

**ENVIRONMENTAL IMPACTS OF INFORMAL ECONOMIC ACTIVITIES IN A LOW
COST HOUSING DEVELOPMENT, CASE STUDY OF DUNOON, CAPE TOWN**

by

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ABSTRACT

Over the past decades, environmental problems associated with low-cost housing developments have been reported on a national and global scale (see Sowman and Urquhart, 1998 and also Norville, 2003). Poor community participation in the early stages of project design and lack of public involvement in decision making regarding low cost housing development are said to have contributed to these environmental issues. The environmental issues that have been reported so far relate to escalating water quality due to poor storm water management and improper waste disposal which poses a threat to the natural environment.

While there is an emerging view that the nature of environmental problems experienced in these settlements are due to a lack of participation by local people in decision making, there is virtual no studies that have located this analysis within the theoretical debate of modernist planning. The issue that has been ignored thus far is the fact that low cost housing development (in generally) still resembles the spatial pattern of both the modernist and apartheid planning orthodox. It is thus from this context that the local people are increasingly excluded from participating in decision making. This form of modernist development is contrary to the ethos of sustainable development. In essence, sustainable development, as a new development theory, also adheres to the notion of local citizenry involvement in development for the benefits of the future generation. The research study further argues that poor people need to participate in decision making regarding the design and delivery of these houses (Oelefse, 1997). Therefore, the study investigated the underlying environmental implications associated with informal economic activities in a low cost housing establishment.

The research study adopted a qualitative research design and an inductive approach. Dunoon was used as a case study for the research. The study used two sampling techniques, purposive sampling and random sampling, were used. Interviews, questionnaires and observations were used to collect data from the residents, informal businesses in Dunoon and key stakeholders from the Department of Environmental Affairs as well as City of Cape Town. The findings of the thesis illustrate that long-term environmental impacts that are visible in the low-cost housing development of Dunoon are triggered by informal economic activities that are practised by the local people to make a living.

In this regard, this thesis argues that local people need to be involved in the early planning and design stages of low-cost housing development. They need to be involved in all development stages to ensure that they drive the vision of the development. Lack of involvement of the local people in the initial stages of decision-making on the project triggered severe long term

environmental impacts. The study then concludes that long-term environmental impacts in Dunoon are intertwined with the escalation of informal economic activities initiated by the local people in order to cope with harsh economic realities. These informal activities are a form of reaction to the imposed version of development. Thus, the environmental problems that emerged out of this pattern of human activities must be analysed by means of conceptualising the Dunoon low-cost housing as a product of modernist planning philosophy. Based on the information gathered and discussed in this thesis, it is concluded that the low-cost housing development is a product of modernist planning.

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DEDICATIONS

I would also like to dedicate this thesis to following angels that have departed from this earth; Nomvuyo Makabeni, Tandeka Makabeni, Luyanda Makabeni and Innocent Puleng Mokoena. This thesis goes out to you too for the different roles you have played in my life into shaping this person I am today. If it wasn't for your love, prayers guidance I would not be where I am today.

DECLARATION

I, **Yonela Makabeni**, declare that the contents of this dissertation/thesis represent my own unaided work, and that the dissertation/thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

Signed

Date

LIST OF ABBREVIATIONS AND ACRONYMS

ANC	African National Congress
CBD	Central Business District
CIAM	Congrès Internationaux d'Architecture
CoCT	City of Cape Town
DAG	Development Action Group
DEADP	Department of Environmental Affairs and Development Planning
DHS	Department of Human Settlement
HDA	Housing Development Agency
EC	Ecological Modernization
EIA	Environmental Impact Assessment
PP	Public Participation
RDP	Reconstruction Development Programme
SD	Sustainable Development
SEA	Strategic Environmental Assessment
SEPC	Social and Economic Planning Council
SIA	Social Impact Assessment
StatsSA	Statistics South Africa
US	United State
WCED	World Conference Environment Development
DoNT	Department of National Tressury
SEPC	Social and Economic Planning Council

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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION AND CONTEXTUAL BACKGROUND

Over the past decades, some environmental impacts associated with the development of low-cost houses in South Africa have been reported (Magalhaes & Eduardo, 1998; Norville, 2003; Sowman & Urquhart, 1998). This thesis reports on the nature of environmental impacts associated with the emerging informal economic activities in a low-cost housing development with specific reference to Dunoon residential area located in City of Cape Town. Historically, particularly in South Africa, the town-planning process has always operated in isolation to environmental management. During this period, the environment was not conceived as part of the development planning, hence the planning process ran parallel to the environmental management procedures (Sowman & Urquhart, 1998). While this is critical in the analysis of this study, it is crucial to mention that the primary concern of the study focuses on the relationship between planning and environmental issues by showing how mainstream spatial planning, as a product of the modernist planning philosophy, directly or indirectly impacts on the environment.

At a conceptual level, the study draws on the theory of modernist planning philosophy¹ to develop a deeper understanding of the environmental problems playing out in low-cost houses. In this case, it is the environmental impacts of low-cost housing development in Dunoon area as an illustrative case study.

While the development of low-cost housing is sold as a post-apartheid democratic alternative development model, this study argues that low-cost housing development is a product of a modernist planning where local people are viewed as mere beneficiaries, rather than active stakeholders capable of influencing the design of their living space (Scott, 2003: 258). The critical theoretical assumption behind the modernist planning philosophy is based on the notion that the social environment can be reconfigured through physical planning interventions. Under this planning modality, town planners and urban development managers often put more emphasis on the physical rather than the social aspect of urban planning. Thus, the low-cost housing in the

¹ Modernist planning is a philosophical construct that “refers to the dominant of scientific thought, in all aspects of life including the character, and or practice of humanity”. Within modernism was a “belief in linear progress positivist, technocratic, rational planning of social and geographic space; ‘standardized conditions of knowledge and production and a firm faith in the rational ordering of urban space’ to achieve individual liberty and human welfare” (Irving 1993: 476).

post-apartheid South Africa, the study argues, should be understood from this theoretical standpoint.

In understanding the nature of environmental impacts within the low-cost housing development, various studies have been conducted in South Africa from all scholarship circles over the last 23 years. For instance, Sowman and Urquhart (1998:7) identify a range of environmental impacts which include periodic flooding, rising damp damages, solid waste and wastewater which lead to the pollution of water bodies. Likewise, Magalhaes (1998) argues that environmental challenges associated with low-income houses in central areas create problems such as poor living conditions for the low-income residents and adverse environmental and social impacts on the rest of the populace. The author argues that these environmental challenges at low-cost houses are caused by the lack of sufficient investments in infrastructure to support the expansion of the cities by the local government. He further adds that low-income houses do not have formal access to affordable housing solutions and therefore trigger environmental impacts in low-cost houses.

Other studies conducted by Norville (2003) and Sowman (1998) show that environmental problems associated with low-income establishments are related to the location and placement of houses, site preparation, drainage and waste disposal. These authors argue that a number of the houses established through low-income housing programmes are located within unplanned developments. In such cases, the houses are often located away from public roads and are not directly serviced with amenities such as paved roads. While tracks and pathways may be found, infrastructure such as water supply pipelines and electricity poles are not laid out in an organised manner and therefore trigger environmental impacts.

While these scholars stated a profound analyses of environmental impacts, they do not focus on the long-term environmental impacts but only draw their focus on short-term environmental impacts associated with the physical environment. Moreover, even in their articulations, there is little stated that integrated these environmental problems with the human aspect. Environmental impacts associated with human activities, in particular, informal economic activities in low-income houses, has not received sufficient attention. As the human aspect has not been considered, this research thus aimed to investigate the long-term environmental impacts that arise from informal economic activities conducted by people residing in low-cost houses.

It is for this reason that the study sought to investigate the underlying nature of environmental impacts associated with informal economic activities that are emerging in the low-cost housing settlements. While these settlements were provided for residential purposes, it is also reported that these communities are partaking in economic activities with severe adverse effects on the

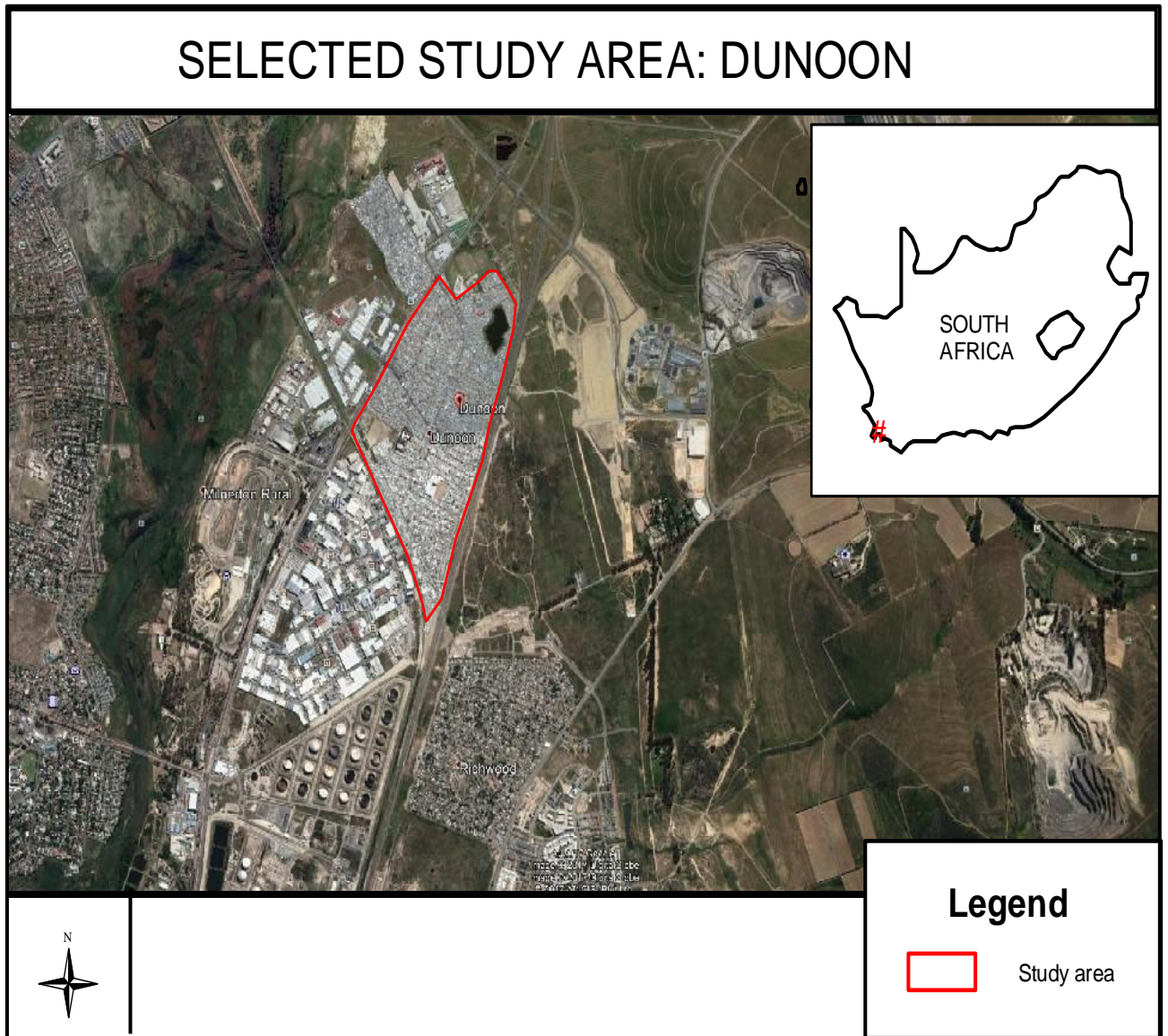
environment. From a theoretical perspective, the study draws from the conceptualisation of urban environment that takes the position that urban landscape is a product of modernist planning philosophy (Hobson, 1999). Similarly, Scott (2003) presents that South African urban areas can be traced back to the early modernist planning which emerged during colonialism and was later adopted by Apartheid. While these landscapes are historical, the debate is on how these low-cost houses resemble the relics of the early modernist discourse and practices.

1.2 BACKGROUND TO THE STUDY AREA

The study used Dunoon as the case study area. This area is situated in the north-eastern part of Cape Town (GPS coordinates 33°49'5.79" and Longitude: 18°32'29.79") (see Map 1.1 below). Dunoon Township is a Reconstruction and Development Programme (RDP) housing project in Cape Town, which was developed between 1996 and 2000. It covers approximately 90 hectares on Cape Town's north-western edge and was an abandoned farm on the urban edge when housing development commenced in the 1990s. Dunoon builds on the study of the Marconi Beam Informal Settlement Beam informal settlement upgrade between 1996 and 1998 and the subsequent follow-up study of Joe Slovo Park (Hayson, 2009). Marconi Beam Informal Settlement Beam was a transit area for squatters to be located temporarily until formal housing could be built for them. Joe Slovo Park was a housing development that was meant to house all the people in the Marconi Beam Informal Settlement Beam transit area. However, people kept moving onto the site, and an overflow of some 350 families ended up being housed in Dunoon (Hayson, 2009).

Location of the Study Area

Map 1: 1 Location of Study



Source: Modified from Google Earth, 2016

Dunoon is situated in the heart of high-income residential suburbs such as Milnerton, Tableview and Richwood with gated communities, trendy and apartment blocks, and an abundance of recreational activities such as golf clubs, restaurants, surfing and canoeing. The majority of residents of Dunoon work in these areas as waitresses, maids and other low skilled work. The study area comprises of brick houses, informal settlements and informal businesses such as second-hand furniture shops, street vendors and car washes.

1.2.1 Demographic status

The vast majority of the housing beneficiaries in Dunoon are black South Africans (specifically Xhosa-speakers) who had migrated to Cape Town from the former Transkei and Ciskei homelands in Eastern Cape in the 1980s and 1990s in search for jobs (Bery 2001; Hayson 2009) . The population stood at 31,134 in the 2011 census (CoCT,2011). Even though 95% of the residents are from the Eastern Cape, Dunoon comprises of other groups such as Coloured people from the surrounding areas. A number of nationals from other African countries have moved to Dunoon due to affordable accommodation, safety and security as well as job opportunities (Crush & Frayne, 2010). While 29% of the youth have completed Grade 12 and higher, 65% are employed as a labour force. According to the City of Cape Town Census (2011), only 77% of the households receive a monthly income of about R3 200 or less. Meanwhile, 41% of the households live in informal dwellings, and 78% use electricity as a source of light in their homes. These statistics were captured and recorded only for 2011 census; thus, they may have changed from 2011 to 2016 due to social factors such as changes in unemployment status, migration and other factors that came to light in the results of the research . Dunoon has unique geographical, ethical and historical features and has been featured in many Cape Town media such as GroundUp and News24. It is in stories such as when residents strike for better water and sanitation, houses and employment services from the City of Cape Town Municipality.

1.2.2 Socio-economic status

Dunoon is located near industrial and manufacturing factories that offer a lot of job opportunities for the area's residents. Despite the nearby employment opportunities, unemployment is still high at an estimated 37%. An estimated 77% of residents earn less than R3 200 per month (CoCT, 2011). Other than through formal employment, residents survive through informal economic businesses such as small home-based shops, home-based service industries such as hairdressing and motor repairs. In addition, they rent out accommodation and space for subsistence businesses in entire homes (i.e. in the lounge), backyard shacks and rooms in homes and hostel style blocks of flats. Dunoon is highly dominated by rural migrants who relocated from the Eastern Cape and immigrants from foreign countries (CoCT,2011). Some of the reasons that influence the migration of people from their original homes to settle in cities include social and economic reasons such as better employment opportunities, better education and livelihood (Crush & Frayne, 2010).

1.3 MOTIVATION FOR THE STUDY

Environmental concerns emanating from low-cost housing developments have been considered over the last decades since the introduction of RDP houses in the post apartheid democracy of South Africa (NDT, 2015). These environmental concerns have been documented by various authors but with little focus on the long-term environmental impacts of low cost housing development. Instead these scholars only draw their focus on immediate-short term environmental impacts because of physical issues such as construction. Moreover, there is little stated that integrates these effects with public participation and the people for whom the houses are built for. Long-term environmental impacts that emerge in low-cost houses can be traced in the modernist planning which is technocratic, rigid, top-down and does not resonate with the people on the ground (Hobson, 2003). However, these authors do not write about the people but rather about the construction (physically built environment) and not the human dimension. As the human aspect has not been considered, this research thus aims to investigate the long-term environmental impacts that arise from informal economic activities conducted by people residing in low-cost houses. These informal economic activities emerge from people staying in low-cost houses because they seek ways to cope with the harsh economic realities in the urban space (Frayne *et al.*, 2010). This study is crucial as it may bring a new dimension in understanding the causes of long-term environmental impacts in low-cost houses. People need to be involved during the early planning and design of any form of houses to prevent these long-term environmental impacts, more especially in the early planning stages of development.

1.4 DELINEATION OF THE RESEARCH

The study investigated long-term environmental impacts associated with human activities emanated from informal economic activities that emerge in low-cost houses of Dunoon, Cape Town. The study draws on the theory of modernist planning to analyse the nature of these environmental impacts.

1.5 PROBLEM STATEMENT

Since 1994, the South African ANC led government state has provided about 3.7 million RDP housing through the Department of Human Settlement. The department has built low-cost houses for disadvantaged people in townships and urban areas (NDT, 2015). While this is a noble idea from a social development perspective, environmental challenges associated with low-cost housing development are being reported (Sowman & Urquhart, 1998). There is also a debate about the nature and extent of environmental issues emerging in these localities. As stated by authors such as Scott (2003) and Oelofse (1997) that there are underlying factors that lead to these environmental impacts in low-cost houses. This study seeks investigate these under pinning

factors in the context of the growing environmental problems in the South African low cost housing areas,

From a social sustainability perspective, it is argued that local people need to participate in decision making regarding the design and delivery of these houses (Sowman & Urquhart, 1998; Hobson, 1999). Scott (2003) and Hobson (1999) argue that other influential factors that result in ecological burdens from a social perspective include poor community participation in the early stages of project design and lack of public involvement in decision making about houses constructed for them. As noted by Hoston (1999) and Harvey (1989), the people excluded from participating in decision making tend to react to these development plans by creating their own lived space, which may, in one way or another, result in enormous environmental challenges. Therefore, this study investigated the underlying nature of environmental implications associated with informal economic activities in the low-cost housing settlement, with specific reference to the Dunoon residential area.

1.6 RESEARCH QUESTION

Initially, there were some challenges regarding the identification of possible research questions that could bring about a more academic analytical pattern of this research. Additionally, the study was primarily going to identify environmental issues. However, it emerged that those issues are obvious and over researched in low-cost houses, what is not known as yet are the underlying factors that lead to environmental problems and associated cummulatives. Therefore, the following research questions were compiled:

1. What are the emerging informal economic activities in low-cost housing with reference to Dunoon?
2. What are the environmental problems associated with these informal economic activities?
3. Why are these environmental problems emerging despite the fact that these settlements are formal establishments?
4. What are the underlying factors that contribute to environmental problems in the low-cost settlements?
5. What is the view of both the residents of Dunoon and relevant government officials with regard to finding solutions towards these environmental issues?

1.7 AIM

This study aimed to investigate the environmental impacts associated with the informal economic activities in a low-cost housing developments.

1.8 OBJECTIVES

The main objectives of this study are listed below:

1. To identify informal economic activities emerging in the Dunoon area;
2. To identify environmental problems in low-cost houses despite the fact that these settlements are formal establishments.
3. To determine the nature of environmental problems emerging in low-cost houses despite the fact that these settlements are formal establishments.
4. To determine activities that contribute to environmental problems in the Dunoon settlements.
5. To gather views of both the residents of Dunoon and relevant government officials with regard to the nature of the problem and solutions towards these environmental issues.

