location (Slaper & Hall, 2011:2) based on the inclusion and exclusion of relevant factors within the basic framework. For human settlements the geographic scope will most likely drive many of the decisions about what drivers to be included and to what level of detail.

There is significant literature on appropriate measures to determine sustainability for each driver within the three spheres (Slaper & Hall, 2011:2). For each project the project team can agree on measurements to evaluate the drivers applicable. This research does not discuss the physical measurement methods. Within human settlements these measures can however be used as a guideline for evaluating that some level of sustainable integration is achieved and can also be used to assess if it has continued to occur during and after development of the project. For example, once the development has completed, sustainability and sustainable integration can be evaluated by the extent of new employment opportunities created and a decline in the unemployment rate. It can be indicated by the increase of employment opportunities within other economic sectors in the area and not just the informal sector or even by a decrease in the number of subsidies needed by the residents for housing which will indicate a growth in their income due to better employment. The economic sphere of the TBL ties the growth of the settlement with the growth of the economy and its contribution to support it and therefore focusing on the economic value provided to the surrounding system in a way that will promote the capability of future generation to support itself (Alhaddi, 2015:8).

For the social sphere sustainability and sustainable integration can be indicated by a decline in crime rates, an increase in the number of residents with basic primary education or even more qualified skilled labourers due to skill transferred during development of the integrated human settlements which residents continues to use afterwards, better quality health facilities and longer life expectancies. Social performance is focused on the community interactions within the human settlements and addresses problems related to community involvement and upliftment (Alhaddi, 2015:8). Environmental efforts can be evaluated by lower resource dependencies and consumptions, better air and water quality that will be associated with higher quality natural environment spaces and residents protecting natural water courses. It pertains to more efficient use of energy and conservation of natural spaces (Alhaddi, 2015:8).

Alhaddi (2015:8) argues that settlements designed to include these sustainable practises are more likely to be able to withstand economic downturns. These measures are only a few

examples that can be used by developers and professions to evaluate their success in terms of providing sustainable human settlements as well as the sustainability of specific drivers and information regarding their integration.

Many state departments and governing bodies have started to adopt the TBL and its sustainability assessment framework as a performance monitoring and decision-making tool. Policy makers can use this framework to assist in the creation of action plans to make societies more sustainable and to monitor if certain plans, programmes or policies results in moving societies towards or away from sustainability (Slaper & Hall, 2011:2). Areas such as Northeast Ohio, San Francisco, Maryland, Utah, Minnesota and Vermont have all moved towards a TBL framework. In the European Union (EU) guidelines have been the subject of critique and undergone several rounds of improvements and redefining their TBL framework's guidelines to ensure a process of integrated assessment.

The TBL framework can consist of various methods. It can be based on a specific measurement indicator such as cost or percentage, it can be an index or setting target goals to be achieved or it can be in the form of an action list that is checked off as certain drivers within the three spheres are addressed and included within the project. The question is no longer predetermining rigid values. Society is moving towards values where quantity is replaced by quality and long-term consideration is an obligation (Berkovics, 2010:9). Slaper & Hall (2011:2) is of the opinion that even though each driver within the three spheres should be measured separately the conclusion of the TBL framework should still be an integrated and combined result in order to see the complete picture of the success or consequences. The drivers for each sphere can be measured alone but there are still shared zones between the spheres that have to be accounted for (Berkovics, 2010:6).

These shared zones or links as they were explained earlier reflects the influence that each driver within a sphere might have on drivers from another sphere. As mentioned a delicate balance exist between all the drivers and sustaining that balance is what strengthens the link between the different spheres.

4.5 Conclusion

Over the last few decades it has become evident that the need for housing provision is greater than the capacity of the governing bodies to supply for this housing need. The services and infrastructure that is available is mostly either insufficient or overloaded. Despite the achievements in service delivery the local government remains pressured to meet the needs of citizens' and address the growing demand in order to reduce backlogs (Killian *et al.*, 2005:33).

With the current population growth and economic conditions, it has become an even bigger priority of the SA government to find ways to provide housing in a more sustainable way.

The history of housing provision in SA concluded that methods such as subsidy systems has been able to provide some people with housing, but it was unfortunately also true that many of these houses that were provided did not become valued assets to the residents as it was located far from supporting opportunities and could not be integrated successfully to the city system and therefore started to deteriorate quickly. The maintenance and management of housing stock lacked sufficiently. The decline in housing provision due to the withdrawal of construction companies that assisted in the housing development has placed pressure on government entities to start helping the emerging contractors. It is suggested that this provided an opportunity for many young entrepreneurs to start companies that will be able to deliver large capacity of quality housing. The problem that became evident was that the quality of housing was lacking with some of the development companies which provided further opportunities to governing bodies to change housing policies to focus on human settlements and their integration. This emphasised the drivers of the three sustainable development spheres in order to guide companies in their housing developments.

This chapter specifically focused on defining sustainable integration based on how strong the three spheres are linked. Dernbach (2003: 248) referred to these links by referring to the opinions of advocates of globalisation who argued that “a rising tide lifts all boats” which simply suggests that for example economic developments will eventually also bring about greater social development and environmental protection. This idea is also negatively applicable, that if one sphere is lacking that it will cause a downturn on the others as well. Practical examples were identified to have a better understanding of the influences that exist between the spheres and to place emphasis on the importance of certain drivers that have to be supplied effectively within human settlements to ensure that the developments are satisfying basic human needs.

At the UN conference, (UN Habitat, 1976:12) there was a positive attitude towards the creation of human settlements and it was noted that every driver of sustainable development; environmental, social and cultural is profoundly affected by the level of economic development, movement, population growth and social relationships. It was concluded that opportunities exist to create human settlements that are sustainable based on the supportive drivers; fortunately, this allows the challenges to be faced with more clarity on how best to resolve it.

As conclusion of this chapter The Vancouver declaration (UN Habitat, 1976:43) argued that methods must be developed and used to assess the social, environmental and economic impact of all proposed development projects to ensure an acceptable level of sustainability will be

achieved. The Triple bottom line concept has changed the way that governments and developers measure sustainability, sustainable integration and performance of human settlement projects and even related policies. This chapter suggested the consideration of the TBL sustainability framework to be used when planning integrated human settlements as it allows flexibility to apply the framework in a manner suitable to the needs of the specific project based on the three spheres of sustainable development, economic (profits), social (people) and environmental (planet) (Slaper & Hall, 2011:2). The challenge associated with the TBL is putting it into practice and finding an approach suitable for the task at hand, whether by means of guidelines, checklists or goals. Time is also a challenge with the development of human settlements as the housing backlog in SA is growing and deliveries of housing units must keep up but the long-term view of delivering quality human settlements requires greater attention (Berkovics, 2010:10). Challenges aside, the TBL allows governments, planners and developers to evaluate their decisions at every milestone reached (Slaper & Hall, 2011:2).

In the following chapter the policies and legislative framework will be considered in relation to housing development on both an international and national level. This will be based on the international and nation legislation and policies within the three spheres of sustainable development and their guidance to human settlement development as the opportunity is available to create an inclusive policy or action plan that will be able to guide development of human settlements. As according to the UN conference (UN Habitat, 1976:15) it may be convenient to assume that the planning of human settlements is conducted at different scales: internationally, nationally, regionally, and locally but to achieve a balanced development policy, the planning decision that are taken at one level must relate and be complementary to all levels, both “above” and “below”.

Chapter 5: Policy and legislative framework: housing provision in South Africa

5.1 Point of departure

A major concern that is driving the urgency of formulating housing strategies for delivery is the life quality and low incomes that are earned by the majority of South Africans (Trusler, 2009:9). Accordingly, greater emphasis is placed on the process of achieving cost effective housing delivery to ensure affordability while placing emphasis on engagement and planning to ensure quality of the produced product, both in terms of location and connectivity, with a further focus on sustainability over the long term within the housing environment (Trusler, 2009:48). It is the government's responsibility to adopt human settlement policies and prepare spatial strategy plans to guide these socio-economic development efforts that can assist in alleviating the backlog that is currently faced and attempt to improve the economic circumstances and population average income. Such policies must be an essential part of an overall strategy of development, harmonising and linking them with policies of agriculture, industrialisation, environmental and social welfare, and cultural preservation to provide support for one another (UN Habitat, 1976:6). Agenda 21 emphasises that policies focused on integrated human development need to address income generation, local institution strengthening, increasing local control and guiding the use of resources and conservation, greater involvement of private sector while building capacity of governing sectors and above all focus on providing better lives for all residents (Agenda 21, 1992:14).

In the previous chapter the three spheres of sustainable development were investigated, and some drivers highlighted that form part of these spheres. The TBL suggested a framework that can be used when dealing with human settlements to monitor and measure its sustainability by considering the different drivers that are included for each sphere as discussed in Chapter 2. The aim of this chapter is to consider different policies, legislative frameworks and action programmes that are currently guiding the development of housing and to what extent these drivers as mentioned in Chapter 2 have been considered. These will be reviewed for both international and national level governance within each sphere of sustainable development to get a better understanding as to the influence that each sphere; social, economic and environmental have on the preparation of a combined human settlement policy or framework and how they can be implemented.

Plans, strategies, programmes and policies cannot be implemented or elaborated on without appropriate instruments. Within the human settlement field these can take the form of

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administrative institutions and regulatory instruments (UN Habitat, 1976:48). Planning of human settlements must include adequate policies, strategies, objectives and clear goals with concrete implementation programmes (UN Habitat, 1976:15) but the planning activities and consideration of suitable policies to be used with planning should guide and promote development rather than control or restrict it. This chapter investigated various policy and programme documentation guiding development of integrated human settlements and sustainable development. Inclusive of the following:

International sphere documentation

- Agenda 21.
- The Earth Charters.
- The 2030 Agenda for sustainable development.
- The Millennium Development Goals report.
- Brundtland report.
- The Vancouver Declaration on Human Settlements.

National sphere documentation

- Strategy for sustainable development for the UK.
- The Australian open space strategy.
- The National Framework for Sustainable Development in SA.
- The South African National Housing Policy and Subsidy Programme.
- The Breaking New Ground Comprehensive Plan for the Development of Sustainable Human Settlements in SA.
- South African National Department of Human Settlements' Policy Foundation for the Development of Human Settlements Legislation.
- South African plan - From Housing to Sustainable Human Settlements Reconstruction and Development plan.
- The South African National Evaluation Plan.
- Government Municipal Structures Act (1998).

Local sphere documentation

- The Sustainable Human Settlement Urbanisation Plan of the Gauteng Department of Human Settlements
- The South African Provincial Five-Year Strategic Plan

- South African spatial planning and land use management Act (16 of 2013) Schedule 2 (1) of the City of Johannesburg Municipal By-law 2016

Agenda 21 stipulates that the overall objective of human settlements is to improve the economic, environmental and social quality of settlements (Agenda 21, 1992:45). It is important that institutions on international and nation level that are dealing with the development of human settlements are able to adapt to changing circumstances (UN Habitat, 1976:50) which will require that a real change is seen in the way housing is provided which will require vision, leadership, a commitment from institutions and long term policies that can promote and sustain the change according to Gray *et al.* (2009:341).

Kutesa (2015:2), president of the UN General Assembly, stated that they are determined to shift the world onto a resilient and sustainable path where change is accommodated, and development stabilised, where a balance is found between the three spheres of sustainable development within human settlement implementation by ensuring supportive and guiding frameworks are in place.

The greatest challenge that is faced worldwide for sustainable development in terms of housing delivery is to operationalise it – to make it happen and to make an effective transition towards sustainability within business, communities and development (Dernbach, 2003: 247). Luckily according to Dernbach (2003: 247) there has at least been a greater understanding that sustainable development will profoundly affect international and national governance by strengthening the regional, national and international development planning platforms to support positive economic, environmental and social links (Kutesa, 2015:19). This understanding will be reflected in the implementation of human settlements in the coming years going forward.

5.2 Governing framework

The sustainable development is guided by the key principles of economic, environmental and social concerns that underlie all drivers of decision making (Dernbach, 2003: 249). Integrated decision-making is at the core of the sustainable development framework's principles and it is this deeply fixed integration concept that distinguishes sustainability policy from the rest (Emas, 2015:3). According to Dernbach (2003: 248) from all the principles that should be included in a sustainable development framework, integrated decision making is the principle most easily translated into law and policies. There is no single meaning for integrated decision making, it consists for multiple facets and cooperation.

Negotiation, decision making and consultation at all levels of government are required for effective human settlement strategies and policy formulation (UN Habitat, 1976:49). It was acknowledged by the Post-2015 Development Agenda on sustainable development of human settlements that

governments and public institutions will have to work together on the implementation and drafting of regulations and policies that will inform human settlement development, alongside the regional and local authorities (Kutesa, 2015:9).

Kutesa (2015:11) stated that the Post-2015 Development Agenda allows for flexibility by ensuring that the targets for sustainable development that were defined are aspirational and global can be met, but that each national government will have to set its own targets that are guided by the global level of ambition, while still taking account of the national circumstances. It makes provision that each national government can decide how the targets should be implemented and incorporated into their planning process as well as policies and other strategies on a local level.

The three categories of municipalities identified within a national government under the Government Municipal Structures Act (1998) (Killian *et al.*, 2005:7) are metropolitan, local and district municipalities. Each of these categories will further refine the national policy guided from an international level. Human settlement policy is interconnected to all levels of development authority and relies on inputs from not only the government and public sector but also the private sector. Each level moving down from international to local policies contains more detail on implementation of the policy framework.

Government organisations are typically arranged into departmental ministries and sectors which work well independently until something highly integrated and comprehensive is encountered, such as sustainable development. Sustainable development requires cross sector integration of economic, social and environmental objectives. Therefore, the elimination of fragmentation on all levels is needed to ensure integration through the decision-making process allowing truly sustainable development functions (Emas, 2015:3). According to the National Department of Housing (2004:13) coordination and alignment of economic regulations and planning instruments is at the heart of sustainable development of human settlements. It requires more than coordination between departments but suggests an overarching planning instrument or authority that can provide a macro-level guidance to support the development of sustainable human settlements which will enhance the success and sustainability achieved by new plans coming into action.

This will only be possible if departments of human settlement development coordinate with institutions that are responsible for social and economic development and environmental policies and plans which must be interrelated on a multidisciplinary basis for an informed human settlement framework to be possible (UN Habitat, 1976:50). Multiple disciplines are involved within the creation of human settlements throughout the project life cycle. It is essential that each discipline correlates towards the larger goal of sustainable development by being included in

policy formulation as well. This will allow the inclusion of all drivers within the three spheres of sustainable development to be included within a framework to essentially lead to human settlements that are sustainable.

Access to healthy and safe housing environmental is essential to any person's psychological, social, physical and economic well-being and is therefore a fundamental part of international and national plans (Agenda 21, 1992:46). Laws and regulations that exist for human settlements on international level are often complex and rigid and thus hinder progress as it takes time to translate these regulations and laws into action plans. The laws and regulations can refer to any legal document that guides development; frameworks, policies, programmes and legislation with regards to the development of housing and human settlements. The regulations for sustainable development and human settlements must establish a realistic means for implementation with clear directions from action plans and programmes (UN Habitat, 1976:54). Regulations need to be based on the fundamentals of human settlement provision which is adequate, affordable and safe housing where basic services are provided (Kutesa, 2015:18). Human settlement regulations and laws must be realistic and easy to understand, effectively adapted and applied, and periodically revised so that it corresponds to the changing needs of the society (UN Habitat, 1976:54).

A great challenge that needs to be faced is finding ways to decrease the rapid growth of informal settlement creation due to accelerated population growth and urbanisation as well as the lack of appropriate land and housing (United Nations, 2015:60). Institutions dealing with human settlements must play a variety of roles in their development by promoting new concept and supportive frameworks. These institutions should be responsive to change within a country and promote changes within the structures to suit the current needs (UN Habitat 1976:48).

Implementation of strategies and policies that consider human settlements and their sustainability must be mindful of the fact that housing is a core function of a government and reflects a responsive and caring government that understands the basic needs of its people and how to respond to them (Provincial Department of Housing, 2004:9). The integrated nature and inter-linkages of sustainable human settlement development can be ensured according to Kutesa (2015:2) by giving careful consideration to each driver that is contained within the three spheres of sustainable development and their effect on the local residents. This will profoundly improve the lives of all the residents that live in integrated human settlements as well as start transforming the world for the better.

When considering different policies and legislative frameworks, programmes and plans for the purpose of human settlements, The Vancouver declaration (UN Habitat, 1976:7) stated that the

progressive minimum standards for an acceptable quality of life should be strived for and defined by these programmes that are in effect for sustainable development of human settlements.

According to The Vancouver declaration (UN Habitat, 1976:13) human settlement regulations must aim to improve the conditions of these settlements by promoting equitable distribution of the benefits of development and making public services and benefits equally accessible to all residents. Such regulations that are concerned with progress needs a strategy that makes necessary choices of options and means, confronts relevant issues and indicates trade-offs in resources. Such a strategy should also allow for future changes, it must be flexible, explicit and comprehensive (UN Habitat, 1976:14). Sustainable provision of human settlements and their integration's policy framework should consider the following key fundamentals of human settlements (UN Habitat, 1976:21):

- Institutions for management of land development and acquisition.
- Securing legislation, regulations and instruments.
- Securing financial and fiscal resources.
- Active participation of the public.
- Protection of critical land and ecosystems.
- Integration of basic facilities, service and amenities.
- Employment opportunities and easy access to work places.

According to the IFC (2012:7) a policy must provide a framework for the assessment and management of critical drivers and processes. It should specify that a housing project must comply with all regulation applicable in the jurisdiction in which it is being undertaken including laws implementing the host country obligations under international law. Ensuring the implementation of such framework also includes a practical consideration to measure and monitor its successful execution.

The International Financial Corporation (IFC) has provided 8 standards by which the performance of a project's environmental and social sustainability can be measured within human settlements. These performance standards are (IFC, 2012:2):

1. Management and assessment of social and environmental risk.
2. Working conditions and labour.
3. Pollution prevention and efficient use of resources.
4. Security, health and safety of the community.
5. Acquisition of land.
6. Managing living natural resource sustainably and conservation of biodiversity.

7. Indigenous people.
8. Cultural heritage.

The performance standards are measurements that help guide development but must be read together and cross-referenced with other guiding policies as needed (IFC, 2012:3) and comply with all applicable international and national law associated with sustainable development and human settlements creation. These standards can be used as a guiding measure on the implementation as well as creation of new policy frameworks on the implementation and planning of human settlements. Furthermore, it is imperative that all measures taken are site and project specific by especially considering the direct community that will be influenced.

Sustainable development has especially become a key factor and basis for proposals and regulations within development agencies to consider when dealing with the provision of housing (Parkin *et al.*, 2003:22). Alongside sustainable development, the availability of housing services and infrastructure as an objective of human settlement planning must be considered and incorporated into regulations that guide the development of human settlements to ensure sufficient provision within the settlements (UN Habitat, 1976:25).

Settlements within a nation define its character according to The Vancouver declaration (UN Habitat, 1976:17), therefore it is important that the planning decisions for development of such settlements are guided by national goals which are implemented by local people who can make the best use of indigenous resources within a context of local religion, culture and environment, and not have foreign models dominate planning procedures but keep a local identity. The National Department of Housing (2004:21) argues that municipalities must have the overall responsibility for housing developments that are within their jurisdiction area. It is assumed that municipalities will take up their responsibilities given that clear guidelines and resources will be forthcoming from the national level which will allow the housing developments that are constructed to keep pace with the local identity. The capacity of municipality has therefore become critical in viewing municipalities as the preferred housing developers (Provincial Department of Housing, 2004:19). Capacity constraints are experienced in all levels of the government but even more acutely on a local level to facilitate the establishment of sustainable housing environments (Trusler, 2009:21). Unfortunately, many SA municipalities do not have sufficient capacity or any program or policy in place to deal with and fulfil this newly allocated function as yet, but as their capacity improves they will be expected to play a bigger role in the development of sustainable human settlements (National Department of Human Settlements, 2010:49; Provincial Department of Housing, 2004:57). In the meantime, in the absence of the municipal capacity the task of serving as housing developer will fall to the provincial departments following clear instruction from the national level of authority (Provincial Department of Housing, 2004:19).

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As part of the opportunities and solutions mentioned at the UN conference in 1976 (UN Habitat, 1976: 3), it is necessary for a national government to adopt meaningful, bold and effective human settlement regulations and spatial planning strategies which should be realistically adapted to fit local conditions.

The UN conference, The Vancouver declaration (UN Habitat, 1976:11) discussed settlement policy and strategies as part of their recommendations for national action. The following was included:

- To achieve the objectives and goals of human settlements, the national settlements policies must be formulated to include implementation strategies that have to be combined into the national strategies of development.
- The construction of the physical component of human settlements, in the form of dwellings or roads, in a sufficient volume to meet the needs of the society, should be structured to become a leading sector in the economy as a major generator of meaningful and skilled employment.
- Strategies and policies should be considered on a scale that is appropriate to the task and form part of a single joint effort to improve quality of life for all residents.

It further also referred to an integrated human settlement policy (UN Habitat, 1976:13) that should:

- Be formulated at the highest political level, in co-ordination and co-operation with local levels, as appropriate.
- Be formulated by interdisciplinary approaches that are concurrent with policies relating to other drivers of economic and social development.
- Be consistent with the preservation, improvement and restoration of man-made and natural environment. Keeping cognisant of the positive role of the environment in the national social and economic development.

At a national level the priority remains to incorporate these strategies and aims by focusing on providing adequate housing with services to lower income groups and to distribute available resources on the basis of greatest need to accommodate for change in demand that exist amongst the poor (UN Habitat, 1976:32).

It was recommended in The Vancouver declaration (UN Habitat, 1976:7) that a national government must promote programmes that will assist and encourage local authorities to participate in national development. Local planning should be set within a framework of national

planning policy and must consider economic and social factors specific to that area (UN Habitat, 1976:20).

Since 1994 there has been various attempts in SA to achieve the above mentioned in the form of regulations and policies developed to give effect to a new housing approach that is integrated and sustainable. The current policy that is still relevant in SA is the Comprehensive Plan for Development of Human settlements, 2004, also referred to as the Braking New Ground (BNG) as well as the Housing Policy and Strategy for South Africa: White Paper, 1994 in which SA's housing policy is rooted (National Department of Human Settlements, 2010:38). These documents are primarily focused on providing citizens with a residential structure that is permanent and secure, has adequate sanitation and water facilities and the improvement of domestic energy supplies to achieve the government's housing aim (National Department of Human Settlements, 2010:44).

The BNG comprehensive plan aimed to provide a framework for the development of human settlements in SA (National Department of Human Settlements, 2010:44). The housing vision of these policies referred to the establishment of viable, economically and socially integrated communities that provides easy access to opportunities within the city economy, access to health, education and facilities (National Department of Human Settlements, 2010:38). The BNG housing policy and strategy focused on stabilising the natural environment to transform the fragmented, racially-based and complex financial institutions framework that was inherited from the predecessor government, while also establishing systems to improve delivery that will address the current backlog (National Department of Housing, 2004:7; National Department of Human Settlements, 2010:45). This plan envisioned a multi-dimensional approach to the delivery of housing by not having a set formula for production but rather encompasses the required flexibility with a project specific approach with more responsive mechanisms to address the multi-dimensional needs of such human settlements (Trusler, 2009:34).

In South Africa the nature of the demand for housing has changed (National Department of Housing, 2004:3) and an important shift has occurred which required the establishment of new and innovative, need-orientated strategies that are based on the government's goal of creating quality living environments, building non-racial and integrated societies and broadening tenure options as envisioned by the BNG plan (National Department of Human Settlements, 2010:45). The human settlement plan newly reinforced this vision of the department of housing to promote such integrated, non-racial society through the development of sustainable human settlements and provision of quality housing (National Department of Housing, 2004:7 ; National Department of Human Settlements, 2010:46) while further aiming to improve the quality of life for the poor, combat crime and illnesses related to bad housing conditions due to dampness, overcrowding and restricted access to clean water and proper sanitation (Trusler, 2009:26).

The BNG comprehensive plan aims to change the spatial settlement patterns through the provision and promotion of multicultural communities that consists of strong partnerships with the private sector (Trusler, 2009:32). The National Department of Human Settlements (2010:11) specifically states that the goal of a human settlement framework is to improve urban efficiency. This can be monitored by evaluating if each settlement in its own context demonstrates viability and then only considering the settlement as a component in the city network and its contribution to achieving the overall city's goals of integration. The monitoring and evaluation can be undertaken within each of the spheres of sustainable development by considering each driver's contribution and execution within the human settlement. The human settlement framework formulation for each sphere can include provision for such evaluation and monitoring that can, when combined result in a policy framework that will be able to guide development of human settlements and their integration on a more sustainable path. Specific consideration is then needed for policy affecting the economy, social and environmental sphere of development.

This human settlement plan further introduces an approach that envisages that municipalities will have an increasing role in the housing process. This will ensure a link between spatial planning, housing delivery and transport systems by ensuring integration with the municipal Integrated Development Plan (IDP) that is specific to local areas of development (National Department of Housing, 2004:10). Unfortunately, most of SA's housing provision shortfalls and inconsistencies are largely attributed to poor alignment of budgets, no clear priorities and a lack of funding and municipal capacity for developing human settlements (National Department of Housing, 2004:4).

The focus was placed on shifting from product uniformity to a more demand responsive approach. This followed the conclusion that the production of single houses on single plots located on distant locations with weak integration with socio-economic infrastructure and access to services that dominated the housing delivery program in SA is not flexible to deal with changes in demand and has no consideration for local dynamics. This new plan aimed to move away from commoditised housing delivery and towards more responsive mechanisms that can address the multi-dimensional needs of sustainable human settlements by providing a more flexible approach to housing delivery that enhances household mobility and quality of life (National Department of Housing, 2004:8). The National Department of Housing (2004:11) framework included pursuing higher densities within a compact urban form and mixed land uses that facilitate the reduction of travelling distances.

Sustainable development of human settlements that is SA specific entails an accelerated and shared growth, targeted intervention and community mobilisation to eradicate poverty and to ensure the ecologically sustainable use of its natural resource (The Sustainability Institute, 2009:4) as well as the enhancement of housing projects by guiding and enforcing quality of the

housing stock through the National Home Builders Regulation Council (NHBRC) audit and compliance with building regulation and regular project quality checks (Provincial Department of Housing, 2004:12).

Human settlement planning must form an integral part of the overall national development planning as it must consider different development drivers and not just housing (UN Habitat, 1976:22). There are several regulations, laws, policies, programmes and legislation around the world that deals with the sustainable development of human settlements and their integration. Interesting viewpoints are given below that are contained in some of these international and national regulations with regards to the three spheres of sustainable development and their drivers as was discussed in Chapter 2. When considered as a whole it can represent a basis for a comprehensive overview of what is needed within an inclusive sustainable human settlement framework. It is clearly stated within The Vancouver declaration (UN Habitat, 1976:4) that the goals of human settlement policies are inseparable from the sector goals of economic, environment and social life and thus the solution to these problems must therefore be seen as an integral part of the development process and must seek harmonious integration of the wide variety of components (UN Habitat, 1976:6).

5.2.1 Economic integration

Over the past few financial years SA has experienced a decline in the number of housing that has been rolled out (Trusler, 2009:18). This is largely due to overall financial constraints within governing agencies as well as unsustainable budget expectations and under-expenditure of provincial budgets. These expectations should be better managed within the framework of the human settlement planning and make provision to sustain the rollout of housing in order to meet the challenges of a growing demand for housing provision. This slowdown in delivery of housing units can also be linked to the withdrawal of construction groups from state assisted housing sector due to lowering profit margins (Trusler, 2009:19). Development in general, not just housing provision is seen as a crucial contribution to economic growth.

The Sustainable Human Settlement Developments cannot afford to minimise or neglect the role of policies for economic development (UN Habitat, 1976:12). Such policies of sustainable development must focus on creating incentives and opportunities for economic advancement and better employment prospects (Porter & van der Linde, 1999). It is clear that there is a need for increased activity from the national government aimed at the mobilisation of economic resources (UN Habitat, 1976: 3), the equal distribution of these resources and funding support within human settlements to create communities that can sustain an economic growth.

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If the issues of sustainable development cannot be addressed fully; housing will stay a mere program to relieve poverty for the low-income residents rather than contribute more effectively to the development and growth of the country's economy by enhancing the overall income status of the residents as well as the community (Provincial Department of Housing, 2004:17).

It is the national governments responsibility to provide alternative housing options to assist low income residents of the country, such as low-cost rentals and subsidised units near job opportunities. Further provision can be made for low interest loans, a range of subsidies and loan guarantees for housing construction (UN Habitat, 1976:32) based on family income and needs.

The Sustainability Institute (2009:2) suggests from their evaluation of the BNG framework that multiple funding mechanisms have already been introduced in SA that enables the effective roll out of infrastructure, the purchase of land and housing finance options through available subsidies. These mechanisms make provisions for social facilities for vulnerable communities and different housing typologies. The future policies for housing are more likely to shift in favour of mixed income housing as it is generally more preferable according to Smith (2002:5) and contributes to more affordable units being available.

Policies on human settlements can be used as powerful tools for more equitable distribution of opportunities and income (UN Habitat, 1976:13) if it is considered and implemented with the larger goal of sustainable development in mind. This can be done by encouraging the following four drivers within human settlements:

- Increased public sector investment in selected areas.
- The allocation of priority investment and direct subsidies to disadvantaged regions and groups.
- The use of incentives – legal, fiscal or other – to favour selected areas and activities.
- Creation of employment, social service and training opportunities.

The sustainable development of human settlements is dependent on the economic growth of the area as it leads to further growth for employment opportunities and enables families to better their circumstances. This requires the promotion of development orientated policies that can support job creation and entrepreneurship, innovation and encourage the formalisation of small and medium enterprises (Kutesa, 2015:16). Human settlement developments provide a unique opportunity to alleviate income poverty by offering direct and indirect training and employment opportunities within diversification of economic productivity and labour-intensive construction sector within human settlements that can have a positive contribution towards sustaining economic growth (National Department of Housing, 2004:25). The average income level of a

human settlement is dependent on the availability of employment opportunities and the ability to create more jobs within the area that will be able to sustain the future community growth and provide financial growth to residents.

The growing unemployment rate is a feature of slow job creation and as a result household income are being placed under more pressure (Trusler, 2009:14). The MDG states that the workforce is growing immensely, resulting in employment creation lacking behind as economic expansion is not fast enough to keep pace with demand (United Nations, 2015:17). The Post-2015 Development Agenda seeks to build economic foundations that are stronger in all counties, which can sustain economic growth that is essential for prosperity and the formulation of new employment opportunities focused on newly created human settlements that can sustain its population. Kutesa (2015:7) states that this will only be possible if income inequity is addressed and wealth is shared within a people-centered economy that promotes women and young adult employment but above all promotes decent work opportunities for all in an attempt to urgently provide all residents with the opportunity to earn a sustainable livelihood (Agenda 21, 1992:14).

Bold policy reform and implementation of equitable planning of economic policies is required to allow necessary growth along with complimentary approaches for provision of economic opportunities within human settlements and more employment opportunities to increase the absorption of the labour force that is needed (United Nations, 2015:61).

The IFC (2012:16) recognises as part of performance standard 2 that the pursuit of economic growth in a country is essential and can be achieved through income generation by means of effectively creating employment opportunities. In addition, it further involves protecting workers' rights and providing job security to enhance operation productivity and efficiency which is fundamental for a growing economy. Generating employment through the provision, maintenance and improvement of infrastructure and services for residents as well as supporting economic activities within informal sectors such as repairs, small commerce and recycling is seen as key activities contained within Agenda 21 (1992:48) to help strengthening employment creation.

As part of the broader goals of economic and social upliftment of communities, the SA government noted that housing policies must include community participation in the development process whereby skill transfer and economic empowerment can be facilitated (National Department of Human Settlements, 2010:43). Guidelines for the implementation of labour-intensive infrastructure and construction projects are one of the methods mentioned by the National Department of Housing (2004:25) to increase employment opportunities within human settlements that will be able to contribute to the sustainability thereof. Installation of infrastructure, construction of houses and construction of social infrastructure or facilities along with the

maintenance and management thereof can create increased job opportunities within human settlements. The establishment of on-site material production activities are also a contributing factor that can create jobs.

The SA government has implemented programmes such as the Extended Public Works Program (EPWP) to give effect to their goal of increased economic growth through addressing unemployment within settlements (National Department of Human Settlements, 2010:32). Through this program the department will ensure that as part of the project tender process that all projects include a labour-intensive mechanism for the installation of services and construction (Provincial Department of Housing, 2004:43).

These methods will focus attention on the development of local contractors and increasing their capabilities by ensuring effective skill transfer while construction commences within human settlements that will provide the local residents with necessary skills to use long after the construction of the human settlements have been finalised (National Department of Housing, 2004:26; Trusler, 2009:67).

Productivity and efficiency within the economic sector are however dependent on the quality of the workforce itself. Having a well-educated and healthy workforce with the skill and knowledge needed for full participation and being productive within the society is essential to the economic growth that can be achieved (Kutesa, 2015:7).

As a settlement objective the establishment, improvement as well as maintaining employment opportunities, the education and training of the workforce is crucial to ensure economic sustainability within human settlements (IFC, 2012:16).

5.2.2 Social dynamics

As part of the general principles mentioned by the UN conference in 1976 in The Vancouver declaration (UN Habitat, 1976:4) the most important objective of a human settlement policy is the improvement of every resident's quality of life within a community. Such policies must facilitate the continuous and rapid improvement in quality of life beginning with the satisfaction of basic needs without any discrimination, in a frame of freedom, social justice and dignity.