1.9 STUDY LAYOUT

The thesis structure is presented below as:

Chapter One: Introduction

The chapter introduces the study commencing with a brief background. The chapter also presents the background to the study area by showing its location. The motivation for the study, delineation, the statement of the research problem, the research hypothesis and research questions, as well as the aim and objectives of the study, are presented in this chapter.

Chapter Two: Literature review

The chapter will first introduce the notion of modernist planning as planning philosophical construct underpinning urban development philosophy and practices. This section will trace the historical context of this planning philosophy to show its strengths and limitations – where it originated from and how it has been passed down from one generation to another. Secondly, the chapter will demonstrate the attributes of modernist planning and associated landscape. Finally, the chapter will introduce the concept of the relevance of sustainable development within the context of low-cost housing developments.

Chapter Three: Methodology

The chapter introduces the methodology adopted in this study, research procedures and data collection methods used and the type of research procedures used to answer the study's research questions. The chapter also provides a brief as to why the selected research methods were used

and as well as the reasons behind choosing the study area. The chapter also explains the data analyses that was used to analyse the collected data.

Chapter Four: Results and discussion

The chapter presents results based on the data collected during the field work from different groups of relevant stakeholders. These relevant stakeholders were the governmental informants, informal economic businesses and residents of Dunoon specifically residing in low-cost houses, backyards as well as tenants residing in the apartments. Results presented are a summary of key findings from the study and are presented under themes addressing those aspects that informed the study while answering the research questions.

Chapter Five: Data Analysis and discussion

The main purpose of this chapter is to locate the local context (issues) within the broader theoretical context. The chapter presents an analysis the causes of environmental impacts in the low-income houses of Dunoon. The chapter also reports on the results of the community survey (including informal economic businesses) and interviews with key stakeholders. The analysis also identifies linkages of research findings with the theoretical framework and previous studies while answering the research questions. Data analysis is also presented along themes, which informed the study. The final results show a complete synthesis of research questions and objectives.

Chapter Six: Conclusion and recommendations

The chapter presents a summary and conclusions while outlining the lessons learnt from this study. Finally, recommendations are presented based on the study's outcomes.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

The analytical approach adopted in this research study is based on the notion that low-cost housing development in South Africa is part of broader modernising forces. It is thus for this reason that chapter two will locate the study within the broader debates focusing on the challenges of modernist planning in the post-apartheid South Africa. The primary aim of this chapter is to demonstrate that planning particularly in the urban environment areas of South Africa, for any development (e.g. road or housing construction), is predominantly underpinned by the modernist planning philosophy, which is traceable back to the beginning of the early 19th century in Western Europe and, or Britain. According to Hobson (1999), planning projects for development were driven by a desire to “civilise” the “uncivilised” and, in the process, this modernising projects resulted in the alienation of people (e.g. indigenous or African people) from their landscape. It is thus from this theoretical angle that environmental problems besetting low-cost houses should be understood.

This chapter has two related arguments, which relate to the broader argument mentioned in chapter one. Firstly, the chapter argues that the modernising forces, in their attempt to create so-called “civilised landscapes”, had unintended consequences. Secondly, it further argues that the modernist planning has resulted in people finding their landscape being imposed, or changes to their historic landscape enforced, rather than a state of where they could negotiate to produce a particular ‘living’ environment² that will be appealing to their aspirations and interests. The chapter concurs with the view that a top-down planning approach (motivated by modernist philosophy) tends to disenfranchise people to the extent that they lost a sense of ownership for their environment or dwellings.

The chapter will first introduce the notion of modernist planning as planning a philosophical construct underpinning urban development philosophy and practices. This section will trace the historical context of this planning philosophy to show its strengths and limitations – where it originated from and how it has been passed down from one generation to another. Secondly, the chapter will demonstrate the attributes of modernist planning and associated landscape. Finally, the chapter will introduce the concept of the relevance of sustainable development within the context of low-cost housing developments. In essence, sustainable development espouses the

Living environment: Living Environment is the basic knowledge about how living things function and how they interact with one another and their environment (Sowman & Urquhart, 1998).

notion which argues that there must be a balancing act between the economy, society and the environment in decision-making for planning and development. The critical principle of sustainability revolves around the notion that local people need to be at the centre stage of planning for any development that will affect them, either positively or negatively.

2.2 THE NATURE OF MODERNIST PLANNING PHILOSOPHY

The notion of urban development thought, as reflected in the spatial planning practice, emerged in the age of modernity in the early 19th century in Western Europe (Scott, 2003; Hobson, 1999). This age was epitomised by the rise of scientific thought driven by the early scientific thinking from the British Empiricists of the 17th century and 18th centuries. The great thinkers of this epoch were such scholars as John Locke, George Berkeley and David Hume whom all argued that all knowledge should be observable and measured (Locke et al., 1960). In the article entitled: *Street vendors, modernity and postmodernity: conflict and compromise in the global economy*, Cross (2000) defines modernism as a philosophical construct that “refers to the dominant of scientific thought, in all aspects of life including the character, and or practice of humanity”. The rise of modernity and its influence on social relations (as noted by luminary urban Sociologists-such as George Simmel), sought to set a departure from the so-called “traditionality”, as a way of life that was connoted with “backwardness” (Scott, 2003). For Scott (2003), this modernising epoch which epitomised by conceptual of social reality as the duality in the sense that the colonial state apparatus sought to create space that depart from traditionality- progress was associated with whiteness and black was associated with black.

It is from this context that Harvey (1989:332) argues that “modernism was a revolt against the traditional values of realism. In this context, the term encompasses the activities and output of those who felt that traditional forms of art, architecture, literature, religious faith, social organisation and daily life were becoming outdated in the new economic, social, and political conditions of an emerging, fully industrialised world”. As stated earlier, modernist planning came about as a result of the emergence of the industrial revolution in the early 19th century due to the problems that were associated with urbanisation. It was during this historical juncture that modernist planning philosophy emerged as a form of social intervention to ameliorate perceived social problems emanating from the industrialised cities in Europe and North America. Shawn (2001) argues that the industrialised cities of the 19th century had grown at a tremendous rate, with the pace and style of buildings largely dictated by private business concerns. The evils of urban life for the working poor were becoming increasingly evident as a matter for public concern. Intent on creating a new and better world, modernism instead provided a blueprint for placelessness (Shawn, 2001). In addressing the excesses of industrial expansion in cities, urban planning took on the same

mechanistic outlook responsible for much of this unparalleled industrial growth and, in the process, created new problems. Three key tenets of the modernist paradigm informed the modernist approach towards city-building: specialisation, mass production and standardisation (Calthorpe & Fulton, 2001) which are discussed in the section below.

2.2.1 Specialisation

To address the problems resulting from massive industrial expansion, urban planning embraced what Jurgen Habermas has termed “the project of modernity.” Drawing on the ideas of the eighteenth century Enlightenment philosophers, planning rooted itself in notions of “objective science, universal morality and law” (Irving 1993:475). Within modernism was a “belief in linear progress positivist, technocratic, rational planning of social and geographic space; ‘standardised conditions of knowledge and production and a firm faith in the rational ordering of urban space’ to achieve individual liberty and human welfare” (Irving 1993: 476). A significant individual embracing these values was the Swiss architect Le Corbusier. Beginning his practice in the late 1910s, he wanted to correct the ‘chaos’ of the city and create an ideal order. His impact on modernist planning thought was incalculable, and his ideas were widely applied all over the world during the 1950s and ‘60s’ (Irving, 1993:476). In Africa and other developing countries modern ideas were transmitted through colonialism.

Furthermore, Sir Peter Hall, articulated, “the evil that Le Corbusier did live after him” (1988: 204). In so stating this, Le Corbusier, as the first architect in the 1920s formed the Congrès Internationaux d’Architecture Moderne (CIAM), in which he played a significant role, reinforced the strict professional separation of architects as an ego-driven profession, with their modernist ideas later mirrored in urban planning approaches. The Congrès Internationaux d’Architecture Moderne (CIAM)³ aim was to disperse the functions of cities, which had become congested by the industrial revolution (Hobson, 1999; Dewar, 2004). The CIAM and its associates believed that the industrial revolution created chaos in European cities by 1900, and that it was responsible for destroying the cities’ social fabric. Consequently, CIAM solution proclaimed a new machine era in which the potential benefits of the Industrial Revolution would be extended to all classes of people. Within this “modernist era” planning practice changed from a kind of craft based on personal knowledge of a rudimentary collection of concepts about the city, into a scientific activity

³Congres Internationaux d’Architecture Moderne (CIAM)³ is an international organization that was founded in 1928 and disbanded in 1959 and organized by Le Corbusier, responsible for a series of events and congresses arranged across Europe by the most prominent architects of the time, with the objective of spreading the principles of the Modern Movement focusing in all the main domains of architecture (such as landscape, urbanism, industrial design, and many others).

in which vast amounts of precise information were garnered and processed” (Hall, 1988:317). At pragmatic level, planning became “a science of codes plot ratios, setback percentages of open space and standardised road patterns” (Newman & Kenworthy, 1999: 287). The overarching vision of urban planning became “planning in the service of modernisation,” as personified by Robert Moses (Sandercock, 1998:27). For Haward, “a new city people needed to be educated to fit into his utopian visionary plan” and in doing so, only planners with scientific knowledge had the power to influence these plans. Planners were seen as possessing specialised professional expertise and objectivity to create spaces. As a state apparatus, the central concern of planners came to be understood as the production of alternative courses of action for top-level decision-makers with power. Such thinking still underlies much of what occurs in planning education and practice. The disciplinary fragmentation of professional education and practice amongst planners, architects, and engineers was transferred and codified in the physical form of our cities and thus resulted, along with other influences, in our communities loss of wholeness (Natrasony and Alexander,2005:6). Following a 1926 US Supreme Court decision to safeguard property values from noxious land uses and neighbours, zoning became accepted as the principal planning tool (Hall, 1988). One of the main attributes of modernist planning is the dominant of state bureaucracy in creating and maintaining urban order. As Holston (1986:55) notes, the state took control of the four functions of urban order namely; housing, employment, recreation and traffic (Holston, 1986: 55). Within the veins of urban bureaucracy are the planners who performed the main function of arranging these functions or ‘objects’ as zoning of spatial entities.

Furthermore, facilitation of movement between these discrete uses, streets also became specialised in their functions. In the past roads were multifunctional – for pedestrians, vehicles, places of children’s play and community socialisation (Holston,1986:55). The idea of separation of urban functions into zones was to “reduce conflict between activities and to maximise the functional operation of each activity” (Dewar, 2004: 11). This concept involved the grouping of units into ‘neighbourhoods’ or ‘cells’ whereby each community and commercial facilities at their geographic centres, and the development around these centres was oriented inward toward them. Movement routes were designed to discourage -traffic. The system of centres in these ‘cells’ was often hierarchical in that many smaller centres in an area would relate to a more massive centre in the area, which in turn would relate to City Centre or (CBD) Central Business District. At a larger city scale, development took the form of a “system of discrete developments, separated by buffers of open space and linked only by high speed, limited access movement routes” (Dewar, 2004: 11). These “buffers” were seen as positive pieces of open land, which the public could use to access nature. Modernist planners relied on state authority to execute planning vision (blueprint)

of these cities. Just as land use lost its multi-faceted nature, so too did streets, with transportation policy at all levels reflecting the new ethos. Transportation policy during the 1950s and 60s focused primarily on increasing vehicle capacity on roads. Analytical tools considered highways and cars only while ignoring community design and public transit considerations. Land use and transportation policy are, but two areas that bear the imprint of modernist thought and in the end, policies were devised and implemented with little reference to the communities that were directly affected (Natrasony and Alexander,2005: 7).

2.2.2 Mass Production

To deal with the myriad problems of urban environments, city-builders began to view the city as a machine. In this view, the city was an object “to be planned as an engineer plans an industrial process, breaking it down into its essential functions (housing, work, recreation, and traffic), taylorising and standardising them, and reassembling them (in the Master Plan) as a totality” (Sandercock, 2000:23). In essence, the key conceptual assumption of planners here, is that spatial orderliness can solve social problems.

The industrialised cities of the 19th century had grown at a tremendous rate, with the pace and style of building dictated by private business concerns. However, the evils of urban life for the working poor were becoming increasingly evident as a matter of public concern (Ashiru,p 5;2015). Around 1900, theorists began developing urban planning models to mitigate the consequences of the industrial age, by providing citizens, especially factory workers, with healthier environments (as stated above). Using the power to ensure mortgages with low rates of interest, the agency fuelled suburbanisation by bringing homes into the reach of most middle class, and even many working classes, citizens (Natrasony and Alexander,2005: 8). At the same time that suburbanisation was being promoted, many inner-city communities occupied by “people of colour” were being ‘redlined’ (Moe & Wilkie, 1997). In effect, “the site became the factory” as hundreds of thousands of similar homes of similar design were mass produced (Natrasony and Alexander,2005:8). The increasing scale of production created a sprawl of houses and shopping malls. Ironically, this was not mainly the result of market forces, but the rigid policies and specifications of federal agencies such as the FHA, local zoning ordinances and building codes (Moe & Wilkie,1997). Planning Profitable Neighbourhoods” described the need for homogeneous, standardised neighbourhoods to create a stable market for mortgage insurance. The idea of separation of urban functions into zones was to “reduce conflict between activities and to maximise the functional operation of each activity” (Dewar, 2004: 11).

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2.2.3 Standardisation

Within modernism, machines ultimately became viewed as a liberating force. Alongside mass production, standardisation, it was thought, could address wicked problems as housing in large cities. Society was to be more free via standardised products produced for all (Ley, 1989).. The ideology of industrial production became ingrained in the culture, and ordinary citizens were swept along by this belief (Natrasony and Alexander,p 11;2005). City-builders sought to apply universal solutions that were functional and utilitarian. Le Corbusier set the blueprint for the modernist architect in the city with his proclamation: "I propose one single building for all nations and climates" (Ley 1989: 47) (Natrasony and Alexander p 11;2005). With this statement, he boldly led a reaction against historical architecture and local place-based vernacular traditions. Such thinking presaged the 'form follows function' philosophy of modernism; the local context was replaced with simple geometry, devoid of historical, regional or cultural references. City-builders lost respect for the locales where they practised. Rather than seeking to attune themselves to the places they were working on, they sought instead to impose the products of their egotistic imaginations on a blank canvas.

Gropius, Mies van der Rohe, and le Corbusier most profoundly typified this viewpoint (Moe & Wilkie, 1997). In their rush to create something new, modernist planners and architects, built "spaces not places" (Ley, 1989: 47). Communities became the vacuous, formless non-places of

the modernist city (Solomon, 2003). The modernists largely succeeded in their endeavour to “erase history” and replace it with a standardised form. However, the effects could not have been more disastrous. Inherent in the modernist project was a belief in the ‘tabula rasa.’ As a result, large areas were cleared with completely new inserted environments. In the end, the effect of these modernist intentions, when put into practice, were to “remove the evidence of the city as a gradual accretion of buildings and spaces, as an organically developing entity with historical reference points, a sense of narrative in the very accumulation of buildings and layouts evident at the street and neighbourhood level” (Houghton & Hunter, 1994: 105). Sweeping away history and starting a new, was viewed as key to the salvation of cities (Irving, 1993). The city of today is a dying thing because it is not geometrical”; we must “replace our haphazard arrangements with a uniform layout (Irving, 1993). The result of a true geometrical layout is repetition standard uniformity” (Le Corbusier qtd. in Moe & Wilkie 1997: 43). In such an environment, a house was “a machine for living in,” a street “a factory for producing traffic” (Ley, 1989: 48). Such standardised communities also tended to become homogenised and segregated by age, income and race. The suburbs ceased to be a neighbourhood unit: it became a low-density mass” these are the “everywhere communities” where all places appear the same: pre-packaged and scattered. In the process of modernist urbanism, the physical context of neighbourhood built around walkability, with clear boundaries, an identifiable centre, and civic institutions and services were wiped out. With the distinctiveness of place, obliterated people have little interest in claiming space or as a so called space. Direct and spontaneous interactions are replaced with indirect and selective ones, and the sense of community is diminished. The aims of modernism were arguably noble in their pursuit of individual liberty and human welfare. Modernist thought continues to inform professional practice, however, because planners continue to teach it (Sandercock, 1998). It is crucial to mention that modernism continues to inform the current approach to city-building as spatial interest and bureaucratic bias exert a strong influence perpetuating the status quo. Developers, builders, and engineers wish to replicate profitable developments, while local governments look to increase tax incomes, and neighbourhoods desire exclusivity (Natrasony and Alexander, 2005:14).

With the three modernist principles in mind – specialisation, mass production and standardisation; we now turn to their manifestation in the case study of South Africa with specific reference to the developing of low-cost houses.

2.3 MODERNIST PLANNING IN THE AFRICAN CONTEXT

Scott (2003), in her article entitled, *Creative Destruction: Early Modernist Planning in the South Durban Industrial Zone, South Africa* shed argued that modernist planning ideas in South Africa were intertwined with racist ideology to created cities that were spatially fragmented along racial lines. Haarhoff (2011) points out that the modernist planning tools of zoning and buffering of urban landscapes were effectively used to produce city landscapes that promote racially spatial fragment action. Although as Dewar (2004) stated that it was the 1948 election of the National Party that resulted in the institutionalisation spacialised spatial planning. Building on a myth of early White settlers encountering an empty land and their fear of Black domination, led to the conceptualisation of “separate development” for Black South Africans outside of territories designated for whites (Haarhoff, 2011:185). Apart from the inhumanity involved, there was also the problem of how to meet the demand for Black labour in the urban areas, while at the same time maintaining cities as the preserve space of White capital and privilege (Haarhoff, 2011:185). The solution was found in two ways: the implementation of a low-cost mass housing programme located on urban peripheries in designated black zones, and in the enforcement of racial segregation by law covering all aspects of social, economic and political life. The associated segregated housing programmes were justified by pointing to “modern” planning and design principles as well as development theories. The outcome from the 1950’s was the formal construction of the Apartheid city with its distinctive spatial structure and inbuilt inequalities. The application and appropriation of the modernist agenda are discussed in relation to the specialisation of race, the emergence of the Apartheid city in the 1960’s, and to the conceptualisation and delivery of a mass housing programme in the segregated township over the next 30 years (Dewar, 2004) (Haarhoff, 2011:185).

2.4 CHARACTERISTICS OF MODERNIST PLANNING IN SOUTH AFRICA

2.4.1 Specialising Racialised Space

South Africa has shared with many other previously colonised countries race-based policies, where land and resources have been the material issue of conflict between indigenous peoples and settlers. What distinguishes South Africa was the extent to which this process was institutionalised and enshrined in law. Driven by the discovery of gold and diamonds in the 19th century, rapid industrialisation led to a demand for labour (largely supplied by Black South Africans). This triggered their movement from rural hinterlands to the growing industrial centres. With no formal provision for housing, this led to the emergence of slum conditions, making the process and outcome very visible in cities. However, as Mabin and Smit (1997) point out, unlike other colonial territories such as Singapore where housing was located in designated “ethnic”

zones, towns in South Africa had been conceived primarily as “White” places (Haarhoff. 2011: 187). Thus the demand for Black labour created a dilemma: how to manage Black urbanisation on which future prosperity depended, while at the same time conceiving cities as “White” places. An early solution to this perceived dilemma was found in the Native (Urban Areas) Act in 1923 that embodied the view of the Stallard Commission investigating the issue:

the natives should only be allowed to enter urban areas which are essentially the White man’s creation when he is willing to enter and minister to the needs of the White man and should depart there from when he ceases to so minister. (cited in Haarhoff, 1984:70)

Local authorities at that time were vested with the responsibility of providing urban services, but the 1923 legislation now required the establishment of “segregated residential areas” for Whites and Blacks, the latter in what was designated “native locations” as temporary places of residence. As temporary places, investment was understandably very minimal because of the anticipation of “temporary” urban residents returning to rural “homelands” once they no longer laboured in the cities. Despite government resistance, the practical reality was that Black South Africa had by this time become effectively permanent, although they were insecure and disenfranchised urban residents (Haarhoff.2011:187).

The anticipation of post-Second World War reconstruction unleashed a modernist planning fervour, leading to the establishment of regional planning authorities charged with the task and planning for industrialisation and urbanisation (Mabin & Smit, 1997). Reconciling racial segregation with town planning principles that advocated positive social outcomes to silence social contradictions. The establishment in 1944 of the Social and Economic Planning Council (SEPC) to advise the government of the day brought the issues of urbanisation, planning and segregation together in a modernist discourse that drew heavily on British planning studies and reports of that time (Mabin & Smith, 1997). The Council adopted the notion of creating coherent communities separated by “green belts” (buffer), justified with reference to their deployment by the New Town Movement in America and Britain at that time. In the context of South Africa, separating communities by green belts translated easily into the idea of planning racially distinct zones (Haarhoff.2011:188). This racialised urban land scope is expressed by Mabin and Smit (1997) as follows:

The Union (of South Africa) has a large and growing permanently urbanised non-European population. The Council... therefore, urges that in the layout of new townships, the re-planning of existing ones and the erection of state-subsidised housing schemes, full use should be made of the principle of planned neighbourhoods, protected from other neighbourhoods by ‘green belts’ of cultivated and parkland...

Furthermore, the SEPC went on to be more explicit in its directives: that it regards the separation of residential areas of different races, as a function of planning in this country. Residential segregation must be the result of a valid and accepted national policy (although) no legal basis exists for this at present (Mabin & Smit, 1997).

Within urban areas, Apartheid legislation was extended under the Groups Areas Act of 1950 to also enforce separate areas according to Black, White, Indian and Coloured. Tight restrictions were placed on the movement of Black South Africans that required permits (passes) to be in White urban centres. Achieving the required racial segregation led to massive upheavals for those (mainly non-White) who ended up residing in the wrong racial zone and suffered the inhumanity of being relocated, disrupting lives and livelihoods.

Thus under Apartheid legislation, the land was designated for occupation by different race groups, and residential areas treated as racial “zones”. In this context, it is not surprising to find that Floyd’s 1951 planning handbook *Township Layout* lists “Native Locations” as a separate “zone” from “residential areas” (Floyd, 1951). Unexplained is the fact that “residential areas” are for exclusive White occupation. The areas “set aside” for Black occupation were usually on the peripheries of cities, and where possible located in the adjacent. This was to ultimately create the illusion of urban Black South Africans living outside White South Africa in independent “countries” (Haarhoff.2011:188).

Closer to the city centres, other “race zones” were demarcated for those classified as White, Indian and Coloured. Moreover, spatial separation also required that each group be separated from others by what were now described as “buffer” strips (Haarhoff.2011:188) .

2.4.2 Townships of South Africa

The key aspect of the implementation of apartheid in the post-World War 2 years was the planning and construction of mass housing schemes to enforce comprehensive residential segregation. The vast expenditure and effort involved were justified by the Secretary of Native Affairs, W. Eiselen when expressing the view that “only with the provision of adequate shelter in properly planned Native townships can have full control over urban native areas” (Chipkin, 1998). The establishment of the standard house included strong advocacy for home ownership, a matter that stood in contradiction to the government’s stance that Black South Africans were temporary residents of “White” urban areas ” (Haarhoff.2011:189). The contradiction concerning urban permanence is resolved through the fiction of locating townships in an adjacent Black “homeland” outside of “White” South Africa, where permanent tenure and home ownership was granted (Haarhoff.2011:192). During this era, Blacks had resisted these houses and these plans. As stated

above this apartheid prevalent due to high beurocratised planning and to developing of low cost houses. In this context, local people are still isolated from planning as they are not treated as mere beneficiaries.

2.5 IMPLICATIONS OF MODERNIST PLANNING IN SOUTH AFRICA

The problems associated with modernist planning in South Africa can be traced from as early as the 1920s (Dewar, 2004) and in recent times. The problems associated with modernist planning have been debated by various authors such as Scott (2003); Jonnase (2012); Oelofse and Dodson (1997) as well as others.

For instance, Scott (2003) in her article titled '*Creative Destruction*': *Early Modernist Planning in the South Durban Industrial Zone, South Africa*' sheds some light on how modernist planning manifested, manipulated and alienated the poor communities of South Durban during the construction of the industrial zone and how they were left powerless and placeless. In her article, she demonstrates how the vision of a planned industrial zone was, by the early 1970s, successfully implemented to produce modernist landscape in Durban's industrial basin. She points out that the industrialisation process had severe consequences for communities living in South Durban that resulted in a continued resistance from local communities to the land alienation and relocation programmes that were instituted to make way for industry (Scott, 2003).

Likewise, Jonnase (2012) in her article titled '*Gated communities in South Africa: the case of Furtherbrooke*' shed light on the impacts of modernist planning such as the changes to the urban landscape which has been the proliferation of different forms of housing such as the in the case of gated communities. She further states that these gated communities originating from as early as the 1800s have been part of the urban landscape in South Africa since the Apartheid era. She further points out that these forms of houses meant for the rich White groups, reflected and complicated various processes in South Africa such as the social exclusion of poor groups not only to gain access to these gated communities. They are seen as spaces that create a physical barrier between residents and the surrounding areas in an attempt to secure the safety of the said residents. The physical barriers have some impacts on the manner in which residents thus begin to relate to surrounding areas. The literature on gated communities emphasizes the fact that these physical barriers produce social exclusion in the sense that residents are not only purposefully excluding themselves from surrounding areas, but restricted access also socially excludes populations from surrounding areas from enjoying services located within these gated communities (Johannes.2012:3). These gated communities perpetuate the segregated nature of urban geography (Landman, 2003) and facilitate social exclusion by creating physical and

symbolic barriers between those living within and outside of the gated communities (Jonnase, 2012).

Lastly, Oelofse and Dodson (1997) also shed some light on the impacts of modernist planning in their article titled '*Community, Place and Transformation: A Perceptual Analysis of Residents, Responses to an Informal Settlement in Hout Bay, South Africa*'. These authors pointed out that modernist planning has resulted in the division and the separation of groups "us and them" phenomenon and geographically. This is proven in the case of Hout Bay and illegal occupation of land by poor people in some suburbs. According to Oelofse and Dodson (1997) these communities comprised workers from the harbour area, who had moved out of crowded hostels, flats and backyard shacks to gain access to land to house their families. Using the case of Hout Bay Mizamoyethu, people from the townships were only given access to the area that is perceived for high-income people only during their labour. Because of apartheid planning or modernist planning and the barriers to poor communities it created, people resisted the planning and created their own by establishing informal settlements close to their jobs so that they would not have to travel far to come to work or in search for job opportunities which they were excluded from (Hobson, 1999). The development of these settlements had a dramatic effect on the nature of Hout Bay as a locality and a community. Formal residents expressed strong concern with regard to the squatter issue. They claimed that the settlements would affect health conditions in Hout Bay; that security had decreased dramatically; property prices were adversely affected; pollution had increased, and the quality of life in the valley had diminished (Oelofse & Dodson, 1997).

In the discussions presented above, various authors present negative impacts that have been caused by modernist planning in South Africa and mostly on the poor communities. The following section will then focus on the environmental impacts that are evident in low-cost houses.

2.6 ENVIRONMENTAL IMPACTS ASSOCIATED WITH LOW-COST HOUSES IN SOUTH AFRICA

Environmental concerns emanating from low-cost housing developments have been considered over the last 23 years since the emergence of RDP houses (NDoT 2015). These environmental concerns have been debated by various authors such as Sowman and Urquhart (1999); Manaus (2002); Rosenberger (2009) and others.

For instance, Rosenberger (2009) and Manaus (2002:4) shed some light on the causes of environmental degradation associated with low-cost houses. They argue that environmental problems arise due to the improper spatial planning of these houses. Their focus was on site preparation, drainage and waste disposal, lack of necessary infrastructure and services including

energy supply, water, sanitation, and waste management facilities. Some low-income housing programmes are located within unplanned developments and in such cases, the houses are often located away from public roads, are next to rivers, fire power stations, and they are not directly serviced by paved roads. This, therefore, triggers environmental impacts.

Other visible environmental impacts are an accumulation of waste in public open spaces and full drainage systems which result in odours (Manaus, 2002). Rosenberger (2009) also adds that economic pressures on residents may also compound environmental impacts in these low-cost houses due to insufficient funds and in some areas, cemeteries can be constructed between dwellings. This poses a significant risk of groundwater pollution. Environmental impacts may also arise from a community's social needs. Rosenberger (2009) argues that in some households, income can be derived from renting out backyard shacks of existing households and in this case, a township's water and sewage services would not have the capacity for an additional load resulting from backyard dwellers.

Sowman (2003: 7) also states that some low-cost houses are built in sensitive areas. The author's example to support this would be building a house in a wetland area thus destroying the wetland ecosystem and loss of water quality. Additionally, the house would require regular maintenance, which might be expensive for the residents living in that household.

In the discussions presented above, various authors have not focused on the long-term environmental impacts but only draw their focus on immediate-short term environmental impacts as a result of physical issues such as construction. Moreover, even in their articulations, there is little stated that integrates these effects in terms of public participation and the people for whom the houses are built. Long-term environmental impacts that emerge in low-cost houses can also be traced in terms of the fact that planning itself is still inherently modernist; in other words, it is technocratic, it is very rigid, and it is top-down and does not resonate with the people on the ground (Hobson, 1999). However, these authors do not write about the people but about the construction (physically built environment) and not the human dimension. As the human aspect has not been considered, this research thus aims to investigate long-term environmental impacts that arise from informal economic activities conducted by people residing in low-cost houses. These informal economic activities emerge from people staying in low-cost houses because they want to cope with the harsh economic realities in the urban space (Frayne *et al.*, 2010).

2.7 THE RISE OF ENVIRONMENTALISM: SUSTAINABLE DEVELOPMENT

Over the past decade, the issue of environmental change has become a critical area of debate resulting in the widespread concern that the consequences of industrialisation are increasingly

negative and that action needs to be taken to remedy this. Although there is no absolute consensus that significant environmental changes are occurring, there is a broad agreement that these changes are playing out and that some form of response is needed (Gibbs.1998:2). Sustainability has increasingly become a central theme in development policy at all spatial scales (WCED, 1987). In general terms, the concept of sustainable development requires that human activities take place within the ecological limits of the planet (Pepper, 1998). This principle of sustainability is encapsulated in the National Environmental Management Act (1996) (NEMA) where it states that development should balance social, economic and the environmental aspect and it requires consideration of inter- and intra-generational equity, greater democratic involvement in decision-making. One approach to addressing the environmental crisis that was caused by planners of 1920s in developing countries such as South Africa is that of ecological modernisation (Pepper, 1998).

2.7.1 New move of Modernism: Ecological Modernisation

The concept was developed in the 1980s through the work of the German social scientists Joseph Huber (1982) and Martin Janicke (1985) . The primary argument is that the central institutions of modern society can be transformed in order to avoid an ecological crisis. Huber (1982), for example, has argued the need for an “ecological switchover” - a transition of industrial society towards an ecologically rational organisation of production, based upon the theory of a changed relationship between the economy and ecology (Gibbs,1998:4).

Huber (1985) and Christoff (1996) argue that ecological modernisation is a modernist and technical approach that uses the language of business and science and therefore conceptualises environmental pollution as a matter of efficiency rather than a threat to the system. It assumes that economic growth and the resolution of ecological problems can be reconciled through science and technology. Rather than the deep ecological position of a radical restructuring of society, ecological modernisation has more in common with “strong” versions of sustainability in that it envisages a process of the progressive modernisation of the institutions of modern society, as opposed to their destruction or dismantlement (Gibbs.1998:4). Ecological modernisation proposes a structural change through the use of new and clean technologies by individual firms (Gouldson & Murphy 1997). There is a link between ecological modernisation and sustainable development such that the latter is the “central storyline” of the policy discourse of ecological modernisation. However, ecological modernisation has much more analytical rigour than sustainable development and has a much sharper focus than sustainable development on precisely what needs to be done with the capitalist political economy, especially within the confines of the developed nation-state’ (Dryzek, 1997: 143).

Hajer (1993) extends this analysis by proposing that there are two interpretations of ecological modernisation. First, a 'techno-corporatist' interpretation which emphasises the 'economisation of nature' and elitist decision-making structures and a second interpretation, closer to some versions of sustainability, which not only stresses changes to production and consumption but does so through greater democratisation, redistribution and social justice.

Christoff (1996: 489) points out that ecological modernisation focuses on the state and industry in terms which are narrowly technocratic and instrumental, rather than on social processes in ways which are broadly integrative, communicative and deliberative. Ecological modernisation is criticised as a discourse that explicitly avoids addressing social contradictions (Blowers & Pain, 1999). Inequalities of wealth and power, which are particularly evident in developing countries, form a barrier to the creation of partnerships and cooperation in environmental decision-making. With the reliance on science and technology for assessing environmental impacts and creating solutions, social and development issues are sidelined because they are difficult to conceptualise and measure (Gibbs, 1998:4). Ecological modernisation does not adequately deal with the social questions related to assessing who benefits from and who bears the impact of development processes (Blowers & Pain, 1999; Scott & Oelofse, 2005).

There is a continuum between weak and strong ecological modernisation which reflects the range of approaches rather than the binary suggested by the two terms, and states that 'it is essential to note that weak and strong features of ecological modernisation are not always mutually exclusive binary opposites' (Gibbs, 1998:5). Table (2:1) below provides the characteristics of weak and strong ecological modernisation.

Table 2: 1 Types of ecological modernisation

Weak ecological modernisation	Strong ecological modernisation
Economistic	Ecological
Technological (narrow)	Institutional/systemic (broad)
Instrumental	Communicative
Technocratic/neo-corporatist/closed	Deliberative/democratic/open
National	International
Unitary (hegemonic)	Diversifying

Source: Gibbs, 1998:5

Hajer (1995) develops this idea of "strong" ecological modernisation as reflexive ecological modernisation, whereby political and economic development proceeds on the basis of critical self-

awareness involving public scrutiny and democratic control and a lifeline for capitalist economies threatened by ecological crisis.

Ecological modernisation has framed environmental discourse and the tools used for environmental management for the past thirty years in developed and developing countries (Oelofse et al., 2006). This mainstream approach relies on science and technology and addresses problems of efficiency rather than need. It has also determined and dominated the range of tools used in the drive toward sustainability such as EIA. Oelofse (2006) points out that new approaches that address social and environmental justice and which are embedded in South African policy and legislation, are beginning to emerge. These more critical approaches are particularly important and relevant to the contexts of the developing world, where mainstream approaches are inapplicable and inequitable (Oelofse et al., 2006).

According to Oelofse (2006), there is a shift that is taking place in the tools and policy frameworks used in the drive toward sustainability in South Africa. The theory of ecological modernisation has been critiqued, and this has provided a continuum of weak and robust ecological modernisation against which the shifts in the tools for sustainability are evaluated and analysed. The shifts that have been identified show that the mainstream methods used are being challenged and modified. In drawing out the lessons learnt from the case studies, it is evident that the shift from mainstream approaches is occurring in some ways (Oelofse et al., 2006:72).

The perspective of ecological modernisation is said to offer a constructive approach to deal with environmental problems, with a central role assigned to science and technology (Mol & Spaargaren, 1993).

In South Africa, an intensive reform process to democratise policy, legislation and related institutions in the country commenced after the first democratic elections in 1994. While environmental law reform includes active public participation and equity principles, it is proposed that modernisation dominates current environmental assessment practice (Scott & Oelofse, 2005:445).

2.7.2 Environmental Impact Assessment (EIA)

In South Africa, Environmental Impact Assessment (EIA), of which Social Impact Assessment (SIA) is a part, is a well-established procedure for assessing the environmental, social and economic impacts of development in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) and the Environmental Conservation Act (Act 73 of 1989, Amended 1997) (ECA) (DEAT, 2004).

However, despite this process and the promulgation of some of the world's most progressive environmental legislation, environmental assessment practices remain firmly located within a neo-liberal paradigm, which dominates society and the economy (Scott et al., 2005). The mainstream practices of environmental management in South Africa are based on assumptions that apply to the developed world and do not always take into account the social context of development. The issues of poverty and social inequality that are prevalent in the developing world often remain neglected (Scott et al., 2005:446). In short, a technocratic expert-driven way of conceptualising democracy that marginalises the agency of ordinary people remains engrained in South Africa (Boyte, 2004: 20). Environmental assessment practices fall into this category as little has been done to embed the democratic principles of social and environmental justice inherent in environmental policy into actual implementation, resulting in what Boyte calls 'shallow democracy' (Scott et al., 2005:446).

Scott & Oelofse (2005:447) frame planning and development in the cities of societies in the transformation to deepen democracy. There needs to be a shift from the technocratic, procedural practices of environmental assessment to more participatory and equitable processes. New methodologies for social assessment are required to ensure that the rights and needs of marginalised urban dwellers are taken into account (Scott & Oelofse, 2007).

Scott and Oelofse (2007) argue that Social Impact Assessments (SIA) within EIAs are specifically designed in order to explore how 'invisible stakeholders' could be included in assessment procedures. 'Invisible stakeholders' are defined as poor and marginalised Black people who potentially suffer the impacts of development but have historically been excluded from assessment procedures due to the conventional methodologies of assessment (Scott & Oelofse (2005:447).

Furthermore, social contradictions are explicitly avoided particularly in project-based EIAs where the context beyond the project is assumed to be outside the brief. Thus, the social questions of 'development for whom and at whose expense are not adequately dealt with' (Blowers & Pain, 2001). In the case of South Africa, mainstream environmental policy discourse was introduced in the late 1980s and early 1990s with EIA as a tool to evaluate development. However, a conscious effort was made by policymakers to disadvantaged backgrounds. Within the approach of weak ecological modernisation, it has been recognised that procedures and methods are necessary for adequately representing the voices of social groups in environment and development decision-making processes (Douglass & Friedmann, 1998) (Scott & Oelofse 2005:447).

The social justice discourse is an alternative approach to that of ecological modernisation and critiques the latter for its focus on technocratic and institutional solutions, and its prioritisation of

efficiency at the cost of social equity (Hajer & Kesselring, 1999; Castells, 2000). It challenges the status quo by proposing changes in economic and social relations to prevent continued environmental deterioration and social crisis (Blowers & Pain, 2001) (Scott & Oelofse 2005:448).

In South Africa, SIAs are mostly conducted by public participation facilitators rather than social scientists, resulting in social issues being raised through the public participation process adopted for the EIA and not being analysed to the depth that they should be through the application of social theory (Taylor et al., 1995). According to Scott (2002), the SIA should be commissioned as a specialist study for the EIA to ensure that social issues are given the same weighting as the biophysical issues in the EIA procedure. In a study conducted by Scott (2005) on an SIA which formed part of the EIA for a proposed landfill site, the cost the SIA received a relatively small budget allocation relative to the technical studies and broader public participation process. This is an indication of the low importance of this specialist study in relation to the other natural science and technical reports.

2.8 CONCLUSION

This chapter explored the notion of modernist planning as planning a philosophical construct underpinning urban development philosophy and practices. It also traced the historical context of this planning philosophy to show its strengths and limitations, where it originated from and how it has been passed down from one generation to another. The chapter also explored the attributes of modernist planning and in the African landscape. Lastly, the chapter also looked at the concept of sustainable development within the context of low-cost housing developments which also emphasis the balance between social, economic and environmental aspect.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

The main purpose of this chapter is to discuss the research methodology utilised in conducting the study. This chapter presents the methodological design that was adopted from a conceptualisation, to data collection and analyses of the study.

A brief explanation is provided for choosing Dunoon as a study area. In addition, the researcher then explains the use of these approaches in gathering data for the study. This chapter addresses questions raised in the study. These are:

- What are the emerging informal economic activities in low-cost housing with reference to Dunoon?
- What are the environmental problems associated with these informal economic activities?
- Why are these environmental problems emerging despite the fact that these settlements are formal establishments?
- What are the underlying factors that contribute to environmental problems in the low-cost settlements?
- What is the view of both the residents of Dunoon and relevant government officials with regard to finding solutions towards these environmental issues?