A human settlement policy for social integration of communities should consider the creation of more attractive, liveable and efficient settlements that recognises human scale, the culture and heritage of its residents, and the special needs of disadvantaged groups within an area that provides education, health services and employment in a framework of social justice (UN Habitat, 1976:4).

The Post-2015 Development Agenda suggest that regulations must aim to improve the universal respect for all human rights and dignity, equity, justice and non-discrimination. It must show respect for cultural, race and ethnic diversity and provide equal opportunities permitting the realisation of human potential and the contribution to prosperity (Kutesa, 2015:4). In light thereof, a key policy concerns highlighted within "*A Shared Future*" have included avoiding social segregation in neighbourhoods and to employ policies to enhance social coherence and combat social exclusion in every form (Gray *et al.*, 2009:343). In the UK the promotion of mixed communities has increasingly become part of government planning as a mechanism to achieve social inclusion and delivering sustainable regeneration (Gray *et al.*, 2009:349).

To achieve sustainable development and the full potential of all humans, it is important that social issues are addressed. Gender equality is an important objective that must take priority as it is not possible to achieve a full functioning and sustainable community if one half of the population is continually denied full rights and opportunities (Kutesa, 2015:6). It further includes that regulations should improve the educational development and investment in children while giving attention to girl gender equality and ensuring that children grow up free from exploitation and violence (Kutesa, 2015:4).

The challenge of urban planning policies is to ensure that decisions regarding human settlements are explicit and coherent, that they are part of the effort to achieve social justice, utilise resources and resolve conflict effectively to change what is problematic and challenging in the current situation of housing provision (UN Habitat, 1976:17). Regulations should be determined to foster just, peaceful and inclusive societies (Kutesa, 2015:2).

The SA government has committed itself to the development of more equitable, liveable and sustainable cities (National Department of Housing, 2004:11). The National Department of Human Settlements (2010:10) promotes integration across income and population group divides. Eradicating poverty is an essential objective of the new sustainable human settlements plan as it specifies that poverty, when being experienced, is associated with vulnerability, deprivation of basic needs, experiencing of exclusion and powerlessness (National Department of Housing, 2004:11). Poverty also compromise the safety and security of residents which the human settlement plan aims to address since many crimes takes place within private and domestic spaces where public policing has a limited impact (Trusler, 2009:14). Consequently, it is essential then to ensure that the creation of settlements address the problem of safety and provides security.

Policies and strategies that simply adapt to and not effectively change or alter these challenges within housing developments will result in segregated communities and resource allocation that

is inefficient. Government strategies to implement new opportunities such as integrated human settlements are unlikely to succeed if these governing bodies are simply ignoring wider issues of local amenities, security, community support and management, and merely providing isolated free-standing housing (Gray *et al.*, 2009:352). The provision of social facilities, amenities and services will contribute to better community integration where residents can share uses and experience being a part of a community.

It is recognised that a need exists to move away from a one-dimensional approach of housing provision by considering the bigger picture and influences. This includes the provision of economic and social infrastructure that must be provided within human settlements (Trusler, 2009:46).

The BNG comprehensive plan covers this acceptably by suggesting that the housing delivery authority must determine the need for community, economic and social facilities based on a facility audit conducted of the area to ensure appropriate and necessary facilities and amenities are delivered, which includes health and educational facilities (Trusler, 2009:46).

The government plays an active role during facilitation with the communities as well as planning, monitoring and implementation of activities and facilities that are specified to support the integration of the community by facilitating interaction between residents (IFC, 2012:52). Interaction between residents within human settlements leads to a basis of coexisting and understanding amongst residents and an increases acceptance of one another. Interactions are stimulated by mutual interests. Integrating communities requires such correlating activities and interests that can be achieved by the inclusion of sites in human settlements that are essential to the identity of some residents, such as areas identified with cultural heritage. This includes ceremonial and spiritual objectives to be considered for each project specifically and for all cultures and religions (IFC, 2012:51).

The provision of such activities and facilities depends on the guidelines available as well as the community needs for the specific project during design and planning phases of a human settlement project. The placement of required land uses must first consider the upgrade and maintenance of existing facilities as well as involve the establishment of site-specific targets to ensure that new developments incorporate existing land uses (IFC, 2012:3). Effective placement of non-residential land uses is dependent on their proximity to residential uses and other established facilities of the same use.

There is a need to move towards a housing development approach that is more holistic. It is the responsibility of the municipality to determine what social and community facilities are needed to

ensure that the demand is appropriately targeted. The provision of these facilities is proposed in a cluster concept to ensure a safe area with increased social interactions (National Department of Housing, 2004:14). Social public facilities that are created then become the responsibility of the municipality to maintain (National Department of Human Settlements, 2010:52).

The National Department of Housing (2004:13) specifies that adequate provision of social infrastructure must be made in support of residential development. Government assistance should only be concentrated on the provision of resources that would enable the construction of social amenities and facilities which residents cannot provide themselves (UN Habitat, 1976:32).

Land use regulations within a human settlement framework must consider the location of facilities along with activities that generate traffic in order to ensure that the need to travel is minimised and that all basic activities such as shopping, recreation or employment is within walking distance from residential areas (UN Habitat, 1976:35). In addition to placement, the promotion of separate vehicle, cyclist and pedestrian traffic lanes (UN Habitat, 1976:35) to ensure safety when accessing these activities and facilities also contribute to the land use being functionally integrated within the fibre of the human settlement.

It is the opinion of Gibbons (1998:12) that high density housing developments must be built adjacent to mass transit lines such as highways to ensure access to utilities, public transport, employment and other service such as social facilities to provide support in movement of lower income residents. Government support to public transportation modes with subsidy programmes is needed to ensure that isolated settlements are reached (UN Habitat, 1976:35).

Infrastructure development can be seen as a driver behind the implementation of human settlements as it ensures better service delivery along with housing development. Aside from better transport systems that are implemented other services such as provision of water and sanitation for each resident is also improved and continues to contribute to the Millennium Development Goals (MDG) that was initiated in 2015 but still a predominant goal of development. Goal 7 of the MDG deals with the sustainability of the environment which is linked to the provision and availability of services and facilities that is provided. Improved drinking water sources and proper disposal of sanitation has led to a decrease in natural source being compromised (United Nations, 2015:7).

The funding for such facilities and services, it is suggested will be through a mechanism that provides 50% of the cost of implementation if the project is implemented by the district council or national authority but that 100% of the cost will be supplied if the project is implemented by a local municipality to increase municipal involvement. The cost for maintenance and operation will also

be the responsibility of the municipality but can also be privately managed upon agreement with the local authority (National Department of Housing, 2004:15). As part of the promotion of integration and sustainable development the investments from the public and private sector used for infrastructure and other facilities such as transport and bulk services must move its focus away from specific beneficiaries to ensure an overall capital investment in needed facilities and infrastructure (Provincial Department of Housing, 2004:57) and that such approaches and guidance from international level can be included in national and provincial levels effectively by being absorbed in local development programmes.

Local authorities must coordinate with organisations in planning and development to ensure recreational and leisure facilities are implemented in human settlements to improve the physical, spiritual and mental health of the residents (UN Habitat, 1976:38). The National Department of Human Settlements (2010:1) set a minimum standard for housing products that includes the improvement of privacy and community specific provision of a range of economic and social facilities within human settlements. This further includes access to quality health and educational service. There are programmes in place in SA currently that deals with the development of public, social and economic facilities for new and existing housing areas (National Department of Human Settlements, 2010:8).

Health and education are indicators of sustainable development (United Nations, 2015:50). Land use guidelines must take careful consideration of placement for healthcare and education centres. Regulations to improve the provision of health care facilities along with better training for health care professionals at these provided facilities must be prioritised to promote mental and physical health, extending life expectancies and achieving better universal health and access to quality health care within newly developed human settlements (Kutesa, 2015:7). Goal 4, 5 and 6 of the Millennium Development Goals (United Nations, 2015:6) is focused on better health for the new born, improving mental health and combating diseases such as HIV/AIDS. Significant progress has been made towards better quality of health care and reaching more people that need medical assistance. Implementing integrated human settlements provide the necessary health facilities within these settlements where more people can be reached that is in need of assistance. According to the WCED Brundtland Commission (1987:93) good health is the foundation of human welfare. This however can only be sustainable and effective with a broad-based health policy that will be essential in sustainable development and the provision of human settlements to include affordable and effective treatments, political commitment and improved service delivery (United Nations, 2015:37).

In many third world countries such as SA critical problems of ill health is related to environmental conditions and development problems that can cause disease outbreaks such as cholera. Such

problems establish the important link as was discussed in Chapter 4, that the environment can have on human health and why environmental policy frameworks should be supportive of social policy frameworks with specific reference to health policies. Alongside health care, education has an equally important role to play. Housing policies and legal frameworks for the development of integrated human settlements need to guide the improved provision of education centres and schools as well as specific guidance on size, distance from residential areas and type to ensure that each community has access to quality education. Improvements of the community's basic education and literacy will benefit the overall community health and employment absorption.

Considerable progress has been made in meeting some of the challenges related to development. Especially noticeable is that in areas where human settlements have already been implemented that access to education has greatly increased as well as the spread of information and skills has accelerated human progress (Kutesa, 2015:5). Statistics show that the literacy rate for youth has increased to 91% in 2015 due to better access to education and target development of youth groups (United Nations, 2015:4). The focus of human settlements is for specific cross cutting measures in particular basic education (Agenda 21, 1992:15).

As part of Goal 4 of the 2030 Agenda for Sustainable Development, Kutesa (2015:14) resolves that quality early childhood development is essential to ensure that children are ready for primary education. Government policies and funding programmes should strive to deliver affordable primary and secondary education that should lead to relevant and effective learning outcomes with subjects dedicated to train students on the protection and use of their natural environment as well as promotion of sustainable development and becoming part of the economic development of their community. The Millennium Development Goal 2 is focused on achieving better primary education and shows that the net enrolment of primary students has in fact increase over the last few years since 2000 (United Nations, 2015:4) but that human settlements and their provision of facilities such as education centres and schools can increase the number of students being reached.

Remarkable efforts have been made through the allocation of funding for school infrastructure and the Right to Education Act as well as significant training for teachers (United Nations, 2015:26). These efforts need to be supported further and extend beyond primary and secondary education. Training and skill development of educators are imperative to increase the supply of qualified teachers that can ensure that knowledge transferral is effectively, comprehensive and inclusive of all age groups (Kutesa, 2015:14).

Skill development for the youth and adults are an aim of human settlement policies that will be focused on to improve entrepreneurship amongst residents and increase the absorption of

employment opportunities within communities by delivering more skilled and educated people (Kutesa, 2015:14). The establishment of a community-based learning centre can increase capacity building and skill transfer for local residents while ensuring a relevant approach to the type of education that is being received (Agenda 21, 1992:15). The MDG has also seen a growth in the amount of people connected to the global network which forms part of the opportunity for better education with access to information (United Nations, 2015:7).

The MDGs place emphasis on the fact that even though progress has been made pre-2015 the focus must now turn to interventions for post-2015 to increase the successes with a renewed attention to the quality of education and the applicability of skill being transferred within the 21st century as stagnation of education will have profound consequences. It will be necessary to reflect and consider alternative and more suitable methods and approaches to education and helping people master the skills that they are taught (United Nations, 2015:27).

Improved opportunities for education and residents being educated will improve the residents' ability to actively participate in their community when decisions are being made and issues discussed that might affect the community and their life quality.

A principle mentioned in The Vancouver declaration (UN Habitat, 1976:5) is that all residents have the duty and right to participate in the implementation and elaboration of programmes or policies regarding their human settlements. Public participation must be a continued feature of the political process with respect to human settlement planning (UN Habitat, 1976:48) to promote and motivate people to take decisions and be involved in decision making regarding their community.

The Sustainability Institute (2009:2) is of the opinion that the BNG framework introduced a shift from 'quantity over to quality' mind-set that was entrenched in the approach to subsidised housing delivery to move towards participative, and multi-dimensional approaches that will enable people to become participants in the creation of human settlements that are more sustainable, rather than just being recipients of RDP units.

Public support and policy design are crucial elements that will influence the success of housing developments (Emas, 2015:1) for this reason the effective human settlement programmes and policies require a continuous co-operative relationship between the governing body and its people at all levels (UN Habitat, 1976:7).

Strategy development and human settlement policy formulation requires active participation from all non-governmental organisations and governing bodies (UN Habitat, 1976:14) as policies must include strong emphasis on the engagement of the community and relevant stakeholders during the project life cycle. Private sector involvement within the provision of housing is expressed as a

deepening partnership that ensures viability of the project by adding needed experience and management skills (Trusler, 2009:35). The IFC (2012:3) first performance standard provides guidance on participation and community inclusion by aiming to integrate assessments that can identify impacts on social and environmental drivers, as well as opportunities for the project. This can be done by ensuring effective engagement with the community, disclosing project related information and ensure consultations on matters that will directly affect the communities.

A comprehensive stakeholder analysis will be beneficial to build the relationships needed for a participatory project (Allen & Kilvington, 2010:251). Identifying stakeholders in development projects can be difficult and therefore require a structured approach set forth within housing policies or legal frameworks that will ensure that all affected and interested parties are considered during the process to effectively address the needs of those involved. The stakeholder analysis also determines the process needed to involve the different stakeholders and will emphasise the role that each have to play (Allen & Kilvington, 2010:251). The public participation process has received more emphasis in the development of integrated human settlements as a method to include the communities as stakeholders during discussions.

Performance standard 1 of the IFC (2012:5) suggests providing the necessary means for adequate engagement with communities and other stakeholders throughout the project life cycle on potential issues that can affect them and will improve the community support through the project. Successful management of settlement projects is depended on the constructive and strong relationships from all stakeholders and keeping them engaged through the life cycle of the project (IFC, 2012:12). Keeping stakeholders and community members involved requires:

- Dissemination and disclosure of all relevant project information.
- Participation and consultation.
- Ongoing reporting to stakeholders.
- Grievance mechanisms in place.

This will further include that a thorough stakeholder analysis is undertaken as the nature, level of effort and frequency of stakeholder engagement will vary. The affected participants, community members and stakeholders, will be the determinant of how the project team will need to approach the risks and impacts of the projects. Policies on participation must make provision for the project management plan that must be tailored to the characteristics and scale of the project as well as effectively address the interests of the affective parties (IFC, 2012:13). It should seek to promptly resolve concerns by consultative processes that are transparent, understandable, and culturally appropriate and allow for a feedback period where results can be explained of how the concerns were dealt with (IFC, 2012:15).

The importance of participation from all affected stakeholders through the disclosure of information and aiming for transparent process according to the IFC (2012:8) will improve stakeholder commitment and trust in the project team by understanding the risks and impact that the project might have. It further creates a platform for the participants to inform the project team of any local environmental, social or economic concerns of the area that needs consideration to ensure that the project team can address all the issues more effectively.

Integration of human settlements refers to various types of tenure options and income groups being present in newly development communities. The IFC (2012:47) as part of performance standard 7 stipulates that many of these people have economic or social limits to their capacity to defend their rights and interests against the corporate giants that are the developing entities restricting their ability to fully participate and benefit from development of human settlements. This reality creates the basis of public participation where governments play a significant role in insuring that all interests, cultural and language preferences and suggestions are considered within the development proposals. This contributes to social sustainability of human settlements by creating and maintaining relationships with the communities and making sure that their newly created settlement caters for their needs as specified through the participation procedures.

5.2.3 Environment planning

Greater attention to, and integration of, development and environmental concerns can lead to improved living standards and the fulfilment of basic needs for residents if such concerns are integrated into decision making processes (Agenda 21, 1992:3). The necessary research is needed when developing a human settlement framework to ensure that the interaction between environment factors and socio-economic factors are taken into account (Agenda 21, 1992:25).

A core pillar of the Post-2015 MDG agenda is environmental sustainability which is a prerequisite for a lasting socio-economic development. Most development activities do affect the environment to some degree therefore the framework must focus on prevention of such effects rather than relying on remediation (Agenda 21, 1992:31). Mitigating future environmental challenges and improved livelihoods can be achieved with a focus on healthy, well-managed and diverse ecosystems and resources (United Nations, 2015:61). Thus, the link between environmental sustainability and socio-economic development will need to be strengthened within the framework that guides human settlement development to ensure an overall acceptable sustainability there within.

Planning for the environment and the sustained use of its resources have long been a global concern. The biggest effect on the natural environment is due to energy resources that are being

depleted at rapid rates caused by the human demand. Policies on environmental health and conservation as well as policies guiding the use of energy resources have increased in their effectiveness over the past decade as more awareness is raised on the consequences of excessive usage. Implementation of such policies and adherence to global guidance programmes on environmental protection have greatly improved the natural environment within and around cities during development of human settlements.

Planning human settlements requires that international recognised resources and control techniques are included when evaluating and considering methods of energy and resource sustainability to be used for a housing project. Where a country implements a human settlement project that have less stringent environmental guidelines and regulations than international accepted standards then the project will have to comply with guidelines that are most stringent as set by international regulations (IFC, 2012:23).

Kutesa (2015:16) listed as part of goal 7 of the Agenda on sustainable development that regulations should aim to increase the international cooperation in order to facilitate other countries in formulating more inclusive policies that are guided by international standards. International cooperation will ensure countries have access to clean energy research and technology to help increase renewable energy, cleaner fossil-fuel technology, energy efficiency and the promotion of clean energy infrastructure that ensures access to affordable and reliable energy sources. Such sources are expensive to implement, and many third world countries do not have access to international support and guidance. Objective 2 under the IFC (2012:22) performance standard 3 promotes a more sustainable use of water, energy and natural resources as a starting point for companies that develop human settlements that are not yet in a position to expand on their use of energy efficient technology during development of housing projects and suggest that cognisance of these three sources can still make a big difference towards achieving sustainability during environmental planning phases of development without losing viability of the project.

A primary goal that was set in the Post-2015 Development Agenda for the planet was to protect the planet from degradation by including sustainable production and consumption of resources and energy usages (Kutesa, 2015:2). Reducing energy consumption, avoiding pollution and conserving resources should form part of environmental policies (UN Habitat 1976:4), where innovative transportation systems, construction materials and energy saving technology is encouraged along with other green planning initiatives to help protect the environment and achieve more efficient usage of resources and effective production of energy.

During the environmental assessment phase of any project the International Finance Corporation (IFC, 2012:4) suggested a starting point inclusive of primary energy effective solutions and that a detailed justification for any alternative suggestions are needed when considering uses that are less energy efficient or sustainable. The justification thereof should demonstrate that the alternative suggestions can stay protective of the environment and human health. In the case where project specific circumstances require alternative interventions or proposals, then it will be necessary to provide a detailed justification thereof to ensure that all stakeholders and relevant parties are informed (IFC, 2012:23). An essential part of such methods that need to be in place is to create standards for environmental and social sustainability within housing developments and a need to commit to good governance and transparency on its operations International Finance Corporation (IFC, 2012:2).

According to Emas (2015:2) the major features that distinguish traditional environmental policy from sustainable development policy is the concept of conserving resources and alternative energy which seeks to internalize the externalities of environmental degradation. The long-term stability of the environment and the economy is the overall goal of sustainable development which is only achievable through the acknowledgment of, and integration of, environmental, social and economic concerns throughout the decision-making process by the project managing authority, whether municipal or private developer.

In 1992 at the UN conference on environmental development also known as the Earth Summit, countries agreed to the Agenda 21 which was an ambitious plan of action towards sustainable development, which was defined as development that restores the environment and protects it against pollution and degradation without compromising the benefits associated with development such as social well-being, economic development, peace and security (Dernbach, 2003: 248). Increasing these benefits is only possible if the management and assessment of environmental risks and impacts during the human settlement development process is the responsibility of the governing authority, based on the guidance of Agenda 21. Only if agreements were reached it becomes the responsibility of the third-party developer (IFC, 2012:6). That responsibility includes all drivers in relation to environmental conservation, protection and effective use of resources and energy as well as pollution control and ensuring adherence to all regulation that guides development and the influences on the natural environment.

Resource sustainability is associated with limiting pollution of the biosphere and all-natural resources contain therein that should be addressed and avoided as a joint effort to protect environmental resources upon which life itself depends (UN Habitat, 1976:5). According to the WCED Brundtland Commission (1987:57) environmental regulations should however start to move beyond the usual menu of zoning laws, safety regulations and pollution control enactments

and consider a wider range of issues related to environmental degradation as well if they want to succeed in creating a framework for development that ensures sustainability of the environmental sphere.

The IFC (2012:22) performance standard 3 considers that an increase in economic activity worldwide along with trends of urbanisation which directly links to the pace of community creation increases the levels of pollution and consumes resources in such a manner that it is threatening environmental sustainability as resources are depleted and contaminated. It therefore suggests a project level approach to pollution prevention and resource efficiency, where private sector companies are promoted and encouraged to adopt practises in their projects that relies on available resources, technologies and skill implemented based on international guidance.

The release of pollutants within a project scope applies to water; land and air that must be controlled and monitored regularly (IFC, 2012:24). Monitoring of pollution needs to consider existing and future land uses as well as their proximity to vulnerable biodiversity areas. In addition to using resource more sustainably and efficiently, pollution control measures are required to protect exiting resources throughout the project and avoid or reduce negative effects (IFC, 2012:25).

Changes will be required in policies to limit and cope with the current high levels of resource consumption by developments that are needed to sustain minimum standards of production and roll out (WCED Brundtland Commission, 1987:52). Human settlement development generates a significant amount of hazardous and non-hazardous waste materials which must be disposed of in an environmentally sound manner (IFC, 2012:25). Untreated materials will increase the risk of pollution, risking contamination of ground water and fertile soil which threatens the environmental health of the area. The responsibility of effectively treating and preventing pollution and polluted areas lies with the project manager and environmental consultant appointed in the project.

A concern of development is, when not given the control over or access to resources that are necessary for development of human settlements, institutions and municipalities are ineffectual useless. For this reason, it is important for different levels of the national governing agencies to share responsibilities and resources about matters that are of common concern and essential to achieve national settlement objectives and goals (UN Habitat, 1976:49).

The National Department of Human Settlements (2010:44) highlights the importance of South Africa's policies to deal with and take responsibility for sensitive environments and the impacts that the development of human settlements will have. The National Department of Housing's (2004:12) Sustainable Human Settlement Development Plan ensures that the development of

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human settlements is more functional, integrated and considers environmental sustainability, while also protecting the natural environments in sensitive areas that are of special ecological and geographic significance so that development can take priority in government policy with emphasis on preservation of pollution and degradation (UN Habitat, 1976:39).

In 2002, Johannesburg, South Africa, action programmes were drafted at the World Summit on Sustainable Development and the progress on implementation of the Agenda 21 and the Local Agenda 21 was reviewed for a SA context (The Sustainability Institute, 2009:3). It was agreed that in SA the implementation of policies, regulations and legislation that are required for sustainable practices and planning, must hold the private sector, municipalities and consumers accountable for their unsustainable practises, but this have been a slow process to date.

Policies for environmental protection, sustainable waste management and pollution reduction have been developed by the Department of Environmental Affairs and Tourism (DEAT) but their implementation at local level is still slow. According to the Sustainability Institute (2009:5) the Department of Water Affairs and Forestry has developed excellent policies and legislation of the protection and management of water resources to start ensuring drinking water quality for all and even though it has been successful to some extent the local implementation is still lacking and not as effective as intended.

Human settlement policies must aim to improve environmental health (UN Habitat, 1976:7). The WCED Brundtland Commission (1987:56) suggested that changes in the legal framework must come from a position where an environment that is adequate for human well-being and health is the primary consideration that is essential for all future developments. That all the decisions regarding change with policy and framework should be focused on achieving healthy environments.

It should be a general goal to those involved in the decision making of land uses to coordinate the growth of communities to ensure that each natural area still preserves its character within a development (Gibbons, 1998:12). The characteristic of a sound environment is that it can still provide the resources needed to sustain growth (Agenda 21, 1992:8) through the prudent use of natural resources and finding ways to reduce energy consumption.

Progress despite the challenge that is faced within the global environment of sustainability and conservation of natural resources has been significant (United Nations, 2015:20). This can be further enhanced by establishing mechanisms to mobilise resources to improve environmental quality and using such resource more sparingly (Agenda 21, 1992:50).

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Such environments can be achieved if new housing developments are managed and designed to ensure that the consumption of natural resource are minimised to protect the quality of the natural environment. This can be done according to Gibbons (1998:12) when the project site's natural futures are respected, the natural drainage effectively utilised to minimise site disturbances and the wetland corridors protected to limit the impact of development on the water resources. Goal 6 of the 2030 agenda for sustainable development includes the protection and restoration of water systems such as wetlands, rivers and underground water, while aiming to reduce pollution, dumping and releases of hazardous chemicals to ensure water quality (Kutesa, 2015:16).

Impacts on ecosystem services, such as water contamination results in unhealthy environments which as emphasised in chapter four links to health risks to communities. International polices aim to protect these ecosystem services during the development of human settlements to ensure that changes in land uses does not result in loss of natural buffer areas that mitigate natural hazardous effects such as landslides or flooding that increase risks to community health and safety (IFC, 2012:29). Depletion and degradation of natural resources impacts on quality of life within communities, it is the responsibility of the municipality with support from the nation governing body to have measures in place to limit the risks related to project activities that affects the availability and quality of natural resources by ensure strict adherence to environmental regulation.

Conserving and protecting biodiversity, sustainably managing natural resource and maintaining the services that ecosystems provide is considered a fundamental to sustainable development as outlined by the IFC (2012:40) as performance standard 6. Ecosystems are underpinned by biodiversity and the impacts on biodiversity affects the capacity of the ecosystems to provide quality and sufficient natural resources that are required to sustain life, therefore affecting the quality of life within human settlements directly. Throughout the project life cycle, it is critical to protect, conserve, promote and maintain the biodiversity of the project area to ensure fully functioning and productive ecosystems that will ensure the production of natural resources needed for a healthy environment. International regulations advice that practices are adopted that can integrate these conservation standards with the priorities of the human settlement development programmes.

Generally, it is suggested that during the planning phase where impacts and risks are evaluated, that an environmental specialist advise on appropriate measures to minimize, avoid or restore affected biodiversity areas (IFC, 2012:42). This includes designing a project appropriate, long term biodiversity monitoring program that can, as addition, be integrated into the project sustainability checklist. This monitoring system will result in an action plan designed to achieve the requirements as initially defined by the environmentalist (IFC, 2012:44).

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The IFC (2012:45) strongly advice with reference to impacts on priority ecosystems that all development projects should minimise their impacts on the services that ecosystems provide and increase resource efficiency in their operations by focusing on the implementation of conservation and upliftment measures such as the provision of additional natural areas that can link through the project to ensure a consecutive flow within the natural system.

Undertaking human settlement development will need authorities to conserve all the values that promotes, guarantee and increase the equilibrium between the human activities and the natural landscape in the environment (UN Habitat, 1976:27). Such provision guidelines should aim to provide for adequate, safe, accessible and inclusive green open space within human settlements (Kutesa, 2015:19).

The success of the provision of open space within human settlements are strongly influenced by good urban planning, strategic planning and elements of urban design as well as a good understanding of the participation and recreational trends of the community according to the PLA and DPCD (PLA Vic/Tas & DPCD, 2013:1) which has to be addressed with the provision of an open space framework and policy guidelines to ensure the desired outcome. Land use planning and zoning can be used as a basic instrument by municipalities in a land development policy to ensure land use allocations within human settlements (UN Habitat, 1976:40) make provision for enough natural open spaces and that thorough consideration is given when placement of such space is considered. During the planning phase of any housing project conservation areas and existing formalised open space need to be incorporated to ensure that the natural movement and ecosystem stays intact.

Berkovics (2010:10) explains that in development of human settlements a problem may arise as companies are often required to act quickly to ensure that deadlines are reached and that projects stay feasible. The problem when considering the environmental drivers of these projects and the implementation of open space is that very careful consideration is needed to ensure sustainable execution which is a timeous process. Much thought and attention are required which takes a great amount of time as all possible influences need to be consider ensuring the approach is not a quick fix and rather a long-term solution. The human settlement framework for open space planning must result in developing agencies considering all influences and make provision that areas of natural pubic open spaces be guided by the needs of the community to ensure that the open space will become an actively used space and not a burden area on adjacent residents or those who need to maintain it. In urban areas open space areas such as parks are often considered unsafe due to the perception of danger and lack of maintenance once such areas start to degrade. This perception can be changed if parks are well maintained and secured by the project managing authority. In addition, the specific placement of parks and open space in a

residential area also plays an important role in how the neighbourhood will be perceived by residents. The placement must take cognisance of different urban design features such as visibility and supplied with enough light features to increase a sense of security and attractiveness.

The same principle is applicable for the consideration of the locality of human settlements as drivers such as security, connectivity and accessibility also apply to human settlement's location.

Land as a resource remains an essential component of a sustainable lifestyle. The BNG comprehensive plan placed emphasis on the location of human settlements and integrating societies with opportunities. According to Trusler (2009:75) this has generally not been achieved as the availability and cost of well-located land remains a challenge. Land forms the basis of the living ecosystem, providing energy, water, soil and above all the means for all human activity to be carried out (Agenda 21, 1992:51). Unfortunately with the growing urbanisation rate access to land is rendered increasingly difficult and therefore more investment is needed when considering land for housing development to ensure that its location and connectivity will provide the necessary means to contribute to the sustainability of the human settlement.

The availability of land for development is a main concern in human settlement development (Trusler, 2009:29). Planning of human settlements at a national level should be concerned with the co-ordination of developments and resources (UN Habitat, 1976:18) which would include proper location identification, the designation of major types of land uses and their potential as well as the location of productive and sustained sources of employment that will support the human settlement. The local municipality or private developer has the responsibility to manage and assess the risks and impacts associated with a specific location being considered and its associated environmental and physical risk at the early planning stages of decision making that will influence the project site selection (IFC, 2012:5). Along with site selection the scale, type and location of the project needs to guide the level of effort and resources that will be devoted to the identification of impacts and risk of identified locations. Small projects with few constraints will be easier to identify than a large-scale project that can consist of multiple constraints which poses more risk in terms of development and construction, feasibility as well as impacts on future residents (IFC, 2012:7).

Land available for development can be rated according to constraints and community health and safety risks that are imposed. Areas of structural components and elements such as ash ponds and tailings dams are generally considered high risk locations where areas affected by wetlands or transportation infrastructure are low risk locations (IFC, 2012:28). If development is considered in high risk areas where such components' malfunction or failure may threaten health and safety

of the future community, the developer will be responsible to engage external experts and professionals with required expertise to advise on design and construction by being involved in the planning procedure at early stages to ensure township layouts considers necessary health buffers and safety zones (IFC, 2012:28).

Low-income settlements are more often found without the provision of economic and social amenities, located on the urban periphery as was done in the apartheid era (National Department of Human Settlements, 2010:4). In support of the spatial re-construction to assist in a move away from the previous apartheid planning spatial structures, the utilisation of housing can be used as an instrument to develop more integrated sustainable human settlements that are better connected (National Department of Housing, 2004:7). A focus of the IRDP was to introduce integrated human settlements in well-located areas that already provided convenient access to urban amenities and employment (National Department of Human Settlements, 2010:4). The IRDP provided a framework for the acquisition of land, servicing of residential, recreational, school and clinic sites as well as other land uses. It specifies that as a consideration, location of land that can be suitable for the development of human settlements can be identified by seeking areas of economic opportunity first and secondly identifying if that area offers bulk infrastructure (National Department of Human Settlements, 2010:10).

The location of housing projects has been criticised over the past decade and has been to some extent reinforcing the apartheid spatial patterns due to the lack of well-located and affordable land closer to the city centres. The National Department of Housing (2004:13) suggested that it is necessary to create an overall strategy that can facilitate the release of well-located land to municipalities for development. All public land and land held by para-statal organisations that is deemed suitable for housing development will be transferred to the municipality at no cost and that private land will only be considered if there is no appropriate state-owned land available. Identifying and strategically assigning vacant land for integrated and sustainable settlements as a function of municipalities during development consideration is essential and can be assisted by provincial or national government (Provincial Department of Housing, 2004:57).

Adequate land that is available within cities, that is suitable for development, is available for all types of land use and not just housing. Therefore, determining the competing land uses in terms of being more economically viable and accessible plays a large role in the land available for human settlements and the dilemma of utilising land within the urban edge. Land available outside the urban edge is often more appealing due to the lower land cost and available land size (Provincial Department of Housing, 2004:18; Trusler, 2009:29). This option however worsens urban sprawl and results to heavy reliance on public transport and bulk infrastructure connection

to be made available. Lack of employment opportunities and additional provision of facilities needed, increases cost of developments further (Provincial Department of Housing, 2004:18).

The National Department of Housing (2004:5) confirmed that the lack of innovative planning principals, sustaining dedicated officials, acquiring affordable land and the capacity to align departmental funding effectively is threatening local governments' ability to facilitate the development and establishment of sustainable housing environments. Shortages in municipal abilities constantly revert back to the provision of housing projects located on land that is on the urban periphery which is cheaper, but has weak integration prospectus (National Department of Human Settlements, 2010:45) making it necessary to identify creative ways to exclude land that is not suitable for development and focusing on land that is suitable while considering strategies that can deal with the growing population densities within cities (Provincial Department of Housing, 2004:58).

Any location that is considered for human settlements will need to adhere to development guidelines. The property's connection to the economic opportunities of the city, access to major transportation routes as well as public transport and availability of engineering services to the site will influence the favourability for the site. In cases where such drivers are not available the cost of provision will be borne by the developing agent to ensure that no human settlement is developed in isolation without proper access to the city network and necessary opportunities.