It is crucial to mention that broadly the study's methodological design was influenced by the questions raised in the study. The second lead of analysis culminated in the conceptualisation of the research questions. This deep analyses lead to the adoption of the theory.

3.2 RESEARCH DESIGN

A qualitative research approach for this study was chosen because it is effective in obtaining specific information about the values, opinions, behaviours, and social contexts of particular specific groups of people (Creswell *et al.*, 2007). In addition, Qualitative methods are effective in identifying intangible factors such as social norms, socio-economic status, social meanings, gender roles and human experiences whose elements in the research process may not be apparent (Talja, 1999; Mottier, 2005). Thus the qualitative method was chosen to ascertain the nature of the long-term environmental impacts associated with informal economic activities in low-cost houses with specific reference to Dunoon.

Furthermore, Briggs (1986) argues that qualitative research methods permit the researcher to study selected issues in an in-depth and detailed manner; hence this methodological approach was relevant in unpacking long-term environmental impacts in this specific locality. Thus, the qualitative research method adopted in this study was crucial in gaining a broader understanding and meaning regarding the nature of environmental impacts from the perspectives of both the residents of Dunoon and other key informants.

3.2.1 Case Study Approach

Since the study was conducted in a specific area and on a particular issue, the proposed research adopted a case study approach for gathering qualitative data, which was central to answering the research questions. The case study selected served as an illustrative case to deal with broader theoretical issues relevant to the analysis of the study. The case study approach is a “systematic inquiry into an event or set of related events which aims to describe and explain the phenomenon of interest” (Creswell *et al.*, 2007).

For Yin (1994) in Nyama (2008:34), a case study is “an empirical inquiry that investigates a contemporary phenomenon within its real life context, when the boundaries between phenomenon and the context are not clearly evident, and in which the multiple sources of evidence are used.” This approach was relevant in that it allowed the researcher to understand a particular group of people, problem or situation in great depth (Patton, 2001 in Many, 2008:24). Therefore, the researcher adopted a case approach to bring out the issue of context and history, focusing on the people living in the low-cost residential establishment of Dunoon. These people were relocated from Marconi Beam Informal Settlement Beam informal settlement to Dunoon low-cost residential area. As it will be seen in Chapter Four and Chapter Five. The use of case study approach has allowed the researcher to explore and incorporate data about the context in relocation to these poor people in this particular vicinity (i.e., Dunoon). This data will be derived from both secondary and primary sources (field research).

For a case study to be considered as a qualitative study, the researcher must be interested in the meaning of experiences of the subjects, rather than in generalising results to other groups of people (Younger, 1985: 178). The case study approach has been used in scientific research over the years to answer research questions. This kind of study approach is particularly insightful because, as Creswell *et al.* (2007) explain, it presents a multi-faceted understanding of not just a few participants but all relevant stakeholders in the phenomenon under investigation. Therefore, the researcher opted for this approach to answer the question such as “how “or “why” the Dunoon

residents view the environmental impacts associated with the emerging informal economic activities (Yin, 1994).

In-depth interviews and observations were conducted to obtain the participants' views. Therefore, the case study approach provided a better insight into how a range of participants in the study area constructed (in their mind) environmental impacts in their area. What propagated overcrowding and a range of activities that appear to have compromised their living environment? This question was crucial in developing a broader understanding of how people's constructions of their lived spaces challenge the ideals of modernist planning.

3.2.2 Selection of the Study Area

The selection of the project was motivated by a number of concerns, and these are:

- The study area is one of the long established low-cost housing that have slowly evolved from being a simple residential area to an activity space created by residents to harness economic opportunities in the Cape Town metropolis. It was enlightening to learn how these people navigate their activities to deal with environmental impacts emanating from their day to day informal business activities. The process of informalisation is playing out in a fascinating manner.
- Dunoon has a high number of immigrants from African countries and local Capetonians that seek accommodation in the residents' backyard to be close to their working areas such as factories in Montague Gardens and elsewhere in the town. As a result of this migration, the area experiences a sudden explosion of backyard dwellers with enormous challenges of waste disposal and sanitation which further compromise the living environment. Therefore, it is crucial to unlocking the linkage between these activities and the environmental impacts in the area. It is crucial to mention that ever since the area was established, there are no complaints of xenophobic attacks and associated violence.

3.3 SAMPLING TECHNIQUE

The process used to select a portion of the population for the research study is referred to as sampling. "Qualitative research involves a small sample size, and sampling is based on the need to produce accurate findings without collecting data from every member of the population" (McNeill, 1990:117). This study used a combination of purposive sampling (i.e. non-probability sampling) and non-purposive sampling techniques in selecting relevant participants who provided data to answer the research questions. According to Patton (2005), purposive sampling "involves collecting samples composed of subjects selected deliberately by researchers, usually because

the researcher assumed that these respondents have the information necessary to answer the research question". In this case, residents of Dunoon were selected using purposive sampling and tracked using a snowballing or referral sampling technique. Government officials were selected by purposive sampling.

To select businesses involved in informal economic activities in Dunoon, the researcher applied a systematic random sampling which is a sample method that is utilised to fairly select from a larger population randomly (Berg, 2001). This sampling method was used to select a variety of informal economic businesses in the study area and in some cases referrals were made by local residents during interviews..

The snowballing or referral sampling was used to select relevant community members residing in Dunoon whether renting in the backyard or owning low-cost houses. Snowballing sampling is used when the researcher initially contacted a few potential respondents and then asked them whether they knew of anybody with the same characteristics (Elmusharaf, 2012). In this case, the Councillor of Dunoon was contacted before the community interviews to give researcher access to conduct community interviews with the local residents of Dunoon (see Annexure A for permission letter). During the interviews with the community members, referrals were also made by the individuals within that specific household directing the researcher to the owner of the house or the landlord to best provide answers in the questionnaire.

The non-probability sampling was used when selecting relevant government officials. This type of sampling is also referred to as judgemental sampling. When developing a purposive sample, researchers use their special knowledge or expertise about some group to select subjects who represent this population. In some instances, purposive samples are selected after field investigations on some group, in order to ensure that certain types of individuals or persons displaying specific attributes are included in the study (Berg, 2001:32). In this case, the researcher selected three officials; one from the City of Cape Town (Solid Waste Department) and two from the Department of Environmental Affairs and Development Planning (DEADP) Waste Management and Land Use Management.

A total sample size of 33 people was selected comprising 18 community members, 12 informal businesses (consisting of street vendors, salon and shop owners) and three key informants who were the officials from the City of Cape Town Solid Waste Unit, Department of Environmental Affairs and Development Planning Waste Management Unit and Development Planning. The total number that was selected was based on the availability of interviewees as most of them were interviewed during their working time. In addition, the number of the selected was also due to

people wanting to participate as many did not participate due to other pressing commitments they had. However, using a larger sample would have been more effective, but due to time constraints, the researcher proceeded. The researcher did not have a specific number of gender(s) but interviewed available business owners that were willing to participate. Nonetheless, the researcher was able to interview six males and six females and had planned to interview 15 females and 15 males from local residents (including business owners) to gain different perspectives. The interviews commenced from the 29th of September 2016 to 02nd of October 2016.

To facilitate the data collection, the researcher used two volunteers who were assistants and a half-day session was held to familiarise the volunteers with the objectives of the study. Because schools were closed, the researcher was not able to get any 2nd-year students from University. It was observed that the majority of business owners understood English and Xhosa and so interviews were conducted in English and interpreted in Xhosa for those that struggled with English. Each interview lasted for 20 to 30 minutes. Eighteen (18) local residents were selected in various streets within one area that was the initial focus, and twelve (12) business owners were selected in the main road close to the taxi rank and public transport and which is where most businesses operate.

Most of the household members approached were willing to participate, but others referred the researcher to the landlord or other household members within the same yard. Some business owners were willing to participate while others were not, so questions were administered to those that were willing. Some vendors feared that maybe the researcher was one of the government officials or sent by the government officials trying to seek information that would be used against them. However, when approaching the street vendors or informal business owners, the researcher assured them of their confidentiality and that she would not get their names but only their age. Participants were not forced to participate if they were uncomfortable.

3.4 DATA COLLECTION METHODS

This research study used primary and secondary data methodological instruments which entailed; semi-structured interviews, questionnaires, literature review, and observations methods. "With open-ended questions, a respondent provides his or her answer to the question, while with closed-ended questions the respondent selects an answer from a list provided by the researcher" (Neuman, 2013: 47). Face-to-face interviews and participant observation were the primary data collection tools in this study. "The advantages of participant observation are that it blends in with natural activity and that it gives researchers access to the same place, people and events as their subject" (Silverman, 2011:52).

The disadvantages of participant observation are that it imposes many demands on the researcher. Participant observation is also disadvantageous when it comes to time management, it consumes a lot of time, and it is expensive. Interviews and questionnaires were on one to one basis for both community residents or household members and informal business owners. Semi-structured questions were used for interviews, which helped to gather reliable data. Under the secondary data, the existing literature was reviewed which includes books that are published, articles from newspapers, conference papers, journal articles, publications from the government and other research available on the internet. O'Leary (2010:48) points out that "that surveys and interviews put the researcher in charge. Not only do you ask what you want, but you also get to ask it how you want, i.e. you get to choose the wording, the order, the prompts, and the probes".

3.4.1 Data sources- Review, and Analysis of Documents

It is crucial to mention that the data collection in the literature review began at the conception of the research project. This aspect of data collection was useful in locating the study within the broader theoretical debate. The form of secondary sources that were used in the research included amongst others; research reports, journal articles, press articles and previous studies' textbooks dealing with the environmental dimension of low-cost housing development. The secondary sources were used to construct a broad understanding of the topic from an international perspective to the South African context. More importantly, they assisted the researcher to substantiate the argument to answer the research question.

3.4.2 Face-to-face in-depth interviews

The face-to-face in-depth interviews were crucial in the qualitative study to collect data about the history and broad issues that addressed the research questions raised in the study. The respondents for the face-to-face interviews were selected using both purposive sampling and referral sampling techniques. Thus, the key informant interviews were conducted with senior relevant stakeholders from the City of Cape Town Solid Waste Directorate, DEA&DP Waste Management, and DEA&DP Development Planning. Key informants are observant, reflective members of the community of interest who know much about the history and are both able and willing to share their knowledge (see Appendix A for consent letters) (Tongco, 2007: 147).

Self-administered questionnaires were sent to the informants prior to the commencement of interviews. This was done to give relevant stakeholders enough time to prepare for the interviews. During these face-to-face interviews, the researcher used questionnaires as well as a tape recorder to capture all the information given by the relevant stakeholders during the discussions. Berg (2005) suggests that researchers can either take notes during their interviews (transcribing)

or observations or take a recording. The benefits of using a tape recorder as outlined by Berg (2005) include; (a) the researcher can concentrate and listen and respond better (b) the discussion flows better when there are no distractions. These recorded interviews were transcribed immediately after interview.

In instances where the key informant interviews could not be conducted, questionnaires were also emailed to the informants to obtain responses. All informants were able to participate in these interviews. There are issues related to these self-administered questionnaires as MacDonald and Headlam (nd: 10) state that surveys are a popular method of collecting primary data. The broad area of survey research encompasses any measurement procedures that involve asking questions from participants. Rubin and Babbie (2005:1) state that email distribution and return remains the primary method of obtaining responses, however, electronic surveys are now possible as well. Furthermore, the authors state that it is essential to monitor the returns and follow-up mailings can increase the response rate. It is also essential to maximise the response rate; 50% or more is generally considered an acceptable response rate.

These interviews were timed for 30 minutes, but some lasted 1 hour. The reason was that the key informants had in-depth knowledge about the subject as compared to the community members.

The components of the surveys used in the relevant, vital informants were as follows:

- Section A: Definition and Developmental Stages of Low-cost Houses
- Section B: Planning and Public Participation; and
- Section C: Environmental Impacts and Mitigation Measures.

Within these sections, however, the questions were tailored to the objective of the information required from the identified vital informant (See Appendix B for questionnaire). Key informants had to give answers based on the working field, projects they implemented in the area and as well as indigenous knowledge.

3.4.3 Semi-structured Interviews- Community Survey

The semi-structured interviews were also used to interviews included households and informants running informal businesses within the community of Dunoon. In semi-structured interviews, the objective was to understand the respondent's point of view rather than make generalisations about behaviour. Berry (1998) further elaborate that semi-structured interviews make use of open-ended questions, some suggested by the researcher ("Tell me about...") and some arose naturally during the interview ("You said a moment ago...can you tell me more?"). It is from this background that the technique was used to administer the number of predetermined questions on selected themes

designed to answer the research questions. These questions were typically asked of each interviewee in a systematic and consistent order. However, it is crucial to mention that “the interviewer was not being confined to the dictates of these questionnaires as she had reasonable space to probe the interviewee if the answer provided is not adequate” (Bery, 1998:70).

The purpose of this interviewing process was to obtain information from individual households in the Dunoon community with specific reference to their feelings, perceptions and attitudes towards the environmental aspect of their locality. To probe this aspect further, questions such as ‘What are the factors that cause these environmental impacts’? Moreover, what these individual households think could be the way forward to manage them, were posed. This was done through questionnaires and one-on-one interviews (see Annexure C for semi-structured questions). Participants were selected for the community survey referral sampling, which included individuals who had background knowledge of the area before it expanded and changed into an informal settlement (as it was assumed that they had more in-depth knowledge of the problems arising in their community related to the study). In addition, the residents owning RDP houses and backyard dwellers or tenants were part of the study as some informal businesses were operated in the low cost houses and backyard shacks (Robinson, 1998).

Thirty (30) household members together with business owners were selected using systematic random sampling as the facilitators selected a household within a cluster of households as they walked the study area through referral by either the councillor or the interviewee. The first purpose of the semi-structured interviews was to find out as to why local residents of Dunoon are engage themselves in informal economic activities and also determine the level of awareness of environmental impacts associated with informal economic activities in low-cost houses and as well as factors that result in these visible environmental problems. Furthermore, it aimed at determining the views of the communities in terms of the mitigations to prevent these environmental problems public participation processes and effectiveness thereof, given that often the community is assumed to be unanimous in their response to developments and planning (Ncapai, 2005: 1).

- The components of the questionnaire were as follows:
- Section A: Social and demographic profile;
- Section B: Income sources
- Section C Housing; and
- Section D: Environmental Management

The section A requested responses regarding gender, age, education levels. Section B focused on questions on income sources and employment status. Section C focused on housing and

section D focused on the community's environmental challenges, factors they think result in these issues, the community's level of awareness towards waste and as well as what they thought needed to be done to prevent these problems from occurring. This was included in order to gain an understanding of the level of knowledge surrounding environmental problems in the community and the extent to which it was prioritised if at all. Section D was informed by the stakeholder theory. It included questions on what the community would like to recommend to the officials in terms of community, environmental issues, and the level of satisfaction regarding service delivery, public participation process and representation within their community. This section was aimed at ascertaining whether the Dunoon residents were given the opportunity to voice their concerns as much as the more advantaged community groups, as literature indicates that the latter tend to be favoured in this regard (Merritt & Stubbs, 2012: 280).

3.5 OBSERVATION

Individual observations were also used in the study area as a data collection method. An observation is a technique that can be used when data cannot be collected through other procedures (Hancock *et al.*, 2009). Observation can also produce data for verifying or invalidating information provided in face-to-face encounters. In some research, observation of people is not required, and instead an observation of the environment (Hancock *et al.*, 2009). This can provide valuable background information about the environment where a research project is undertaken.

This research utilised unstructured observation to collect data by observing;

- Visible or physical environmental impacts in the RDP houses and the community as a whole (solid waste, blocked drainage system).
- Informal economic activities and their impact on the environment.
- Any visible projects or on-going projects implemented by the City of Cape Town or DEDAP to minimise or manage environmental impacts at Dunoon.

The observations will contribute in answering the research questions of the study under the findings in chapter four.

3.6 LIMITATIONS OF THE STUDY

While the research methods highlight more strength, there were few limitations to the research methods adopted in this study. For instance, some participants were reluctant to give the researcher the necessary information due to suspicions that the information may be used against them for campaign purposes. In addition, since some informal businesses use public spaces illegally, it was difficult to conduct fieldwork as some were not willing to participate in the interviews as they assumed they would be in trouble. It was also challenging to take images on the streets

because some local residents showed signs of aggressiveness towards the researcher. It was also difficult to get hold of the correct person to interview during household interviews as the interviewees were busy or were not interested in the survey. Generally, carrying out the research was somehow interrupted because the informal businesses had to attend to their customers as well as participate during the interviews. Some participants did not understand English, and the terms had to be explained in Xhosa otherwise they could not understand the content of the interviews. In this case, questions had to be repeated many times for them to understand what was asked. In the process, this consumed a lot of time. Nonetheless, the researcher managed to carry out the fieldwork.

3.7 ETHICAL CONSIDERATIONS

The study took the following ethical principles or issues into account:

Access: The Community Councillor of Dunoon was consulted and informed in detail about the study, how long the study will take and how the findings of the study will be disseminated and used and also permission to conduct the community survey. A letter (see Annexure D for permission letter) of consent was requested and received from the Councillor of Dunoon to submit to the HDC committee for approval. A certificate from the HDC for approval was received before data collection. Letters from relevant informants were also collected as approval that the researcher could interview them. The letters collected prior to data collection were also submitted to the HDC committee for approval (see Annexure B).

Informed consent: The researcher meticulously explained and ensured that participants understood what the study was about and why it was being undertaken. Furthermore, the researcher offered an opportunity for the participants to accept or not accept being part of the interviews. This was done prior to the interviews' commencement.

Anonymity and confidentiality: The researcher ensured that the research participants were afforded anonymity and confidentiality, where they wished to remain so. Thus, any confidential information provided by research participants was treated with anonymity. All names mentioned in this research are pseudo-names in order to conceal the identity of the respondents.

Reliability: To ensure the accuracy of the collected data, the researcher conducted follow-up interviews and used multiple sources of data.

3.8 CONCLUSION

As discussed in the chapter, the study was conceived as qualitative research, and as a result, qualitative methods were used to collect and analyse data. Qualitative research methods were

used to gather data with the aim to answer the research questions and achieve the objectives of the study. This research methodology chapter outlined a research plan of the project from the selection of methods, philosophy and approach through to the data collection, research reliability and validity as well as data analysis. Important to highlight is that the choice of all the methods used was primarily influenced by the research question, aim, and objectives which required qualitative information, hence the selection of qualitative research methods. For the collection of in-depth data, semi-structured interviews, observations and questionnaires were used. The research also discussed ethical issues concerning the research study; these were examined in detail. The chapter also described and discussed the methods used for sampling in this investigation. There were two sampling techniques used namely purposive and non-purposive sampling. The research also discusses the relevance of these two techniques in this environmental project. Diverse participants were used as informants in this research study providing a broad range of perspectives on the environmental project. This broad variety of perspectives and other results on the data collection on the environmental project in Danoon are presented in the following chapter on the study's findings.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 INTRODUCTION

While the previous chapter discussed the methodological design adopted in this research, this chapter presents the discussion on the results obtained during the fieldwork. This section will present findings on the environmental impacts of informal economic activities in low-cost housing developments of Dunoon. The chapter argues that the socioeconomic activities of local people have triggered environmental impacts that are now visible in the low-cost housing of Dunoon. The local people's informal economic activities, which are a reaction to their social pressures, have triggered long-term environmental impacts.

The chapter is divided into two sections. The first part presents the historical background of these local residents by tracing their historical socioeconomic life in Marconi Beam Informal Settlement Informal Settlement; their lived experience in the informal settlement as well their movement to Dunoon low-cost housing establishment. The second part presents the current life of the local people in Dunoon, the socioeconomic activities and associated environmental impacts. This chapter presents empirical discussions that specifically address the questions raised in the study as presented in chapter one. The aim of the study was: to investigate the environmental impacts of informal economic activities in low-cost houses. To achieve this aim, the study relied on the following research questions:

- What are the emerging informal economic activities in low-cost housing with reference to Dunoon?
- What are the environmental problems associated with these informal economic activities?
- Why are these environmental problems emerging despite the fact that these settlements are formal establishments?
- What are the underlying factors that contribute to environmental problems in the low-cost settlements?
- What is the view of both the residents of Dunoon and relevant government officials with regard to finding solutions towards these environmental issues?

4.2 THE CIRCUMSTANCES BEFORE THE ESTABLISHMENT OF DUNOON

To develop a broader understanding on the nature and significance of the current environmental impacts associated with emerging informal economic activities in Dunoon, it is crucial to trace the lives of the people residing in this locality. The historiographical narrative regarding the nature of the socioeconomic relations of these people is paramount as it helps to unpack the social relations of the local people and as well as the associated environmental impacts with a particular instored context.

Dunoon was established as a settlement which was meant to accommodate residents who resided in the Marconi Beam Informal Settlement Beam Informal Settlement. The Marconi Beam Informal Settlement is critical to explore as Dunoon has its first origins there. Marconi Beam Informal Settlement Beam is an informal settlement that was established in the 1970's with a complex history that led to a relocation scheme, which lead to the establishment of the two townships, Dunoon and Joe Slovo (Barry & Rüter, 2005:44).

The history of the area is provided by Barry (2006). For Barry (2006), Marconi Beam Informal Settlement area comprised of large numbers of the population of families of Xhosa speaking black South Africans from Ciskei and Transkei migrated to Milnerton because they had envisioned that there were job opportunities in the Milnerton Race Course. In 1990, the Milnerton workers formed groups and embarked on a strike action at the Milnerton Racecourse⁴, where they demanded higher wages, better working conditions. Additionally, they demanded that the single male hostel they were residing in be converted into proper housing units so that they could stay with their families, who at that time, were in the Eastern Cape (Rollins 1991).

Furthermore, Rollins (1991) argues that employers (under the apartheid government) responded by involving the police to intervene, and because the workers depended on them for accommodation, their removal from the premises of the racecourse left the South African migrant labourers homeless. The workers, however, had two options through which to address their problem of shelter. The first option was to head for the African townships⁵ around the Cape Metropolitan area such as Langa and to find refuge with kin, friends, or acquaintances (Cooper, 2009).

The second option was for them to find refuge in the bushes near the racecourse until the labour dispute was resolved and because it was close to their workplace (Barry, 2006). While a fraction

⁴ **Milnerton Racecourse** the racecourse is not used for races anymore and around the race track, the land was sold for the Establishment of Royal Ascot residential precinct which is a high income gated community.

of workers found refuge with kin, friends and acquaintances, the remaining proportion of workers found shelter in the bushes in Milnerton with only the skies over their heads, depending on the fires they burnt throughout the night to keep themselves warm. They camped for a few nights, joining women vendors who had been living in these bushes illegally for some time. These women vendors were selling meat and African beer to workers who were employed in the Montague Gardens Industrial Township and the neighbouring predominantly white suburbs and so that they can look after their children while the men worked at the racecourse. Most of these women came to Cape Town to collect allowances from husbands who had been in town too long. Given the difficulty which some of the women encountered in tracing their loved ones, they ended up remaining in town, relying on illegal brewing and the sale of African beer because they had to make money to provide for their children (Barry, 2006).

The Black male migrant then went ahead to construct a few informal dwellings in the bushes. An informal settlement was established and which was home to people from many parts of metropolitan Cape Town, other small towns of the Western Cape and the rural parts of the Eastern Cape. However, it is individuals who originated in the rural Eastern Cape that constituted the majority of the residents of Marconi Beam Informal Settlement Beam Informal Settlement. Due to Montague Gardens economic value, the land invasion did not only concern the owner of the invaded land, but the entire business community owning property on the Montague Gardens Industrial Township.

Around this time, attempts were made by the government to halt the further growth of Marconi Beam Informal Settlement Beam by upholding the Prevention Squatting Act 52 of 1951 that would force the squatters to remove their shacks from the area. Little progress was made, however; roughly 25 shacks were demolished before the residents gathered a court order to stop further deconstruction of the settlement. Soon after, the land was deemed a transit area, which allowed Marconi Beam Informal Settlement Beam squatters to maintain their resistance on the land, while new land was sought to relocate the settlers (Barry, 2006).

4.2.1 Lived experiences of people in Marconi Beam Informal Settlement Beam Informal Settlement

While most men in the Marconi Beam Informal Settlement Informal Settlement worked as racecourse grooms in the Milnerton Racecourse, women kept themselves busy by establishing their own businesses such as selling meat and African beer to workers who were employed in the Montague Gardens Industrial Township. They also sold their product to the neighbouring predominantly White suburbs and so that they can look after their children while the men worked

at the racecourse (Berry, 2006). The residents of Marconi Beam Informal Settlement Beam Informal Settlement further established local social networks to cope with the challenges of life typical in informal settlement settings. Social support networks played an essential role in the survival strategies of poor households in informal settlements of Marconi Beam Informal Settlement Beam (Smit, 2000). Social networks can include *stokvels* (savings clubs), burial clubs, church groups, kinship groups based on membership of the same clan, or simply groups of friends. Social networks can also be based on speaking the same language. For example, Sesotho speakers tended to band together in the predominantly Xhosa speaking Marconi Beam Informal Settlement Beam Informal Settlement (Rollins, 1991) .

Furthermore, these social networks involved activities such as lending money and sharing meals and household utensils. Smit (2000) argues that in the informal settlements, the spatial arrangements can significantly facilitate social support networks. Households which are part of the same social network can build their shacks next to each other, and extended families can build larger shacks. In the Marconi Beam Informal Settlement Beam settlement, many shack owners had large shacks with rooms for “tenants”. Most tenants in the Marconi Beam Informal Settlement Beam Informal Settlement did not pay rent - there was more of a reciprocal relationship in which both landlord and tenant helped each other out. For example, the tenants helped out with domestic chores and childcare or contributed to buying groceries when they were able to. Sometimes employed tenants even supported their unemployed landlords (Yose, 1999). Because the Marconi Beam Informal Settlement Beam settlement was an informal settlement, it was seen as rural: an *ilali*, a rural village. People’s perceptions that it was the same as a rural area shaped their social relations and interactions. It was said that Marconi Beam Informal Settlement Beam “is a rural area and you can borrow whatever you need from someone that you know or feel close to”(Smit, 2000).

However, such local social networks were undermined by the frequent fire strikes that were so much a part of life in Marconi Beam Informal Settlement Beam Informal Settlement. These shack fires were unpredictable, uncontrollable and highly devastating (Smit, 2000). Often in their wake, these shack fires left residents reeling with loss and severely hampered the ability of residents to acquire material belongings, and thus to consider themselves as successful and to live a life of comfort. With declining economies, the poor in African urban centres had in the last few decades witnessed joblessness, a reduction in wages, worsening housing conditions. In these situations, migrants found it wise to sustain active links with kin in the rural areas, and have indeed turned to these social networks in times of need, while nurturing new social ties. Migrants also developed and nurtured new networks in the cities (Smit, 2000).

4.2.2 The socioeconomic benefits of residing in Marconi Beam Informal Settlement Informal Settlement

The middle and high class residents from the affluent neighbourhoods such as Blouberg and Tableview were not pleased with the establishment of Marconi Beam Informal Settlement due to their concerns over negative property value and as well as safety and security (Smit, 2000). However, squatters saw the land invasion as a positive move, and the population was growing every day especially people coming from the Eastern Cape. Firstly, the informal settlement stood on a favourable location within an industrial township. The residents of this informal settlement were thus appropriately located within walking distance from job opportunities. Indeed the distance from the informal settlement to the factories in Montague Gardens was less than five minutes walk.

Secondly, the informal settlement was located along the Koeberg Road Economic Corridor. Along this road are fast food outlets, restaurants, petrol filling stations, garages, supermarkets, second-hand furniture shops, and other establishments of economic significance. Thirdly, this informal settlement was situated approximately 17.4 kilometres away from the Cape Town Central Business Districts. Fourthly, the Marconi Beam Informal Settlement Beam Informal was situated near white residential suburbs. Consequently, both men and women living in the Marconi Beam Informal Settlement Beam Informal Settlement provided a labour pool to the middle-class residents who lived in the surrounding suburbs (Hayson, 2009). . A significant characteristic distinguishing this particular land invasion from the rest was its location in relation to places of economic significance. The Marconi Beam Informal Settlement Beam Informal Settlement was located in an area with employment opportunities. For this reason, there were people from various parts of Cape Town relocated or settled in Marconi Beam Informal Settlement Informal Settlement with the hope that they would benefit economically (Hayson, 2009).

According to Hayson (2009), In 1993, a committee was created to facilitate the negotiation between the Marconi Beam Informal Settlement Beam residents and the Milnerton Municipality, and a decision was later reached in 1995 to relocate Marconi Beam Informal Settlement Beam residents to Joe Slovo and Dunoon as part of practical transition of 1994 RDP.

4.3 THE ESTABLISHMENT OF DUNOON AS A LOW-COST HOUSING RESIDENTIAL AREA

The end of Apartheid was first and foremost the result of the urban working-class doubling in size between the 1950s and 1980s, producing a cohort of African city dwellers who came into contact with radical ideas and yearned for an education, housing, urban services and political rights (Nattrass & Seekings, 1998). The development of Dunoon is evident in this process. The area is a provincial government RDP housing project that was designed to accommodate people from the

nearby informal settlement of Marconi Beam Informal Settlement Beam. The process of moving people to Dunoon and Joe Slovo, from Marconi Beam Informal Settlement Beam, was assisted by a government housing subsidy, one that provided once off support for people to acquire a permanent dwelling (Barry, 2006).

In 1994, subsidies for housing in Dunoon were obtained through the National Housing Subsidy Scheme, which provided for infrastructure and the 2,964 state-subsidised houses (Cape Metropolitan Council, 1997). The houses in Dunoon were constructed in three phases. Phase I comprised 1000 houses, which were completed between 1996 and 2000 (Charlton, 2013). The 1331 houses in Phase II were constructed between 1999 and 2000, and the 633 houses in Phase III were constructed between 1999 and 2001 for residents who previously resided in Marconi Beam Informal Settlement Informal Settlements (see site plan below).

Map 2: 1 Dunoon low-cost housing site plan



Source: DOH,2017

In understanding Dunoon as a low-cost housing development, it is important to assess the socioeconomic status of the local people. A summary is given in the next section.

4.3.1 Socio Economic realities of Dunoon

The purpose of this section is to present the socioeconomic background of the local people residing in the low-cost houses of Dunoon. It is crucial to unpack the current socioeconomic profile of this area in order to understand how the local people are currently surviving in the settlement of this locality. According to the CoCT 2011 census data, Dunoon is an impoverished township, by Cape Town standards having 90% of the population being Xhosa. Only 63% of the labour in Dunoon (aged between 15 to 64) is employed in the formal sector. While 37%, is unemployed population.

Table 4: 2 Economic Profile of Dunoon

Dunoon Labour Force Indicators	Black African	Coloured	Asian	White	Other	Total
Population aged 15 to 64 years	20049	1080	21	39	1209	22398
Labour Force	15966	798	18	27	1095	17904
Employed	9909	504	12	18	885	11328
Unemployed	6057	294	6	9	210	6576
Not Economically Active	4083	282	3	12	114	4494
Discouraged Work-seekers	486	36	0	0	12	534
Other not economically active	3597	246	3	12	102	3960
Rates%						
Unemployment rate	37.94%	36.84%	33.33%	33.33%	19.18%	36.73%
Labour absorption rate	49.42%	46.67%	57.14%	46.15%	73.20%	50.58%
Labour Force participation rate	79.63%	73.89%	85.71%	69.23%	90.57%	79.94%

Source: City of Cape Town Census Data, 2011

As also stated in the previous sections, Dunoon is predominantly occupied by Black South Africans (Xhosa), with the highest unemployment rate as compared to other groups. Of those that were employed in Dunoon, the majority (as reported in the City of Cape Town 2001 census data), were employed in elementary work (41%), with 17% working in crafts and trades, 11% as service workers in shops and sales. Of this population, 9% is working as plant and machine operators in

the nearly industrial basin. Seventy seven per cent (77%) of Dunoon residents have a monthly income of R3200 or less (see table 4.3 below).

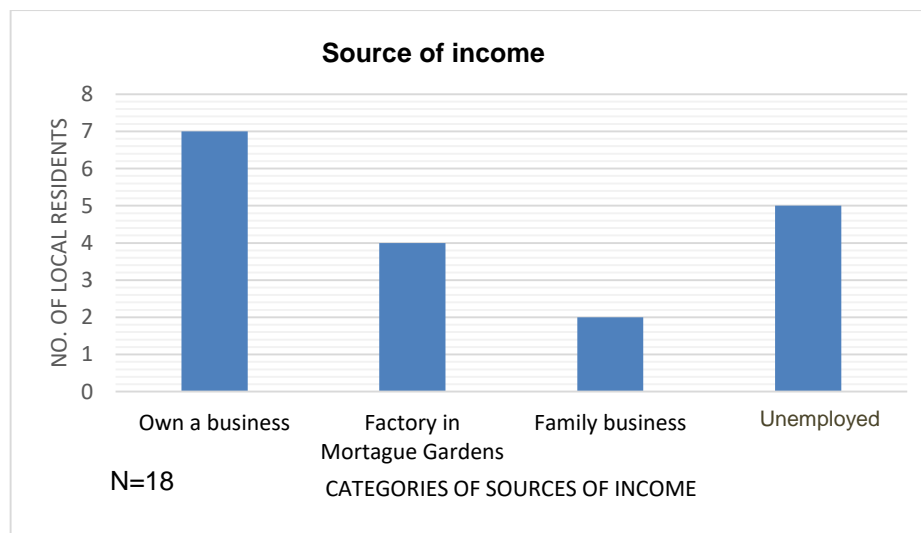
Table 4: 3 Monthly income earned by local residents in Dunoon

Dunoon Monthly Household Income	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
No income	2 559	24.5%	75	17.0%	3	50.0%	6	28.6%	72	12.8%	2 715	23.6%
R 1 - R 1 600	2 898	27.7%	141	32.0%	3	50.0%	6	28.6%	87	15.4%	3 135	27.3%
R 1 601 - R 3 200	2 682	25.6%	105	23.8%	0	0.0%	0	0.0%	186	33.0%	2 973	25.9%
R 3 201 - R 6 400	1 566	15.0%	69	15.6%	0	0.0%	6	28.6%	150	26.6%	1 791	15.6%
R 6 401 - R 12 800	591	5.6%	42	9.5%	0	0.0%	0	0.0%	51	9.0%	684	6.0%
R 12 801 - R 25 600	105	1.0%	6	1.4%	0	0.0%	0	0.0%	9	1.6%	120	1.0%
R 25 601 - R 51 200	48	0.5%	3	0.7%	0	0.0%	3	14.3%	9	1.6%	63	0.5%
R 51 201 - R 102 400	3	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	0.0%
R 102 401 or more	9	0.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	9	0.1%
Unspecified	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	10 461	100.0%	441	100.0%	6	100.0%	21	100.0%	564	100.0%	11 493	100.0%

Source: City of Cape Town Census Data, 2011

Seeing the fact that the census data motivates that there is high unemployment rate in Dunoon, residents were then asked about their income sources. Of the 18 households interviewed 13 indicated that they were employed, while 5 indicated that they were unemployed.

Figure 4. 1: Employment status of local residents



Source: Author, 2017

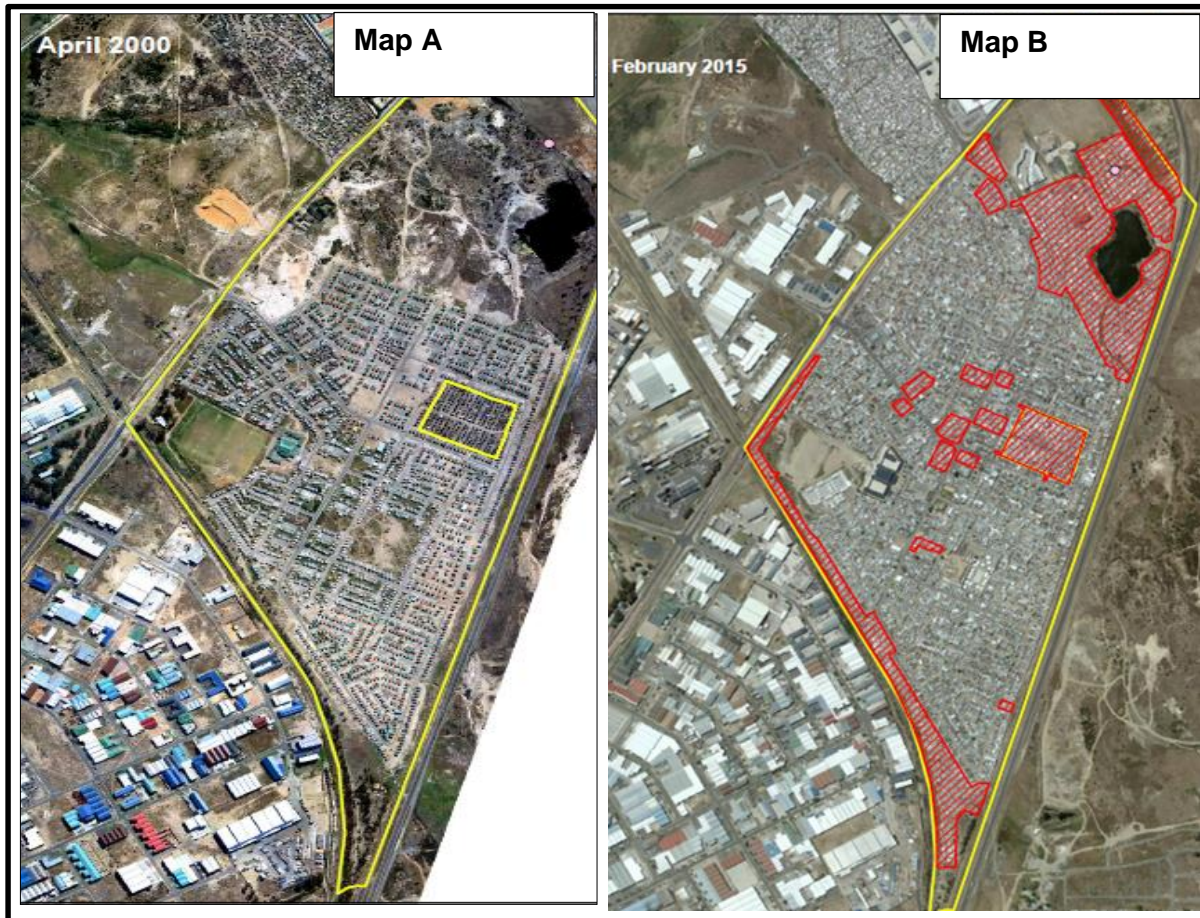
For instance, figure (4.1) above shows that from the total of 18 household residents interviewed, 7 indicated that they own businesses. While 5 indicated that they work in the factory shops in Montague Gardens which is 2.5 km away from Dunoon. Only 3 stated that they work for family businesses. It is important to note that, those that indicated they were working for family businesses were African foreign nationals. Furthermore, 5 individuals indicated that they were unemployed because they struggle to find jobs in the formal sector. As stated in the figure above, a high numbers of the residents are partaking in informal economic activities to survive. These informal activities are analysed in the following section.