5.3 Conclusion

Parkin *et al.*, (2003:22) states that sustainable development is not a "policy fashion" that will disappear, it is a change that will affect the entire society, and as such it is the companies, organisations and people that understand the implications thereof best that are able to see the opportunities presented by this major change. In most countries this change has already presented opportunities to be formalised within their policy and legislative frameworks, in South Africa this change has only just began and will increase once it is supported by policy frameworks. According to Dernbach, (2003: 248) relatively little progress have been made towards sustainable development over the last decade due to policy and legislative framework flaws. He suggests that the reason for this failure to make more progress is due to the failure of the international community to translate plans and principals into specific actions for specific spheres to be incorporated within national guidelines. It is essential to strengthen this bond and influence between international and national policies to adapt to new realities and implementation of such policies enabling the achievement of more progress (Agenda 21, 1992:4).

This chapter considers the policies, legislation, action plans and frameworks that deal with housing provision to identify to what extent these policies and legislation considers sustainable development based on the drivers thereof as included within the three spheres of sustainable development; economic integration, social dynamics and environmental planning. From this chapter it can be concluded that the drivers of sustainable development as discussed in Chapter 2 are included in policy and legislation for the provision of housing but that currently different policies exist to address different drivers, resulting in a fragmented approach.

The review of both international and nation policies informed the conclusions that national policies are guided by international perspectives. It can be concluded that the links between the spheres of sustainable development are noticeable within policies and do consider their influence on housing provision and development of human settlements.

Berkovics, (2010:10) makes the specific conclusion of the importance of diversity on decision making levels. It is unfortunately common that gaps arise between the introductions of legislation guidelines, new policy measures and procedures as well as their application when different levels of decision-making is in effect (National Department of Housing, 2004:5; Trusler, 2009:9). The uneven application and inadequate enforcement of policy directives in provinces and regions have resulted in a negative impact on housing delivery and that remedial measures are now needed (Trusler, 2009:21). With the inclusion of all three spheres in the consideration of sustainable development it calls for an integrated solution towards policy creation to ensure that they are addressed effectively thus concluding that an innovative approach is needed. The sustainable development of human settlements should recognise that combating inequality, creating an inclusive and sustained economic growth, eradicating poverty in all forms and fostering social inclusion are all linked and needs to be addressed interdependently (Kutesa, 2015:4). Implementation of an integrated policy framework is needed that can guide sustainable development of human settlements and their integration while recognising that it is complex, but still possible with the cooperation of the relevant governing agencies and their coordination among different departments.

To change the stereotypical mind-set of people when considering of housing provision within SA it is concluded that the introduction of measures within policy and legislation is needed such as the inclusion of design and planning professionals at the concept stages of housing delivery. These measures can contain design guidelines and regulations in order to achieve socially, economically and environmental efficient and sustainable settlements that are dignified and supportive to residents (Trusler, 2009:47). Measures can complement the built quality that is regulated by the National Home Builders Registration Council (NHBRC). In addition, regulation on township layout design can be included in frameworks to address the pursuit of a compact

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urban form with higher densities that consists of mixture of uses combined with integrated transport planning with the focus on reducing travelling distances, responsive and diverse environmental elements. Despite the well-intended planning and design measures that are already in effect in SA through the BNG framework, the inefficiencies and economic inequalities are still evident (Trusler, 2009:40).

It is clearly seen that the country's progress towards achieving the Millennium Development Goals up to 2015 have been greatly uneven (Killian *et al.*, 2005:19; Kutesa, 2015:5) and the outcomes of the BNG comprehensive plan flawed (Trusler, 2009:73). The dedication in the provision of human settlements that are integrated and sustainable cannot be overlooked as it has provided success in alleviating some of the housing backlog. The National Department of Human Settlements (2010:39) specifies that the vision of housing in SA policy is based on principles of viability, integration, sustainability, equality and good governance. Worldwide there are several different policies and laws that are providing guidance within each of the sustainable development spheres and all brought together to formulate a sustainable development framework is possible.

The following chapter will provide a practical approach towards the planning of integrated human settlements from a sustainable development perspective. The methodology will be examined as to provide a clear understanding into the methods used to gather data on sustainable development of integrated human settlements.

Chapter 6: Empirical investigation: Practical implementation of sustainable development objectives in integrated human settlement projects

6.1 Point of departure

The need exists to respond proactively and positively to the processes of housing developments that are currently being planned (Trusler, 2009:49) with the goal of stabilising and integrating these new human settlements with existing structures and systems. To accomplish this, the study attempts to emphasise that the practical feasibility of planning and delivering housing should be supported by the objectives of sustainable development.

A primary aim of the study, based on the research questions set out in Chapter 1, was to identify whether integrated human settlement planning considers the objectives of sustainable development. By considering if the drivers of sustainable development underlying the three developments spheres are included during planning and implementation stages when providing housing and creating communities.

The objectives of this study were listed in section 1.4 of Chapter 1. The first three objectives: the concept of sustainable development, integrated human settlements and legislative and policy approaches were dealt with in the preceding sections. Conducting research on a specific subject is the best way to develop an understanding of that particular subject of interest (Gratton & Jones, 2010:6). Objectives relating to the practical implementation and current approaches to development will be dealt with as part of the practical research conducted and described in this chapter.

As part of the preceding sections, sustainable development objectives were highlighted that have over the decades become supportive of the implementation of each of the development drivers discussed in the literature review in Chapter 2.

To achieve the mentioned primary aim, the study employed a document analysis (qualitative method) and an expert analysis (quantitative method) as part of a mixed methods approach.

This chapter is divided into three main sections. Firstly, it discusses the research design that was employed in the study with focus on data collection and analysis. This includes an explanation of the study population, the sampling techniques, data collection methods and analysing procedures.

Secondly, a total of four case studies were discussed that were purposefully selected as they are focused on integrated human settlement development, two international case studies and two national case studies. The aim was to identify how the case studies approached integrated human settlements to address issues that occurred in housing projects, did they achieve the aims of the project as envisioned and what they suggest could be improved for future developments to ensure more sustainable developments. Thirdly, questionnaires were sent to purposefully selected experts and professionals with expertise on planning integrated human settlements in South Africa, to identify objectives that should be considered and are important to improve integrated human settlement development going forward.

These suggestions that were forthcoming from the case studies and questionnaires were incorporated into the sustainable development objectives list in the following chapter in an attempt to provide a comprehensive sustainable integration checklist that can guide the developers and planners of integrated human settlements to consider these objectives during planning and implementation phase but also presents an opportunity for governing agencies to produce a comprehensive policy framework that considers the full range of objectives. Utilising the checklist will also provide an opportunity to document procedures that were followed to implement objectives, resulting in transparent processes and stakeholder feedback mechanism.

6.2 Methodology

Cohen *et al.*, (2000:3) explained that research is concerned with understanding the world, which is informed by our view of the world and the purpose of understanding it. In general, research is a process of steps to collect and analyse information to increase our understanding (Creswell, 2011:3; Gratton & Jones, 2010:2) Research is defined by Gratton and Jones (2010:4), as a systematic process of advancement and discovery of knowledge.

Methodology describes a variety of approaches that can be used for research purposes to gather data that is used for interpretation, prediction or explanation for a study (Cohen *et al.*, 2000:44). Methods specifically describe procedures and techniques used to gather data. Methodology describes and analyse methods and techniques to understand the process itself rather than the product.

The research design, according to Gratton and Jones (2010:92) is the blueprint that guides the data collection process; however, no single blueprint exists for planning research. Cohen *et al.*, (2000:73) explained that the research design is based on the notion of “fitness for purpose”, meaning that the purpose of the study will determine the design and methodology and guide the

procedures needed to collect and analyse relevant data that would best answer the research questions (Cohen *et al.*, 2000:73; Creswell, 2011:20).

This study thus employed an inductive qualitative ethnographic approach to data collection as part of the research design.

6.2.1 Research design: Inductive qualitative ethnographic approach

Creswell (2011:16) is of the opinion that although literature can justify the need to study a specific research question, it does not provide direction for the research question which can only be learned from the participant in the study by interpretation and analysing data that will assist in developing a theory or model that attempts to provide an explanation of the research question, this is referred to as inductive research (Gratton & Jones, 2010:22). Qualitative research according to Sukamolson, (2007:9) is to understand a certain phenomenon where the issues that are being studied are complex and requires an in-depth examination of circumstance or meaning of events (Sukamolson, 2007:10) that captures qualities that cannot be quantifiable such as experiences and concepts that are associated with interpretive approaches (Gratton and Jones, 2010:22).

Qualitative research refers to research comprising of non-numerical data, encompassing a range of methods inclusive of case studies, interviews and ethnographic research (Sukamolson, 2007:5; Gratton & Jones, 2010:22). This form of research is interactive with evolving decisions as the researcher interacts with the researched (Sukamolson, 2007:7), accommodating a variety of viewpoints, perspectives, beliefs, judgment and opinions (Sukamolson, 2007:17) allowing the researcher to learn more through exploration (Creswell, 2011:16). This study examined documents from a variety of sources related to four case studies. This allowed for a better understanding of the phenomenon that shaped each of the case studies and how it can provide important guidelines for the implementation of integrated settlements.

Ethnographic research refers to an in-depth study of a particular group or situation (Cohen *et al.*, 2000:73; Creswell, 2011:461), committed to catch the creativity, diversity, uniqueness of social interactions over time to better understand regularities and patterns within such groups and situations (Cohen *et al.*, 2000:139; Creswell, 2011:21). It allows the examination of individuals within the setting where they live and work to develop a view of how they interact, drawing on a variety of sources for information (Creswell, 2011:21). Ethnography is employed when the study aims to provide understanding of larger society issues (Creswell, 2011:462).

Ethnographic research is summarised in Table 6 as follow:

Table 6: Summary of ethnographic research

Ethnographic research	
Purpose	• Portrayal of subject events. • Subjective, reporting of multiple perspectives. • Understanding, explanation and description of situations.
Focus	• View and perception of participants. • Issues as they emerge over time.
Key Theme	• Subjective. • Authenticity and honesty. • Non-generalizable. • Multiple perspectives. • Exploration of specific context. • Emergent issues.
Characteristic	• Context specific. • Emergent and formative. • Responding to emergent features. • Allows room for judgment and multiple perspectives. • Wide data base gathering over time. • Time consuming to process data.

Source: Cohen *et al.*, (2000:78)

Many scientific researchers have abandoned the choice to choose between qualitative and quantitative methodological approaches and are rather preferring to use a combination, allowing the use of the most valuable features of each (Cohen *et al.*, 2000:45; Creswell, 2011:19; Gratton and Jones, 2010:25). The primary approach of research will still favour one or the other but when the researcher considers the methods to be used to collect data it can be useful to make use of a combination of qualitative and quantitative methods. This study made primarily used of a qualitative ethnographic approached as it examined a society context based on the uniqueness of each situation and the patterns that were observed as captured in the case studies.

Developing a central phenomenon is a useful advantage of qualitative research as it represents a key concept or idea that relates to the primary research question (Creswell, 2011:16) around which the data collection methods are informed and guided. The central phenomenon of the study related to the sustainable development objectives suggested too guide integrated human settlement planning. Even though this study followed a qualitative ethnographic methodology approach as it made use of documented research and case studies it also made use of a

structured questionnaire. The questionnaire, as a quantitative research (Gratton & Jones, 2010:26) method of data collection was used secondary to the case studies to further collect data on important sustainable development objectives.

Research documents as sourced in this section that are used to explain the research methodology and design were also selected based on relevance to best answer or explain certain methods. A combination of sources was selected to comprehensively cover all methods used. Research methods for sport studies by Gratton and Jones (2010) were used in this research as it focuses on social science and management approaches (Gratton & Jones, 2010:2) with similarities in research designs to that what is used in this study. The book provides clear guidelines when using an inductive qualitative ethnographic research design, as utilised in this study, in order to successfully execute data collection and analysis needed to address the research question. The relevance of this source is argued based on the fact that it describes methods conducted in social sciences that deals with people; sports teams, athletes and the like that closely relates to this study were experts and professionals in the field of planning sustainable integrated human settlements were used to enable the researcher to considers participants/athletes opinions, views or perspectives and learn from them which allows the researcher to develop a theory or explanation for the research question. Research methods for studies in sport science has seen significant growth and stimulation as academic interest has increased over the years (Gratton & Jones, 2010: xii) and therefor provides a valuable source to be used that contains vast knowledge and research that have yet to be undertaken specifically for sustainable human settlement development. Based on this fact this study referred to the techniques researched by Gratton and Jones.

6.2.2 Research population and sample

The research population refers to a group or category of individuals that have corresponding characteristics (Creswell, 2011:16). The population of the research within this study refers to a diversity of experts and professionals within the field of development and planning integrated human settlements, both in the private and public sector.

Factors such as time, expense and accessibility often prevent researchers from gaining the required information from the intended population and it is then needed to collect data from a smaller group representing the knowledge of the total population. The smaller group is referred to as a sample (Cohen *et al.*, 2000:92), which is a subset or subgroup of the target population that is used for study generalising about the population (Creswell, 2011:142; Gratton & Jones, 2010:100).

Quality of research is defined by the appropriateness and suitability of the sampling strategy that is adopted (Cohen *et al.*, 2000:92). Purposeful sampling was used in this study as the case study sites and individuals participating in the study were intentionally selected to illustrate a particular situation, or due to their involvement and understanding of the central phenomenon (Creswell, 2011:206; Gratton & Jones, 2010:106). Patton, (1990:169) as cited by Creswell, (2011:206) suggests that the participants in a purposeful sampling is chosen based on the fact that they are “information rich”.

Selection of participants in the empirical investigation is based on the following criteria:

- Participants have to be South African citizens.
- Participants that have studied town and regional planning.
- Participants employed in a town and regional planning positions.
- Participants employed in public or private sector focused on human settlement development/ land use planning.
- Participants with experience and expertise in current South African circumstance in human settlement development planning.

The smallest sample size that can be used needs to accurately represent the population that is targeted (Cohen *et al.*, 2000:93) by ensuring that a state of saturation is reached, where further data collection will not provide any different or new information than that which has already been collected (Gratton & Jones, 2010:153). This study had a sample size of twenty professional urban planners with expertise both within the public and private sector.

6.3 Data Collection

Evidence provides answers to the research and helps to understand and make conclusions regarding the research questions understanding (Creswell, 2011:9). Data collection refers to gathering information by selecting methods that will provide the answers by either asking people questions, observing behaviours or examining situations. This study made use of document and questionnaire analysis to collect data in an attempt to provide answers on the research questions. The following section will give an overview of the methods that were used within this study.

6.3.1 Documented research

Documents are a valuable source of information that is used in qualitative research (Creswell, 2011:223). Documents are private or public records. The researcher can use documents to obtain information regarding a project site or participant. These sources can help provide information relating to the central phenomenon by providing a practical experience or account of situations.

Documents can be public or private, public documents refer to newspaper articles, official memos and reports, archived material in libraries or records that are contained in the public domain and freely obtained, where private documents can be personal journals, letters or diary entries. Email comments and web site data can illustrate a combination of both public and private documents and has in Creswell's (2011:223) opinion become a growing data source for qualitative researchers.

Documents are a good source for text data, that is independently produced in the words of the participants who have given thoughtful attention to what is written, and the information is ready to be analysed. A downside is that sources can be incomplete or difficult to obtain (Creswell, 2011:223).

Case studies represent a form of documented research that describes activities of a group by means of an in-depth exploration of the actual bounded (specific place or physical boundary) "case" (Creswell, 2011:465). The design of a case study provides a holistic understanding of a set of aspects and how they relate to a situation or group (Gratton & Jones, 2010:97).

A case study is a specific instance or subject that is being described that enables the reader to clearly understand the instance or subject by presenting examples of real people within real situations (Cohen *et al.*, 2000:181) rather than presenting the reader with abstract theories or statistics. The appeal of case studies within qualitative research is that it establishes cause and effect as the case study observes effects within a real context and recognises the cause.

Case studies examine human system and therefore necessitate more in-depth investigation (Cohen *et al.*, 2000:181) based on extensive data collection (Creswell, 2011:481). The context of each case study is dynamic and unique as it presents a chronological narrative of events with the analysis of the case study helping to understand events and how they relate to the broader study.

Case study research is summarised in Table 7 as follow:

Table 7: Summary of case study research

Case study research	
Purpose	• To portray, interpret and analyse the uniqueness of real situations through accessible accounts. • To catch the situation and complexity of behaviour. • To contribute to intervention and action. • To present and represent reality – give a sense of being there.
Focus	• Local and individual situations. • Unique instances. • A single case. • Bounded phenomena and systems.
Key Theme	• Individuality and uniqueness. • In-depth analyses and portrayal. • Subjective, analytical, descriptive, understanding, specific situation. • Sincerity, particular and complexity.
Characteristic	• In-depth, detailed data from wide range of data sources. • Non-interventionist. • Participant and non-participant observations. • Holistic treatment of phenomena. • What can be learned from the particular case study?

Source: Cohen *et al.*, (2000:79)

This study identified four case studies that relates to integrated human settlements and their approach to implementation. Each case study relates to a particular situation and portrays “what it is like” to be part of that situation or experience (Cohen *et al.*, 2000:182). The case studies of Ireland and America’s integrated housing approaches were selected based on their detailed account of the issues that were faced within their housing delivery strategies and communities and why an integrated housing approach was used to address these issues. Chapter 4 of this study discussed the South African history of housing provision and why the approach was changed to consider integrated human settlements that are more sustainable. The two national case studies of City of Johannesburg Metropolitan Municipality and Nelson Mandela Bay Metropolitan Municipality was selected to give an account of how the approach was implemented in SA within the newly created integrated human settlement developments and identifies similarities with the international case studies. The case studies overall aimed to identify sustainable development objectives that are currently contained and considered within the

approach to integrated human settlement planning. These objectives were added to the objectives that were identified during the literature of the study.

6.3.2 Expert analysis

A widely used instrument is the questionnaire when collecting information (Cohen *et al.*, 2000:246). A questionnaire is a standardised set of questions aimed to gain information on a subject (Gratton & Jones, 2010:115). Questionnaires are useful in that they enable comparisons and can generate frequencies of responses that can be easier to analyse statistically (Cohen *et al.*, 2000:247). Questionnaires used in this study were sent to South African participants as determined by the participant criteria indicated above and questions contained there within relates to South African circumstances. Conclusions and recommendations made in this research referred to the planning of sustainable integrated human settlements in South Africa.

This study made use of a structured questionnaire with a mixture of closed-ended questions that enabled pattern observation and specific comparisons to be made (Cohen *et al.*, 2000:248), as well as an open-ended question that allowed the respondent to give an opinion.

Dichotomous questions were used to compel respondents to “come off the fence” on issues (Cohen *et al.*, 2000:250). This was paired with the Likert rating scale questions (Cohen *et al.*, 2000:253) indicating the extent to which respondents agreed or disagreed with the statement (Gratton & Jones, 2010:121), made in the dichotomous questions, making it a useful way of tapping perceptions and attitudes towards the statement. The list of sustainable development objectives as identified by the literature study and documentary analysis of the case studies was included in the questionnaire to test whether the objectives that were included is considered a priority and important by experts and professions within the field of development and planning integrated human settlements. This was followed by an open-ended question that allowed for the respondent to make a comment or addition with regards to the sustainable development objective list. The purpose of this was to gather data in regard to the central phenomenon. The questionnaire was structured to require little time to complete on the part of the respondents (Li, 2006:83).

6.4 Data analysis

Analysing and interpreting data refers to making conclusions by summarising the results in tables and figures to provide the answers on the research question. It can also reflect descriptions and themes as forthcoming from a report discussion (Creswell, 2011:18; Gratton & Jones, 2010:35).

Other methods of analysing data can be to make reference to literature and interpret the data in view of the research that was undertaken showing that the findings may contradict or support the literature (Creswell, 2011:258).

Creswell (2011:258) is of the opinion that qualitative researchers can never keep their personal views separate from their interpretations and personal reflections regarding the meaning of the data during the analysis thereof. The advantage is that interpretations can be based on insight, hunches or intuition as most qualitative researchers are usually individuals who are in a good position to remark and reflect on the meaning of the data based on personal experience. Analysing qualitative data is a continual process that allows for interpretations emerging from data (Gratton & Jones, 2010:184).

Content and documentary analysis are a flexible method that was utilised in this research during the case study analysis to understand why integrated human settlements were the answer to the issues identified in each situation and what sustainable development objectives were guiding the planning and implementation as well as how the approach was adapted to fit certain context. The questionnaires were analysed by using a statistical approach to capture the data in tables and graphs that made it easier to make conclusion with regards to the participant's view and opinions about integrated human settlements, their sustainability and the policies that guides them.

The empirical research undertaken in this study was conducted according to the ethics guidelines of the NWU. The participants were assured of their anonymity as well as that the information gathered from the questionnaires would be presented without reference to the participant's identity. It was emphasised that the participation is voluntary and would not include remuneration.

6.5 Empirical investigation: Case study documentation analysis on integrated human settlements

The international case studies were selected as they are representatives of situations where an integrated approach to housing planning was followed as a solution to address housing provision and segregation.

- The case study of Ireland examined the issues that arise from religion segregation and the approach that was followed to attempt to rectify the problems. It gave an overview of the practical considerations and their outcomes.
- The case study of America examined the issues that arise from racial and economic segregation and the approach that was followed to attempt to rectify the problems. It gave an overview of the practical considerations and their outcomes.

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The national case studies were selected as they are representatives of situations where an integrated approach to housing planning was followed as a solution to the housing backlogs that currently exist in South Africa. It further gave a clear understanding of the practical implementation and the realities that are being faced with regards to segregation.

- The case study of City of Johannesburg Municipality examined the spatial issues that resulted from the apartheid planning legacy based on race segregation and how that further resulted in income segregation. The case study considered integrated human settlements as an approach used to eradicate informal settlements and addressing the housing backlog.
- The case study of Nelson Mandela Bay Municipality identified the current approaches and considerations for the implementation and planning of sustainable integrated human settlements that resulted from implementation issues and opportunities that were identified within the City of Johannesburg case study.

It is mentioned in the literature review if sustainable development can be deconstructed to consider each of the individual drivers that supports the sustainable development sphere, it can be considered that achieving a level of sustainability for each driver is possible, if the drivers can then be dissected to objectives it can be dealt with individually based on its applicability to the human settlement. From each of the case studies sustainable development objectives were identified guided by the development drivers that were discussed in the literature review. Figure 10 below depicts a flow chart of the deconstruction from the three spheres of sustainable development towards identifying sustainable development objectives.

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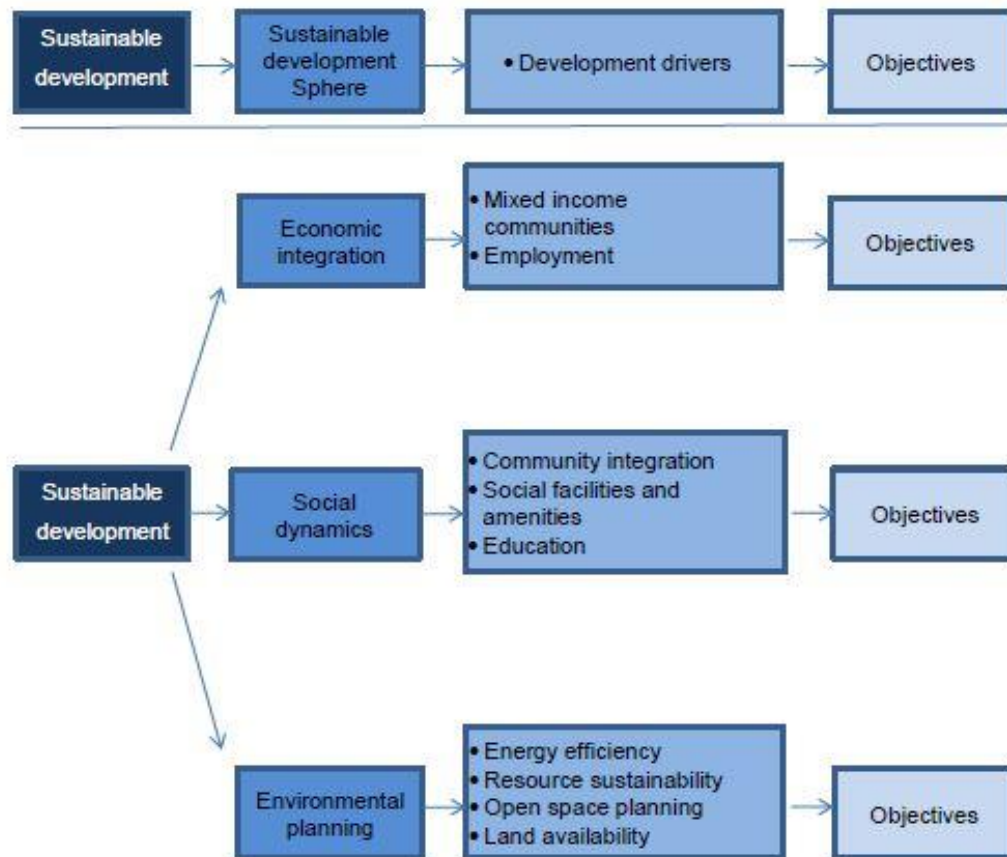


Figure 10: Sustainable development four tier flow chart

Source: Own construction (2018)

6.5.1 Case study 1 - A Shared Future: Improving relations in Northern Ireland

In 1969 the Troubles broke out in Northern Ireland, a violent 30-year conflict, sectarian violence forced a Catholic – Protestant divide. The two groups were physically separated from each other. Living in segregated communities, separated by the incongruously named peace-line a wall between Catholic and Protestant housing estates (BBC NI. 2014:1). Intimidation and interface violence were a growing problem that increased after the paramilitary ceasefires (Murtagh & McDaid, 2000:4).

The results of segregation were that services and facilities became “trapped” in a territory, while the provision of dual facilities to serve different ethno-religious spatial catchments became insufficient as land available for safe neutral buffer zones where not always possible (Murtagh & McDaid, 2000:5). The deepening patterns of segregation within residential areas had become an obvious manifestation of the mutual mistrust and social distance that needed to be rectified (Murtagh & McDaid, 2000:1). Even though there was a legacy of 30-years of continued political

uncertainty and violence it did not constrict housing development or the move towards shared societies (Darby and Knox, 2004:18).

Darby and Knox, (2004:17) stated that: “fear cements the status quo”. They explained that the problem in Ireland was that fear of reprisal stopped many people of interacting with others of different beliefs based on intimidation and terrorism by neighbours. The passive sense of fear, direct violence and danger destroyed the sense of community and many chose to retreat into silence (Murtagh & McDaid, 2000:5; McVerry, 2008:18). Darby and Knox, (2004:4) maintained that “People’s lives must change significantly if they are to feel the sense of safety/security necessary to enable them to engage with each other”.

Different approaches were examined to provide housing and communities without the dual approach to delivery and managing tensions. One potential approach that was examined offered permanent creation of separate communities that would share little or no values, live in separate ways, always in tension and suspicion of each other. This was referred to as “benign apartheid” in the hopes of managing conflict by separating the two communities with equal footing, but many agreed that apartheid was never benign in South Africa and would have result in same when approached in Ireland (Darby and Knox, 2004:16).

It was necessary to attempt to deconstruct the community perception of Northern Ireland society to move away from the perception that poor community relations only refer to the relation between Catholic and Protestant communities. It is these relations between these two communities that have resulted in further inter-community divisions that also needed to be addressed (Darby & Knox, 2004:13).

During the initial implementation many believed that shared/ integrated communities is a middle-class concept based on people having the resources to choose to live in this way Darby and Knox (2004:4). It was suggested that even though a move towards integration is encourage, that consideration should be given to those who choose single identify areas, and this can be incorporated within the bigger design of integration by creating overlapping realities and realising that the aim is to enhance integration and reduce segregation, while accepting that the latter will always be present (Darby and Knox, 2004:17). This represented an uncomplicated approach that was met with approval and tolerance.

Integrated societies are possible according to McVerry (2008:23), but the cost of failure would be more social unrest, anti-social behaviour and drug related crimes on a scale that have not been seen before. If integrate societies are to be a reality they would need to be approached with caution, but that it was the solution needed (McVerry, 2008:23). Darby and Knox (2004:16) stated

that a move towards integration needed to be promoted: “otherwise we stand still, entrenched in existing division and sectarianism”.

The majority of residents agreed with the vision for Northern Ireland, enabled by addressing the exiting pattern of segregation and division by focusing on creating shared communities and a pluralist society (Darby and Knox, 2004:3).

6.5.1.1 An integrated approach

According to the Ireland Housing Executive (2011:41) if Ireland wants to meet the housing needs in all its forms, progress must be made towards integrated housing by developing models to guide the approach. To help solve the issues faced in Northern Ireland a new approach was needed that considered all the issues and not just those related to sectarianism. A Shared Future provided a strategy framework to help guide the development of integrated communities to become a reality. A dual approach was adopted to facilitate the development of integrated communities by providing neutral shared spaces, accessible places of employment and public transportation options to ease integrated areas and promote a sustainable approach while recognising the desire of some residents to live separate in single cluster areas (Murtagh & McDaid, 2000:3). This approach was one that tackled economic inequalities through the provision of mixed-use housing and mixed tenure developments (Mccrudden, 2018).

Even though the specific concern and understandable emphasis was on community background and religious Catholic - Protestant divide, the approach went beyond this to include a focus on persons of different sexual orientation, race and ethnic minority groups (Darby & Knox, 2004:13) promoting equality of opportunities, interdependence and ensuring equitably distribution of resources (Ireland Housing Executive, 2007: 25). Promoting integrated communities where people have the right to choose their house and be left in peace there (Murtagh & McDaid, 2000:3).

Division itself is unsustainable and results in inefficient resource allocation according to the Community Relation Unit (CRU, 2006:5).

The Good Friday Agreement signed in 1998 pledged to encourage and facilitate integrated housing and education as an essential part of the process of reconciliation (BBC NI. 2014:1). This included the provision of opportunities for shared and stable communities by building strong positive relationships between residents of different backgrounds (Ireland Housing Executive, 2007: 11)

Addressing the following became the point of departure for all guiding documents in achieving integration and tolerance (Darby and Knox, 2004:4):

- Reduce conflict and tension at interface areas.
- Eliminate racism and sectarianism by eliminating the fear of intimidation in living and working areas.
- Provide better support to the development of shared and integrated communities where people are encouraged to work, live, learn and play together.

It is also true that for some people this was aspirational rather than something that could be achieved. The starting focus was however on stabilising and managing the worst consequences of division between the two religious divisions and from there promote rapid progress to achieve more shared and integrated societies (Darby & Knox, 2004:3).

6.5.1.2 Considerations: Practical solutions

- Growing up for many young people in disadvantaged areas resulted in educational underperformance and eventually reduced prospects of employment. In turn their resources in providing their children with better educational opportunities and advantages decreased, leaving the vicious cycle to spiral down with each generation (McVerry, 2008:19). So even though education was considered an important structure in society, as educational achievements is a determinant of one's future prospects, housing was still the most fundamental structure as it influenced education and other structures. Therefore, children and the youth were targeted as the custodians of the future (Darby & Knox, 2004:6). It was suggested that mixed schooling and integrated education systems would have a significant impact on relations between the two divides (Darby & Knox, 2004:7) as it was seen as a way of breaking the barriers down between the two religions by having children grow up in an environment that is uncorrupted and tolerant (BBC NI. 2014:1).
- Mixed tenure housing was implemented along with support systems that were required for the new build housing to be sustained in the long term (Murtagh & McDaid, 2000:2). According to Downes (2013:2) the report, Independent Commission on the Future of Housing in Northern Ireland, addressed housing across the mix of tenure providing necessary support for social cohesion. In addition, the requirement under Section V of the Planning and Development Act 2000 provided support for integrated housing to be developed in all new estates by having all developers allocate 20% of the residential output to meeting the needs of the local authority's housing waiting list by providing affordable and social housing (McVerry, 2008:19).

- The Shared Neighbourhood Program provides grants to community organisations within existing communities to encourage the celebration of diversity and bring residents together from all backgrounds who live there (Dawnes, 2013:2). The grants enabled “neutral” social events and facilities that would bring residents together.
- The state government took a cross-departmental approach towards service delivery with the explicit to improve “sharing” the responsibility (Darby & Knox, 2004:3) and ensuring a co-ordinated and effective response to delivery (Darby & Knox, 2004:9). To do this the state became more proactive and took up the responsibility for developing integrated communities and the necessary service delivery (Darby and Knox, 2004:21). Partnerships with the private sector were further encouraged.
- Meeting the challenge required the state had to alter existing policies relating to planning and housing provision. It also required a method to counter the negative aspects by having the state and churches act together (McVerry, 2008:18). Darby and Knox, (2004:6) pointed out that for many of Ireland’s religious segregation problems, the churches were the key to change. Churches are acknowledged as leadership groups in communities as the strength of the churches are at local level where influence and intervention were most needed. This enabled the State to interact with those who were energetic, active and committed to building their communities (McVerry, 2008:23).

6.5.1.3 Outcome

Darby and Knox, (2004:13) warned that with the initial attempts an emphasis on specific community background and religion obscured the voice of other groups that existed, not only minority groups of culture, race, language or religion but also the old, the young and disabled that are found across all groups. Therefore, moving away from segregation cannot only be focused on integrating the communities that are segregated, but also be focussed on all other groups to be more integrated.

A comment was made by McVerry (2008:23) that if Ireland wishes to improve on building sustainable communities, those who are responsible for policies relating to housing need to be prepared to really listen and enter into discussion with the communities and not half-hearted dialogues to impose preconceived planning approaches. The housing policies must reflect the willingness to invest resources in the ideas voiced by the communities. This will result in

integrated communities being created where the community that lives there is supportive of the integration.