4.4 INFORMALISATION OF DUNOON SETTLEMENT

It is crucial to present an empirical discussion on informalisation of Dunoon formal settlement. This informalisation of space played out in various forms which included among other the growing economic activities and the mushrooming of backyard dwellers. This aspect of the chapter is crucial as it assists in analysing the extent and the impact that these informal economic activities have on the environment. The types of environmental impacts triggered are drawn from this section. It is also crucial to remind the reader that these informal economic activities are not a new phenomenon to the people of Dunoon but rather an extension of those that have existed in Marconi Beam Informal Settlement as a form of survival. Thus, this section reports on the current informal economic activities that local people of Dunoon engage themselves in order to survive. To analyse these informal economic activities, it is essential first to provide a background of the setting that local people were moved to as this will assist to unpack informal economic activities in the context of growing environmental issues in this particular locality.

It was only between 1997 and 2000 that many people were moved from Marconi Beam Informal Settlement into Dunoon formal housing, yet few held actual ownership of these houses (Berry, 2006). When they were moved, they were still unemployed, and no form of job opportunities were presented to them as well as spaces and facilities to start their businesses. Even after the local people were moved to the low cost houses in Dunoon, many people were still not owners of these formal houses. This problem ultimately led to the demise of Dunoon as a “formal settlement”, and soon after its establishment, quickly become “informalised” (Berry, 2006). Instead of neat rows with well kept yards, the settlement was nearly indistinguishable from the original formal settlement (Myers, 2011). This spatial dispromixity is visible in maps below.

Map 3: 1 Informalisation of Dunoon from 2000 to 2015

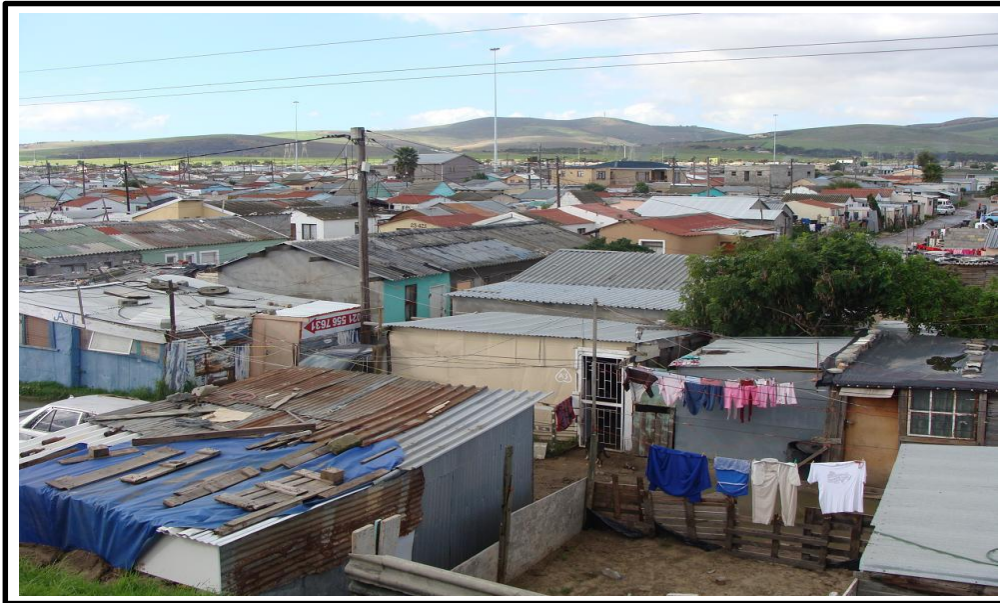


Source; COCT,2016

The above map (3.1) shows two different maps of Dunoon with its housing developments and how the informal portion (2000-2015) have mushroomed in the area. The spatial pattern of map (A) dated April 2000 shows Dunoon settlement pattern, with grid and spaces in between the houses and with its associated factories surrounding the area. Map (B) dated February 2015 shows irregular spatial patterns of informal settlements. No form of roads are visible on the images, and this also indicates the growing migration of the population moving to settle in the area since the year 2000. Map B on the right shows representation of the current spatial state of Dunoon which is a sign of reaction to the planning by town planners. The map further presents the socio-economic realities prevailing in the locality. It is evident in the image above that Dunoon has changed from being a formal low-cost housing to an informal settlement. Reasons that have resulted in this transformation are presented in the next paragraphs. The history of the evolution

of spatial settlements towards informalisation is the form of escalation of backyard dwellers is well depicted in figure 4.2 below.

Figure 4. 2: Backyard dwellers in Dunoon



Source: Smit,2011

Compiling the data of housing dwelling type in Dunoon before 2000, the census of 2011 shows a sharp growth of informal dwelling. For instance, the 2011 census data shows that 41% of the residents are residing in formal dwellings which comprised of RDP houses. While 31% in informal dwellings in shacks not in the backyard. On the other side, the data shows that 26% of formal dwellings in the backyard are prevalent, with 3% lived in other forms of housing structures (see table 4.4 below).

Table 4: 4 Dwelling type according to the numbers in Dunoon

Dunoon Type of Dwelling	Black African		Coloured		Asian		White		Other		Total	
	Num	%	Num	%	Num	%	Num	%	Num	%	Num	%
Formal Dwelling	4 015	38.4%	289	66.4%	4	57.1%	18	75.0%	377	66.8%	4 703	40.9%
Informal dwelling / shack in backyard	2 675	25.6%	114	26.2%	3	42.9%	2	8.3%	158	28.0%	2 952	25.7%
Informal dwelling / shack NOT in backyard	3 478	33.2%	21	4.8%	0	0.0%	4	16.7%	20	3.5%	3 523	30.6%
Other	299	2.9%	11	2.5%	0	0.0%	0	0.0%	9	1.6%	319	2.8%
Total	10 467	100.0%	435	100.0%	7	100.0%	24	100.0%	564	100.0%	11 497	100.0%

Source: CoCT Census Data, 2011

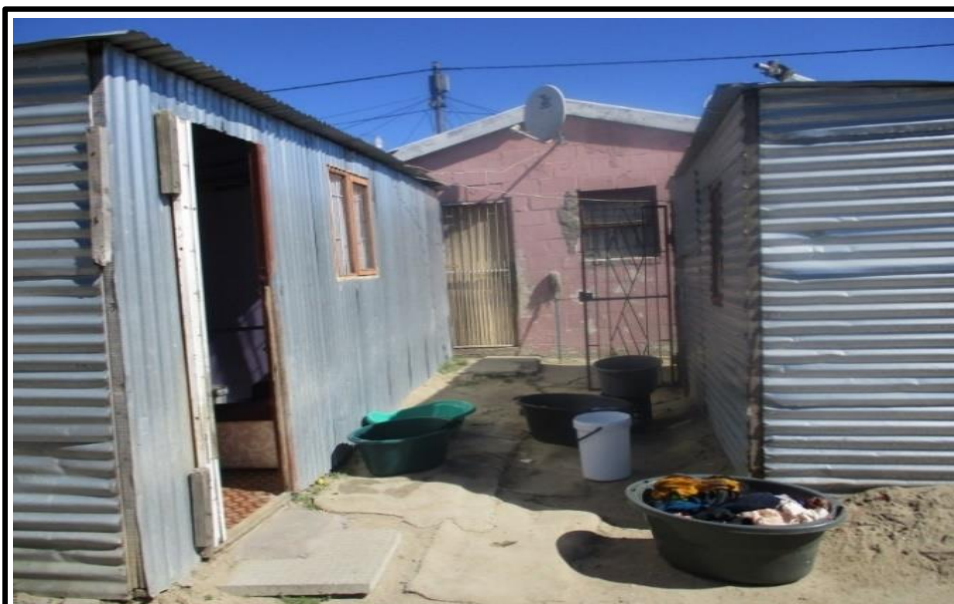
For instance, the 2011 Census data further indicates that the formal dwellings which were at 39% were owned but not yet paid off due to socio-economic problems, followed by 37% which indicates that these formal houses were used for rental. Even though people reside in them, they still need to be fully paid for. Only 19% of these houses are occupied free of charge. The following section further discusses other economic mechanism that were employed by local people to survive.

4.4.1 Housing/Room rentals for income

It is important to remind the reader that a high number of local people were employed in the informal sector (as mentioned in the sections above). In order for them to survive, the residents rent out their RDP houses, shacks on their yards and as well as extend their houses and turn them into more rental rooms. During data collection, the researcher observed that most of the low-cost houses were not fenced and were built close to the small public road, which was used by both cars and pedestrians. In these low-cost houses, there were a number of informal settlements that took all the front and backspace (two informal settlements at the back of the yard and another two in front of the yard) (see figure 4.3 below).

What is crucial, which is particularly important for this study is to understand how these spatial expansion of Dunoon translate into the informal socio-economic footprint during the fieldwork, the study finds that there are a number of income generation from the informal structures in the area; These are housing/room rentals.

Figure 4. 3: Clustered RDP houses with informal settlements used for rental



Source: Author, 2017

The above figure (4.3) demonstrates two different low-cost houses that are clustered with shacks built at the back and front of the yard. These shacks, according to the residents of Dunoon, are rented out to generate an income. This implies that accommodation is in demand in the area and locals use this as a form of income generation.

4.4.2 The emergence of flats for rental

Another emerging source of income in the vicinity is the single- and multi-storey flats (apartments) or blocks of rooms for rent. The CoCT 2011 census counted 38 blocks of flats, and the number has grown since then. In cases of new houses and flats, the original RDP house get demolished and replaced due to limited space to extend their houses. Houses and property establishments on the RDP housing sites are a source of rental income for many residents, and entrepreneurs are developing rental property portfolios. According to one of the participants, these blocks of flats belong to taxi drivers. Each taxi driver owns more than five apartments and other community residents buy out RDP housing sites mostly from the elderly who want to relocate to Eastern Cape and demolish the original structure and rent out rooms in blocks of flats. Another participant emphasised that flats were financed in a variety of ways, but never with a bank loan. Some were financed with profits from vegetable or alcohol trade, money generated from the taxi business and others through *stokvels*.

Figure 4. 4: Clustered streets comprising of different blocks of flats in Dunoon



Source: Author, 2017

For instance, figure (4.4) above illustrates different blocks of flats which are found on every street of the area. These blocks of flats are occupied by a different families. According to a participant who resided in these flats consists of showers that mostly do not work because of blockages since there are many people residing in these flats. He went on to say that the flats are costly as they each have a rate R1200 to R2000 per month.

4.4.3 Informal selling or trading

During data collection, the researcher observed a variety of informal businesses found in different areas ranging from vegetable traders, barbershops, restaurants and car washes. Dunoon, also famously known for its economic viability, comprises of a variety of informal economic businesses that occur in and around the community. Table (4.5) below indicates different forms of business owners that were selected to be interviewed for this study.

Table 4: 5 Informal operational businesses in Dunoon

Type of business
a. Restaurant
b. Butchery
c. Salon
d. Street Vendor
e. Mechanic
f. Welding and Hardware
g. Car Wash
h. Clothing Store

Source: Author, 2016

Table (4.5) above indicates different informal businesses operating in Dunoon. The amount and impact each waste type identified might differ. It is crucial to understand the type of business operating in the area as this will help in knowing the type of waste generated by each business, which will contribute in tracing the sources of environmental problems triggered by each business and also be able to identify the extent and the nature of the environmental problem on the Dunoon community. The following figure (4.6) illustrates a visual idea to the reader on informal businesses operating in Dunoon. It is important to note that 100% of the 12 different business owners started their business in order to make an income to look after themselves and their families.

Figure 4. 6: A business stand attached to the main house



Source: Author, 2017

The above figure (4.6) illustrates a Zimbabwean street vendor selling fruit in her home. The respondent lives with her family. The family home is attached to the shop. The street vendor decided to start a business after struggling to find employment back home and came to Dunoon, she moved in with a relative who assisted in securing space for her to set up her stall to sell. The street vendor mentioned that the business was slow due to competing vendors offering the same products and the close proximity of their stalls to hers are also having an impact on her business. She further stated not having sufficient money was inhibiting, as she failed to secure a lucrative selling space close to the taxi rank where there is lots of traffic of people and had to settle on running it in her home which she wouldn't have pay rent.

Figure 4. 7: A street vendor selling second hand clothes without proper facilities



Source: Author, 2017

The above figure (4.7) above shows a South African female a local resident of Dunoon. She sells second-hand clothes and mentioned that she did not struggle to get customers for her clothes because people from different local townships buy clothes in Dunoon. Because of this, clothes get bought fast. However, she only complained about the growing population of Dunoon. From her point of view, the increasing population was due to the high number of flats constructed in Dunoon. She mentioned that because people are many, there is waste thrown everywhere and even close to her spot where she runs the business.

Figure 4. 8: Tyre business operated by two young brothers at their mother's garage



Source: Author, 2017

Figure (4.8) above illustrates a tyre business operated by two South African brothers at their mother's home. The business runs in the front space, which was meant to be a garage. These young males have been operating for years. According to the young brother, the business is doing well as people from Parklands and other townships come for their excellent services. The business fixes and sells any form of flat tyres and for any car.

Figure 4. 9: A salon operating in an informal settlement attached at the main house



Source: Author, 2017

Figure (4.9) above shows a female hairdressing salon that is owned by two foreign females originally from Zimbabwe but have been staying in Dunoon for years. The business is situated close to the taxi rank. The owners of the business mentioned that they rent the structure used as shelter and also pay for water and electricity. The owners also mentioned that the business is doing well even though there are many other salons on the same street because it due to the high trafick of potential customers where the business is situated situated. They do not struggle to get customers as people from Parklands and other township travel to do their hair in Dunoon.

Figure 4. 10: Spaza shop attached to the main house selling groceries to the communities

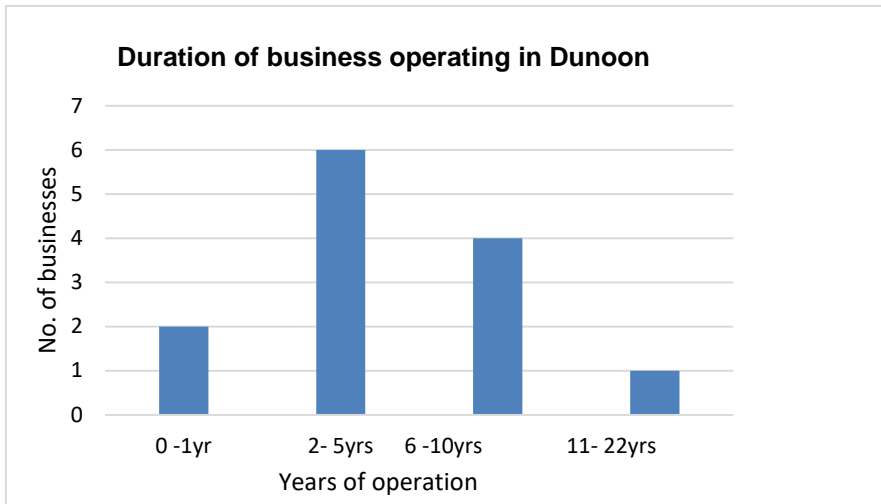


Source: Author, 2017

Figure (4.10) above illustrate a tuck shop situated in front of a house (informal settlement). The tuck shop sells small products such as ice cream, milk, bread and soup. The business is operated by a South African female residing at the informal settlement situated at the back of the shop. She stays with her children and mentioned that she struggled to get employment because she does not have matric. She decided to sell and re-sell products with the help from her the money she gets from the *stokvel* she participates in. The participant also mentioned that she rents the tuck shop from her relatives and that business was also slow because of other similar businesses in the same street she operates in.

From the information gathered above, it can be noted that businesses operating close to the taxi rank are profitable when compared to resident-operating businesses. Therefore, the facilities and space a business operates under affect the performance of the business either positively or negatively. The duration of operation of the informal businesses was important to investigate as it contributed to analysing the extent to which these environmental problems have been occurring; whether they are long term or short term environmental impacts. Therefore, for each of the businesses interviewed, the years of operation are presented in figure 4.11 below.

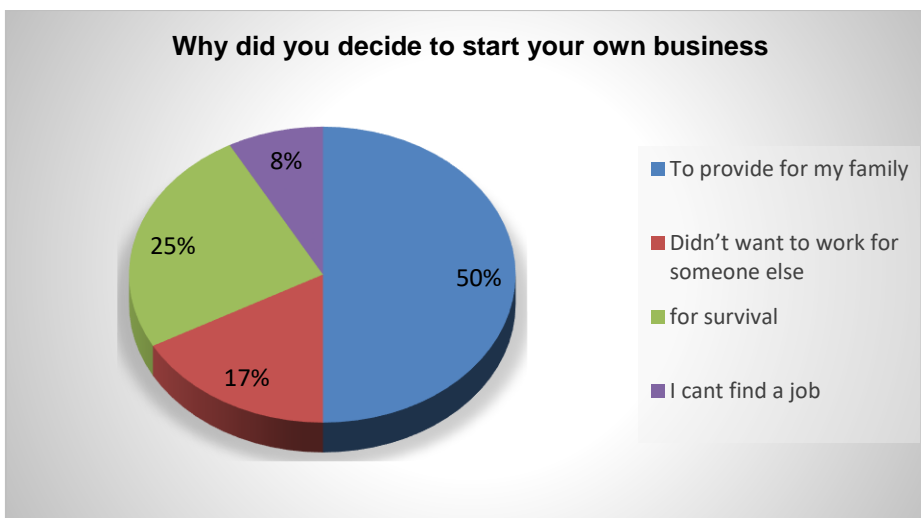
Figure 4. 11: Years of operation by businesses in Dunoon



Source: Author, 2017

For instance, figure (4.11) above indicates that from the total of 12 informal businesses interviewed, the majority of the businesses indicated that they had been operating for a maximum of five years, followed by ten years. This implies that the informal economic activities have become a permanent and a well-established sector for making income for the majority of residents in Dunoon. Therefore, emerging environmental impacts ought to be viewed as long-term rather than short-term challenges. The lowest duration of operation as indicated in the graph is between a few months to one year. This also implies that local people are joining the informal sector as a way of generating an income. The following figure (4.12) provides various reasons provided by business owners for starting their businesses.

Figure 4.12: Reasons for starting a business



Source: Author, 2017

Local people engage in informal economic activities for various reasons depending on their need and current challenges. For instance, from the total of 12 businesses interviewed, 45% of business owners mentioned that they started their businesses for survival. Twenty five per cent (25%) indicated that they did not want to work for someone else and wanted to become their own bosses, 13% indicated that they started their business because they had passion and lastly 13% indicated that they wanted to stay away from crime and be able to be independent. A majority of the local residents joined the informal sector in order to make an income and be able to provide for their families; However, this is not the only reason local people started their businesses. For instance, (Business Owner 1 , 29 September 2016);

I dropped out of school in grade 10 so I decided to look for a job so that I don't get involved in crime and use drugs. Now I work here (taxi rank) and I wash taxis. With this money I buy myself clothes and help my mother at home with groceries.

Likewise, (Business Owner 2 , 29 September 2016) stated that;

I started my own business because I have a passion for the work that I do. I own an internet café and back home in Zimbabwe I studied Information Technology, so here I deal with computers. I want to put my brand out there and grow it.

Moreover, (Business Owner 3 , 29 September 2016) stated that;

I never liked working for someone else; if you have your own business, you work at your own pace.

The above statements clearly show that, business owners sell for survival to stay with their families (they are wives and husbands and have kids), but those who indicated other reasons such as the ones stipulated above are young males that do not have major responsibilities but only look after themselves. Therefore reasons will vary depending on the person needs and aspirations.

4.5 ENVIRONMENTAL PROBLEMS EMERGING IN DUNOON LOW-COST HOUSES

The reason why the above section has dealt with the informal economic activities present in Dunoon low-cost housing establishment, is to present environmental problems emerging in these low-cost houses. This section is thus crucial because it presents and traces the sources of these challenges as well as the causes of these environmental problems and their extent of impact on the environment of Dunoon. During the site visit to the study area, the following environmental impacts were identified almost throughout Dunoon low-cost housing, in every street and corner of the study area.

Figure 4.13: Illegal dumping of waste in a public space



Source: Author, 2017

The above figure (14.13) shows a container that is used by municipal waste contractors to store their brooms and bags for cleaning waste in and around the community. Next to the container is mixed waste dumped next to it as well as a blue bag. What is disturbing about this image is that next to this dumping open space are houses that people stay in. This has a negative impact on their health and well-being.

Figure 4.14 Illegal dumping of waste next to a public school by residents



Source: Author, 2017

The above figure (4.14) shows a pile of scattered waste in torn municipal bags that has also been dumped next to a local school. According to the street vendor who was amongst those operating next to the waste, the waste gets dumped by residents at night, especially those staying in flats. She further stated that the municipality does their job in ensuring that the streets are clean. However, every time they come to put up their stands in the morning, they find the dumped waste. Lastly, she expressed concern about the rising number of flats in Dunoon that is increasing the population in the area.

Figure 4.15: Blocked drains causing overspill of waste water in the public street



Source: Author, 2017

The above figure (4.15) shows the spillage of wastewater which is an indication of burst sewage pipes. This street is one of the busiest streets because it is close to the taxi rank. It is used by both pedestrians and cars, and lastly, it is situated next to various businesses. During data collection, a lot of businesses and residents were not shocked by this incident; in fact, they indicated it as being a typical problem that was caused by population growth in the area.

Figure 4.16: Sewage waste water and grey water next to the residential public tap

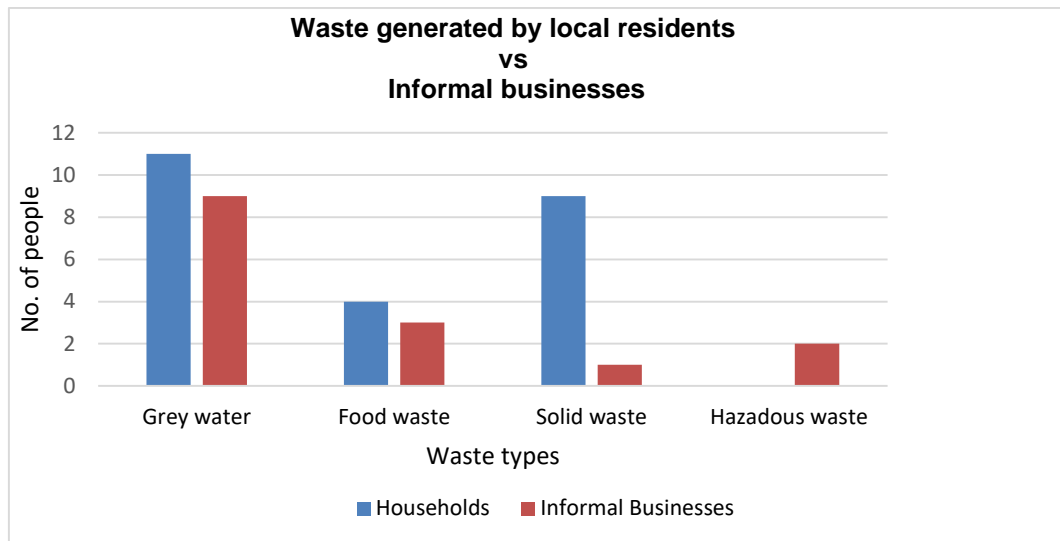


Source: Author, 2017

The above figure (4.16) shows the spillage of grey water as next to it is a block of flats and a tap that residents use for domestic purposes. The image also shows sewage wastewater mixed with general waste. Residents still used some toilets (in bad condition) but what was concerning was the fact that houses were situated close to the facilities which are not safe for residents, especially children.

It is important to note that the above mentioned environmental problems were not the only challenges, but there were other significant issues which are presented in the following sections. Seeing that environmental challenges were present in the study area, both the local residents and the business owners were then asked about the waste they generated. For instance, 39% of households indicated that they generated mostly solid waste such as papers, plastics and 33% indicated that they generate grey water and 22% indicated that they generate food waste, as well as 6%, who said they generate hazardous waste. Meanwhile, 75% of the informal businesses indicated that they generated grey water as most businesses indicated that they use water in their businesses, 25% was solid waste such as plastics, empty containers and boxes and 8% was food waste from leftovers.

Figure 4.17: Waste generated by local residents and informal businesses in Dunoon



Source: Author, 2017

Figure (4.17) above reveals grey water is a major waste type generated by both groups, followed by solid waste which is mostly generated by the household residents. As observed on the figure above, the major waste generators across all waste types are the local residents, and this difference can be influenced by the fact that most businesses showed awareness and knowledge on environmental issues. It is essential also to make mention that it was observed that the majority of businesses in Dunoon were owned by foreign African nationals. Both groups were then asked as to how they disposed of the waste streams identified in the graph below. For instance, 88% of the local residents indicated that they used wheelie bins provided by the municipality followed by 12% who indicated that they disposed on land. From the small number of residents who indicated that they dumped waste on the land, for instance (Resident 1, 29 September 2016) stated that:

The municipality must come and clean, and sometimes these workers do not do their job instead they go around the townships and when they see the truck to collect they act as if they were working.

(Resident 2, 29 September 2016) who gave a similar narrative stated:

Ever since the establishment of these flats, people dispose waste in open spaces or at the back of my container which I use for business. In my container, I have small space, the municipality needs to provide me with a big facility so that I can run my business and get more customers. I do not even have water and electricity; they (municipality) should do something about this problem.

And lastly (Resident 3, 29 September 2016) gave a different narrative to the rest and stated that;

Municipality must employ us to clean the streets and build bigger houses for us where our children can play safely.

Meanwhile, 46% of the informal businesses also indicated that they use Wheelie bins, 21% take their waste to a recycling company, 17% use blue bags, and 16% said they give recyclables to their customers. However, there was one business owner who runs a fast food restaurant that is situated at the taxi rank. This owner showed concern about the flats built in Dunoon which now has a negative impact on her business. For instance (Business Owner 4, 29 September 2016) stated that:

I am not happy at all. I work in this small container and my customers have to stand outside. Dunoon is overpopulated, bins are full all the time and they get stolen. I think ever since these flats, as you can see at the back, people from those flats they dump waste everywhere. The municipality need to provide us with proper facilities so that we will not work in an unhealthy environment like now, Look even next to my door there is running dirty water from a blocked pipe. This is not how people should live.

From the dialogues presented above from both the local residents and informal business owners groups, it should be noted that residents expressed a concern of lack of jobs which was a factor raised by many to say that the municipality employs people from other communities to clean their area instead of employing them. The residents, especially those who were unemployed, emphasised that the municipality must employ them to clean the streets. Business owners showed a positive side of the municipal services as they thought that the municipality is doing a great job. It is important to note that the majority of the businesses that gave positive feedback on the municipality service were situated close to the shops and taxi rank where most bins were evident, and the area looked clean.

Both the local residents and informal business owners were asked to state what they identified to be environmental challenges in low-cost houses of Dunoon. All of them indicated solid waste and air pollution (bad smell) from the solid waste, blocked drains and grey water as the major environmental problems in the low-cost houses.

When the Department of Environmental Affairs and Development Planning and City of Cape Town were asked about the environmental impacts in Dunoon, the departments expressed different

views on the matter. For instance, (Official⁶ 1 of the DEA&DP: Waste Management, 2 September 2016) had this to say about the environmental problems in Dunoon;

It depends; I think generally I would say its overcrowding, poor services such as when there is no electricity etc.

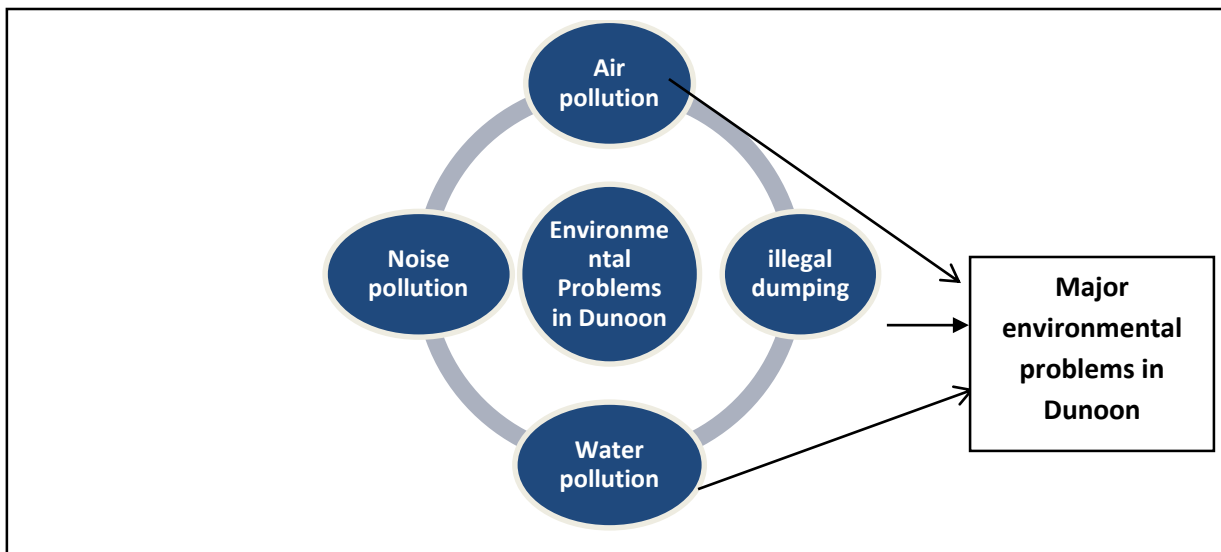
While (Official 2⁷ of DEA&DP: Land Use, 1 September 2016) presented a different view and stated that;

A premier complaint was that you wait two years for an EIA by the time its complete people have already settled (informal settlement) so it is mainly vegetation and then your on-going problems are litter, liquid waste and solid waste informal roads. This all has an impact on the clean environment.

Lastly, (Official 3 of the City of Cape Town⁸: Solid Waste Directorate, 1 September 2016) presented a similar view from both of the above narratives and listed the following to be environmental problems;

Illegal dumping of waste on the streets, overpopulation makes it difficult to provide services that will sustain the environment e.g. sanitation problems, air pollution and land pollution due to the burning of tyres during service delivery protests.

Figure 4.18: Environmental problems in Dunoon low cost housing developments



Source: Author, 2017

⁶ Official 1 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Waste Management Directorate

⁷ Official 2 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Land Use Directorate.

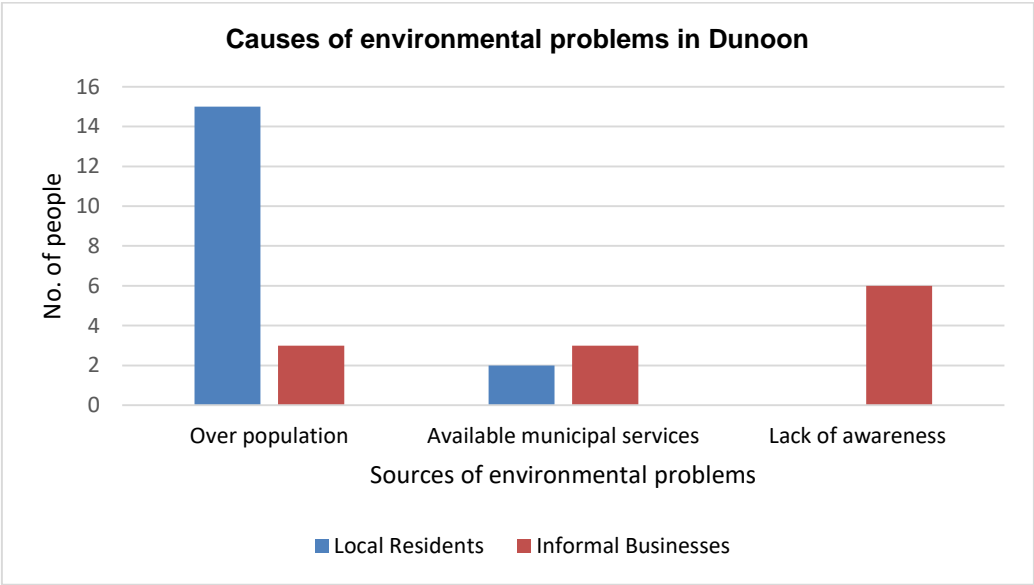
⁸ Official 3 is City of Cape Town under the Solid Waste Directorate.

As shown in figure (4.18) above , the major and most common environmental problems in Dunoon low-cost housing establishment and as identified by all groups interviewed include, illegal dumping of waste, water pollution and air pollution triggered by blocked drains and scattered solid waste. The least identified environmental problem was noise pollution even though some local residents expressed their concerns with regard to this. For instance, (Resident 4, 3 September 2016) stated;

Trucks are making noise because I stay close to N7. My house is next to N7.

It was stated in chapter one that the study area is situated close to the N7 which is a busy street as it connects the Northern Suburbs to the West Coast and Cape Town CBD. After the different groups identified different environmental problems that were emerging in Dunoon low-cost housing establishment, they were then asked about the factors that caused these problems. This question is crucial as it assisted in tracing the source of these problems so that prevention mitigation measures could be put in place accordingly. From the total number of residents interviewed, 80% indicated overpopulation to be the main cause of environmental problems in Dunoon, while 20% stated that poor municipal services triggered these problems.

Figure 4.19: Causes of environmental problems in Dunoon



Source: Author, 2017

The high number of residents expressed their concern about the increasing population in the area. This is shown in the following narratives. For instance (Resident 5, 4 September 2016) stated that;

Overpopulation and Municipality not cleaning properly. There is also a lack of awareness in the people, and the streets are small.

Similarly, (Resident 6, 4 September 2016) stated;

Some people do not want to use provided bins because they are full sometimes that is why they throw waste on the floor.

Only a few residents stated that even though the place is overcrowded, the municipality does not clean the community properly and that they should be hired to clean their community as they know it better. While the residents expressed the concern of overpopulation to be the cause of environmental problems in Dunoon, the business owners stated similar yet different narratives from the residents. The informal businesses also identified overpopulation as the primary cause; flats built in the area seem to be attracting more people to move to the area. A high number of the business owners also blamed bad behaviour and ignorance of community members with regard to not using services provided by the municipality appropriately. For instance, (Business Owner 4, 4 September 2016) stated;

There is an increase in flats as they being developed every day, this result in a lot of people moving to stay in Dunoon, bins provided by the municipality also not enough for the people staying in there

While (Business Owner 5, 4 September 2016) was very impressed with the municipal services stated;

The municipality is doing a good job because they come to collect the waste regularly. The people are ignorant they just do as they please because the bins are provided so they need to be educated.

When the Department of Environmental Affairs and Establishment Planning and City of Cape Town were asked about the environmental impacts in Dunoon, the departments expressed different views on the matter. For instance, (Official⁹ 1 of the DEA&DP: Waste Management, 2 September 2016) had to say this about the environmental problems in Dunoon;

Just for location, the mitigation hierarchy says first mitigation is to avoid, so we try and explain to municipalities to avoid the problems in the first place. One of the ways to avoid is by developing in your established house. What they do is they look for cheap land but somewhere else the land is too expensive. You buy cheap land, you put people there but then those people have to pay to come into the town whereas if you bought the more expensive land the people would not have to pay so much. By buying cheap land the municipality benefit but the people pay extra cost whereas if they

⁹ Official 1 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Waste Management Directorate

buy the expensive land then the cost to the public is the same. So the main cause is that not putting houses in the right place.

While (Official 2¹⁰ of DEA&DP: Land Use Directorate, 1 September 2016) had this to say;

Promises made by politicians to the general public during election campaigns, overpopulation (households with backyarders) which leads to overloading of drainage infrastructure, as a result of overpopulation there is more waste being generated which is more than the provided refuse bins and the excess usually lands on the streets as illegal dumping.

Lastly, (Official 3 of the City of Cape Town¹¹: Solid Waste Directorate, 1 September 2016) presented a similar view from both of the above narratives and listed the following to be the causes of environmental problems in Dunoon;

There might be things wrong in the environment that cause these problems such as overcrowding, lack of awareness people not utilising the services as they should be.

The key stakeholders were further asked if they considered the local people's day to day activities to have either a negative or positive impact on the environment. All the stakeholders agreed and individually gave a different scenario as to how human activities trigger environmental problems. For instance, (Official¹² 1 of the DEA&DP: Waste Management, 2 September 2016) indecisively said;

Yes when you do not have waste removal, refuse and solid waste and liquid waste sewage. People do not have toilets and then the pit toilets contaminate the environment. Poor location so people do have an impact.

While DEA&DP had presented a different view in some instance, (Official 2¹³ of DEA&DP: Land Use Directorate, 1 September 2016) had this to say;

Yes, because when one person sees another dumping waste on the street, they tend to do the same, and a lack of environmental education in these areas leads to these types of problems.

¹⁰ Official 2 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Land Use Directorate.

¹¹ Official 3 is City of Cape Town under the Solid Waste Directorate.

¹² Official 1 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Waste Management Directorate

¹³ Official 2 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Land Use Directorate.

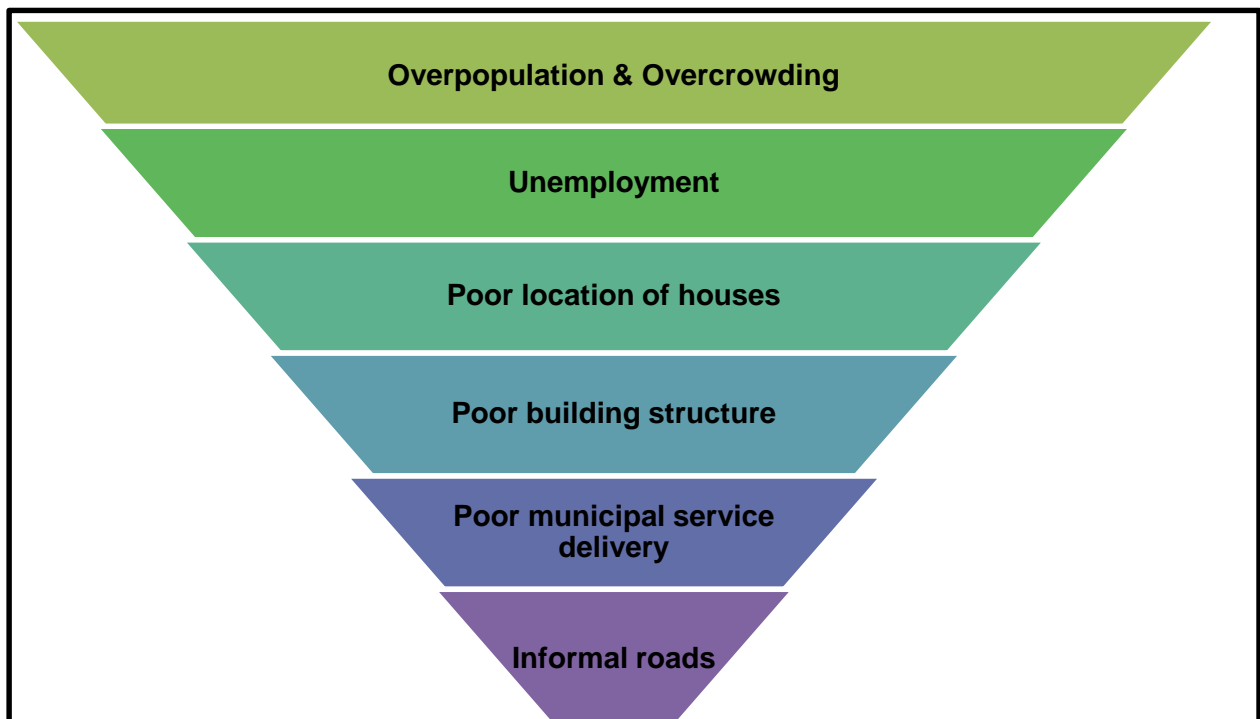
Lastly, (Official 3 of the City of Cape Town¹⁴: Solid Waste Directorate, 1 September 2016) presented a similar view from both of the above narratives and stated;

It depends on the type of community. You can get a community that is aware as to how to use these systems and a community that does not know how to use them and blocking their sewerage.