It was specifically emphasised by Darby and Knox, (2004:18) that “people are scared to discuss issues of sectarianism “; but to create an open and free community, that fear needed to be addressed. It was resolved that to remove the fear of intimidation based on sectarianism and related hate crimes, a clearly accepted definition thereof was needed and would be equally and strongly enforced by the law (Darby and Knox, 2004:18) with the view that sectarianism is not an option and therefore not to be tolerated. This would enable environments where all residents are conscious of sectarianism and willing to act to reduce its affects. The state recognised that at the heart of the government, an integrated and coordinated approach was needed to improve relations between communities and effectively address sectarianism (Darby & Knox, 2004:44).

Darby and Knox, (2004:18) emphasised an outcome of dependence and mutual respect between the different communities and identities, stating that “there is more that unites us than divides us”. A Shared Future, the policy document that guides integration in Northern Ireland have the specific aim of promoting respect, encourage and celebrate the different faiths, cultures and traditions by eliminating racism and sectarianism to enable people to work and live without the fear or intimidation (Darby and Knox, 2004:21). This approach prioritised local community involvement as the aims of the policy could not be reached without the cooperation of the community as it is their deeper understanding of different cultures, values and lifestyles that build mutual respect, understanding and tolerance (Murtagh & McDaid, 2000:4). Chief executive Paddy McIntyre further made the statement that “trust and safety will ultimately dictate the pace of change” (Ireland Housing Executive, 2007: 17; Ireland Housing Executive, 2011:41) in achieving a move towards a genuinely pluralist society that respects and promotes diversity (Darby and Knox, 2004:17) where Northern Ireland’s diversity of traditions are seen as an asset (Darby and Knox, 2004:18).

6.5.1.4 Objectives

It was clear from the examination of this case study that religious segregation started a domino effect, causing several other issues within Ireland dividing the residents. The division led to separate communities and the communities never interacting. The tension and fear between the religious groups further spilled over and manifested in racial and cultural division leading to a further divide within the communities with mutual mistrust and social distance. Rectifying segregation that occurs to this extent was challenging and did not happen overnight. Implementation of the integrated approach to provide housing allowed an opportunity for people from diverse backgrounds to live side by side in peace. Residents were given a choice and the

approach showed respect to the needs of the residents and their preferences even if the residents choose single identity areas that could be planned for within bigger integrated communities. Implementation over time made the transition easier as it allowed residents to become used to the idea and ease the tensions and suspicion between the different groups. It also became clear that integration enforced by policy can only be successful with the support of the community and that many people were in favour of eradicating the segregation by not tolerating sectarianism or racism in any form. Integration methods in Ireland were strongly focused on the social dynamic sphere and to a lesser extent economic integration sphere even though it still played a significant role in the implementation success of providing housing for all residents in Ireland.

The examination of the case study identified several key objectives that were the focus of the integrated approach. These objectives led to an improved community acceptance of difference within the community of integrated housing. The objectives are listed in Table 8 below.

Table 8: Ireland: Sustainable integrated housing development objectives

Case study guiding objectives
• Encourage tolerance, trust, communication and respect for different faiths, traditions and cultures (Darby and Knox, 2004:19).
• Eliminating racism and sectarianism to enable people to work and live without the fear or intimidation (Darby and Knox, 2004:21).
• Improved and integrated schooling to increase tolerance and respect for diversity, prospect of employment, opportunities and advantages (McVerry, 2008:19).
• Tackle economic inequalities through provision of mixed tenure housing (McCrudden, 2018).
• Promote equality of opportunities and ensuring equitably distribution of resources (Ireland Housing Executive, 2007: 25).

Source: Own construction (2018)

6.5.2 Case study 2 - USA HOPE VI: Mixing it up

In the United State of America (USA) public housing was labelled as severely distressed (Popkin *et al.*, 2004:8). It was everything the label implied, dilapidated, poor construction with neglect from management with little to no-maintenance and rampant vandalism, faced with problems of inadequate services, sanitation, schools and extreme economic and racial segregation (Popkin *et al.*, 2004:7).

In most large American cities, the white and black neighbourhoods were separated (Clark, 1991: 1). According to Popkin *et al.* (2004:5) the levels of economic segregation were closely linked to

racial segregation with discriminatory practices leading to public housing being developed in poor minority neighbourhoods. Separation of residential areas increased economic differences between the racial groups, racial composition of areas, the nature of urban structures and the housing affordability in those areas (Clark, 1991: 1). Residential land across cities were linked to ethnicity and race, privileging middle and high income “whites” over low income “non-whites” for better located housing. In many cities it meant the reproducing of settlement patterns with little exceptions where public housing for African Americans and Hispanics were located in the “Black Belt”. The neighbourhoods in which these public housing projects were located had high rates of unemployment, school dropouts and faced with social ills, few services and even fewer employment opportunities (Popkin *et al.*, 2004:7).

Economic spatial segregation was reinforced in America by strategies providing public housing to low income (non-white) residents to only rent and financing for middle income (white) residents to purchase housing in the market. The reason was that the majority of housing in the private market sector bought by middle income residents was situated in the surrounding suburbs and public housing situated in the central cities thereby effectively separating residential areas under the perception of income level rather than race even though they were closely associated (Smith, 2001:5). Segregated areas were associated with low economic performance as the non-white enclaves where physically separated from job opportunities, faced high commuting cost and lack of information of new employment opportunities (Boustan, 2011:330).

In the 1960s residents in Chicago filed a class action lawsuit claiming that the Chicago Housing Authority (CHA) was discriminating with their processes of site selection and tenant assignments. The lawsuit became a landmark case, *Gautreaux vs. Chicago Housing Authority (1969)*, which was decided in favour of the residents and mandating that public housing need to be more integrated in future developments (Smith, 2001:10).

A new attempt was needed to address the mistakes in development of public housing to undo the social isolation of the low-income non-white residents (Smith, 2001:3) by de-concentrating the intense poverty pockets by which these neighbourhoods were characterised (Tracy, 2008:26; Boustan, 2011:331). In 1992 a dramatic turnaround was made within the policy of public housing in America with the implementation of the HOPE VI (Housing Opportunities for People Everywhere) program to achieve more income integrated communities and as a result also racial integration (Popkin *et al.*, 2004:1; Tracy, 2008:26).

The HOPE VI provided grants to reconstruct housing projects that were labelled as distressed. The tenants residing in these projects received assistance to relocate by receiving subsidies to cover their rent in private market units while public housing projects were demolished and

reconstructed into mixed income complexes. In theory the aim was that original tenants would move back after the reconstruction and be able to enjoy the range of economic and social programmes designed to help ease their transition (Tracy, 2008:26).

This program faced several problems. In 1940 America's President Roosevelt stood at a public housing project in Atlanta called Techwood, one of the first public housing projects in America at the time and said: "Within a very short period of time people who never before could get a decent roof over their head, will live here in reasonable comfort and healthy, worthwhile surrounding". Even with this historic significance, in 1996 the Techwood project was demolished under HOPE VI and replaced with only 300 public housing units instead of the 1100 units that were demolished, leaving many original tenants without a home (Tracy, 2008:26).

The first HOPE VI grant was implemented at Cabrini Green in 1994, 3600 units within mid and high-rise buildings ended up a few years later combatting drug deals, high vacancy rates and gun violence, becoming an example, according to Smith (2001:12) of everything wrong with public housing. Many lessons were learned for implementation on other mixed income housing developments. An improved and comprehensive approach was needed to address the existing problems within public housing developments (Popkin *et al.*, 2004:1). An interest in New Urbanism by developers of housing introduced a mix of income, tenure and land uses approach that has in Smith's (2001:5) opinion became the model for the transformation of public housing that provided affordable and decent housing for low income residents (Popkin *et al.*, 2004:7) and led to the revision of HOPE VI.

6.5.2.1 An integrated approach

Boustan (2011:318) stated that understanding why residential segregation takes place is important if the segregation is leading to negative economic and social consequences. Of further importance is to understand why residents choose to self-segregate and live in single identity areas (Boustan, 2011:323). The integration approach needed to address these issues.

National policy supported and encouraged the intentional mixing of incomes and race. The basis therefore was that the quality of life of the residents will be improved along with the economic viability of multi-family developments, especially former public housing developments (Smith, 2001:3). Poverty levels and existing segregation of communities are factors that were affecting the levels of integration (Dawnes, 2013:1), but the provision of mixed income housing was expected to break the poverty cycle by connecting the usually low income tenants of public housing with the middle class and their work ethic/values as well as their labour force connections (Smith, 2001:5) and thereby de-concentrating poverty (Popkin *et al.*, 2004:14).

The objective was the reduction of lower income residents being isolated in communities within specific geographical areas and rather to promote an increase of diversity and spatially de-concentration of the poor (Tracy, 2008:27). Rather than having public housing focused in the central city cluster or periphery areas they were intended to be scatter throughout the city, to connect these residents with the opportunities that were found in the business districts far removed from the inner cities.

According to Smith (2001:3) the intention was that mixing public housing and market rate housing units would result in the promotion of social and economic interaction of different racial groups and different income residents within the community and provide lower income residents with better opportunities. However, the reality was that there was little empirical evidence that mixing would actually occur (Smith, 2001:2).

Smith (2001:4) stated that if transformation in the USA was really intended to not repeat past mistakes, then the planning process of housing needed to address the difficult issues of class, race, income and right to housing head on.

The new HOPE VI program focused on more than just rebuilding housing and giving residents the chance to work their way out of public housing and poverty (Smith, 2001:6) but also promoted self-sufficiency of residents by improvements to supportive services (Popkin et al., 2004:1). The objectives of the program were based on:

- Building sustainable communities.
- Improving the living environment.
- Improve the surrounding neighbourhoods.
- Decrease the concentration of very low-income residents.

Supportive services to communities were imperative to sustain the community social relationship. The changing nature of neighbourhood towards more integrated communities changed the demographic found within schools to be more racially and economically diverse (Eberhart & Barnes, 2014:3). The school's success was influenced by the neighbourhood (Eberhart & Barnes, 2014:2). In areas where less integration was seen with predominantly low-income residents the schools experienced more student dropouts and lower passing rates as well as lower earnings that (Boustan, 2011:319) suggested was the effect of segregation on economic outcomes. In areas where public housing developments were implemented schools attracted families and students from outside communities as well which resulted in schools gaining higher levels of commitments from the families and students. Higher commitment increased attendance and passing rates of the students which increased economic outcome (Eberhart & Barnes, 2014:3).

Supportive services also referred to the inclusion of local consumer goods, making provision for retail shops and restaurants. Boustan (2011:323) emphasised that such goods must be a shared preference by all residents as different racial groups have significantly different tastes of the type of amenities within their neighbourhood.

Smith (2001:6) stated that it was equally important to change the way in which public housing was viewed by the residents. This was addressed by HOPE VI by making significant improvements to physical infrastructure and community institutions in the neighbourhoods where public housing was located. It included the provision of parks, police stations, libraries, commercial facilities, restaurants and supermarkets (Popkin *et al.*, 2004:42). In some projects, HOPE VI led efforts to develop medical centres and job training centres.

The new approach further called for the reduction of public housing unit numbers per development and the replacement of high-rise development with lower density mixed income communities (Smith, 2001:17; Popkin *et al.*, 2004:14) resulting in less public housing per new development, but more developments of smaller scale scattered through the city. Since lower income residents were mostly associated with non-white residents, Clark (1991: 17) believed that failure to recognise the realities that accompany racial groups and their choices will lead to patterns of segregation being reinforced. This was addressed by implementing the smaller scale developments throughout the city that was affordable to low-income residents but also respected the racial preferences that full integration into a different neighbourhood is not always preferable. Smith (2001:18) also suggested inclusionary zoning for neighbourhoods where scale developments were not possible. This would require portions of the area to be set aside for affordable housing and linkage programmes.

6.5.2.2 Considerations: Practical solutions

- Replacing the existing high density, high rise 'projects' with mixed income, lower density communities (Smith, 2001:2) with the intention that mixing together public housing units and market rate housing units would have social interaction between middle income and low-income families as result. In turn this also reduced social isolation of the poor and provided them with better opportunities.
- While there is not a fixed ratio for the mixing of housing tenure/types and income groups, the surrounding neighbourhood's income mix were used to help determine the ratio of public low-income units and market rate units. It was assumed that in areas characterised by predominantly low-income housing, a higher portion of market rate units are needed to attract market rate tenants which were associated with middle income residents (Smith,

2001:7). A maximum of 40% public housing units was assumed per development project (Smith, 2001:17). This approach was implemented under the inclusionary zoning law tying the construction of affordable public housing units to market rate housing, specifying that new developments should contain a certain percentage of public housing to ensure that private developers assist in the provision of public housing and not use the development of public housing projects to construct market rate units for their own profit. The inclusionary zoning provided incentives to developers by allowing higher densities in developments (Boustan, 2011:333).

- The private sector developers aligned their outcomes with government to ensure that risk on large scale developments are minimised and returns maximised (Smith, 2001:4).
- Good design of the development, adequate amenities and increased job opportunities were insisted on in mixed income developments to make them more desirable and strengthening social safety (Smith, 2001:7; Tracy, 2008:28).
- All non-viable developments were replaced with new units and the tenants received housing vouchers to be used in the private sector to relocate (Smith, 2001:3; Popkin *et al.*, 2004:1) to higher quality housing in neighbourhoods that are safer (Popkin *et al.*, 2004:5).
- A new urbanism approach was followed to restore essential functions and sustainable communities by implementing a mix of housing types, size and prices to attract a mix of people; creating parks and shops that are accessible by footpaths (Popkin *et al.*, 2004:16).
- Ensuring houses face the streets and open spaces to promote “defensible spaces” that will allow the residents greater control over the areas outside their homes (Popkin *et al.*, 2004:16).
- Encouraging attendance at schools through making bicycling and walking to school more sustainable and safer for the students of the community by implementing a travel plan through Safe Routes to School (SRTS) as many students were from low income families that could not afford private vehicles or bus fares (Georgia SRTS resource centre, 2015:5).

6.5.2.3 Outcome

The approach to housing developments have evolved considerably over the past decades as implementation shaped many programmes, regulations and practises (Popkin *et al.*, 2004:2). From the Cabrini Green development failure many lessons were learned in the USA for the development of integrated or mixed housing that guided the revision of the HOPE VI program (Smith, 2001:15-16):

- Process matters: Resident of public housing cannot be excluded from important decision making.
- Race (still) matters: The *Gautreaux vs. Chicago Housing Authority (1969)* lawsuit resulted in fair tenant assessment and caution in producing integrated public housing.
- Location matters: HOPE VI sites should be in economically viable locations.
- Scale matters: Maximising the public housing units that are built while maintaining a viable mixed income development.
- Outcome matters (more): While process is important to residents to assure they are part of making the decisions, the outcomes are equally important in the long run. Compromising between parties and their expectations to ensure a favourable outcome.

The biggest challenge was to get the right mix of high, middle and low-income households in a development while balancing the needs of market interest developers and public housing residents (Smith, 2001:2). Smith (2001:5) stated that caution is needed in development to assure that social goals are not subordinate to fiscal goals, but rather on equal footing. Furthermore, the mix of different incomes was also cautious for the mix of different races that was moved into the new integrated developments and that all are supported by social facilities and services.

Boustan (2011:319) warns that planners and developers that take on the responsibility of integrated housing projects and aiming to increase their sustainability must be cautious to “treat the cause and not the symptoms”. It is explained that even though improving public transportation is an overall city development goal it should not be used as a solution to segregation of low-income non-white neighbourhoods.

A further significant risk explained by Vale in 1996 (cited by Smith, 2001:9) is that funding for large scale developments are often not available at once, resulting in a phased approach to development. The risk is then that funding for later phases might not become available. This can be detrimental if later phases included commercial development or rental housing that are presumed crucial for the success of the transformation of public housing developments. The

suggestion resulted in smaller scale public housing developments that are scatter throughout the city that could be more feasible.

6.5.2.4 Objectives

This case study identified racial and income segregation as the main reason for the tension and division found within residential communities in the USA. Racial segregation instigated social ills but was in many cases hidden away under the pretences of income segregation. Areas where public housing was located were characterised with school dropouts, crime and unemployment. The location of these housing projects further led to high transportation cost as they were located far from employment opportunities with little integration and access to the city network. The HOPE VI program allowed residents of public housing to enjoy a more integrated living environment. The program mixed public housing and market rate housing units in order to promote a mixed housing development that increased social interaction and economic integration. The new approach further emphasised the provision of public services and facilities that would support social interaction and increase tolerance between the diverse residents within these mixed neighbourhood. The focus was specifically on the needs of the residents and providing a range of shops, restaurants and amenities that suited the preference of each racial and income group since it differed. The approach in America was focused on de-concentrating poverty to help low income residents get connected to better employment opportunities through interaction with higher income residents. Focusing the approach on the economic integration sphere, the housing provision subsequently also achieved racial integration and enhanced social dynamics. Environmental planning was considered to the extent of identifying locations where housing is better integrated and would provide better opportunities for the residents that would occupy the new public housing developments.

The examination of the case study identified several key objectives that were the focus of the integrated approach. These objectives contributed to the implementation of integrated housing that addresses the issues of poverty concentration and racial segregation that were faced in America. These objectives as listed in Table 9 below:

Table 9: America: Sustainable integrated housing development objectives

Case study guiding objectives
Promote diversity and spatially de-concentration of the poor (Tracy, 2008:27).
Increased employment opportunities and exposure to higher income residents' ethic/values and labour force network. (Smith, 2001:5).
Location must be selected in economic viable areas with opportunities for the residents. (Smith, 2001:15-16).
Inclusive decision making (Smith, 2001:15-16):
Supportive services to communities to sustain community social relationship (Popkin <i>et al.</i> , 2004:1).
Promoted self-sufficiency of residents (Popkin <i>et al.</i> , 2004:1).
Improvements to physical infrastructure, community institutions and commercial facilities to increase social interaction (Popkin <i>et al.</i> , 2004:42).
Creating parks that are accessible by footpaths (Popkin <i>et al.</i> , 2004:16).

Source: Own construction (2018)

6.5.3 Case study 3 - City of Johannesburg: Breaking New Ground

In the late 1980s, the twilight years of Apartheid, residents of South Africa were spatially segregated under urban apartheid regulations forcing black South African residents to live separate (Maylam, 1995:22) giving the government control over the black lower-class within the spatial dimension (Maylam, 1995:19) to achieve their political goals. The divide based on race separated residential, social and employment areas with black and white South Africans not having equal access to opportunities and disregarded culture, life style and struggles of residents (Maylam, 1995:21). The effects were most visibly seen in urban areas such as the cities where polarities of poverty and wealth existed (Maylam, 1995:20) This segregation resulted in many black residents living in informal settlements (Mvambo, 2014) that were characterised by small zinc sheet structures (Anon, 2007).

Mvambo (2014) wrote that residents of informal settlements in South Africa lived in poverty that further bred jealousy as residents resented those who were seen as even a little better off than anyone else. The racial divide was clearly noticeable and further fuelled division between different classes and income groups.

The Apartheid era's spatial planning scars are still carried by the City of Johannesburg (CoJ), like most of the South African cities. These cities were specifically designed to separate the white and black residents of SA that has further resulted in the separation of the wealthy and the poor, with

the latter in many instances faced with living in the informal settlements on the city's periphery with little prospects of better economic opportunities (Mashaba, 2018). Traditional approaches to housing provision relocated poor residents in the metropolitan areas to the city's periphery, far removed from amenities and employment opportunities (Anon, 2007). The landscape created by apartheid was unsustainable in terms of social services, bulk infrastructure provision and access to economic opportunities (GDHS, 2012:58).

Executive major of CoJ at present, Herman Mashaba explained in an article on News24 the importance to understand and emphasise the mismatch that exists between housing and employment spatially that resulted from the apartheid planning as this understanding revealed that in reality up to 70% of residents in informal settlements that are located on the periphery needs to spend their meagre salary on transportation to work. In addition to the monetary cost of travelling, time cost must also be considered that could have been better spend with family (Mashaba, 2018).

After 1994 the South African government sought solutions that would attempt the eradication of informal settlements and for all residents to be placed in formal housing (Mvambo, 2014). According to the Gauteng Department of Human Settlements (GDHS, 2012:57), the Reconstruction and Development Program (RDP) led to many residents being housed in formal monotone structures, however issues and challenges were soon apparent that questioned the long-term viability, social responsibility and sustainability of these RDP type settlements.

The concerning issue was that the RDP housing were characterised by the "one-size-fits –all" approach where the subsidy scheme did not offer diversity that considered different lifestyles, affordability and needs of residents through a variety of housing typologies (GDHS, 2012:58), and that it further did not make provision for the integration of environmental responsibilities (GDHS, 2012:57).

It was clear that action was needed (Mashaba, 2018). A solution was presented as an inclusionary, mixed used and integrated human settlement (PDG, 2011:1) approach to housing delivery within City of Johannesburg Metropolitan Municipality. This approach was seen as the supposed answer to ending racial divides and class prejudice (Mvambo, 2014). An approach that would bring together the South African population that would have never imagined living together in formal human settlements (Anon, 2007).

In 2005 the first integrated human settlement project in CoJ had residents occupying their new homes (Anon, 2007). The project was well located and provided a mixture of land uses enabling a socially and income diverse project (GDHS, 2012:57).

6.5.3.1 An integrated approach

Integrated housing developments in CoJ was intended to be a solution that would foster integration across diverse backgrounds and class while providing better living environments than that what was experienced by those who still lived in informal settlements (Mvambo, 2014). CoJ spokesperson at the time Nthathise Modingoane said that: “the government hoped that mixed developments would promote reciprocal relationship between residents”, allowing different people of race and income to interact without fear (Anon, 2007). According to The Gauteng Local Government and Housing (GLGH, 2011:3) integrated human settlements encouraged social cohesion, inclusion of a broader society that brings independence and identity to the area with enhanced services, connectivity and infrastructure.

In order to achieve this, the government was required to work in a holistic manner, closely integrated to be able to provide the needed support for each government sphere (GDHS, 2012:51) to be able to effectively contribute to the delivery of housing. This also included the administration of the necessary funding mechanisms such as the Urban Settlement Development Grant (USDG) or formally known as the Municipal Infrastructure Grant (MIG) that allows government investment and subsidies for the provision of infrastructure within human settlements (GDHS, 2012:51) as well as the housing subsidies for different income groups.

This approach was two pronged; diversifying the townships that were situated on the periphery to be inclusive of a variety of amenities, services and employment opportunities, and the development of new housing units in areas that are already integrated with public transportation, employment and education (Mashaba, 2018). This initiated the movement of housing delivery towards sustainable integrated human settlements (GDHS, 2012:51).

The integrated approach made provision within the layout design of a township for different tenure housing to overlap in single neighbourhoods referred to as extensions, creating multiple housing typologies (PDG, 2011:18) and a tenure mixture of subsidised, social rental, credit linked and bonded housing (PDG, 2011:1; Mvambo, 2014). This design led to every extension being inclusive of every class and income group. Through the Breaking New Ground (BNG) policy subsidies were provided for the fully subsidised units and the partially subsidised units received assistance through the Finance Linked Individual Subsidy Program (FLISP) (PDG, 2011:4) that was offered to residents of integrated settlement to create a mix of incomes (GDHS, 2012:58).

However, the viability of the human settlement projects was dependent on getting the right mix between bonded, non-subsidised units and subsidised BNG units. According to the Gauteng Department of Human Settlements (GDHS, 2012:61), integrated mixed income settlements were

only effective up to a certain point. They suggested a minimum of 60% of bonded units were needed to achieve effectiveness of integration, mixed income and sustainable dignified settlements. The reason was that any less would result in the settlement being predominantly lower income and not be able to effectively uplift the lower income residents.

Integrated human settlements gave the residents of South Africa hope, as many residents looking for an affordable home were now able to move to these developments (Anon, 2007). The housing backlog faced in SA was still increasing and supply could not be rolled out fast enough to satisfy all the South African residents' search for a home (GDHS, 2012:61).

Even with the new integrated human settlement approach the housing backlog indicated deficiencies as the demand grew rapidly (GDHS, 2012:57). Addressing the growing demand and supply that is needed, an inclusionary draft policy was introduced in an attempt to increase the number of affordable housing that is being delivered. This policy was in addition to the existing integrated human settlement framework guiding housing provision by government and made out a small component of the overall housing approach (Mashaba, 2018). The policy allowed for affordable residential developments on well-located and sustainable land, delivered by private developers (GDHS, 2012:60).

The intensions of the Integrated Human Settlements Program extended further to creating additional opportunities for affordable housing within existing housing projects that were already located on the city's periphery by undertaking to upgrade these projects. As part of the upgrade the approach aimed to reduce the current levels of crime that were experienced, promote clean and healthy environments and increase opportunities of employment (GDHS, 2012:61).

The approach did not only provide quality housing. Integrated development further referred to intermixing of land uses with a proactive inclusion of community centres, schools and hubs for businesses (Anon, 2012). It incorporated social and institutional facilities throughout the settlement (PDG, 2011:1; GDHS, 2012:61). Within the first integrated human settlements development in CoJ provision was made for a private-public clinic, four churches, public and private schools (two primary and one secondary school) as well as transportation facilities with bus- and taxi stops (Anon, 2007). Further planning for the future amenities included more churches, crèches and clinics, park and recreational sites as well as retail and commercial sites (PDG, 2011:6).

Special consideration was made in the approach to deal with emerging and growing entrepreneurial potential and boosting new business (GDHS, 2012:71).

Importance of environmental promotion and the improvement to natural ecologies were also seen as an important contribution to the overall sustainability of the integrated settlements. This focused on the continuity of green spaces that would allow ecosystems to develop, bio diversity to increase, effective pollution filtering and natural cooling of the urban area (GLGH, 2011:3).

6.5.3.2 Considerations: Practical solution

- The housing crisis could not be addressed by the government alone and assistance from the private sector was needed (Mashaba, 2018). Positive social impacts resulted from the effective public and private partnerships entered into for the development of affordable housing (Anon, 2012) providing an opportunity to deliver dignified housing to residents by sharing the responsibility.
- Development of housing within integrated human settlements employs many unskilled and skilled workers within the construction phase resulting in skill transfer and community development that increase residents' employment opportunities (Anon, 2012).
- Human settlements were inclusive of a range of housing typologies and innovative tenure options (GDHS, 2012:51). It provided a range of financial support and subsidies to residents making housing more affordable to all income groups and provided a variety of choice.
- High income residents contributed to employment opportunities being provided (Anon, 2007) by assisting low income residents to connect with labour connections and information of employment opportunities.
- A draft policy was introduced for a more inclusionary and integrated approach to housing delivery (GDHS, 2012:51) that dictated that any new development consisting of more than 10 dwelling units or more must include 20% inclusionary housing. From the extensive public participation, the draft policy was amended to provide incentives to the developer of proportional bonuses in the development controls to increase building height and reduce parking requirements (Mashaba, 2018).
- Housing units needed to adhere to design requirement, ensuring acceptable quality (Mashaba, 2018) and also include landscaping and safe play areas for children (GLGH, 2011:3).

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- Access to movement routes, trading and business facilities and public facilities allowed greater integration from a transportation, economic and social perspective in creating functionality of these components and increasing the connectivity within the neighbourhoods (GLGH, 2011:1).
- Since most residents that moved to integrated human settlements were of a mid and lower income status, not many owned private cars. This was provided for by ensuring that the integrated human settlements had convenient public transportation stops and efficient access to different types of transportation. The movement routes were linked with trading, retail, public and community facilities as well as schools (GLGH, 2011:2).
- Creating nodes for business activities that were linked with pedestrian activity and transportation spines to increase access to business areas (GLGH, 2011:2). These areas also included community clinics to increase convenience.
- Increased integration of non-residential uses by incorporating mixed use facilities where community buildings are used for religious purposes as well and locating such adjacent to public open spaces created unique reference points within the neighbourhood that contributed to its character (GLGH, 2011:2).
- Public open space areas included pedestrian street courts, open-air spaces, parks and squares that are well defined. Increasing the use and sharing of the open space areas by associating them with community centres, crèches and churches (GLGH, 2011:2). Open space areas along pedestrian sidewalks were linked by continuous tree planting and ensuring that parks are manageable in size.
- Achieving a balance between natural and concrete areas within the built environment. (GLGH, 2011:2). The township design included natural areas such as parks that are integrated throughout the development (PDG, 2011:6) to create continuity of green spaces (GLGH, 2011:1).
- Energy saving requirements for construction and design included the use of green technologies within building materials, thermal insulation and housing fitted with solar geysers (PDG, 2011:5; GDHS, 2012:57), to reduce household energy consumption by saving up to 78%. This allowed for effective heating within housing units, as well as hot and cold-water provisions (GDHS, 2012:57).

- Residents were taught and encouraged to grow and nurture their own fruit and vegetable gardens to provide food (GDHS, 2012:57) as well as get the residents in touch with their natural environment (Anon,2007).

6.5.3.3 Outcome

It was realised that the capacity and preparedness to act at scale to achieve delivery of settlements and communities that are sustainable is imperative to resolve the housing backlog (GDHS, 2012:74). Urban development and housing provision are often faced with enormous challenges especially when located in a country's economic centre like Gauteng (Mvambo, 2014).

In addition to the spatial mismatch of CoJ, it was also faced with an extensive crisis in the delivery of housing units (Mashaba, 2018) with more individuals being added to the waiting list and more still living in informal settlements and the supply of affordable housing not catching up fast enough (GDHS, 2012:62).

The basis for suggesting inclusionary housing was that more affordable housing would then be available within high- and middle-income private developments to enable a more balanced socio-economic neighbourhood (GDHS, 2012:62). The draft inclusionary policy should provide a voluntary option for developers (Mashaba, 2018). The incentives of the policy should be such that it is more beneficial for developers to include inclusionary housing rather than choosing not to. Executive major Herman Mashaba stated that the aim of the integrated approach was to create an "inclusive city where development fosters economic and racial integration" (Mashaba, 2018).

Gauteng Department of Human Settlements (GDHS, 2012:63), is of the opinion that even though many integrated human settlements have been implemented many of them have not reached a respectable level of sustainability and should aim to be more inclusive of mixed uses and mixed incomes. The key aim is appropriate and strategic location of settlements, to move away from the inefficient use of land that fuels urban sprawl and results in car orientated cities.

A few years after the integrated human settlements approach was implemented, the first development projects are showing the effects. A reporter for the Mail & Guardian wrote that the children of the new community played freely and completely oblivious to the different income status of their parents (Anon, 2007). A resident that moved into a subsidised unit of the integrated human settlement, commented to the reporter (Anon, 2007) saying that she was happy there, "because I have water and electricity".

Problems were also faced; people who were recipients of subsidised houses within newly created integrated human settlement developments made alterations to their units and provided “back rooms” or “backyard shacks” that were then rented out for income. This caused problems of overcrowding (Mvambo, 2014). These dwellings functioned on sensitive social and economic relationships but were seen as a means to generate an income (GDHS, 2012:64).

Furthermore, the integrated human settlement approach made provision for mixed land uses and provided designated areas for business uses. This resulted in residents that moved into these developments no longer being allowed to operate business, such as selling fruit or sweets from home as they use to do while living in informal settlements (Anon,2007). The resident explained in the conversation with the reporter that she was blessed to provide a roof over her family’s head but that she could now not afford her children’s school fees due to the loss of income.

Developers experienced challenges in implementation and delivery of integrated housing as a result of infrastructure constraints, affordability of well-located and delays in the administration processes of township establishment (GDHS, 2012:51).

Overall the approach and its implementation did address the housing crisis but beyond this the approach also addressed the need in SA to unite people of all languages, incomes, race and cultures (Anon, 2007) in an area that considers their social and economic needs. Even though the approach might be flawed it could adapt to the changing circumstance and sensitive relationships between residents of the community.

6.5.3.4 Objectives

This case study identified racial spatial segregation and in addition income segregation as the issues in South Africa that led to the creation of informal settlements on the city’s periphery that experienced little prospects of better socio-economic opportunities. Due to the apartheid spatial planning legacy, cities in SA are still experiencing the effects and have many residents living in inadequate conditions. In order to address the issues that came with the spatial divide the government resolved to eradicate informal settlements and provide all South African residents with a formal house to improve their life quality. The RDP approach to housing delivery resulted in monotone structures with little consideration for the diversity of the residents that the settlements would host. The settlements did not make provision for any supporting social facilities or economic opportunities, and the financial support was based on a one-size-fits-all approach that created areas of concentrated poverty as all the residents in the area was of the same income group and received their homes through the same subsidy program that is administered under the same qualifying requirement.

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The approach to housing was revised allowing residents of different race, culture, religion and income groups to live side by side. The sustainable integrated human settlement approach allowed development of housing units that comprised of different tenure and typology drawing together different income groups regardless of race or culture, it further focused on providing social facilities to increase interaction between the residents, better access to economic opportunities as well as placing an increasing emphasis on the provision of parks and conserving resources by being more energy efficient. The housing approach in South Africa focused on improvements to the economic integration sphere in equal measure to improvements to the social dynamic sphere. Environmental planning also played a considerably increased role.

The examination of the case study identified several key objectives that were the focus of the integrated approach. These objectives contributed to the provision of integrated human settlements that were seen as the solution to address the spatial income and racial divide faced in South Africa. These objectives as listed in Table 10 below:

Table 10: CoJ: Sustainable integrated housing development objectives

Case study guiding objectives
Support emerging and growing entrepreneurial potential and boosting new business (GDHS, 2012:71).
Multiple housing typologies (PDG, 2011:18) and a tenure mixture with access to a range of subsidy programmes (PDG, 2011:1; Mvambo, 2014).
Ending racial divides and class prejudice (Mvambo, 2014).
Encourage social cohesion, independence and identity (GLGH, 2011:3).
Environmental promotion and the improvement to natural ecologies (GLGH, 2011:3).
Continuity of green spaces to allow ecosystems development and increasing biodiversity (GLGH, 2011:3).
Effective pollution filtering (GLGH, 2011:3).
Reduce household energy consumption (GDHS, 2012:57).

Source: Own construction (2018)

6.5.4 Case study 4 - Nelson Mandela Bay: Sustainable Communities

Housing according to Li (2006:74) is an important indicator of the social well-being and standard of living of people. South Africa is characterised by high poverty levels that are linked to unemployment levels and lack of social stability and further coupled with limited access to basic services and highly destabilised housing environments. The political history in South Africa has divided the cities resulting in continuous urban sprawl with isolated townships characterised by

standardized box-like houses in rows on grid layouts with little to none service delivery or facilities as well as high environmental and transportation costs (Koen & Theron, 2010:1). This spatial divide has been increased by the way South Africa has attempted to deliver housing rather than dismantled. The formal townships that are created are still located far from city centres that reinforce the system whereby poor people live outside the city centres that their labour is sustaining (Bradlow *et al.*, 2011: 267).

Improved human settlements have not been delivered regularly at a meaningful scale to address the backlog (Bradlow *et al.*, 2011: 270). The demand surpassed the supply of affordable housing and necessitated high volume developments, delivered rapidly and at a low cost (Koen & Theron, 2010:4). However, low income affordable housing cannot be isolated on the large land parcels available outside the city (Li, 2006:2).

The problem with many of the initial human settlements were that an increased cost of top structure, infrastructure and land played a major role in the affordability of the end-user products (Koen & Theron, 2010:3) which had serious implications on the sustainability of the projects. Many human settlements projects that were developed to cater for low income residents by providing affordable housing has also, over time, seen price increases to an extent where it too is out of reach for those the houses were intended for (Koen & Theron, 2010:6). Bradlow *et al.* (2011: 269) further argues that relocation to the provided formal settlements on the peripheries has had many economic and social problems that became clear with the RDP housing as well as first implementation attempts of integrated human settlements.

In South African the need for development projects of housing delivery, access to sanitation and water resulted in a lot of knowledge and policies as to what is needed and much agreement on how to implement what needed to be done, and yet so little to show for it (Bradlow *et al.*, 2011: 267). The first implementation of human settlements in City of Johannesburg based within this knowledge has to some extent been the answer but implementation once again lacked fulfilment of the intended goals. According to Local Department of Human Settlements (2017:1) progress has been made towards giving better direction and stabilising new human settlements projects with an emphasis on thoughtful implementation.

Minister Sisulu commented in the Eastern Cape uMhlali community newsletter that the provincial government was not prepared for the rate of urbanisation and that they are dealing with a problem that has been there for years where they are merely playing catch up and might be playing catch up for a long time (HDA, 2017:1). Executive director of human settlements Ms Gqiba explained that it was through benchmarking with the City of Johannesburg Metro, which has already partnered with the private sector for housing delivery (Local Department of Human Settlements,

2017:6) that Nelson Mandela Bay Municipality (NMBM) realised alone they could not achieve the highly demanding responsibility of delivering the scale needed. The responsibility for housing construction became the function of the Housing Development Agency (HDA) to ensure efficient and speed to the creation of human settlements (Local Department of Human Settlements, 2017:3). This allowed the implementation to focus on design criteria and sustainability measures.

According to Koen & Theron (2010:5) it is due to the world-wide environmental crises that the focuses of housing delivery shifted intently on creating environmentally sustainable buildings that are using water and energy more efficiently. Since 2011 South Africa specifically has experienced shortages in energy, and the traditional methods of electrical generation has become insufficient. The responsibility of creating buildings that are self-sufficient and decreases the energy consumption needs needed to become part of the implementation deliverables.

Bradlow *et al.* (2011: 268) are of the opinion that one of the failures that were noted with the original housing delivery programmes was that a people centred approach with real people participation remained a hope rather than a reality and that there existed very little interaction between the resident that would live in the housing units and those who designed them. Effective design required intensive research and to listen to the contributions and views of the public to determine inter-alia affordability and preference of the end uses (Koen & Theron, 2010:4; Local Department of Human Settlements, 2017:2). Unfortunately, “people centred” Bradlow *et al.* (2011: 268) argued is just not the way that the SA government does business or deal with land tenure, housing or service delivery. This is mainly due to the government’s singular focus of formal housing delivery in most instances by profit driven developers where the ideal of “people centred” gets ignored or conveniently lost within the large-scale deliveries. NMBM ensured that an extensive public participation program be launched to increase the success of their developments (Local Department of Human Settlements, 2017:2).

NMBM became fully committed to facilitating and promoting integrated human settlement provision to close the gap that was created by the apartheid past. The metro is portrayed by statistics as the most segregated in SA. The city is experiencing an income divide as well as structural divide between historically disadvantaged and advantaged groups. Councillor Bhanga was of the opinion that the first priority needed to be to change the spatial legacy of apartheid by ensuring that lower income earners can access housing closer to where they work by utilising social housing as a way to increase urban renewal and integration (Local Department of Human Settlements, 2017:1).

In addition, part of the focused approach NMBM turned their attention on revitalisation and integration on a smaller scale within the metro centre (Koen & Theron, 2010:3) to return life to the

areas of the inner city by creating mixed use buildings (Local Department of Human Settlements, 2017:1) and affordable housing pockets in closer proximity.

6.5.4.1 An integrated approach

Implementation of the integrated human settlements program within townships has been implemented within other metropolitan areas in South Africa; however, the approach needed to be adaptable to different circumstances while addressing the housing backlog successfully. NMBM implemented higher volumes of housing delivery with increased densities that was aimed at fast-tracking delivery and associated process. This however brought challenges of dealing with higher volumes within construction and administration systems that required faster turnaround times (Koen & Theron, 2010:2). To ensure successful and effective management of the planning phase the time needed to evaluate planning applications needed to be reduced (Local Department of Human Settlements, 2017:1).

NMBM adapted policy strategies seeking to integrated and mobilise resources for efficient and effective utilisation in order to address the challenges concerning health, housing, poverty, development and economic growth (Li, 2006:23). The main focus was placed on several objectives (Li, 2006:25):

- Social justice – providing basic rights to communities such as access to services, equal opportunities and live in crime free safe environments.
- Sustainable environments – renewable energy innovations and compliance to international standards of environmental management.
- Public participation - ensure continuity in practice of good participating structures that need to be utilised effectively and ensure sustained and continues participation.
- Sustainable socio-economic development - effective utilisation of resources to enable development and growth of small enterprises.
- Improved quality of life – address the challenges of recreational and spiritual needs.

NMBM suggested a method to address the gaps in current approaches by filling the gap between the existing Spatial Development Framework planning and the detailed layout planning of integrated human settlements through the Sustainable Community Unit Planning approach (NMBM, 2007:10; Koen & Theron, 2010:3). It considers how human settlements will fit with the surrounding community network by producing area specific guidance. The Sustainable Community Planning Guide was an attempt to apply the principals of a sustainable community within the planning process (NMBM, 2007:8) to achieve more sustainable and integrated towns that have a better quality of life and urban environment. It formed the basis of intermediate

planning. The planning guide introduced a participative process in order to address the issues that faced initial integrated planning processes in SA such as (NMBM, 2007:8):

- Standardised houses in low cost areas characterised by grid layouts.
- Environmental and transportation cost associated with urban sprawl.
- Vast informal settlements on periphery with widespread poverty and elevated unemployment.

The town planning layout, which is the start of the process, needed to be designed to include high density units while considering the resident's privacy and still provides a sense of dignity. The aim was that people would feel like they belong in the places that were created (Koen & Theron, 2010:10). The layout further focused on economy of design to minimize service cost (Koen & Theron, 2010:10) but still upscale the delivery of services to cover bigger areas (Local Department of Human Settlements, 2016) for a variety of uses such as schools, clinics, commercial, recreational and residential for high, middle and low-income groups (Local Department of Human Settlements, 2017:5).

Design also considered areas for development in terms of walking distance. The concept of sustainable community planning was not only envisioned for new planning areas but also when revisiting the existing developments in order to increase their compliance with the concept (NMBM, 2007:10) ensuring that all residents in NMBM would have access to a full range of facilities to address their needs within 30min or 2km walking distance from where they live.

The mixture of income groups and land uses as based on the needs assessment (Local Department of Human Settlements, 2017:4) influences the layout to provide for a full mix of tenure options with a range that is flexible, has higher densities that are better integrated (Bradlow *et al.*, 2011:272). Making a range of housing subsidy programmes available to new tenants will ensure that the settlements is inclusive of mixed income groups (Local Department of Human Settlements, 2017:1). The provision of affordable houses is aimed at what is commonly referred to as the missing middle, which includes nurses, teachers and civil servants who earn a salary but not enough to buy a house (HDA, 2017:1) but needs to be located near the city centre.

Therefore, increased attention was placed on the location of the human settlements as it represented an important driver of sustainability in terms of connectivity and transportation options (Koen & Theron, 2010:6) as well as affordability of homes. Well located land for development that is privately owned has become expensive and scarce, requiring special measures to keep the housing units affordable. One such option is labour cost.

South Africa has a shortage of skilled workers within delivery of housing, leaving the pressure of the housing backlog to be delivered by unreliable and unskilled labourers. As part of the integrated human settlements program new methods were needed that made use of local labour that also provided opportunities to train and educate workers while providing the local community with the opportunity of employment (Koen & Theron, 2010:6; Local Department of Human Settlements, 2016). The challenge was to ensure that contractors on site are under strict instructions to adhere to performance standards, quality and producing as many units as possible (Local Department of Human Settlements, 2016). This led to the inclusion of supervised management from senior members.

The increase in training opportunities and job creation influenced the overall community investments, where macro, medium and small enterprises in the areas benefited from the workers spending their wages locally (Local Department of Human Settlements, 2016; Vallie, 2017).

In NMBM the new and comprehensive human settlement sustainable community approach to planning at an intermediate level is already in motion for housing development projects and has reached early stages of implementation (HDA, 2017:1). Social housing projects have been moved closer to the city centre and will allow residents to be closer to and gain easier access to economic opportunities that are concentrated within the city centre (HDA, 2017:2) such as convenience hubs and better transportation nodes (Vallie, 2017).

6.5.4.2 Considerations: Practical solution

- Encouraging the use of passive environmental control techniques when building houses, where the climate determines the techniques used in order to maximise efficiency and cost saving (Koen & Theron, 2010:5) such as sun-angles, natural light and ventilation. The combination of techniques used is project specific to ensure that all units implemented within the sustainable integrated approach are passively designed to conserve energy (Koen & Theron, 2010:9).
- Alternative energy methods can be implemented such as solar power water heaters, (Koen & Theron, 2010:5), gas for cooking and low energy fittings if electricity use cannot be avoided (Koen & Theron, 2010:10).
- Environmental impact of buildings is also considered and includes methods to lower such impacts such a grey water recycling, collection of rain water and sufficient disposal of black water (Koen & Theron, 2010:10).

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- Design of housing gives special attention to cost saving (Koen & Theron, 2010:6) by counteracting the rising input cost of development with higher densities that lowers the cost per unit without having to compromise on environmental quality to save costs (Koen & Theron, 2010:7). Affordability is improved by increasing unit numbers per hectare and still being able to provide open space and other facilities within the development as well as including environmental criteria in accordance with the requirements of the metro.
- Considering qualitative and economic factors in all architectural requirements when designing housing to align with end user preference, increase sustainability and affordability (Koen & Theron, 2010:7).
- Implementing a range of standardised design options that are based within quality and aesthetic principles to enable quicker turnaround time and lower cost within developments to be consistent with high volume deliveries (Koen & Theron, 2010:8).
- Increase the range of affordability of housing to allow end users to buy and rent houses in the market in accordance with their income (Koen & Theron, 2010:9).
- Include the possibility of extension of an integrated housing development in an organised matter to ensure that the particular character of a development is maintained (Koen & Theron, 2010:9).
- Provision is made for versatile spaces within design that allows the residents to use space in accordance with their needs such a spaza shop or rental room that creates an income for the end user. This provision increases affordability as well as contributes to effective densification within large developments (Koen & Theron, 2010:9).
- Creating mixed use buildings through providing residential accommodation in upper floors and shopping and business uses on ground floors (Local Department of Human Settlements, 2017:2).

6.5.4.3 Outcome

Through the sustainable community planning program implementation related guidelines became available to guide development on an intermediate level within the city (NMBM, 2007:10).

According to Koen & Theron (2010:20) it became clear that a balance needed to be found between the design densities, environmental quality, location and volume-based development on the one-side and end user affordability, sustainability, cost increases and delivery time frames on the other. This was attempted through many various implementation attempts.

Many considerations of the creation of sustainable integrated human settlements in NMBM included locality and job creation as important supporting considerations that can be dealt with as part of initial planning and implementation phases of developments. NMBM made a statement (Koen & Theron, 2010:19) that most of their residents would spend up to 25% of their income on transport. It was decided to increase the initial development cost of the housing project by purchasing expensive land that is closer to work places to support the end users and deal with affordability of housing in different ways rather than compromising on good location of developments. Location criteria were not limited to available areas where vast numbers could be provided in one area, but also focused on a number of smaller land parcels scattered throughout the city that have better accessibility and connectivity.

NMBM aimed to provide higher densities while using techniques of creating sense of place that forms part of the urban fabric (Koen & Theron, 2010:10). By providing mixed tenure and typology options creating a diverse and unique surrounding while also ensuring affordable communities with flexibility in the subsidy programmes to meet the needs of the residents (Local Department of Human Settlements, 2017:5).

Building communities that are strong and vibrant is a complex process that requires commitment from both the communities and the government (Local Department of Human Settlements, 2017:6). To achieve this relationship public participation was emphasised with focus on the users it served (Vallie, 2017). Participation that should be guided by accountable, efficient and sustainability focusses on sustainable environments, economic and social development, and improving life quality in secure environments (Li, 2006:25). Petterson (2016) reported in Infrastructure News that in the end it is the people needing decent shelter, safe living conditions and habitable clean environments that will benefit from being part of the process.

The approach further stipulated that during construction of housing units that local unskilled labour is possible and can be beneficial. In addition to creating employment for the residents during construction it provided less expensive labour costs and over a period of time the workers would have gained enough experience to become licensed contractors, this in return results in more and more labour being available to decrease construction time (Koen & Theron, 2010:19). 492 Work opportunities were created within the housing process in June 2017 alone (Local Department of

Human Settlements, 2017:4) and more than 10 000 jobs created during the rollout period of five years (Vallie, 2017).

Many pilot projects have been implemented in NMBM following the sustainable community planning approach. The aim is focused on resulting in integrated, dynamic, safe and vibrant communities within a sustainable urban development based on good community participation (NMBM, 2007:15).

6.5.4.4 Objectives

Nelson Mandela Bay Municipality is also characterised by the same South African history where low income, poor neighbourhoods are located separated and far from the city centre. NMBM however decided to improve on initial approaches within their provincial and local government based on the lessons learned from City of Johannesburg and the integrated human settlements that have been established for a few years. This enabled clear identification of the social ills and opportunities in these settlements. Based on the results the sustainable community unit planning guide was released as a tool to assist urban planners in their process when establishing integrated human settlements.

This case study identified that the key focus needs to be on the location of settlements and integrating them with the economic centres of the city. Its emphasis was placed on the design of the settlements to ensure cost are saved on infrastructure and service installation as well as the design of the housing itself to be more sustainable for the end user. Significantly more value is added to the participation of the public and having them involved on all levels of project discussions. The approach still valued the objectives as summarised in the previous case study but further refined these objectives and was more focused on environmental planning.

The examination of the NMBM case study identified additional key objectives that were the focus of the sustainable integrated approach. These objectives contributed to the provision of sustainable integrated human settlements that were seen as a refinement of the current national housing provision program in South Africa. These objectives as listed in Table 11 below:

Table 11: MNBM: Sustainable integrated housing development objectives

Case study guiding objectives
Integrated and mobilise resources for efficient and effective utilisation (Li, 2006:23).
Social justice – providing basic rights to communities such as access to services, equal opportunities and crime free, safe environments (Li, 2006:25).
Ensure continuity in practice of good public participating structures to be utilised effectively and ensure sustained and continues participation (Li, 2006:25).
Effective utilisation of resources to enable development and growth of small enterprises (Li, 2006:25).
Sustainable environments – increases use of renewable energy innovations (Li, 2006:25).
Address the challenges of recreational and spiritual needs of a community (Li, 2006:25).
Use of local labour to provide opportunities to train and educate workers as well as employment opportunities (Koen & Theron, 2010:6; Local Department of Human Settlements, 2016).
Use of passive environmental control techniques in order to maximise efficiency and cost saving (Koen & Theron, 2010:5).
Alternative energy methods to be implemented to reduce environmental impact of buildings (Koen & Theron, 2010:5).
Connectivity of spaces - access to a full range of facilities within 30min or 2km walking distance (NMBM, 2007:10).
Attention on the location of settlements in terms of connectivity and transportation (Koen & Theron, 2010:6).
Include full mix of tenure options and flexible range of housing subsidy programmes (Local Department of Human Settlements, 2017:4; Bradlow <i>et al.</i> , 2011: 272).

Source: Own construction (2018)

6.5.5 Analysis

The case studies indicated similarities in planning approaches. Development drivers as discussed in Chapter 2 of the literature review overlapped within the approaches followed in the four case studies and indicated the importance of these drivers within an integrated approach to housing delivery. Economic integration considered mixed income communities and employment as primary supportive drivers to the sustainable development sphere. These drivers were highlighted in the case studies. Integrating communities through housing provision in Northern Ireland focused on including lower income residents within the communities when addressing economic inequalities by providing mixed tenure housing options (Mccrudden, 2018). The shared future policy framework enabled the provision of more affordable homes in closer proximity of employment opportunities.

In America the HOPE VI central premise was that the poor non-working households were concentrated in single areas resulting in elevated levels of social ills. To improve this, priority was placed on the de-concentration of poverty by helping residents relocate to better neighbourhoods and creating mixed income communities (Popkin *et al.*, 2004:14). Higher income residents in those communities that were implemented successfully provided lower income residents and children with role models to encourage them to find employment and stay in school. Moving into a neighbourhood with lower crime rates reduced stress and promoted mental health which had an influence on the outcomes evaluated for adolescents as they achieved better educational outcomes and eventually resulted in employment outcomes (Popkin *et al.*, 2004:23). In some projects HOPE VI led efforts to creating job training centres (Popkin *et al.*, 2004:42).

The City of Johannesburg is faced with many challenges regarding implementation of housing developments that are integrated and affordable. These challenges were inclusive of the organisational arrangements within institutions responsible for delivery and the strategies, program goals and activities aimed at improving conditions of the poor residents of SA (GDHS, 2012:74). The BNG and Integrated human settlements program introduces mixed tenure and housing typologies that were supported by a range of subsidy programmes that can assist the poor residents to afford a formal house within an integrated environment. The integrated approach also enabled mixed land uses for business opportunities in allocated areas, although residents preferred to operate their business from their homes which was not allowed, resulting in residents losing income.

Nelson Mandela Bay municipality made strides in housing delivery and ensuring that deserving and needy residents received a house (Local Department of Human Settlements, 2017:4). Providing alternative types of housing and tenure for low income residents ensured affordability for the residents of NMBM (Li, 2006:32). Mixed use housing was implemented that allowed residential uses on top floors with business at ground floor providing employment close to home, residents were also allowed to conduct business from home on request. Local labour used in construction was indicated as method that can provide employment to the community and in turn allow investment within the local economy where wages are spent (Koen & Theron, 2010:19). Strategies for implementation primarily focused on alleviating poverty, encouraging job creation, economic growth and resource efficiency (Li, 2006:45).

The sustainable development sphere of social dynamic probably played one of the most important roles in the case studies and contributed in the success of all four the case studies with the main focus on the development drivers of community integration, facilities to increase and stimulate interaction as well as the contribution of education within a community. Public participation also played a critical role. It can be concluded that most segregation and social ills were addressed

through the implementation of the social dynamic sphere's drivers. It is important to note that throughout the case studies integration of the community focused on improving interaction and residents wanting to live in these integrated human settlements.

From the Ireland case study, it was concluded that integrated housing programmes were focused on shared communities which included strategies to contribute to transforming Northern Ireland towards an inclusive, peaceful and a pluralist society that embraces difference (Ireland Housing Executive, 2007: 17) by removing the fear that drove people to cluster with members of their own community (Darby & Knox, 2004:46). Since residents still prefer segregation to an extent, provision within design was still made for smaller pockets of housing with similar characteristics to ensure that all resident's needs are addressed while still forming part of the bigger integrated neighbourhood. Interaction was encouraged through a grant system by having neutral social events that were inclusive of all residents.

The USA case study made reference to the inclusion of a variety of social facilities and amenities to support and ease the transition within integrated communities where different race and income groups were present. Segregation was based on dividing the low and high-income groups which was a political attempt to divide the cities according to race. HOPE VI allowed the transition to a mixed community through facilitating social cohesion by providing a mix of uses that catered for all differences based on their preferences.

Since both City of Johannesburg and Nelson Mandela Bay Municipality share the South African history of the apartheid divide they also share the social ills. The history of segregation based on race led to the formation of informal settlements that are located on the periphery of all the metropolitans in SA. Both case studies emphasised the importance of integrating different race and cultures within communities and providing facilities and opportunities for residents to interact and learn more about the differences. The mushrooming of informal settlements characterised by the lack of infrastructure and planning made the housing provision difficult in SA, requiring proper planning and development of infrastructure and facilities to help build more sustainable and inclusive communities (Local Department of Human Settlements, 2017:6).

Addressing an integrated approach also needed public input to ensure success as each situation is unique and characterised by the community. Sectarianism was the cause for Ireland's division therefore attention was called to the churches as the key agents for change and to improving the relationship between the divides (Darby & Knox, 2004:35). Achieving the improvements needed to integrated communities, residents at a community level needed to be included and empowered, this can be facilitated by the churches. A call was made for a bottom up approach that saw community relations and action driven by the community for the community and not those

developing the community physical structures, proving to be more effective (Darby & Knox, 2004:34).

HOPE VI emphasised public participation, explaining that making the residents part of decision making is an important outcome. Peterson (1996) as cited by Smith (2001:18) explained that even though making people homeowners are a way of empowering them, it is also a conservative view. A progressive view of empowerment would be to focus on political influence, therefore giving residents the power to make decisions regarding their future and control over the resources needed to implement it. Having an interactive community leads to identification of social problems within the communities being more effectively addressed. Popkin *et al.* (2004:8) maintained that in reality the issue of race and social integration must be central in any discussion or programmes that will impact communities.

City of Johannesburg made reference to the importance of public participation within the integrated human settlements approach that was followed in SA, but as mentioned within the case study for NMBM it was an approach where the public participate remained a hope and did not become a reality within the current SA implementation practise (Bradlow *et al.*, 2011: 268). NMBM emphasised that for their development approach at an intermediate level public participation will be extensive (Local Department of Human Settlements, 2017:2).

The problem with housing that was implemented without the contribution or input of the community is that it led to the creation of negative stigmas around the world. Smith (2001:6) stated that the way in which public housing was viewed by the residents of the USA needed to change before the implementation of HOPE VI and related housing provision programmes would be effective, the same is necessary in SA with regards to the way people perceive RDP, BNG and other forms of government assisted housing.

The importance of public participation was discussed in the literature review in Chapter 3 even though it was not included as a development driver; it still has an important role within the success and sustainability of integrated human settlements.

Education within the first two case studies was emphasised. The youth was seen as the peacemakers in Ireland. Darby & Knox (2004:35) affirmed that “a shared future will be achieved by the youth”. Integrated education posed a solution for teaching children to be tolerant, encouraging them to have a joint voice (Darby & Knox, 2004:36) and grow up in an environment that respects differences.

At the heart of the supportive services of integration efforts that accompanied HOPE VI was the importance and awareness of a comprehensive approach to education and improved success that stems from early age child development (Eberhart & Barnes, 2014:8).

Education in the literature review did not only focus on the youth but did indicate that an educated and informed society could be able to participate actively in the formation of the communities.

In both national case studies education did not form a primary concern within the approach to integrated human settlements. It is mentioned as a facility to be included to improve integration within human settlements and facilitate social interaction, but the importance of an educated society and the influence thereof is not mentioned as a method to be considered even though the policy framework mentions that learning centres for adults need to be established and encouraged.

The environmental planning sphere of sustainable development has only in recent years become a priority within development of housing. The international case studies have to some extent made reference to some development drivers within the sphere; however, the integrated housing approach started to take form internationally long before the Vancouver declaration of 1976 was released or even the WCED Brundtland Commission report of 1987 which are still seen as the building blocks of sustainable development. However, for the national approach it is seen that the environmental sphere is playing a more prominent role as integrated development only started implementation in the 1990's and could make use of the information available for the sphere to guide development. Focus was specifically on land availability and location of development as well as the provision of natural open spaces. To a lesser, but currently increasing, extent resource sustainability and energy efficiency have been included.

The City of Johannesburg case study made reference to requirements within construction and design to save energy through the use of green technologies in building materials. This allowed the reduction of energy consumption of households by implementing thermal insulation and solar geysers (PDG, 2011:5; GDHS, 2012:57). Design of human settlements was more conscious of the influence on the environment but also how the environment can be used to reduce energy consumption. For most integrated human settlements all the available techniques could not be implemented as it increased construction cost.

The overall approach in NMBM insisted that affordability is important but would not sacrifice good design and dignity of the residents to achieve affordability. NMBM approach aimed to provide developments that can sustain themselves (Koen & Theron, 2010:11). This was done by focusing on passive design methods that could conserve energy (Koen & Theron, 2010:9) and create

buildings that are using energy and water sparingly to address the environmental crises worldwide of depleting resources (Koen & Theron, 2010:5).

According to Li (2006:25) an important part of the NMBM approach was that it complied with international standards of environmental management and strived towards renewable energy innovations within development.

A Shared Future referred to resources being distributed equitably (Ireland Housing Executive, 2007: 25) and that resource allocation is more effective to ensure resources are not wasted (CRU, 2006:5). The HOPE VI program share this view and noted that resources for development are scarce and costly which also resulted in national approaches trying to be more compact to not influence natural ecologies that are important to the sustainability of integrated settlements. CoJ and NMBM through the integrated human settlements policy promoted environmental improvements such as the implementation of green spaces that are continues and allows the increase of biodiversity and the ecosystems to develop properly. This in turn also promoted effective filtering of pollutants (GLGH, 2011:3) to produce environments that are healthy and clean (GDHS, 2012:61).

Achieving this within integrated developments HOPE VI included the creation of parks (Popkin *et al.*, 2004:42). Providing parks that are accessible by footpaths became an important part of linking green open space (Popkin *et al.*, 2004:16). The integrated human settlements policy in SA suggests that continuity of natural open spaces improves the natural cooling of the urban area (GLGH, 2011:3). This was implemented within the design of settlements through the provision of pedestrian sidewalks that are lined with green spaces and trees (GLGH, 2011:2). street design received more attention in NMBM to ensure pedestrian and cyclist are prioritised as it created more environmental areas along roads and within the layout design that increased areas for social activities can be stimulated (Koen & Theron, 2010:11). The policy does however emphasise that even though green open space does positively contribute to the sustainability of developments it needs to be manageable in size in order to guard against degradation or high maintenance costs.

Cost saving for housing developments has for many years resulted in developers using cheaper land that is situated on the city periphery. Housing developments in Ireland used locations that are close to the city centres to help reduce expenditures of the end uses. Land availability and location matters according to HOPE VI and stipulates that sites used for development should be close to economically viable areas (Smith, 2001:15-16) and not reinforce the residential divide through placing affordable homes separate from marked related units but integrated them closely on in the same location. The Gauteng Department of Human Settlement (GDHS, 2012:80) stated that well located land needs to be selected strategically in close proximity to employment and

supporting facilities and infrastructure (GDHS, 2012:51). For this reason, NMBM emphasised that through their sustainable community planning they will identify land for development in locations that are integrated with the city and rather increase the initial cost of the development but ensuring that end user cost is decreased in terms of travelling cost and time lost. Delivery of scale with completely serviced sites in NMBM has been approached in different ways, either developing a large portion of land as integrated housing or developing numerous small pockets of land for housing or even incremental upgrading of informal settlements (Bradlow *et al.*, 2011: 271).

Based on the case studies it is noted that their approach to sustainable integrated housing originates and follows primarily an approach relating to the issue that caused segregation. In Ireland the primary focus for delivery was based on providing socially integrated communities to eradicate sectarianism. In the USA it was based within economic integration to bridge the divide between the affluent and poor which was closely associated with the racial divide. Therefore, their approach focused on a socio-economic integration.

The two South African case studies had a similar approach due to apartheid that left a racial and economic divide. City of Johannesburg described the initial implementation for addressing the problems therefore focusing the initial implementations on socio-economic integration. Nelson Mandela Bay attempted the current approach and included the considerations for implementations after the lessons learned in CoJ. This case study focused on the social, economic and environmental integration importance and their combined contribution to sustainability.

It is true that each case study represented certain successes in its own right; it is however the combination from all four that paints a picture of a true sustainable development approach.

The case studies further identified objectives that were considered important towards achieving sustainable integrated human settlements. These objectives are summarised in Table 12 below according to their sphere of development:

Table 12: Summary of sustainable integration objectives: Case study documentation review

Sustainable Development Sphere	Sustainable integration objectives
Economic integration	• Tackle economic inequalities through provision of mixed tenure housing (Mccrudden, 2018). • A range of housing typologies (PDG, 2011:18) and a tenure mixture with access to a range of subsidy programmes (PDG, 2011:1; Mvambo, 2014). • Include full mix of tenure options and flexible range of housing subsidy programmes (Local Department of Human Settlements, 2017:4; Bradlow <i>et al.</i>, 2011: 272). • Promote diversity and spatially de-concentration of the poor (Tracy, 2008:27). • Increase employment opportunities and exposure to higher income residents' ethic/values and labour force network. (Smith, 2001:5). • Support emerging and growing entrepreneurial potential and boosting new business (GDHS, 2012:71). • Effective utilisation of resources to enable development and growth of small enterprises (Li, 2006:25). • Use of local labour to provide opportunities to train and educate workers while providing the local community with the opportunity of employment (Koen & Theron, 2010:6; Local Department of Human Settlements, 2016).
Social Dynamics	• Encourage tolerance, trust, communication and respect for different faiths, traditions and cultures (Darby and Knox, 2004:19). • Addressing racial divides and class prejudice (Mvambo, 2014). • Removing racism and sectarianism to enable people to work and live without the fear or intimidation (Darby and Knox, 2004:21). • Encourage social cohesion, independence and identity (GLGH, 2011:3). • Social justice – provide basic rights to communities such as access to services, equal opportunities and crime free, safe environments (Li, 2006:25) • Address the challenges of financial, recreational and spiritual needs of a community (Li, 2006:25). • Promote self-sufficiency of residents (Popkin <i>et al.</i>, 2004:1).

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	• Provide supportive services to communities to sustain community social relationship (Popkin <i>et al.</i>, 2004:1). • Improvement to physical infrastructure, community institutions and commercial facilities to increase social interaction (Popkin <i>et al.</i>, 2004:42). • Improve and integrate schooling to increase tolerance and respect for diversity, prospect of employment, opportunities and advantages (McVerry, 2008:19). • Inclusive decision making (Smith, 2001:15-16). • Ensure continuity in practice of good public participating structures to be utilised effectively and ensures sustained and continues participation (Li, 2006:25).
Environmental planning	• Implement alternative energy methods to reduce environmental impact of buildings (Koen & Theron, 2010:5). • Use of passive environmental control techniques in order to maximise efficiency and cost saving (Koen & Theron, 2010:5). • Sustainable environments – increased use of renewable energy innovations (Li, 2006:25). • Reduce household energy consumption (GDHS, 2012:57). • Promote equality of opportunities and ensuring equitably distribution of resources (Ireland Housing Executive, 2007: 25) • Environmental promotion and the improvements to natural ecologies (GLGH, 2011:3). • Effective pollution filtering (GLGH, 2011:3). • Integrate and mobilise resources for efficient and effective utilisation (Li, 2006:23). • Create parks that are accessible by footpaths (Popkin <i>et al.</i>, 2004:16). • Ensure continuity of green spaces to allow ecosystems development and increasing biodiversity (GLGH, 2011:3). • Connectivity of spaces – provide access to a full range of facilities within 30min or 2km walking distance (NMBM, 2007:10). • Select locations that are in economic viable areas with opportunities for the residents (Smith, 2001:15-16). • Attention on the location of settlements in terms of connectivity and transportation (Koen & Theron, 2010:6).

Source: Own construction (2018)

From the above summary it is noticeable that the objectives can be categorised within the key development drivers as was summarised in Table 4 of Chapter 2. Additional drivers were forthcoming through the case studies and were added to the literature drivers in order to expand the sustainable integration checklist. Figure 11 below summarises the inclusion of the drivers from the case study documentation review.

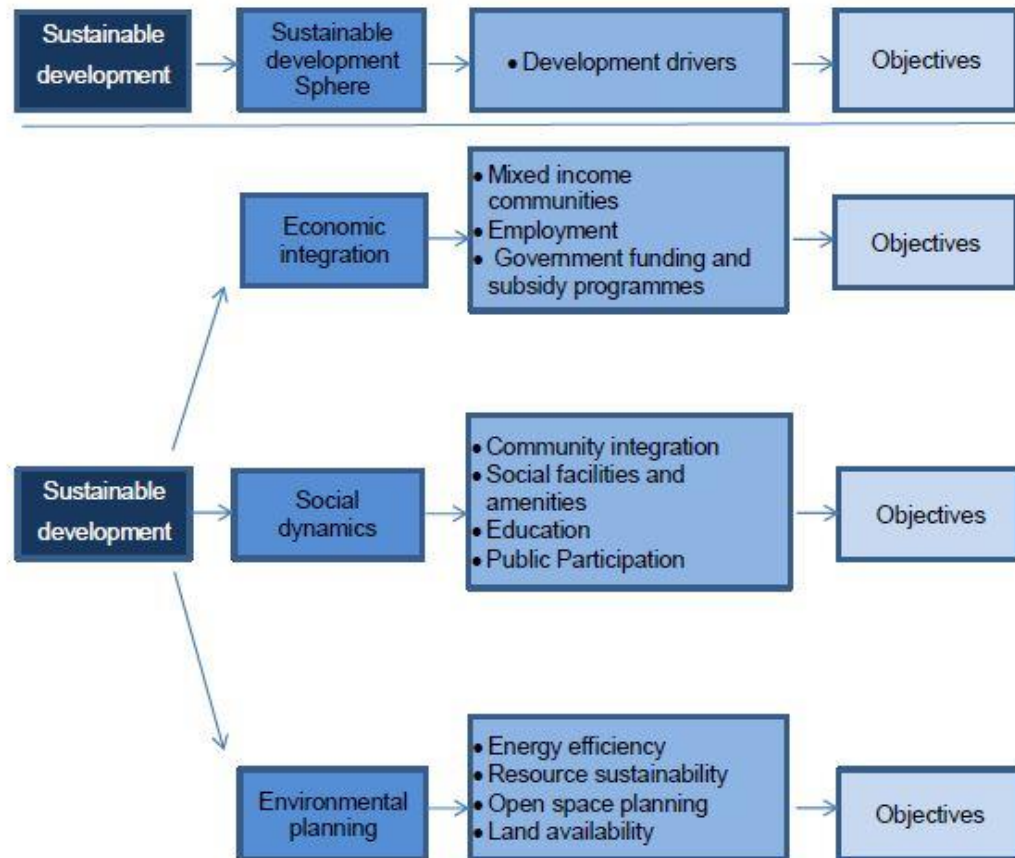


Figure 11: Sustainable development four tier flow chart – Case study documentation review

Source: Own construction (2018)

The case study analysis identified additional development drivers and objectives that were added to the sustainable integration checklist. To ensure that the checklist is applicable to the local South African context, the objectives that were identified were included within the questionnaire that was sent to South African planning experts and professionals employed within the field of integrated human settlement development to identify the importance of each objective within a local South Africa perspective. The questionnaire also presented the opportunity to add objectives that are applicable within the local context. The following section reports on the feedback received from the professional planners on the questionnaires.

6.6 Empirical investigation: Expert analysis on Integrated Human Settlements

Following the case study analysis, the sustainable integration objectives that were identified during the literature review and summarised in Table 12 after the case study documentation analysis were refined to produce a list of objectives that was included in a questionnaire and was sent to purposefully selected experts and professionals within the field of planning and developing integrated human settlements. The questionnaires allowed the further refinement of the sustainable integration checklist based on the feedback from the participants and their suggestions as well as indicating the addition of development drivers. The questionnaire also provided feedback on the first three primary research questions.

This section reports on the findings of the questionnaire. The questionnaire focused primarily on current approaches to integrated human settlements and sustainable development as well as establishing if, in the opinion of the participant, sustainable development objectives as listed in the questionnaire are considered within integrated human settlement planning and identifying any additional comments or objections they might consider important. These comments and recommendations gave insight as to what the participants regarded as important or issues identified within the current approaches.

A number of 20 participants were selected to participate; 19 questionnaires were received back for analysis. The participants selected to partake in the research were chosen based on their qualification as a professional urban planner with experience and expertise within the field of planning and development of integrated human settlements. The range of years that the participants have within the town planning practise was between 1 year and 25 years, thus ensuring a broad range expertise and opinions of the change that have been occurring over the last few years within South Africa with regards to planning of integrated human settlements and sustainability implementations. The majority of the participants indicated that they are a lot familiar with the planning of integrated human settlements. This result indicates that their feedback was based within experience and knowledge of the research subject. It also indicated that there is a need to improve and expand the knowledge of current experts within this field. No participant indicated that they are not at all familiar with the research subject as was the aim of specifically selecting participants.

Sustainable development consists of three spheres; economic integration, social dynamics and environments planning as was discussed extensively in Chapter 2 of this research. It was mentioned in the literature review that all three sustainable development spheres need to be balanced with an equal importance within development but that during implementation and construction of integrated human settlements this is sometimes not the case. Urban planners,

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developers and governing bodies compromise development drivers within these three spheres to save time and money. The participants were asked to rate each sphere separately based on its importance. Figure 12 below depicts the rating of the three spheres based on their importance according to the participants by using graphs to illustrate the rating of each sphere according to the amount of participant indicating a not important, slightly important, important or very important rating.

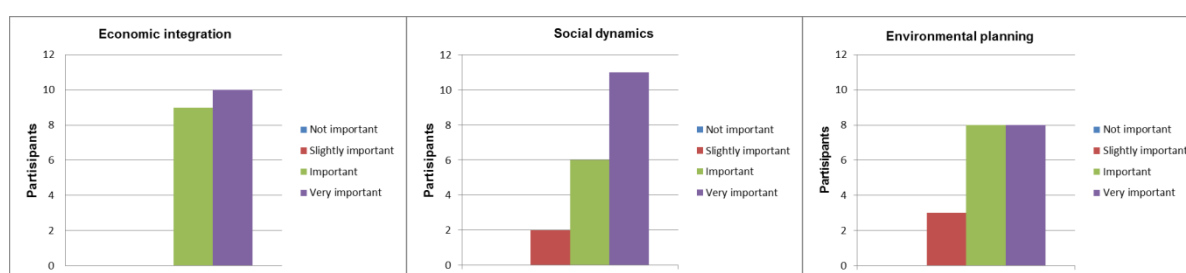


Figure 12: Ranking of importance of sustainable development spheres

Source: Own construction (2018)

Figure 12 indicates that all of participants consider economic integration to be important or very important, with majority indicating very important. Based on the overall income divide within SA between rich and poor it is easily understandable that a primary focus of urban planners would be economic integration, to integrated different income groups within human settlements in an attempt to alleviate poverty and to provide lower income residents with better employment opportunities and environments to live that would uplift the standard of life for South Africa residents.

It is also indicated by more than 85% of participant that social dynamics and environmental planning is important or very important. Urban Planners are cautious with regards to the development drivers within the social dynamic sphere due to the apartheid legacy. The urban planners that are implementing integrated human settlements are faced with the challenge of removing this legacy's divide between different races and cultures; therefore, the sphere is considered predominantly as very important at 58%. Environmental planning is depicted as equally important and very important with 42% in Figure 12 above and has been receiving increased attention from urban planners in SA following worldwide initiatives to be more considerate of the natural environments.

Participants indicated on both social dynamics (11%) and environmental planning (16%) that these spheres are only slightly important. Even though this is a minority opinion it is still needed to be considered that to some extent these two spheres are perceived as less important by some

planners in South Africa during planning and implementation of integrated human settlements. Economic integration has the perception of being a more primary focus.

Based on the second primary research question listed in Chapter 1, the participants were asked to what extent the success or failure of one of these spheres will influence the remaining two. The data analysis of the questionnaires indicated that in the opinion of 79% of the participant that the success or failure of one sphere will influence the remaining two a lot or completely, 16% indicating fairly and 0.05% indicating slightly. Resulting in all the participants agreeing there will be an influence on the remaining two spheres but that the influence's extent will vary. The majority participant agreeing the influence's extent being a lot and not necessarily completely. It is imperative for those dealing with integrated human settlements to understand these influences in order to identify the impact within the spheres before compromising on drivers to be able to limit the consequences.

Having the knowledge of integrated human settlements and the expertise within the development and planning field to implement sustainable development is only reaching the goal half way. The governing bodies need to support and guide such implementation through policies, legislation and programmes to truly achieve more sustainable developments.

Participants were asked, if in their experience in dealing with integrated human settlements and their sustainability, if the current South African policy, legislation and programmes on human settlement provision consider sustainable development and to what extent. Figure 13 and Figure 14 below depicts the participants' feedback.

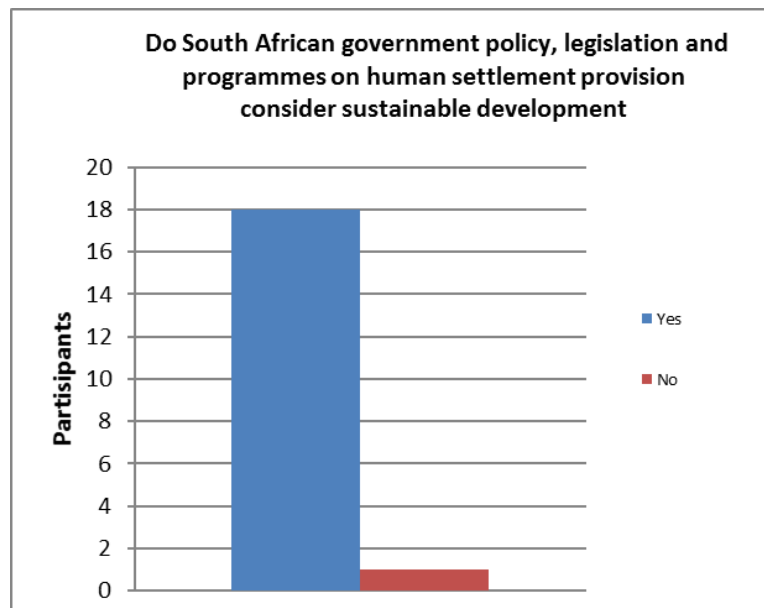


Figure 13: Sustainable development being considered in SA government policy, legislation and programmes on human settlement provisions

Source: Own construction (2018)

It became clear from the participant's feedback that in their opinion the SA government is currently considering sustainable development within their policies, legislation and programmes. As explained in the preceding section of this Chapter under data analysis, this question was specifically asked to have participants "come of the fence" on such an important topic regarding sustainable development. Two of the participants included a side note to the question indicating that even though they answered yes, they believed that sustainable development is only included in policies, legislation and programs "to a certain extent" or that it is included but that governing bodies "don't implement it". It is thus clear that sustainable development is considered, the question remaining to what extent.

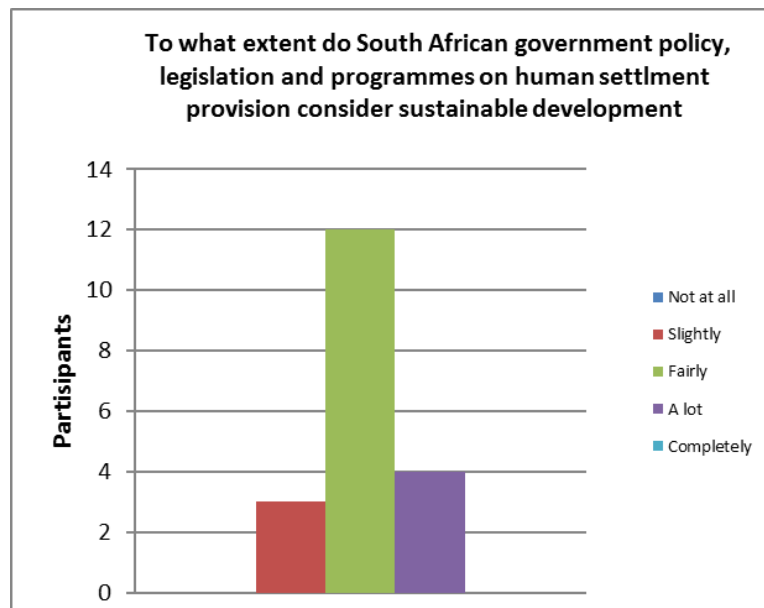


Figure 14: Extent to which SA government policy, legislation and programmes on human settlement provision consider sustainable development

Source: Own construction (2018)

Figure 14 indicates that the majority of the participants are of the opinion that the governing policies, legislation and programmes only consider sustainable development to a fair extent. This indicates that policies are inclusive of sustainable development approaches but not enough to support and provide proper guidance to those implementing integrated human settlements. The need therefore exists to re-evaluate the current policies, legislation and programmes and ensure a comprehensive and practical approach to sustainable development, as well as adopting a framework for the implementation of integrated human settlements that is guided by the sustainable development spheres, their supporting drivers and objective.

In addition, another primary aim of this research was to identify if currently in South Africa integrated human settlement planning approaches are considering the objectives of sustainable development. Figure 15 below depicts the results received from the participants, indicating a 37% slightly and 42% fairly response. This majority result does not reflect a positive feedback and it can therefore be concluded that a need is indicated to increase the extent to which sustainable development objectives are included in the planning of integrated human settlements through the facilitation of governing frameworks or planning approaches.

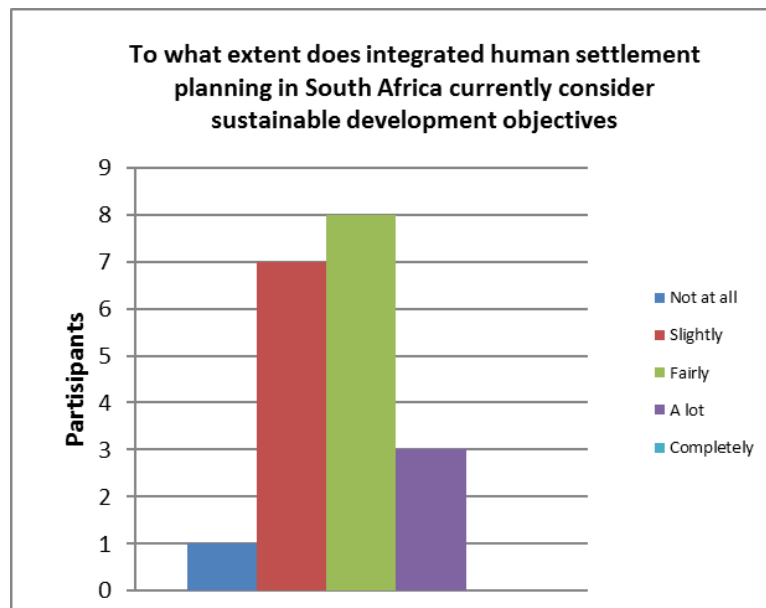


Figure 15: To what extent does integrated human settlement planning in South Africa currently consider sustainable development objectives

Source: Own construction (2018)

Based on the results of Figure 15 and the fact that sustainable development is a broad concept, a practical method is needed to include sustainable development during the planning of integrated human settlements. For this reason, the three spheres of sustainable development were introduced in literature to simplify and make the concept more understandable. The three spheres of sustainable development were deconstructed to drivers to further simplify the concept as explained with Figure 10's flow chart. Through the literature review of the sustainable development spheres and their supporting drivers as well as the case study documentation analysis of the empirical investigation, objectives were identified in an attempt to get a better understanding of what these drivers consist of in practice and how important the different objectives are. The objectives were presented to the participants by using a Likert rating scale-based questions where after the participants were asked, in their opinion, to recommend additional objectives they considered important, participants also used this opportunity to comment on some of the objectives that were stated in the questionnaire.

The National Framework for Sustainable Development in SA recognises the influences and interdependencies between the three spheres and their objectives (National Department Environmental Affairs and Tourism, 2008:3). Objectives from all three spheres were included in the questionnaire and the results are discussed below per sphere by depicting the results of each sphere as a single figure consisting of separate graphs that represents each objective. This illustrates the notion of 1 sphere consisting of different objectives. Each objective's results are

discussed separate but further recognises the interdependencies between them and their combined contribution to the final result of the sphere. By fully understanding the separate objectives and their influence on the sphere itself enables planners to consider each objective to its fullest potential and thereby strengthen the links between the objectives and ultimately between the spheres.

Table 13: Economic integration objectives

Economic integration Objective
Maintenance of stable and high levels of economic growth and employment.
Assemble corridors as opposed to scattered parcels for economic opportunities and supported growth.
Economic justice - addressing community income upliftment and de-concentration of poverty.
Consideration for all income groups and associated patterns of consumption.
Mixed tenure and typology option to provide across the income divide.

Source: Own construction (2018)

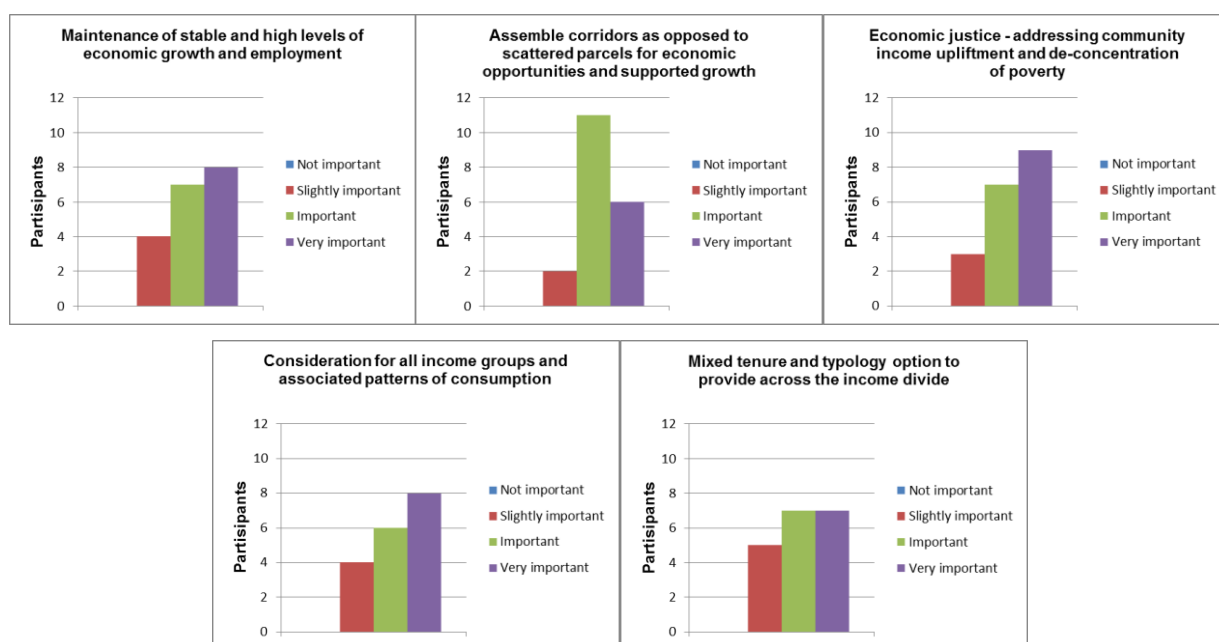


Figure 16: Economic integration objectives importance

Source: Own construction (2018)

Economic integration presented several different objectives to the participants as indicated above in Table 13 and their feedback depicted in Figure 16.

Maintaining economic growth and employment is depicted as very important by the majority of participants. This can be explained due to the fact that the one is directly dependent on the other.

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Employment growth leads to personal economic growth that can be reinvested in the area to create more employment as the area expands creating a stable level of growth. For this reason, it is considered very important by 42% of the participants, to ensure that high levels are sustained to continue the growth and economic upliftment of the residents and the area.

The second objective depicted an overall important (58%) result, indicating that creating corridors of economic opportunities such as business, commercial or retail areas are considered more effective by participants than scattered parcels. By providing corridors that combine different uses reduces the need for residents to travel to various places for such uses and provides agglomeration advantages to the business, commercial or retail uses. These areas provide employment opportunities as well making it convenient for employees working there to spend their salaries in such an area that provides all their needs without the need to travel far. In the participant's opinion, integrated developments need to allow for diverse economic activities that are accessible and include readily available local community components such as shopping, education, recreation, employment and commerce within walking distance of residential areas to encourage reinvestment in the area.

Upholding the first two objectives will contribute to the achievement of the third objective which is considered very important by the majority of participants. Increasing the income of residents require better employment opportunities and the continuous creation of opportunities to earn a better salary. By de-concentrating poverty, the risk is lower to create an area that cannot sustain a positive economic growth. Lower income residents that are integrated in an environment with a strong economic growth and employment creation have an increased opportunity to be uplifted out of poverty.

Objective four was rated very important and objective five equally important and very important, with one participant abstaining from giving feedback with regards to the fourth objective. In creating an integrated environment, consideration must be given to a range of incomes with both the typology and tenure of the housing units as well as their associated consumption patterns. Residents with lower incomes would prefer commercial and retail stores that are more affordable and provide the basic necessities, where higher income residents would have different preferences. These two objectives also depicted to an extent a slightly important rating, indicating that from the five objectives these two might not be as significant as the first three to participants, but still need to be considered. Providing a range of tenure and typology options to create an integrated development can be challenging. The need exists to provide more gap market units to assist in alleviating the housing backlog for the population that is within this gap market. This will provide opportunities for residents that do not qualify for government subsidies or financing from institutions according to participants. A participant further suggested the incorporation of informal

housing into planning and design to truly become integrated. Urban planners can provide areas for residents to construct and erect their own house.

The separate economic objectives reflected a combined result of an equally important and very important rating, scoring 40% which does not indicate a correlation with the results reflected for the economic integration sphere as was depicted in Figure 12 which had a majority very important rating. The first, third and fourth objective indicated a very important rating with objective two being important and the fifth being equally important and very important.

Table 14: Social dynamic objective

Social dynamic objective
Building democratic societies that are gender and race equal, inclusionary and just.
Social justice – addressing human rights and development.
Education– addressing access to information for lifelong learning, formal primary education and early childhood development.
Community and spiritual well-being of all religions.
Participatory decision making and community involvement.

Source: Own construction (2018)

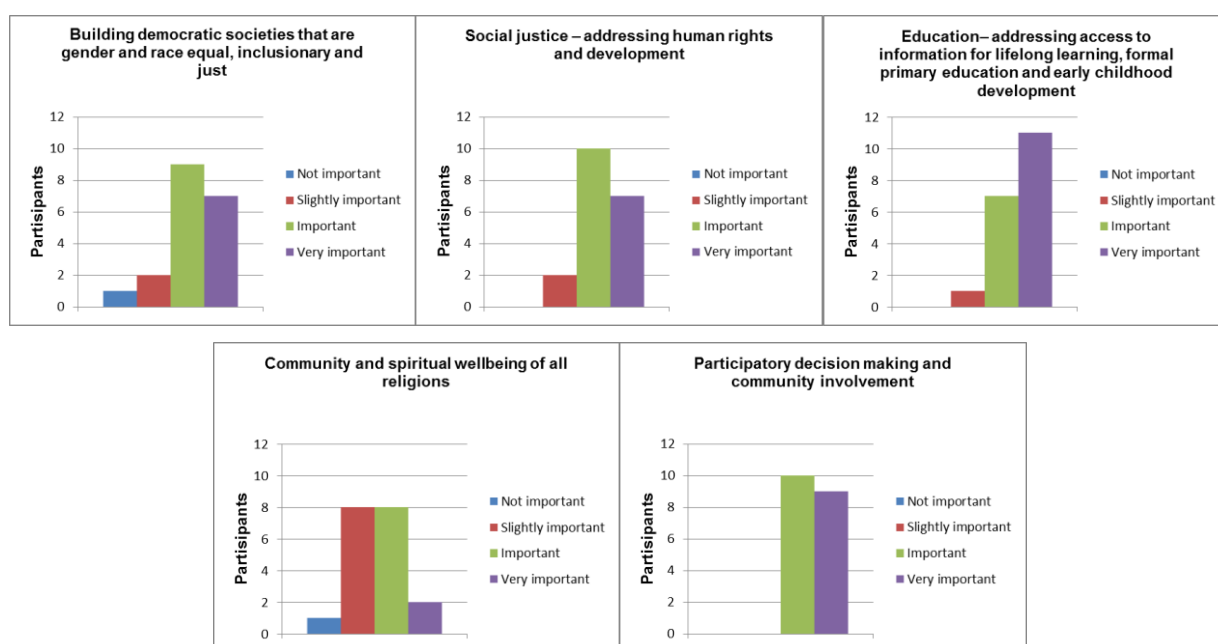


Figure 17: Social dynamic objectives importance

Source: Own construction (2018)

Social dynamics presented several different objectives to the participants as indicated above in Table 14 and their feedback depicted in Figure 17.

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The first two objectives clearly indicate an above 80% important and very important rating, both these objectives scoring 47% and 53% important respectively. With the South African apartheid history this result can be expected as people are focused on creating equal and democratic societies that respects human rights and the eradication of gender and race discrimination. Based on these results it is clear that urban planners involved within housing development also consider these objectives as important. In order for South Africa to move away from the history and create inclusive societies, urban planners need to be conscious about objectives relating to equality when designing and planning human settlements. This can be done, a participant suggested, by providing more community related functions such as community centres, clinics and active open spaces that will promote social interaction and integration.

Education was considered by more than half of the participants as very important. Education is a basic right for all residents in South Africa and having access to education and information from an early age can be accomplished with the assistance of urban planners by ensuring opportunities are created within human settlements to provide this service. This is considered a very important objective as it also contributes to an increased public participation and residents actively taking part in decision making processes as well as an increased skilled labour force. Education services also provide employment opportunities to the residents. Environmental education was indicated by participants as a means to achieve greater sustainability measures by having an informed community that can protect their natural environment and the benefits it provides. The emphasis for a participant was on promoting responsible use of natural resources and encouraging their conservation through appropriate education systems and learning programmes.

Religion and spiritual well-being, the fourth objective, was depicted as equally slightly important and important. Religion is an important objective to consider when integrating residents as it provides opportunities for social gatherings. The increased social interactions relate to better integration within a human settlement as sharing beliefs can easily bridge the divide created by different incomes, race or gender. Succeeding in this objective depends on the residents and how they choose to exercise their religion or connection to a spiritual entity and not as much dependent on the urban planners, who can only provide an area for such practises. This could indicate a plausible reason why religion is considered by 42% as slightly important for the physical development of human settlements, even though it is also 42% considered important for improving social relations between residents. A participant offered their view by stating that sustainable development has to address and recognise that social groups are different and require different planning strategies due to their believes which need to be accommodated.

Participation by the community within decision making and having residents more involved with their community was indicated by the participants as being an important objective (53%), with

some participants indicating very important and being the only objective where no participants indicated slightly important. Having the community involved in decision making and participating during development will allow developers as well as the urban planners to get a better idea of the needs of the specific community that they are dealing with. Creating human settlements is as much about the physical structure and layout as it is about the community that is formed. Planning for the needs of the community would require the community to be actively involved as well as understand what is required of them to give meaningful feedback that can be implemented. Full public participation during development decision procedures were emphasised by a participant, stating that the public need to be allowed to be part of decisions considering economic, social and environmental impacts of the development. A participant expressed their opinion regarding public participation stating that the current practises for public participation within town planning procedures only provides a basic level of engagement with little insight as to what the immediate needs and socio-economic issues are of the communities therefore, missing the opportunities to address them from the inception of project. An increase emphasis is needed on public participation.

Overall the social dynamic objectives reflected a combined result of a majority important rating, scoring at 46%, and very important only accounting for 39% of the final results which is not correlating with the results indicated for the sphere as was depicted in Figure 12 which concluded in a 58% very important and 32% important rating. The first two objectives as well as the fifth objective indicated a majority important rating with the third being very important and the fourth equally important and slightly important.

Table 15: Environmental planning objectives

Environmental planning objective
Enhancing and conserving the resource base –Efficient management of energy demand and water consumption by households.
Effective disposal and recycling of waste building materials and waste generated by the households.
Effective protection of the environment – Natural landscapes retaining their unimpaired qualities to protect ecosystems at work including maintaining natural drainage ways.
Ecological integrity – preventive and precautionary approach to ecological protection. Protecting threatened and critical habitats, minimising the adverse impact on quality of water, air and natural elements.
Connectivity and easy access to open space, limiting barriers and providing open space in walking distance from where people live and work.

Source: Own construction (2018)

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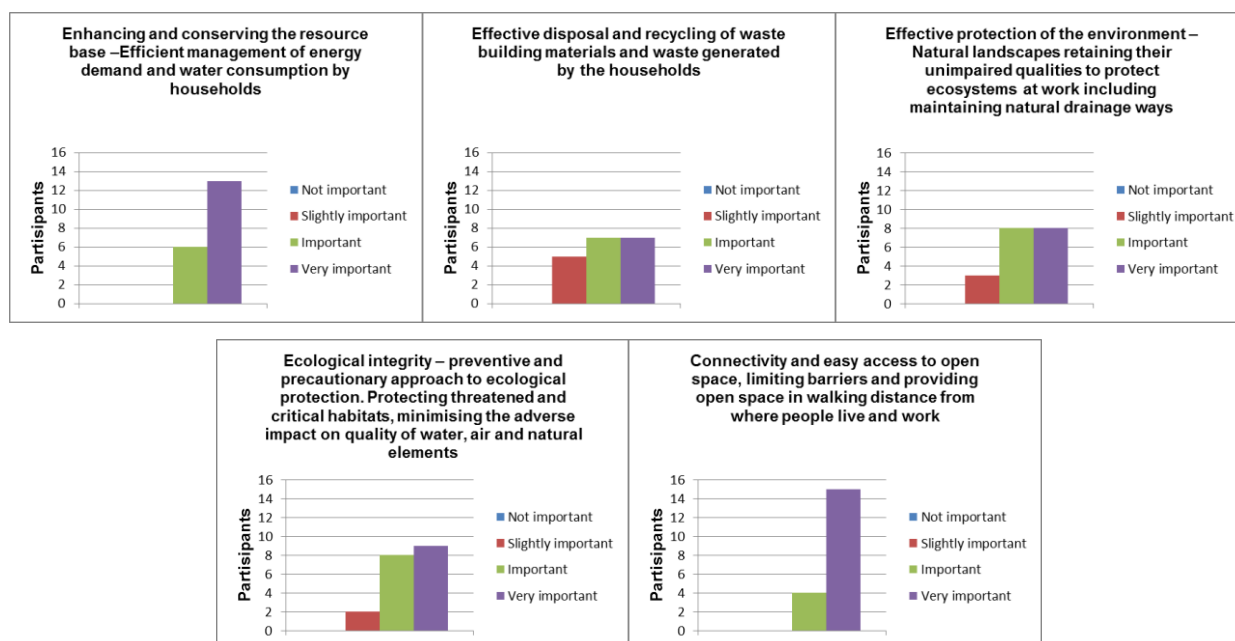


Figure 18: Environmental planning objectives importance

Source: Own construction (2018)

Environmental planning presented several different objectives to the participants as indicated above in Table 15 and feedback represented in Figure 18.

Conservative use of resources such as energy and water are depicted as a very important objective (68%) by the participants. Household consumption can be managed more efficiently through the use of sustainable technology and design methods to reduce the household demand. The responsible consumption of resources and resource depended services was emphasised by a participant as a priority. Efficient land use planning and building design was suggested by another participant as a method to promote energy conservation. It was also suggested that users are charged for the full local cost of the individual use of electricity, water and sanitation to encourage responsible use.

During development of human settlements and long after completion of the project consideration must be given to the disposal and recycling of waste generated by households as well as during the construction phase. This was considered equally important and very important objective (37%) by the participants, but also 26% indicating this objective to be only slightly important. Disposal and recycling of waste does contribute to the overall sustainability of a housing project but during planning stages this objective is only considered. Implementation thereof relies on the developer and construction teams to adhere to guidelines set for disposal and recycling. This objective, even though considered by the majority as important is the responsibility of those implementing and monitoring the project. A participant specifically emphasised that the discharge of toxic pesticides

and other chemicals need to be minimised. Awareness and promotion are needed to eliminate the use of toxic pesticides and chemicals that have negative effects on the environment especially persistent pesticides. Systems and programmes can be put into place to deal with the recycling of house hold waste after the project is completed and managed by the community members. Creating work opportunities as well as contributing to the sustainability of the overall project.

Effective protection of the environment and ecological integrity were both indicated as 42% important with effective protection also scoring 42% very important and ecological integrity scoring 47% very important and can be seen as going hand in hand. Protecting the natural landscapes to prevent negative impacts on the ecosystems at work and natural habitats needs to follow a preventive and precautionary approach from the start of the planning phase. Urban planners can exclude critical biodiversity areas from developable considerations to ensure that natural drainage ways, ecosystems and habitats are protected and not compromised or degraded during the construction of human settlement developments. A participant suggested that urban planners need to consider attenuation within urban built environments rather than natural drainage; this will prevent erosion caused by increased water runoff from concrete surfaces. Urban water runoff and storm water need to be managed to protect the natural watercourses. The natural watercourses that have already been significantly altered, the participants suggested interventions to restore the watercourses to a more natural state. Protecting these areas from the start will minimise pollution of water sources as well as air and other natural elements. Promoting environmental sensitive land and setting land aside for agricultural purposes on land with fertile soil was considered by a participant as “making the best use of land”.

The fifth objective was considered very important (79%). Creating a connected open space system within human settlements allows effective protection of the natural habitats and their ecosystems while enabling the movement of species. The purposeful placement of open space areas based on the natural landscapes, provide urban planners with the means to protect and conserve the ecosystems and natural habitats as well as create a healthier living environment for the residents. Preserving and extending accessible green spaces along natural watercourses to protect natural resources was included by a participant as an additional objective to be considered as well as creating more aesthetic green open spaces by encouraging reforestation of the cities through promotion of replanting trees and vegetation. The open space connectivity throughout the human settlements provides opportunities to be more accessible from residential areas where residents can enjoy the areas for recreational and aesthetic purposes. Participant feedback indicated that there is a need to move away from the provision of scattered parcels of open space, and rather to provide more connected public open spaces that can also be linked with social amenities and pedestrian movement corridors to increase sustainability.

Connecting natural open space relies on the characteristics of the surrounding uses and environment, requiring the integration of natural features and green spaces. Efficient design is required with land uses to connect the developments with the current urban communities to promote densification, diversification and limiting urban sprawl. Therefore, careful consideration is needed according to the participants to access well located land that is not located on the city's periphery but rather focused on infill development within close proximity to economic and social opportunities that are integrated with open space areas to connect all the various uses.

Environmental planning objectives reflected a combined result of a majority very important rating, scoring at 55%, and important only accounting for 35% of the final results which is not correlating with the results reflected for the sphere as was depicted in Figure 12 which indicated an equal important and very important rating (42%). The first objectives indicated a majority important rating with the second and third being equally important and very important, the fourth and fifth being very important.

Figure 12 above indicated the results of how important each sphere ranked. Based on the above section, the importance of the objectives included in each sphere, it is interesting to note that the results from Figure 12 does not correspond with the results indicated by the objectives within each sphere as depicted in Figures 16, 17 and 18. Economic integration in the sphere's rating was very important, and the objective rating concluded as equally important and very important. Social dynamic in the sphere rating concluded very important and in the objective rating concluded important, where environmental planning in the sphere rating concluded equally important and very important and in the objective rating concluded very important. Once the spheres are deconstructed to their most simplified level of the objectives they are more comprehensible of what is contained within each of the sphere thereby making it easier to rank each objective more accurately rather than considering the three spheres in their totality without fully comprehending what each sphere contains. Therefore, indicating the need that was expressed during the literature and case study documentation review for deconstructing the spheres to better understand the supporting development drivers and then further dissecting to objectives to get a clear understanding of the magnitude and importance of each sphere.

The research further emphasised that the spheres need to be balanced to achieve the triple bottom line of sustainable development. By deconstructing the spheres, it became noticeable as to what objectives are regarded as less important, confirming that some drivers within the spheres have been compromised within integrated human settlements thereby resulting in human settlements that are not reaching their triple bottom line.

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The participants were also asked to suggest additional objectives of sustainable development they would consider important that influences human settlements planning and development in SA, in an attempt to further extend and refine the sustainable integration checklist based on the sustainable development objectives. A participant emphasised the importance of creating increased awareness of the sustainable development concepts and ensuring the compatibility between the three spheres as the balance between them is “proportional to the flexibility of interactions between the fundamental systems and their execution”.

To increase the awareness of sustainable development and the achievement of any sustainable development goals are dependent on changes at a senior level of government and municipality to actively promote sustainable development in their approaches to housing development. It is also required that national, regional and local legislation need to be harmonious in their attempt to achieve sustainable development and include institutional capacity of the local government to support such projects.

The participants suggested that affordability and government assisted funding also have an important role in the development of integrated human settlement development and enabling these developments to be more sustainable. The participants’ feedback consisted of several different objectives contained within the funding driver to enable more affordable developments. They suggested that government subsidies will enable more housing to be affordable and that an increase is needed in the development of units in the gap market where residents do not qualify for state subsidies but also do not earn enough to qualify for a bond. This can be achieved through partnerships with the private sector by encouraging greater investment in social housing projects, integrated housing and mixed-use developments and will provide a solution through the rental housing schemes to deal with non-qualifying beneficiaries. Cross subsidisation in all developments can be used as a method to enable funding to be available through the project life cycle, assisting developers in their delivery of larger scale unit totals. A concern raised by a participant was that the current policy consideration does not favour democratic societies in integrated development projects, as most projects are grant funded and only beneficial to previously disadvantaged groups. Another concern raised was security of tenure.

A participant focused more specifically on the sustainability of integrated human settlements and commented that some integrated communities do not have the funds available to attend to the upkeep of their properties especially in the fully subsidised BNG sector, thus providing a great challenge to the municipalities and developers of integrated human settlement developments. New initiatives should be considered to assist these communities with these challenges. They suggested that government assistance in the funding for these initiatives is needed, because even though the policies consider sustainable development, subsidies for fully and partially subsidised

units do not make provision for any items that can assist in the enormous task to make properties more sustainable and that currently this is all for the developers account, explaining why most developers cannot afford such practises and still contain a financial feasible state in the overall project, resulting in such initiative not being implemented.

In addition to the social dynamic objectives that were discussed, the participants also indicated a need for increased safety and security measures within developments to increase sustainability. Participants also suggested providing well connected, safe public transportation and using existing systems to their fullest capacity. They expressed the need for different modes of transport including transit, cycling and pedestrian movement as well as ensuring that public transport systems are more affordable to the users. One participant emphasised that human settlements developments needs to be closer to major transport nodes and corridors of economic opportunities and amenities in order to reduce the need to use public transportation drastically. This proposal was supported by other participants indicating that creating a sustainable development will need to focus on a providing a work, home and play environment where employment opportunities is closer to home to reduce excessive travelling and the impact on the road network as well as public transportation systems.

Existing and future transport systems and their planning need to be accommodated through the implementation of a proper road hierarchy. In addition, the evaluation of existing roads and related infrastructure need to be upgraded and provision made for sustainable maintenance programmes. Monitoring and evaluation is required for every development to ensure it does not negatively impact the city's finance and the environment.

A participant further emphasised that a balance is needed between rural and urban development to reduce the current high levels of migration that is placing more pressure on the rate of development and delivery of housing. They suggested that infrastructure provision as well as local economic development needs to be improved in rural areas to assist with job creation within those areas in an attempt to balance development with urban and rural areas within the country. Further suggestions were made to integrate planning systems with technological platforms and to optimize the opportunities that are generated from industry 4.0 i.e. big data and augmented intelligence to assist in achieving improved planning approaches that are more efficient. Overall the participants agreed that a balanced development is needed. By providing an economic strategy or community plan that aims to create sustainable and appropriate forms of development that will reflect sense of community and human scale as well as focus on achieving a balance between the urban development and environment.

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From the above summary of the comments and recommendations that were received from the expert analysis, additional drivers were highlighted by the professional Urban Planners that are applicable within practical implementation of sustainable integrated human settlements and added to the literature and case study documentation review drivers in order to expand the sustainable integration checklist further. Figure 19 below summarises the inclusion of the drivers from the expert's review.

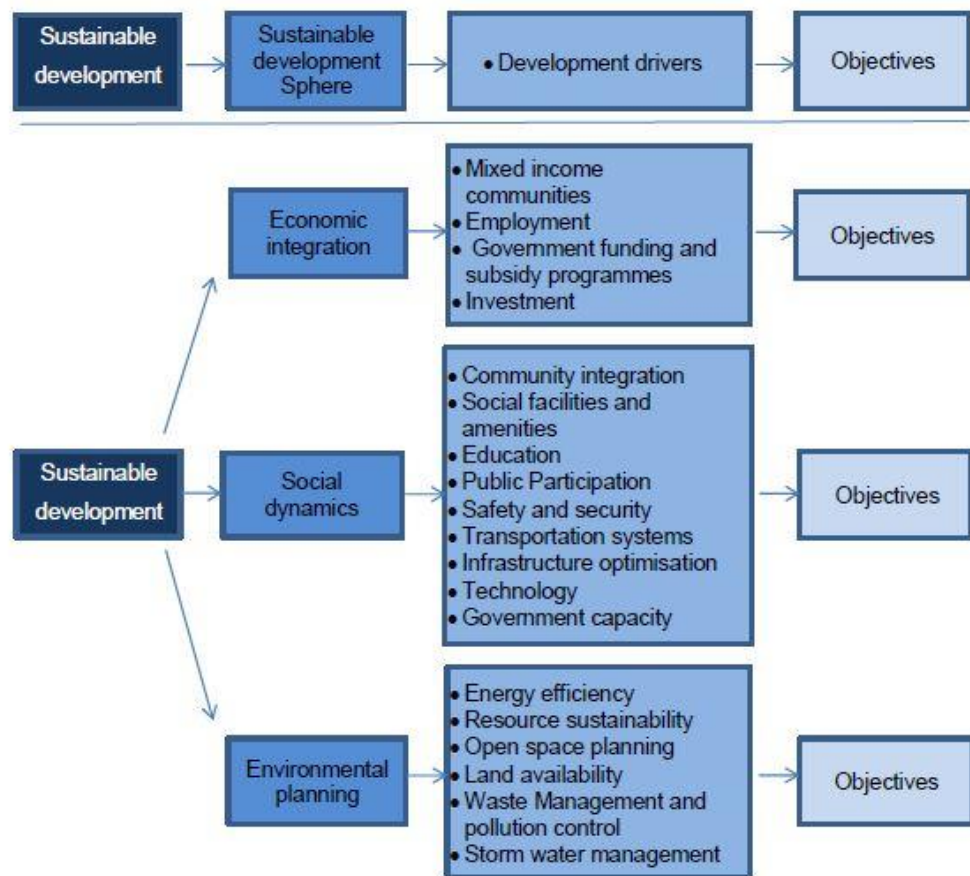


Figure 19: Sustainable development four tier flow chart – Expert review

Source: Own construction (2018)

6.7 Conclusion

From the case studies, situations were explored where housing provision and segregation were overcome through the implementation of integrated human settlement developments. This was used as a basis to emphasise that South Africa is not alone in their attempt to provide integrated housing as a solution and that other countries have been implementing this approach. It resulted in large amounts of information being available regarding the implementation of sustainable integrated human settlements from which SA can learn from to help guide and improve the future

implementation, especially with regards to addressing socio-economic challenges within communities.

The overall approaches to integrated human settlements and the provision of housing for all the case studies were based on similar ideals. It is also interesting to note that both the international and national case studies described an inclusionary approach to development attempting to decentralise poverty. In Ireland 20% of all new estates were set to be allocated to integrated housing. The inclusionary zoning in the USA stated that a maximum of 40% housing units should be allocated to public housing (Smith, 2001:17; Boustan, 2011:333). South Africa has also recently introduced the idea of inclusionary housing to new developments consisting of more than 10 dwelling units that need to allocate 20% of the total units to inclusionary housing (Mashaba, 2018). The approach is similar in a way stating that a portion of all housing developments be allocated to affordable housing, allowing higher densities or increased coverage as an incentive to developers (Boustan, 2011:333). The inclusionary housing approach had success in other countries. Nationally the draft policy is still being reviewed and has been met with challenges.

The list objectives as guided from the literature study and captured within the case studies were used as part of the empirical research distributed to professional urban planners within the field of delivering integrated human settlements. The results were discussed in the preceding section.

The results as mentioned under section 6.6 of this chapter indicated that the majority of the participants rated that they are a lot familiar with integrated human settlements planning but that there is still room for improvement. It became clear from the preceding section through the feedback received from the participants that it became easier to rate the influence and importance of each sphere more accurately when asked to consider a few simplified objectives that are contained within the spheres rather than the sphere itself. This result supported the aim of the study to provide a sustainable integration checklist to attempt to guide urban planners dealing with the delivery of human settlements to consider the spheres of sustainable development when planning settlements in a more comprehensible and simplified form rather than trying to understand the magnitude of each sphere and a term such as sustainable integrated human settlements in its totality. Deconstructing the spheres to drivers and the objectives will allow planners to ensure that each development project and governing policy does consider sustainable development and is able to include it within planning approaches from the start. Figure 19 as depicted above stipulated the drivers that were added following the empirical analysis. All the drivers that were initially identified within the literature review corresponded with the empirical investigation as they again received emphasis. The empirical investigation indicated additional drivers to be included that resulted in the refinement of the sustainable integration checklist

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through the additional objectives that were suggested to ensure a comprehensive checklist compilation which is discussed in the following chapter.

The following Chapter 7 and Chapter 8 contain the summary of the research, consisting of the conclusions and recommendations respectfully following both the literature and empirical research findings. Chapter 7 will aim to address primary research questions as well as provide the sustainable integration checklist for integrated human settlements based on the findings of the research.

Chapter 7: Conclusions

7.1 Point of departure

This chapter considers the literature review, policy and legislative framework analysis and empirical investigation presented in the previous chapters, to draw conclusions in line with the research aims and objectives captured in Chapter 1.

Communities are the heart of every city; they are what drives the city (Trusler, 2009:74) therefore every driver that influences community creation will subsequently influence the city network. In South Africa the problem is that many residents do not have a home and living conditions in informal settlements are inadequate (National Department of Housing, 2004:3). The delivery of housing is a priority in South Africa along with the creation of a healthy and productive society where residents will feel part of the community, safe and most of all at home.

Addressing the housing backlog has been challenging for the public and private sector alike. Housing unit numbers that have to be reached require accelerated delivery that has in recent years caused the quality of the housing stock to be substandard and not result in decent, adequate housing for all as stipulated in terms of section 26 of the Constitution of the Republic of South Africa (1996:11).

The question can be asked that after such extensive research and implementation programmes have been done worldwide, why does housing delivery, informal settlement upgrading, or socio-economic integrated human settlements seems to always result in urban concrete slums that increases urban sprawl and contribute to segregated cities? Bradlow *et al.*, (2011: 268) states that to understand the reason South Africa failed to deliver, one first need to understand the intention behind why a seemingly well-intentioned interventions and governing policies have achieved so little. Bradlow *et al.*, (2011: 268) explain his view for the lack of reaching goals that are extensively supported and guided worldwide by using a quote from the former USA president Bill Clinton during his first campaign in 1992: "*It's the economy, stupid*". For SA, Bradlow *et al.*, (2011: 268) argue the reality is that: "it's the money, stupid". Housing construction within SA is a source of money in the profits that are made. Private developers are profit driven and even while in partnership with the government a healthy profit is still made. In 2009 the minister of human settlements acknowledge that thousands of government houses were unfit for occupancy and that more money will be invested on repairs to improve the standard. This resulted in money paid to public or private developers to deliver human settlements and more money being paid to repair and improve the standard. All the while, profits are increasing, even though no housing is

transferred to end-users in desperate need (Bradlow *et al.*, 2011: 269). It is therefore argued to not just seek to provide housing at the lowest cost possible (McVerry, 2008:23), but that to achieve the national goals for delivery of housing that are a good quality, it will be needed to regulate housing delivery more closely to optimise capital inputs and quality outputs.

SA is characterised by cities that are increasingly unequal, fragmented, and unsustainable. Approaches where houses and services are given to residents are important to house the nation, but this is not effective without empowering the residents to participate and change their environment and communities to be more effective and sustainable (Bradlow *et al.*, 2011: 2671).

Sustainable development practices are complicated and need to be dealt with as a single integrated matter. A comprehensive framework is needed to deal with all aspects relating to development of sustainable integrated human settlements. A solution can be found with the use of the TBL sustainability framework with the inclusion of integration guidelines in order to thoroughly consider the practical feasibility of developments, inclusive of planning, implementation, evaluation and monitoring approaches that is supported by a policy that addresses the intricate and delicate balance within development through the guidance of the sustainable integration checklist.

- The concept - From the above research it was found that sustainable housing practices as used worldwide, balances the critical need for affordable, decent and appropriate shelter with the technical aspects of housing construction within the broader community (The Sustainability Institute, 2009:8). Guidance is needed for the planning, implementation, evaluation and monitoring of housing delivery in order to be more integrated and sustainable in the South African context.
- Policy - The practises also aimed to balance technical drivers of housing delivery with the requisite governing policy for the delivery of housing. This requires that delivery is in a co-evolutionary process between moving away from the one-size fits all approach, towards empowered participants who engages with the project team and the government, and utilising and understanding technology that is appropriate to housing delivery (The Sustainability Institute, 2009:8). Guidance is required to integrated and focused policy and legislation.

This study therefore drew the following conclusions as discussed below following the Chapter 1 aims and objectives.

7.2 Conclusion 1: There is an interface between human settlement planning and sustainable development objectives that should be enhanced

To address the issues of housing delivery, South African housing delivery authorities focused on providing integrated human settlements. This study considered these settlements from a sustainable development perspective in an attempt enhance current planning approaches to improve the alignment with broader sustainable thinking. This was done by investigating the concept of sustainable development and the interface thereof with broader human settlement planning approaches. The concept of integrated human settlements was then further investigated in the current South African reality by referring to the different spheres of sustainable development and if the success and failure of one sphere of sustainable development influence the other two spheres. It was best stated by Dernbach (2003: 248) that a rising tide lifts all boats, which he used as an expression to confirm that an increase within one sphere will eventually also bring about a greater turn up within the others.

Through a thematic literature investigation overlapping drivers between the concept of sustainable development and the concept of integrated human settlements planning were identified, building a case for the interface between the two concepts. This interface could be further explored from a spatial planning perspective, to enhance the linkage between sustainable and integrated housing provision within the local environment.

7.3 Conclusion 2: The drivers of sustainable development could be employed to enhance integrated human settlement planning.

The three spheres of sustainable development were considered in Chapter 2 of this research and concluded that it is necessary to understand the three spheres in its simplest form before one can really make decisions regarding the approach to integrated human settlements and planning them more sustainably. Therefore, the study deconstructed the spheres to development drivers within the literature review. The drivers were refined as part of the empirical investigation and summarised in Chapter 6, Figure 19. Understanding each driver's influence on an integrated human settlement can enhance planning approaches as it allows deliberate intervention on addressing such influences from the start. Considerations for enhancements for each driver concluded the following:

Based on the development drivers the study concluded that it is essential that housing typologies and tenure options are conceptualised broadly within human settlements to allow the inclusion and accommodation for a wide range of housing products designed to meet affordability needs of a variety of income group residents (Trusler, 2009:52). Providing an integrated community

specifically requires a mix of different income groups in order to move away from segregated areas and allow for residents to influence one another by providing lower income residents with better opportunities for upliftment. It was also discussed that lower income residential areas are commonly associated with social ills which can be address through the mixing of income groups. To achieve an economic integrated community, it was concluded that the right mix is needed. This can be achieved through the provision of different housing typologies and tenure options. The economic mixture within a community directly influences the stability of the community as higher income residents are more willing to invest in their neighbourhood in terms of addressing safety and security issues, maintaining the natural open spaces as well as supporting local businesses to expand in an attempt to increase economic growth in an area and associate employment creation (cross reference to section 6.6).

Creating dedicated business, commercial and retail areas within residential areas was concluded as the most viable method, where such areas are clustered and easily accessible to residents. As part of the creation of human settlements it is also encouraged that a job creation strategy must be developed within integrated human settlements to ensure increased opportunities through the construction of social and economic facilities, the construction, maintenance and management of housing stock and the installation of infrastructure (Trusler, 2009:66). The goal would be to identify activities with the potential to intensify labour in order to employ more local residents.

Sustainable community creation relies on social integration. Integrating a community relies on a combination of factors such as the current climate in SA that is sensitive to the integration of races, cultures, languages and religions due to the apartheid history.

It is important that a neutral approach is taken in settlement planning to ensure that segregation is discouraged. This can be done by focusing on integrating a society in a non-racial or economic classification manner, placing emphasis on adequate shelter while simultaneously enhancing mobility and flexibility of residents by providing the necessary facilities that are required to support social interactions within an acceptable distance from residential areas (Trusler, 2009:52). The entire community's needs have to be provided for when considering facilities and amenities to be developed. The provision of social facilities and amenities inclusive of educational, religious, community centres and sport facilities are required to increase social interactions and decrease tension between residents. This can be facilitated by encouraging community projects involving all the community members to work together to achieve the same goals. One approach suggested was to use the educational institutions as custodians of such projects to involve parents and children.

Education was identified during the literature review (cross reference to section 2.3.2.3) as well as the case study documentation review (cross reference to 6.5) as a primary driver within the social dynamic sphere of sustainable development. Education provides a fundamental foundation for three specific reasons. The first being helping residents improve their skills and knowledge through formal education programmes leading to better job opportunities being available. Secondly, the development of human settlements provides the opportunities for skill transfer within labour and administration sectors of construction which residents can use after construction is completed in their community and perhaps lead to new entrepreneurs for the area. This is beneficial as it allows the necessary skills to be available in the community that can maintain and manage the condition of the human settlement. The third, being a community that is actively involved. Making provision for a full range of training and educational methods, from formal education to the use of media and learning by doing techniques, to train and educate the society to become participants in all aspects concerning their community (Agenda 21, 1992:50). A community will benefit through better education systems and learning programmes that create informed residents allowing them to be conscious of resource usage and the protection of the environment as well as be actively involved in decision making processes.

The environmental planning sphere identified several drivers that can be employed to improve the sustainability of integrated human settlements. Agenda 21 (1992:55) concluded that a primary objective must be to actively seek and extend the provision of energy-efficient technology and focus on renewable and alternative energy sources for human settlements as a means to reduce the negative impacts caused by energy production on the environment and human health. The focus included improving human settlement design to reduce household consumption of energy and resources. It is important that the resource base is conserved and the impact on the environment reduced by keeping residents responsible for their resource usage in an attempt to encourage a reduced consumption standard. A focus on alternative and renewable resources are needed.

The sustainable use of resource is dependent on protecting natural habitats, landscapes and the ecological integrity of the environment through conserving and protecting natural areas. This includes specific consideration for natural drainage ways and water courses that are essential to ecosystems at work. These ecosystems have an important role towards healthy environments and producing resources needed to sustain the communities. In order to assist planners and developers in their attempt to protect these areas it is needed that areas within integrated human settlements are earmarked for public open space. These areas can be an important tool for Urban Planners as it enables areas to be excluded from development that have critical biodiversity habitats or species that need protection by creating a natural feel environment that moves away

from concrete slums. These areas, it was concluded need to be connected in order to assist in the movement of species between natural open spaces and accommodate migration patterns of species. In addition to the protection of natural landscapes and sensitive areas, connected open spaces throughout a housing development improves movement of residents between buildings and different uses through the creation of pathways that are pedestrian, and cyclist orientated. This further encourages more outdoor activity and healthier living for residents. Open space is something that needs deliberate planning and not added to layouts as an afterthought as these areas are crucial for social interactions as well and if implemented wrong can lead to degrade, unsafe areas.

Land that is selected for development will ultimately influence the success for the project as physical location and characteristic of the land will determine the success of integrating with the economic and social systems of the surrounding area. The study concluded that the focus for identifying land needs to be directed by connectivity and accessibility to provide the residents with optimal opportunities to improve their life quality.

Considering the drivers and their influence towards achieving sustainable integrated human settlements provides an opportunity for urban planners to employ each driver more successfully to result in an enhanced planning approach to settlements creation.

The success of implementation is however always dependent on the guidance and assistance received from government institutions. For this reason, government policy and legislative programmes were also extensively considered in this study.

7.4 Conclusion 3: The current policy and legislative framework in South Africa is not comprehensively aligned in terms of sustainable development and integrated human settlement planning.

A primary research question of the study was to identify if South African government policy, legislation and programmes on human settlement provision consider sustainable development. This required an investigation into policy, legislation and programmes to identify if there are considerations and linkages within current policies between integrated human settlements and sustainable development. The study concluded that currently the policy, legislation and programmes on human settlement development within SA do consider sustainable development, but only to a limited extent.

National policies did to some extent include guidelines relating to sustainable development within the provision of housing deliver (Li, 2006:85) but this approach was fragmented. The primary focus was to deliver subsidies housing and did not provide much scope for a wider area settlement

plan that included the integration of housing typologies and tenure options, alongside social amenities, commercial facilities and natural open space to create truly integrated communities (Tissington, 2011:81). It can be considered that currently the policies, frameworks, guidelines and action plans that exist are satisfactory for each driver of the sustainable development spheres separately. For example, all the drivers contained within the environmental planning sphere when considering conservation, energy and resource use, land allocation and open space are all dealt with as separate policies without recognition of their influence on one another.

When considering integration of human settlements all these government policies should be considered simultaneously by the project team and made applicable to the same project which proves problematic for those needing to adhere to numerous separate policies that are in many cases contradictory. Furthermore, different governing agencies are responsible for each of these drivers making alignment of process and priorities perplexing. This creates an opportunity for some developers to compromise on one or more of the crucial drivers during housing development as monitoring adherence is increasingly difficult. The lack of monitoring will result in a sphere not reaching its full sustainability potential. The need therefore exists to create a single combined policy to govern the drivers of all three spheres and align priorities of governing departments for the delivery of housing.

The BNG Comprehensive Plan guided development of human settlements since 2004. Evaluating the objectives of the plan according to Trusler (2009:77), confirmed that it has fallen short of expectation. None the less it provides a platform to build on and improve current policies with the inclusion and guidance from the sustainable development spheres. This new approach to human settlement creation within a sustainable framework would require municipalities to take responsibility over their areas of jurisdiction and proactively take up their role within housing delivery. According to Trusler, (2009:57) this can only be based on the assumption that clear guidance and resourcing will be forthcoming from a national and international level. A requirement will be that a stringent framework will be established to guide municipalities in their role and build capacity.

The difference between the previous housing implementation programmes and the envisioned sustainable integration TBL framework to guide sustainable integrated developments is that previously in the supply driven framework of housing provision the private sector was granted a leading role, where a new approach would follow a demand driven framework from the public sector due to local circumstances and shortages. This resulted in the government being placed in a leading role to link the demand for and supply of housing (Trusler, 2009:57). However, this does not trivialize the role of the private sector as the primary delivering agent of housing.

In 2005 the government and private sector, including banks and developers signed the Social Contract for Rapid Housing Delivery in an effort to accelerate the delivery of housing (Trusler, 2009:71) and to show intent of working together to remove bottlenecks within delivery. This showed commitment from all sectors towards producing housing within the available policy programme which however did not make provision for a sustainable development approach to be followed. The contract was a good intention as it did offer a solution to result in the delivery of a lot of housing units. The basis of this contract can be included in the sustainable development of integrated human settlements framework to ensure a correlation between all stakeholders while demanding adherence to sustainable development measures in order to achieve accelerated delivery.

This research further emphasised that housing delivery cannot be focused on accelerated delivery alone as compromising the quality of housing leads to bigger issues. From the MDGs it was proven that over time a targeted intervention supported by sound strategies, political will and adequate resources (United Nations, 2015:4) can make a difference towards a country's progress in providing adequate housing for its residents that addresses all their social, economic and environmental needs by aiming to create a better life for all.

7.5 Conclusion 4: The practical implementation of sustainable development objectives as part of human settlement planning is visible in limited case studies across the globe, identifying the potential and success of interfaces.

The case study documentation analysis as discussed in Chapter 6 consisted of investigating the case studies of integrated human settlement developments internationally and nationally which allowed conclusions to be drawn on the practical implementation of such settlements and the sustainable development drivers and objectives that were included as part of human settlements planning. Limited case studies are available with regards to integrated human settlements, but each case study confirmed the influence of the drivers as mentioned in Chapter 2 at the interfaces to conclude that the success of planning integrated human settlements is dependent on the inclusion of the sustainable development drivers.

It was concluded that integrated human settlements do have the potential to address the provision of housing in such a manner that also addresses wider issues of community creation. The case studies that were analysed all addressed housing provision and segregation through the provision of integrated human settlements. As each case study differ in their consideration of how they approached the planning of integrated human settlements it allowed the emergence of additional sustainable development objectives to be identified. These objectives resulted in drivers which

increased the success of interfaces between sustainable development and integrated human settlements.

Addressing the challenges associated with housing provision requires that urban planners understand the challenge associated with each project or human settlement development they undertake. As reflected in the case study of Northern Ireland where religious segregation was a challenge within housing provision, Darby and Knox, (2004:18) commented that “people are scared to discuss issues of sectarianism“, the same applies to South Africa when discussing racism or cultural and language differences which can then also be addressed in a similar way as attempted in Ireland by identifying an accepted definition for these different forms of discrimination that leads to segregation, and enforcing it equally and strongly by law to create an open and free community where the fear is addressed head on and all South African residents continuously and actively attempt to remove these barriers from society by not tolerating discrimination in any form.

A clear alignment was noticeable between the literature review and the case study documentation review. Within the case studies, drivers of sustainable development were identified as discussed in Chapter 2 as part of the approach to address housing provision that also addresses segregation, which is important as it relates closely to the South African context. The case studies focused on ensuring mixed housing options that encouraged diversity of religions, race and incomes in close proximity of employment opportunities. The provision of social facilities such as schools, parks, religious and community buildings were emphasised as a method to encourage social behaviours amongst the community. Education was especially emphasised as a determinant of future prosperity and a fundamental structure contributing to the success of a settlement. The national case studies placed more emphasis on addressing the environmental planning sphere by including provision of public open space that are connected and links to other facilities allowing the preservation and protection of resources and ecosystems needed for a healthy environment. Focus was also placed on being energy efficient and encourages improved design methods.

Considering the practical implementation of sustainable development objectives as part of human settlements planning, additional objectives were also identified during the case study analysis. To ensure successful interface between sustainable development and integrated human settlements requires acknowledgment of the public's needs and input towards creation of settlements. Public participation is required to provide for all the variant needs of a community and therefore included as an important driver during the empirical analysis. It is concluded that Urban Planners will need to be more conscious and initiate better public participation processes in their attempt to provide sustainable integrated human settlements that can effectively address the needs of the

community. It was also mentioned that the participation process needs to be continuous as the needs of the community changes as the neighbourhood grows and develops.

The driver of land available and location for development also provided an interesting result. A reality is that desirable location such as sites close to schools are bought up by developers providing private estates for a substantial profit, while less desirable locations are used by the governments at a lower cost enabling them to provide social housing at a reduced economic cost but also a substantial social cost leading to the division amongst housing estates with isolated social segments (McVerry, 2008:19). As a result, in Ireland the government made the decision to withdraw from the provision of housing and transferring the task to the private sector by implementing massive subsidies to assist them in this role. The intention however of Section V of the Planning and Development Act of Ireland was that the government remained at the head and not dependent on the private sector. In SA it is needed that the government take up their leading role in development and delivery of housing with the assistance of the private sector. From a practical implementation perspective, the allocation of land needs to be based on the best integration possibilities with the city network no matter if it is public or privately-owned land.

The establishment of agreements between the government and the private developer for the provision of social needs such as housing, healthcare and education reflects the governments as sharing their responsibility and the private sectors as taking up the responsibility under guidance. The corresponding arrangement globally is for government to provide the land, which it already owns, to the private developer and in turn get hundreds of housing units to alleviate the backlog, without the cash starved government having to provide any direct financial input. All the while the private developer makes a healthy profit from hundreds of private housing units developed alongside government units (McVerry, 2008:20). This arrangement seems to be a successful approach in many countries. The crucial element thus remains that during implementation the government needs to manage and monitor the process.

The case study analysis concluded that the success of the interface between sustainable development and integrated human settlements can be contributed to the consideration and inclusion of the development drivers during the planning phase of settlements. The case studies do however recognise the potential of public participation for successful implementation of sustainable integrated human settlements.

7.6 Conclusion 5: The local perspective regarding sustainable integrated human settlement emphasises the need of such to address the housing complexities in South Africa.

The importance of housing provision was investigated in Chapter 3 and concluded that a need exists to provide housing in an integrated matter that considers all three the sustainable development spheres in order to provide quality housing that could improve the life quality of residents. Chapter 4 provided an explanation of the South African history within housing provision that identified the increasing backlog and growing informal settlements contributing to uncontrolled urbanisation and urban sprawl. Ultimately it concluded that service provision and access to infrastructure could not keep pace with the expanding cities and development pressure. Housing provision and employment creation have also been lagging behind without effective absorption of the population within city structures, resulting in a large portion of the South African population living in poverty and degrading conditions.

To address the increasing backlog, the focus has shifted to emphasise the need for sustainable integrated human settlements. In Chapter 6 the expert analysis examined the local environment and the extent to which integrated human settlement planning is based on the objectives of sustainable development. Based on the analysis it was concluded that planning approaches only considered sustainable development objectives to a limited extent, emphasising the need to revise the current approaches to planning integrated human settlements in order to achieve more sustainable integrate human settlement developments, to ultimately address the housing complexities in South Africa.

Based on the results of the expert analysis that was discussed in Chapter 6, sustainable development objectives were identified from a local perspective of planning integrated human settlements that led to the refinement of identified drivers.

The results of the expert analysis identified the importance of government funding and subsidy programmes within the development of integrated housing to assist developers with construction cost of infrastructure and services that are needed to support the growing communities as well as residents in obtaining housing. Further mention was made to investment within integrated human settlements from both private and public sector, and local residents of the area to emphasise the contribution and responsibility that every resident have towards creating sustainable communities.

Emphasis was also placed on the safety and security within integrated human settlements which need to be addressed by urban planners during the design phase already as well as public

transportation systems to be better integrated with the design of the settlements. Proper and affordable transportation planning that is easier accessible is encouraged along with integrated land use planning (Agenda 21, 1992:55), infrastructure optimisation and the use of technology to make process more efficient and easier to monitor is also highlighted as the responsibility of the urban planners to consider during the design phase. However, these drivers should not be used as a solution to treat the symptoms of bad planning and weak network integration but guide proper planning in advance.

The research further concluded that building government capacity and their ability to assist, plan, evaluate and manage the development of integrated human settlements will need to be increased if South Africa intends to achieve a sustainable approach to delivery that is consistent and comprehensive.

In addition to the environmental planning drivers that were discussed in Chapter 2, waste management and pollution control was emphasised as being a separate driver having an important contribution to sustainability of settlements along with storm water control as these elements can affect the natural environment adversely if not managed and implemented correctly.

7.7 Conclusion 6: A sustainable integration checklist can guide the planning of integrated human settlements from a sustainable development perspective.

The aim of the study was primarily to investigate how current planning approaches of integrated human settlements can be enhanced with objectives of broader sustainable thinking. It can be concluded that to enhance the approach, sustainability within each sphere has to be understood and what the drivers are that are contributing to achieving sustainability. If sustainability is understood in its simplest form it can guide the approach to integrated human settlements. Understanding the influence of each objective will allow the Urban Planner to consider implementation methods for each in order to efficiently address the impact on sustainability of the human settlement development. By using the proposed checklist Urban Planners will be able to record their considerations while planning settlements that will allow a comprehensive approach by not excluding crucial drivers that can adverse effect the settlement and compromise its sustainability and integration.

A checklist structure provides flexibility in use as it allows the identification of additional drivers and objectives based on the specific project characteristic at hand. In addition to planning and implementation approaches a checklist can also be used for evaluation or monitoring of sustainable integrated human settlements or policy relating to sustainable integrated human settlements. This study specifically focuses on the compilation of the sustainable integration

checklist to enhance planning approaches of integrated human settlements. In order to successfully address planning approaches, a framework is needed that is inclusive of planning, implementation, evaluation and monitoring processes. To address sustainable integrated human settlements is a complex process where administrative processes cannot be considered separately. A brief conclusion is made as to the fundamentals of such a framework that is based on the checklist even though the framework itself is not extensively discussed in this study.

This study suggested that the sustainable integration checklist can be used as the basis for producing a framework that can guide the planning, implementation, evaluation and monitoring of integrated human settlements as well as the compilation of a combined policy by considering each driver and objective as contained in the checklist.

In Chapter 4 the TBL sustainability framework was discussed and provided a comprehensive framework for reporting and monitoring of sustainable development that can be adapted to fit with the contexts of integrated human settlements. To revise the current approach to integrated human settlements to be more sustainable, this study concluded that there is a need for a sustainable integrated human settlements framework. Such a framework can be considered along with the TBL sustainability framework that deals with planning, implementations, evaluation and monitoring by using the sustainable integration checklist as the basis. This will ensure that each of these sectors (planning, implementation, evaluation, monitoring) cover all required drivers of sustainable development.

Such a framework needs to be practical and transparent in its processes. From this point of view, considering the provision of housing is a task that requires constant flexibility and involvement, adapting to changing needs and therefore each endeavour should be dealt with on a project specific level (Trusler, 2009:83). Through the consideration of the drivers and the objectives that are contained in the checklist this is made possible. With the sustainable integrated human settlements framework in mind, having a dedicated project team devoted to a project will increase success of execution as each member is familiar with the checklist and can make valuable contributions within their specific field to contribute to achieving each objective and driver. Such teams will consist of all necessary personnel from the relevant professions such as the urban planner, project manager, quantity surveyor, environmentalist, architect, urban designer, construction manager, civil, electrical and traffic engineers, financial managers and the like.

Monitoring and reporting with guidance from the sustainable integration checklist will then become necessary to meet the delivery commitments (Provincial Department of Housing, 2004:43) to alleviate the massive South African housing backlog and will also address poverty, environmental degradation, segregation, unemployment, mortality rates, health risk and contribute to a more

educated and involved community being established. The project team will report to the project manager who will ensure that the integration checklist is adhered to, to ensure housing stock being provided is habitable and compliant with sustainable development measurements as identified at the start of the project by the project team (Trusler, 2009:71), but also that all problems arising in the project can be dealt with effectively through the creation of a transparent feedback and input structure.

In order to have an effective project team it was concluded by the IFC that a process of “plan, do, check and act” as part of the performance standards need to be implemented. By keeping the checklist in mind, the process can consider all three spheres of sustainable development. The benefit of the performance standards stated by the IFC (2012:5) is that if a project promotes sustainable social and environmental performance that it can lead to improved social, financial and environmental outcomes within the whole project.

It was discussed in Chapter 4 that the completion of a pre-project due diligence for instance, will identify impacts and risks at the starting point of the project to assist the project team in avoiding and dealing with problems from the start. This identification process need to be based on the most recent environmental, economic and social baseline data of the area the project is located in with an appropriate level of detail including employment rates, community income levels, available resources, education and health facilities statistics available in the communities etc. thus concluding the practical implementation need for the sustainable integration checklist that is able to guide the due diligence identification process to ensure that such a process consider all risks and impacts of the project that can then be discussed and considered by the project team before any decisions are made (IFC, 2012:8). In addition, this level of detail consideration that is based on the objectives also allows the process to identify:

- Areas likely to be affected by the project activities.
- Identify future planning possibilities. Developments that are caused or initiated due to the project and will occur at a later stage. Identify the impacts from unplanned developments at the stage when the due diligence is undertaken for the project.
- Indirect project impacts on the ecosystems and bio diversities of the project location.
- Existing facilities that are not funded under the project and would not have been expanded or maintained without the project but contributes to the viability of the project.

As part of the due diligence process the dynamic nature of a project can be recognised and with the assistance of the checklist be able to adapt to changes and be responsive towards unforeseen circumstances (IFC, 2012:10) without compromising on crucial development drivers.

Detail expansion of the framework for sustainable integrated human settlements is possible especially within evaluation and monitoring as this research did not consider these sectors comprehensively. In conclusion, to ensure future studies on the topic remains comprehensive and inclusive of all the drivers of sustainable development it is needed that the sustainable integration checklist is used as guidance. Dissecting the drivers to sustainable development objective made the drivers more comprehensible and allowed a practical approach to planning and implementing integrated human settlements as well as allowed the point of departure for a method to guide the production of a framework that can be used for evaluating and monitoring as well not only within housing developments but also current integrating human settlements policies and legislation from a sustainable development perspective based on the simplest form within the sustainable development spheres.

7.8 Conclusion 7: There is a gap between literature and practice relating to planning of sustainable integrated human settlements.

The research investigated the concept of sustainable development and interface with integrated human settlement planning. Chapter 2 investigate the drivers of sustainable development and the objectives that ultimately guide integrated human settlement planning. These drivers were summarised in Table 3 contained in Chapter 2 and consisted of the following drivers:

- Mixed income communities.
- Employment.
- Community integration.
- Social facilities and amenities.
- Education.
- Energy efficiency.
- Resource sustainability.
- Open space planning.
- Land availability.

These drivers were also identified during the case study documentation analysis that concluded alignment between the literature review and the case study documentation review. However, the case study documentation review further provided additional drivers to be considered based on the objectives that were identified. Furthermore, the expert analysis also identified additional drives based on the feedback that was received on the objectives. The following additional drivers were identified during the empirical investigation:

- Government funding and subsidy programmes.

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- Investment.
- Public participation.
- Safety and security.
- Transportation systems.
- Infrastructure optimisation.
- Technology.
- Government capacity.
- Waste management and pollution control.
- Storm water management.

Even though the initial drivers as discussed in Chapter 2 were indicated during the empirical investigation in Chapter 6 the identification of additional drivers leads to the conclusion that there are gaps between literature and practice relating to planning of sustainable integrated human settlements.

Current planning approaches of integrated human settlements can be enhanced with the consideration of all the sustainable development drivers and objectives as contained within Chapter 2 and Chapter 6 combined to ensure a comprehensive approach.

7.9 Conclusion

This chapter considered the aims and objectives of the study in order to draw conclusions based on the findings that were presented during the literature review, policy and legislative framework analysis and empirical investigation.

It was concluded that there is an interface between integrated human settlement planning and sustainable development objectives and that currently integrated human settlement planning is based on the objectives of sustainable development to a fair extent.

In an attempt to enhance the approach to integrated human settlement planning the research concluded that the drivers of sustainable development as summarised in this chapter could be employed to achieve comprehensive planning approaches. Considering and understanding each driver and objective in its simplest form enables the urban planner to address each separately which when combined, result in addressing each sphere of sustainable development comprehensively.

The success of including the drivers within planning approaches depend on understanding the influence that these drivers have on each other and ultimately the influence that the three spheres of sustainable development will have on each other. This was emphasised by comparing

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sustainable development to a rising tide that influence all the spheres of sustainable development as one sphere (boat) lifts and have increased success.

During the chapter it was concluded that policy and legislative framework in South Africa does not comprehensively align as current human settlements provision does not proactively address sustainable development. The need was emphasised to revise current policy and legislative frameworks to produce a combined and inclusive framework that addresses all three of the spheres of sustainable development in order to remove the fragmented approach to human settlement provision in South Africa.

There is a need for a sustainable integrated human settlement planning approach in South Africa that can address the housing complexities. Through the guidance of the sustainable integration checklist it is possible to enhance the current planning approached based on the objectives of sustainable development that will result in the provision of a better quality of life to all South African residents.

Chapter 8: Recommendations

8.1 Point of departure

This chapter considered the research conclusions drawn in the previous chapter and aims to provide planning recommendations to address the current approaches of sustainable integrated human settlements. As final recommendation, this chapter proposes a sustainable integration checklist to guide the planning of integrated human settlements that will assist Urban Planners within the public and private sector, as well as related planning authorities to plan sustainable integrated human settlements in the midst of the increasing housing backlogs in South Africa.

It is the responsibility of the urban planner to understand sustainable development as discussed in Chapter 2 as well as understand the concept of how human settlements are provided and integrated, that was discussed in Chapter 3. The knowledge of how the three spheres of sustainable development are linked and how these drivers can be used to influence development of human settlements, combined with the TBL sustainability framework that can guide and measure implementation, evaluation and monitoring as explained in Chapter 4, can be employed to provide a sustainable and practical framework to guide sustainable integrated human settlement planning. Planning approaches should however be supported by a strong policy and legislative framework to guide and support the implementation of sustainable integrated human settlements.

The sustainable integration checklist that is recommended in this chapter contains a comprehensive exposition of the identified drivers that should be considered. The proposed checklist can transform the current approach to housing provision towards sustainable integrated human settlement developments in South Africa.

Recommendations included in this section relate to the aims and objectives of this study (cross reference to Chapter 1) and further suggest areas for future research to be considered to substantiate the findings of this study and guide the planning profession towards sustainable integrated housing provision, as explained accordingly.

8.2 Recommendation 1: The interface between integrated human settlement planning and sustainable development objectives should be strengthened through identified drivers

Through the reflection on the concept of sustainable development in Chapter 2, three spheres of sustainable development were considered to guide the integration of human settlements. These drivers should be considered within broader spatial planning approaches to strengthen the interface between integrated human settlements and sustainable development.

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The Identified drivers of sustainable development were further considered in Chapter 3 to understand how these drivers can be used to address the design of integrated human settlements. These drivers should thus directly inform design considerations to ensure that human settlements are integrated and sustainable. The following drivers are considered:

- Mixed income communities.
- Employment.
- Government funding and subsidy programmes.
- Investment.
- Community integration.
- Social facilities and amenities.
- Education.
- Public participation.
- Safety and security.
- Transportation systems.
- Infrastructure optimisation.
- Technology.
- Government capacity.
- Energy efficiency.
- Resource sustainability.
- Open space planning.
- Land availability.
- Waste management and pollution control.
- Storm water management.

Within the economic integration sphere the driver of integrated communities considered the approach of mixed income developments which is a good point of departure when considering de-concentrating poverty and providing better life quality for lower income residents, but this approach should not only attract tenants with few or no housing options as encouraged by the current subsidy programmes, but also tenants who are willing to pay market prices. To achieve this, it is recommended that the housing and development structures be built to high standards and quality, that is acceptable to higher income residents rather than conforming to expectation of low income or subsidies beneficiaries. In line with the current government objective to provide housing that is “income blind” in design (cross reference to section 3.2.1), it is recommended that the design conforms to high-end market quality (Smith, 2002:11).

Identifying the right mix of housing typologies and tenure options is a crucial consideration that needs extensive planning to ensure successful implementation (refer to section 6.5.3.1). In providing integrated neighbourhoods it is imperative that low income residents are distributed throughout the development in small clusters, in order to effectively de-concentrate poverty and addressing related social ills from the start. The inclusionary housing policy that was introduced in South Africa has been met with challenges, although of its success across the globe. Allocating 20% of residential units within a settlement to low income residents or subsidy programmes can be a method of reducing the housing backlog, the current planning approach needs to be reconsidered. For example, by dedicating 5 units out of a multi-storey block with 24 units towards fully subsidised beneficiaries and a further 5 to partially subsidised beneficiaries and the remaining 14 to the open market for rental or buying options, then the residents from those 10 units will be absorbed in an environment of higher quality and most likely directly influenced by residents living around them. Then having a few of these proposed mixed multi-storey blocks clustered in a neighbourhood, providing residents of similar groups in close proximity of one another but moving away from whole extensions or pockets specifically characterised by a single group of low income or subsidised beneficiaries. The inclusionary approach to housing provision is recommended for future research as a field of research requiring intervention to produce economic non-segregated neighbourhoods.

Employment was also identified as a driver, with economic opportunities and job creation within integrated developments as important considerations to the economic growth of a neighbourhood. Clustered provision of business, retail and commercial uses is recommended as one method of producing opportunities by creating economic corridors that provide agglomerated advantages and decreases travelling for residents when utilising these areas. A second method to consider is by providing smaller clusters of business uses within residential areas, following the implementation of the Live/work design concept (cross reference to section 3.2.1). This can be achieved through the encouragement of a mixed land use approach allowing densification within residential areas through the live/work design within developments and emphasising the benefits (DVRPC, 2004:3) that it will have to the overall growth of the community economy, as well as the individual.

Social dynamic as a sphere of sustainable development, emphasised that integrating a community relies on more than just the housing units itself. By addressing the segregated history that is still reflected in South African neighbourhoods will require intervention from Urban Planners and decision-making authorities, by being conscious of planning decisions. To achieve social integration, it is however needed to have a neutral approach to housing provision, where religion, race, culture and language do not matter when buying or being allocated a house as a beneficiary,

it should also not influence the criteria of becoming a qualifying subsidy beneficiary. Social integration is reliant on increasing social interactions between residents irrespective of their background. The inclusion of a broad range of facilities and amenities could encourage interactions and could reduce social segregation at interface level. The objective however, is to identify context-based needs, as each human settlement will differ. In this sense, the residents (and participatory planning) should be considered an essential part of the planning and decision-making process relating to sustainable integrated housing provision.

Providing facilities from a planning perspective relies on site allocation and public participation but maintaining such facilities from a developer's perspective also proves challenging. It is recommended that these facilities and amenities be transfer to the different body corporates of the surrounding housing units in the area to maintain and manage. Allocating a facility to a body corporate for management and maintenance will allow the provision of employment for residents of that complex and the surrounding area, conforming to literature of social capital and local ownership.

Education provides a further opportunity to explore within the planning of sustainable integrated housing developments. Education facilities can provide employment opportunities that can be reserved for local residents within maintenance of school facilities, while providing recreational facilities and amenities to the surrounding communities, full-filling an important role in facilitating social interactions.

As part of establishing employment within sustainable integrated human settlements, security initiatives can be suggested to the community for those who are unemployed and ready to take up the challenge as residents know their neighbours and will be more invested in keeping their families safe. Urban Planners can assist in creating safer environments through design techniques that increase "eyes on street" and natural surveillance but this responsibility lies with the residents by being aware of what is happening around them.

Transportation in general it is recommended to move away from private transportation planning and be conscious of pedestrian and cyclist as a primary focus and secondary on public transportation. Ideally, providing an integrated human settlement that considers all the needs of the community such as employment and social opportunities, the need for transportation should be reduces significantly. In instances where developing and extending the infrastructure is needed for effective transport corridors to be created, it is suggested to be planned thoroughly before implementation, with the consideration of being labour intensive to optimise skill transfer and provide local employment opportunities.

Ultimately policies and planning approaches should be aligned to protect the environment and reduce energy usage. The objective should be to create sustainable neighbourhoods that are environmental conscious. Therefore, the need exists for government funding in assisting developers to implement alternative approaches to conserve resources (refer to section 6.6). Further investigation is recommended to develop a program that supports developers to include environmental conscious development initiatives, where ecological integrity is protected during development.

It can be recommended that housing developments can also follow the approach of smaller scale, lower density developments within neighbourhoods to include appealing open spaces that accommodate the critical areas as well as the residents (Popkin *et al.*, 2004:19). Each open space has its own characteristic and requirements based on the specific community it serves therefore no complete set of guidelines can exist for open space design. The experienced and qualified professionals that are designing and planning open space have to be creative to maximise the potential of the space available and ensure that open spaces comprise of a range of different types (PLA Vic/Tas & DPCD, 2013:48). Open space planning is recommended to be based on 3 principals according to PLA and DPCD (PLA Vic/Tas & DPCD, 2013:49); that open space has to be accessible and liveable, have multi-functions and be adaptable, and be sustainable and protect the environment.

From a spatial planning perspective, smaller developments within the city should be considered as infill development, rather than expanding the city's neighbourhoods and contributing to urban sprawl. If infill development is not possible and neighbourhood expansion is required, then it is crucial that all infrastructure and transportation connections are efficient and will result in effective delivery of services needed to the community.

Identifying these drives and including them within integrated human settlements planning approaches will increase the potential to achieve successful integration and being able to plan for sustainable integrated human settlements.

8.3 Recommendation 2: The current policy and legislative framework in South Africa should be aligned to ensure the planning of sustainable integrated human settlements

Policies that are implemented to guide the development of human settlements should align with objectives of integrative planning and sustainable development objectives. Sustainability, in this sense should refer to fiscally, socially, economically, environmentally, financially and politically sustainable housing settlements (National Department of Human Settlements, 2010:43). All three spheres of sustainable development should be considered and balanced in terms of standards of

housing, the number of units required, end user affordability, and the fiscal allocation to the development of such settlements (National Department of Human Settlements, 2010:43).

Current disjointed policies and legislative frameworks (refer to Chapter 5) should be reconciled as a national policy to guide sustainable integrated human settlements in terms of planning, implementation, evaluation and monitoring. Such national policy should as point of departure consider the global goals for sustainability, while guiding the implementation of such through strengthening of identified drivers. Such a policy could eliminate the fractured approach within governing departments and enforce further alignment between development policies and budget allocation.

The alignment of policies and legislative frameworks could also speed up delivery of housing within the current housing backlog by streamlining approval and administration processes in the establishment of human settlements (GDHS, 2012:80) and by standardising the quality of sustainable integrated human settlements. Improved technology systems might be valuable in this regard and should be explored as part of further research into streamlining spatial planning and sustainable integrated human settlements.

8.4 Recommendation 3: The local perspective pertaining to sustainable integrated human settlement should be included when considering context-based planning solutions for the housing sector in South Africa

This study investigated four case studies and their approach to practical planning and provision of integrated human settlements. These cases provided valuable examples of best practices linking sustainability objectives with that of integrated human settlement provision, and more such case should be documented to expand the literature base guiding the planning of sustainable integrated human settlements from a spatial planning perspective.

From the case studies it was evident that public participation is a critical aspect in light of the success of integrated human settlements and related level of sustainability. Based on the findings of the empirical investigation and local perspective towards planning for sustainable integrated human settlements (refer to section 6.6), participatory planning should thus be explored to enhance context-based planning of sustainable integrated human settlements.

8.5 Recommendation 4: A proposed sustainable integration checklist to guide the planning of integrated human settlements from a sustainable development perspective

This study recommends an integrated checklist to guide the planning of sustainable integrated human settlements based on the spheres of sustainable development, the sustainable

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development drivers as overlapping with integrated human settlements and sustainable integrated planning objectives that were identified throughout the study. It is recommended that the checklist is used as the bases for producing a sustainable integrated human settlements framework that can guide planning, implementation, evaluation and monitoring of integrated human settlements from a sustainable development perspective. Table 16 below captures the proposed sustainable integration checklist, derived from the findings of this research.

Table 16: Sustainable integration checklist for human settlements development

Sustainable development spheres	Sustainable development drivers	Sustainable integration objectives	✓
Economic integration	Mixed income communities	- Focus on affordability of units. - Mixed tenure and typology options to provide across the income divide (PDG, 2011:18). - Economic justice - address community income upliftment and de-concentration of poverty (Tracy, 2008:27). - Provide housing in the GAP market. - Incorporate informal housing into planning and design. - Consider all income groups and associated patterns of consumption (Earth Charter, 2000:4; CEE, 2017:22). - Assemble corridors as opposed to scattered parcels for economic opportunities and supported growth (Gibbons, 1998:8). - Allow for diverse economic activities	
	Employment	- Maintain stable and high levels of economic growth and employment (Parkin <i>et al.</i>, 2003:19). - Increase employment opportunities and exposure to higher income residents' ethic/values and labour force network. (Smith, 2001:5). - Support emerging and growing entrepreneurial potential and boosting new business (GDHS, 2012:71). - Use local labour to provide opportunities to train and educate workers while providing the local community with the opportunity of employment (Koen & Theron, 2010:6; Local Department of Human Settlements, 2016). - Use resources effectively to enable development and growth of small enterprises (Li, 2006:25).	

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		Local economic development in rural areas to provide job opportunities and reduce high levels of migration to urban areas.	
	Government funding and subsidy programmes	- Mixed tenure options with access to a flexible range of subsidy programmes (PDG, 2011:1; Bradlow <i>et al.</i>, 2011: 272; Mvambo, 2014). - Address the challenges of financial needs (Li, 2006:25). - Grant and subsidy programs need to favour democratic societies. - Provide rental options to non-qualifying beneficiaries - Ensure security of tenure. - Provide for cross subsidisation within all developments - Provide new initiatives to make funds available to attend to the upkeep of properties especially subsidised housing. - Increase methods for subsidy programmes to make provision for items making properties more sustainable.	
	Investment	- Partnerships with the private sector to encourage greater investment in integrated housing and mixed-use developments. - Promote greater local investment by residents.	
Sustainable development spheres	Sustainable development drivers	Sustainable integration objectives	✓
Social dynamics	Community integration	- Build democratic societies that are gender and race equal, inclusionary and just (Earth Charter, 2000:3; CEE, 2017:22). - Social justice – address human rights and development (Earth Charter, 2000:4; CEE, 2017:22). - Improve community and spiritual well-being of all religions (Earth Charter, 2000:4; CEE, 2017:22). - Encourage tolerance, trust, communication and respect for different faiths, traditions and cultures (Darby and Knox, 2004:19). - End racial divides and class prejudice (Mvambo, 2014). - Provide economic strategies and a community plan aimed at creating sustainable development that reflects sense of community and human scale design.	

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	• Social facilities and amenities	• Provide supportive services to the community to sustain community social relationships (Popkin <i>et al.</i>, 2004:1). • Ensure access to services and equal opportunities (Li, 2006:25). • Address the challenges of recreational and spiritual needs of a community (Li, 2006:25). • Health facilities such as public hospitals and clinics need to be geographical balanced when distributed (Killian <i>et al.</i>, 2005:15). • Promote mental and physical health, extending life expectancies and achieving better universal health and access to quality health care within newly developed human settlements (Kutesa, 2015:7). • Health services for families to be more accessible (National Department of Human Settlements, 2015:26). • Provide more community related functions, such as community centres, clinics and active open spaces to promote more social integration. • Ensure that developments include readily available community components in walking distance from residential areas, such as shopping, commerce, education, employment and recreation.	
	• Education	• Address access to information for lifelong learning, formal primary education and early childhood development (Earth Charter, 2000:5; CEE, 2017:22). • Integrate and improved education systems (Darby & Knox, 2004:7) to increase the prospect of employment, opportunities and advantages for residents (McVerry, 2008:19). • Promote self-sufficiency of residents (Popkin <i>et al.</i>, 2004:1). • Include basic health education to prevent diseases (WCED Brundtland Commission, 1987:96). • Provide environmental education that train residents in sustainability measures. • Include education programmes that encourage conservation of resources. • Increase the awareness of the sustainable development concept.	

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	Public participation	- Encourage participatory and inclusive decision making and community involvement (Smith, 2001:15-16). - Allow for extensive and continues public participation process (Local Department of Human Settlements, 2017:1). - Ensure continuity in practice of good public participating structures to be utilised effectively and ensures sustained and continues participation (Li, 2006:25). - Increase emphasis on public participation that provides insight to immediate needs and socio-economic issues. - Allow public to be part of planning decisions to consider economic, environmental and social impacts of proposed developments.	
	Safety and security	- Promote respect, encourage and celebrate the different faiths, cultures and traditions by eliminating racism and sectarianism to enable people to work and live without the fear or intimidation (Darby and Knox, 2004:21). - Promote crime free and safe environments (Li, 2006:25). - Stimulate a sense of confidence in communities (Li, 2006:25). - Implement security measures to create safe environments.	
	Transportation systems	- Provide well located and safe public transport. - Effective provision of different transport modes including transit, cycling and pedestrian movement. - Incorporate of efficient public transport systems that are affordable. - Ensure that transportation systems make the best use of road systems and existing facilities to optimise their fullest capacity. - Increase provision of walkways for pedestrian movement. - Locate developments in closer proximity to major transport nodes and corridors, economic opportunities and social amenities. Reduce the rate for such public transport drastically. - Elevate excessive travelling and impact on public transport and road networks by creating work opportunities close to home, to get a work, home and play environment.	

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		Accommodate a proper road hierarchy that can accommodate existing and future transport planning.	
	Infrastructure optimisation	- Improve physical infrastructure, community institutions and commercial facilities to increase social interaction (Popkin <i>et al.</i>, 2004:42). - Service provision and adequate infrastructure to improve the social environment (WCED Brundtland Commission, 1987:93). - Evaluate development - Evaluate existing infrastructure and provide upgrades and maintenance programmes. - Provision of infrastructure in rural areas to balance development in the country.	
	Technology	- Integrate planning systems with technological platforms. - Optimize opportunities generated from industry 4.0 i.e. big data; augmented intelligence etc. - Promote energy-efficient technology (Agenda 21, 1992:55) through clean energy research, cleaner fossil-fuel technology used in development, energy efficiency and the promotion of clean energy infrastructure (Kutesa, 2015:16).	
	Government capacity	- Encourage accountability in governance (Earth Charter, 2000:5; CEE, 2017:22). - Support change in senior levels of government and municipalities to evolve towards sustainable practices. - Attempt to achieve sustainability goals through alignment of national, regional and local legislation. - Encourage the increase institutional capacity to support development.	
Sustainable development spheres	Sustainable development drivers	Sustainable integration objectives	✓
Environmental planning	Energy efficiency	- Enhance and conserve the resource base –promote efficient management of energy demand and water consumption by households (WCED Brundtland Commission, 1987:46; The Sustainability Institute, 2009:8). - Promote values that will encourage consumption standards that can be ecologically supported (CEE, 2017: 21).	

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		• Reduce household energy consumption (GDHS, 2012:57). • Implement alternative energy methods to reduce the environmental impact of buildings (Koen & Theron, 2010:5). • Integrate and mobilise resources for efficient and effective utilisation (Li, 2006:23). • Promote energy conservation through efficient building design and land use planning. • Use passive environmental control techniques in order to maximise efficiency and cost saving (Koen & Theron, 2010:5). • Sustainable environment – increase the use of renewable energy innovations (Li, 2006:25).	
	Resource sustainability	• Ecological integrity – follow a preventive and precautionary approach to ecological protection. Protect threatened and critical habitats, minimise the adverse impact on quality of water, air and natural elements (Gibbons, (1998:8; CEE, 2017: 21). • Effectively protect the environment (Parkin <i>et al.</i>, 2003:19) – protect natural landscapes to retain their unimpaired qualities to protect ecosystems at work including maintaining natural drainage ways (UN Habitat, 1976:38; Gibbons, 1998:8). • Encourage the prudent use of natural resources (Parkin <i>et al.</i>, 2003:19). • Promote equality of opportunities and ensuring equitably distribution of resources (Ireland Housing Executive, 2007: 25). • Encourage environmental promotion and the improvement to natural ecologies (GLGH, 2011:3). • Encourage responsible consumption of services and resources. • Promote the protection of natural resources through the preservation and extension of water courses and green spaces. • Encourage conservation of resources through taking responsibility of individual usage.	

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	Waste removal and pollution control	• Effective disposal and recycling of waste building materials and waste generated by the households. • Effective pollution filtering (GLGH, 2011:3). • Minimise the use and discharge of toxic pesticides and chemicals that have negative environmental effects, particularly those that are persistent.	
	Storm water management	• Implement attenuation measures to protect sensitive ecosystems during natural drainage in urban environments. • Protect water courses in their natural state and those courses that have been significantly altered need to be restored to more natural state.	
	Open space planning	• Design connectivity and easy access to open space, limit barriers and provide open space in walking distance from where people live and work (PLA Vic/Tas & DPCD, 2013:52). • Ensure connectivity between all open spaces as well as connection to other services and facilities (PLA Vic/Tas & DPCD, 2013:52). • Design continuity of green spaces to allow ecosystems development and increasing biodiversity (GLGH, 2011:3). • Design connectivity of spaces - access to a full range of facilities within 30min or 2km walking distance (NMBM, 2007:10). • Promote increase of outdoor activities for better human health (Killian <i>et al.</i>, 2005:33). • Integrate green space and natural features within development. • Decrease urban sprawl through efficient land use planning and the promotion of diversification and intensification. • Provide connected public open spaces that links with social amenities. • Promote replanting and management of vegetation within developments.	

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	Land availability	- Select locations in economic viable areas with opportunities for the residents. (Smith, 2001:15-16). - Give attention to the location of settlements in terms of connectivity and transportation (Koen & Theron, 2010:6). - Use well located land not on the periphery. - Ensure that location and surrounding environment guide site selection - consider infill development in close proximity to economic development. - Make land use decisions based on a best use approach that considers ecosystems, environmental integrity and diversity. - Promote sensitive land uses such as fertile soil for agriculture rather than development throughout the urban areas.	
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Source: Own construction (2018)

8.6 Conclusion

This chapter made recommendations to enhance the current planning approach towards sustainable integrated human settlements. The development of sustainable integrated human settlements is complex and therefore the study proposed, as point of departure, a sustainable integration checklist to guide the planning of integrated human settlements to enable the planning of sustainable integrated human settlements as a solution to address the current housing complexities in South Africa.

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Izaan van der Walt
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072 273 1679

Dear Sir/Madam.

September 2018

RE: Considering integrated human settlements from a sustainable development perspective.

You are hereby invited to partake in research conducted as part of an MSc in Urban and Regional Planning at the North West University. The study considers integrated human settlements from a sustainable development perspective based on the sustainable development spheres; economic integration, social dynamics and environmental planning, in order to identify current realities and possible solutions to enhance sustainable development as part of broader human settlement planning.

Your selection to participate in the study is based on your experience and expertise as an urban and regional planner, and because of the unique insight you would provide (from your perspective) on sustainable and integrated human settlement development.

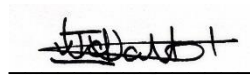
Your participation is required in the form of the completion of a short questionnaire. The research will be conducted according to the ethics guidelines of the North West University. Your participation is voluntary and will not include any remuneration. If you choose to participate, please note that your participation is anonymous and your name or contact detail will not be shared with anyone or included in any report that results from the research. You also have the right to omit from answering questions.

The data from the questionnaires will be analysed and used as part of the overall outputs of the study and represented in the form of an MSc dissertation. Dissertations from the North West University are available in printed form from the University Library and are also publicly available on the internet.

Considering integrated human settlements from a sustainable development perspective

I hope that you will consider taking part in this research as your feedback will result in a more comprehensive database and allowing a better understanding of integrated human settlements and their sustainability.

Warmest Regards,



Izaan van der Walt

Question 1:	Contact Information				
Name					
Email address					
Question 2	Years in industry				
Question 3	How familiar are you with integrated human settlement planning?				
	Not at all	Slightly	Fairly	A lot	Completely
Question 4	To what extent does integrated human settlement planning in South Africa currently consider sustainable development objectives?				
	Not at all	Slightly	Fairly	A lot	Completely
Question 5	Sustainable development consists of three spheres; economic integration, social dynamics and environmental planning. Rank the importance of each sphere.				
Economic integration	Not Important	Slightly Important	Important	Very Important	
Social dynamics	Not Important	Slightly Important	Important	Very Important	
Environmental planning	Not Important	Slightly Important	Important	Very Important	
Question 6	To what extent does the success or failure of one of these spheres influence the remaining two?				
	Not at all	Slightly	Fairly	A lot	Completely
Question 7	Do South African government policy, legislation and programmes on human settlement provision consider sustainable development?				
	Yes		No		
Question 8	To what extent do South African government policy, legislation and programmes on human settlement provision consider sustainable development?				
	Not at all	Slightly	Fairly	A lot	Completely
Question 9	How important is the following sustainable development objectives when planning integrated human settlements?				
Maintenance of stable and high levels of economic growth and employment	Not Important	Slightly Important	Important	Very Important	
Assemble corridors as opposed to scattered parcels for economic opportunities and supported growth	Not Important	Slightly Important	Important	Very Important	
Economic justice - addressing community income upliftment and de-concentration of poverty.	Not Important	Slightly Important	Important	Very Important	

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Consideration for all income groups and associated patterns of consumption	Not Important	Slightly Important	Important	Very Important
Mixed tenure and typology option to provide across the income divide	Not Important	Slightly Important	Important	Very Important
Building democratic societies that are gender and race equal, inclusionary and just	Not Important	Slightly Important	Important	Very Important
Social justice – addressing human rights and development	Not Important	Slightly Important	Important	Very Important
Education– addressing access to information for lifelong learning, formal primary education and early childhood development	Not Important	Slightly Important	Important	Very Important
Community and spiritual well-being of all religions	Not Important	Slightly Important	Important	Very Important
Participatory decision making and community involvement	Not Important	Slightly Important	Important	Very Important
Enhancing and conserving the resource base –Efficient management of energy demand and water consumption by households	Not Important	Slightly Important	Important	Very Important
Effective disposal and recycling of waste building materials and waste generated by the households	Not Important	Slightly Important	Important	Very Important
Effective protection of the environment – Natural landscapes retaining their unimpaired qualities to protect ecosystems at work including maintaining natural drainage ways	Not Important	Slightly Important	Important	Very Important
Ecological integrity – preventive and precautionary approach to ecological protection. Protecting threatened and critical habitats, minimising the adverse impact on quality of water, air and natural elements	Not Important	Slightly Important	Important	Very Important
Connectivity and easy access to open space, limiting barriers and providing open space in walking distance from where people live and work	Not Important	Slightly Important	Important	Very Important
Question 10	In your opinion, what other objectives of sustainable development do you consider important that influences human settlements planning and development within South Africa? Please list your recommendations			

Thank you for your participation

Last updated

14 November 2018