4.5.1 Underlying factors that result in these environmental impacts in Dunoon

The following diagram indicates factors that the three different groups (household residents, informal business and relevant stakeholders) identified as major causes of environmental problems in the low-cost houses of Dunoon. The challenges cited by the participants are stipulated below. These range from the major least cause in descending order.

Figure 4.20: Factors of environmental problems in Dunoon low cost housing development



Source: Author, 2017

The figure (4.20) above demonstrate factors that residents identified as potential causes of environmental problems in Dunoon low-cost housing developments. For instance, a high number of residents indicated that Dunoon is overpopulated and that the area was built in a poor location. In addition, the materials used for constructing these houses was also of poor quality and as well as the poor municipal services had contributed to these environmental problems. Even though the

¹⁴ Official 3 is City of Cape Town under the Solid Waste Directorate.

68% indicated that bins were collected by the municipal truck, some 32% felt that the workers were not doing a good job. Some mentioned that bins get full and dogs come to scatter the waste all around the area. Others stated that the bins get stolen if left overnight.

From the twelve(12) informal businesses interviewed, nine (9) informal businesses were situated close to the taxi rank indicated that the municipality was doing a good job. Another factor that was stated repeatedly was the overpopulation and overcrowding of Dunoon as 82% of local residents and business owners' emphasis was on the flats developed, saying that they are attracting people who then throw waste on the ground because the bins get full. The sewage pipes burst because of the large number of people increasingly using the drainage systems. Others even throw grey water with food waste in the drainage system. This results in the blockages and over spilling of wastewater.

When the Department of Environmental Affairs and Establishment Planning and City of Cape Town were asked about the underlying factors, the departments expressed different views on the matter. For instance, (Official¹⁵ 1 of the DEA&DP: Waste Management, 2 September 2016) had to say;

Lack of awareness from the people and maybe that the services provided is not suitable for that specific community or the public does not have a lot of services provided.

While DEA&DP had presented a different view in some instances, (Official 2¹⁶ of DEA&DP: Land Use Directorate, 1 September 2016) had this to say;

The underlying factors of location, if it is in a poor location.

Lastly, (Official 3 of the City of Cape Town¹⁷: Solid Waste Directorate, 1 September 2016) presented a similar view from both of the above narratives and listed the following factors;

Service delivery protests, burst water and sewerage pipes, overcrowding and overpopulation and the illegal dumping of waste.

From the above discussion, it is evident that these informal economic activities practised in Dunoon by local people trigger a variety of environmental problems. This is mainly due to the failure of planners when they were planning the low-cost houses as they did not provide any form

¹⁵ Official 1 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Waste Management Directorate

¹⁶ Official 2 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Land Use Directorate.

¹⁷ Official 3 is City of Cape Town under the Solid Waste Directorate.

of employment opportunities for the local people. The researcher observed that there were no facilities and open spaces for informal business to operate and as such 32% of ran their businesses in their low cost houses . Local residents that moved from Marconi Beam Informal Settlement and to Dunoon low-cost housing establishment were still faced with the same socio-economic challenges. Since informal business was a strategy they were used to, they carried on with it to the study area. It is important also to note that these environmental issues are long-term problems that are triggered by human activities. To administer the correct mitigation measures, they need to be understood and addressed from this dimension.

4.6 CONCLUSION

The results reported in this chapter presented the findings as gathered from the field in Dunoon on its environmental impacts. The results reported are a collection of all the participants involved in this research. These results indicated that long-term environmental impacts that are visible in the low-cost housing development of Dunoon are triggered by informal economic activities that are practised by the local people to survive. The next chapter presents the analysis and discussion of the data collected from Dunoon low-cost housing development. The analysis and discussion are on Dunoon low-cost housing development as a product of modernist planning and how informal economic activities are a reaction to the plans, which then trigger long-term environmental impacts in Dunoon.

CHAPTER FIVE

DATA ANALYSIS AND DISCUSSIONS

5.1 INTRODUCTION

While the previous chapter presented the results of the study, this chapter provides the analysis based on the research findings. It is important to highlight that the project investigated environmental impacts of informal economic activities in low-cost housing development of Dunoon. The analytic approach adopted in this study is based on the notion that low-cost housing development of Dunoon is a product of modernist planning. Therefore, this chapter has two related arguments, which relate to the broader analytic approach mentioned above. Firstly, the chapter argues that the modernising forces, in their attempt to create so-called civilised landscapes for the local people, have triggered long-term environmental impacts in Dunoon low-cost housing development. Secondly, it is further argued that modernist planning has resulted in the local people (beneficiaries) finding their sense of place being imposed on them. To this end, they further find themselves being alienated and, in most cases, being compelled to compromise their self-created social space in order to accommodate the new wave of modernist forces playing out in the form of low-cost housing development. Thus, the low-cost development (i.e. Dunoon) as modernist version is rather a break away from a state where the local people could negotiate to produce a particular living environment that will be appealing to their aspirations and interests.

It is thus crucial to remind the reader of this study's argument. The research study argues that local people need to be involved in the early planning and design stages of low-cost housing development. This means that local people need to be involved in all development stages to ensure that they drive the vision of the development. The study further argues that lack of involvement of the local people in the initial stages of decision-making on the project may make them feel alienated from the development with severe long term environmental consequences. The study finds that long-term environmental impacts in Dunoon are intertwined with the escalation of informal economic activities initiated by the local people to make a living. These informal activities, I argue, are a form of reaction to the imposed version of development; low-cost housing. Thus, the chapter concludes, that the environmental problems that emerged out of this pattern of human activities would ideally be analysed by means of conceptualising the Dunoon low-cost housing as a product of modernist planning philosophy.

As such, this chapter first locates the study within the broader modernist planning philosophy to demonstrate how Dunoon low-cost housing development is a product of modernist planning for the assumingly "good of the public". The chapter also reveals how technical planning tools such

as racial zoning and buffering have been used to implement and stamp out resistance to these plans. Furthermore, the chapter also presents outcomes of the modernist planning process in the form of informal economic activities and their associated environmental impacts in Dunoon low-cost housing development. Lastly, the chapter interrogates post-modernism and current tools implemented in the post-apartheid South Africa that are aimed at ensuring sustainable housing to achieve sustainable development in Dunoon. This is to protect the environmental resources and as well as enhance community participation and boosting the country's economy.

The key questions that are addressed in this chapter are: What are the underlying factors that contribute to the long-term environmental impacts in the low-cost settlements? Why are these long-term environmental impacts emerging even though these settlements are formal establishments? The chapter, therefore, argues that the reaction to the modernist landscape by the local communities is the reason why there are these long-term environmental impacts in Dunoon.

5.2 DUNOON AS A PRODUCT OF MODERNIST PLANNING

This section focuses on Dunoon as a product of modernist planning and how its tools were implemented to create a modernist landscape expressed in the form of low-cost housing development. In South Africa in general, and in the case of Dunoon in particular, the study finds that the planning process "with ruminant racial segregation" purported to build mass houses for the poor were greatly influenced by the British planning philosophy. As stated in chapter two, the concept space was expressed by means of such modernist planning tools as racial zoning and buffering of urban landscapes (see Scott, 2003:3-5). The legacy and traces of racial segregated planning are still evident today even in the democratic South Africa. For Scott, the history of urban development in South Africa is traceable from the unique patterns of industrialisation in the early 19th century in which the state played a pivotal role in the making of modern development of urban centres. Thus, the broader historical development of modern landscape in South Africa, from the colonial epoch (early 1800s) to the apartheid era in 1945 onwards is critical in understanding the making of Dunoon as a modernist landscape. The development of Dunoon as modernist landscape can be traced in the early 1990s epitomised by the movement of people from Marconi Beam Informal Settlement Informal Settlement to what was later called Dunoon (see chapter four). Like the early modern intervention, the development of Dunoon, followed by the relocation of the communities in Marconi Beam Informal Settlement, resembles the breakaway from the traditional

or informal way of living to the new landscape, which promised to deliver a “better life for all¹⁸”. One of the strongest aspects of modernist planning is erasing anything associated with traditional elements as it portrays backwardness, which must be “eradicated” to create a utopian environment. In this context, Marconi Beam Informal Settlement represents traditional landscape and Dunoon is a modernist vision that was implemented by planners because they had envisioned that the local people would live a new life, start afresh and that all the informal activities that they used to practice would be discarded. Such a breakaway from traditionality is visible in the day-to-day development discourse expressed by the governing party (ANC) whereby they use concepts such as “eradication of poverty”, “better life for all” and more, as way of selling their version of development. It is fascinating that the planners using scientific and technical concepts to justify the modernist planning development, invariably expressed such development discourse. When one of the city planners was asked about Dunoon as a product of modernist planning, she stated:

Such is no longer relevant in the post-apartheid South Africa where people’s houses are built not far from city centre and workplaces. We know that Dunoon did not follow the apartheid and, or colonial planning processes which dehumanised people. The intention of the development was to improve the lives of the people, not to isolate them or control them as it way during the apartheid past.

The above quote shows that planners used technical jargons to justify or conceal the instrumental nature of their planning intervention. While, Dunoon was developed in the post-apartheid democratic area, the element of the modernist planning process is evident in that particular landscape. The planners also ignored the fact that people were not involved in the early stages of planning that culminated to the development of Dunoon as a low-cost housing establishment.

Furthermore, the planning discourse expressed in the above quote was purely focusing on the physical planning without incorporating the human element to ensure that Dunoon settlement was informed by the cultural and socio-economic aspirations of the people who were moved from Marconi Beam Informal Settlement. Inherent in the planning discourse expressed above, is the notion of control of space as a form of institutional engineering purported to disassociate the people from any form of informality. This is done under the guise of the development vision sold by the dominant political apparatus. Thus planning philosophy is nothing but a tool designed to meet the idealised “needs of the people”. The planning process entails the creation space as a

¹⁸ “Better Life for All” is an ANC slogan which was previously used to promise people houses if they voted for the party.

means of controlling and, or establishing urban order. As Holston (1989:55) argues, this was done by controlling four functions namely; housing, employment, recreation and traffic. It is thus from this context that Dunoon low-cost housing development is viewed as a product of modernist planning philosophy.

5.2.1 Attributes of modernist landscape: Dunoon low-cost house

Historically, it was well known that planners conceived the city landscapes as a “machine” dealing with the myriad problems of urban environments. In this view, the open space or land was viewed as an “object” “to be reconfigured using a range of planning tools breaking it down into its essential different zones translated into functions (housing, work, recreation, and traffic). As well as taylorising and standardising them, and reassembling them (in the Master Plan) as a totality” (Sandercock, 2000:23).

In the case of Dunoon, in dealing with the increase of informal settlements in Marconi Beam Informal Settlement Beam, planners re-zoned an abandoned land that was initially a farm into a low-cost housing development. The site became a factory of hundreds of thousands of calculated small size plots of similar standardised and uniform houses with similar designs which were produced on a mass scale. Consequently, these low-cost houses were small cells with no playground or space for children to be free and play in. While the development planners marvelled at a successful low-cost housing delivery project to benefit the predominantly Black South African communities, the generality of these people differed with the planning officials. One of the household interviewees (Resident 6, 5 September 2016) who has been residing in Dunoon for more than 6 years, had pressing concerns regarding the ill-planned low-cost housing:

I live in this house with my husband and four kids. We are from the Eastern Cape but we moved to Marconi Beam Informal Settlement Informal Settlement because my husband was working as a labourer at Race course. As you can see, there is no space here, the yards are small and children play in the roads, this is dangerous as there are cars moving up and down. We cannot even have a garden at the back. The place is clustered. If there is a fire in one house, all the houses in this line will be affected. That is how close these houses are to each other.

The above statement indicates that, people are dissatisfied with the houses because they cannot sustain the life they used to live in Marconi Beam Informal Settlement. This also indicates that people’s views and opinions were not included when the houses were built. Their needs and aspirations were not catered for by the planners who built Dunoon. While these houses were planned and built for the people, the people are constantly complaining about the quality of these houses, as one of them argued: “planners built containers and not homes to live a normally family life”.

Figure 5. 1: Dunoon low cost houses size



Source: Author, 2017

The figure (5.1) above shows the size of low-cost houses in Dunoon as well as their limited space. The image also demonstrates children sitting and playing in front of the house as there is no playground and space is limited for them to be free. The image also shows that these houses built for the good of the people are not child friendly; at the back of the house is another low-cost house. A high number of the people that moved from Marconi Beam Informal Settlement to Dunoon had survived through informal economic activities and no provision of space for such activities was included in these new houses. This was articulated by (Resident 7, 5 September 2016) who runs a tyre business at his mother's garage:

Me and my brother work here, we fix and sell tyres to the community. But people from other areas such as Parklands they come and buy from us. We are selling in my mother's garage because we do not have another place to sell and run our business. The garage is small so I wish the government can provide us with facilities to sell in. We must run this business so that we can put food on the table for my family as my mother is unemployed. Because we are selling in this garage, my mother's car gets parked at the road, it is not safe there but we do not have another option.

The above statements articulate the need for space or shortage of proper space for the local people to operate their businesses. This statement also shows that in the space that they live in, they have adapted new ways to survive and make a living. Planners in their design for low-cost houses built spaces not places. One of the attributes of modernist planning is rationalism and linear progress. In the case of Dunoon, the low-cost houses had similar plot ratios, equal and

percentages of open space and standardised road patterns. This was articulated by the Councillor of Dunoon in the following statement:

The planners that built Dunoon did not think about the people and families they were building for, if you look at what is happening now. All these houses are very small and you cannot raise your children in this environment. It is not child friendly. Remember these people come from Eastern Cape, where they are used to spacious areas, gardens, play grounds and big yards. Now Dunoon is the opposite. You cannot even have make your own garden here. Yes, a lot of people are extending their houses to rent them out but these houses end up being built close to the public roads. This is not only a danger to the people living in these houses but also the sewerage systems connected will also be affected which will then results to waste water on the roads and blocked drainages. This not good for the health of people and especially children because you find them playing next to solid waste.

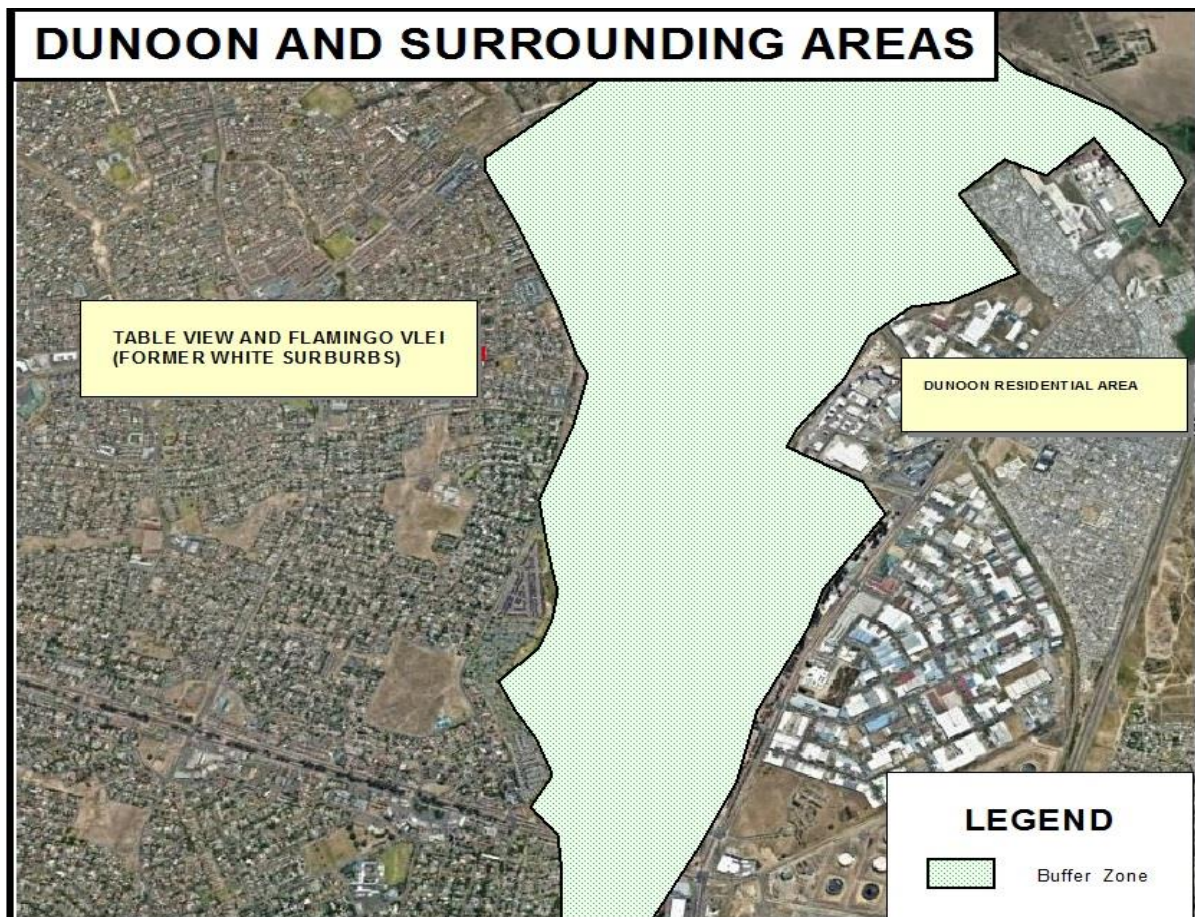
The above statement illustrates the extent to which planners implemented the top down approach during the construction of the low-cost houses in Dunoon. It also illustrates that the houses were built without taking into consideration the type of people that were going to occupy the houses, the fact that they were used to subsistence farming and they had children. These factors, which are important, were not considered during the construction of Dunoon. It is obvious that the people carried their traditionalism to the area and they did not change or adapt to the new space. Instead, they continued with the normal lifestyle they were used to. This had a tremendous impact on the receiving environment. Long-term impacts are discussed briefly in the following sections.

5.2.1.1 Standardisation and spatial separation

As stated in chapter two, standardisation and rationalisation of space are key tools of modernist planning philosophy. These tools are used to exert spatial control (often implemented by the city's bureaucrats) as part of maintaining urban order. Such concepts as suburbanisation and gentrification are part of a concerted effort to utilise space in order to create a particular social order. Thus, there is a dialectical link between social organisation and physical planning. While suburbanisation was being promoted during the 19th Century, many inner city communities occupied by people of colour were 'redlined' (Moe & Wilkie 1997). In this case, houses close to the inner city were occupied mostly by White people such as in Blauberg, Tableview and Melkostrand. These neighbourhood communities, separated by trees, were homogenous and standard across the gated communities. This concept involved the grouping of units into 'neighbourhoods' or 'cells' whereby each community and commercial facilities at their geographic centres, and the development around these centres was oriented inward towards them. The use of buffers, as tools of spatial control, culminated into open space areas such as golf courses, the sea and wetlands to segregate high-income (mainly whites) areas from poor areas that were

predominantly occupied by poor Black people. In the modern world, these buffers were positive pieces of open land, which only White people could use to access nature. More importantly, these spaces were used by the Apartheid state machinery to enhance spatial separation along racial lines. This pattern of spatial racial separation is evidence in the spatial planning of Dunoon in relation to other suburban areas (see Map below).

Map 4 :1 Dunoon and surrounding areas



Source: Modified from Google Earth, 2018

The people who reside in Dunoon have very interesting social interaction with the former White suburban neighbouring communities such as Table View, Parklands and Ridgewood (see map 4.1 above). As depicted in the above map, Dunoon is separated by buffer areas whereby former White residential areas such as Table View and Parklands (on the western side) and Richwood on the eastern side are both separated by the land zoned for agricultural use. These spaces perform a specific social function that is to ensure that the former White areas are situated far apart from the Black township establishment. The Dunoon communities only gain access to these neighbourhoods by means of providing services such as being maids, garden boy, nanny and

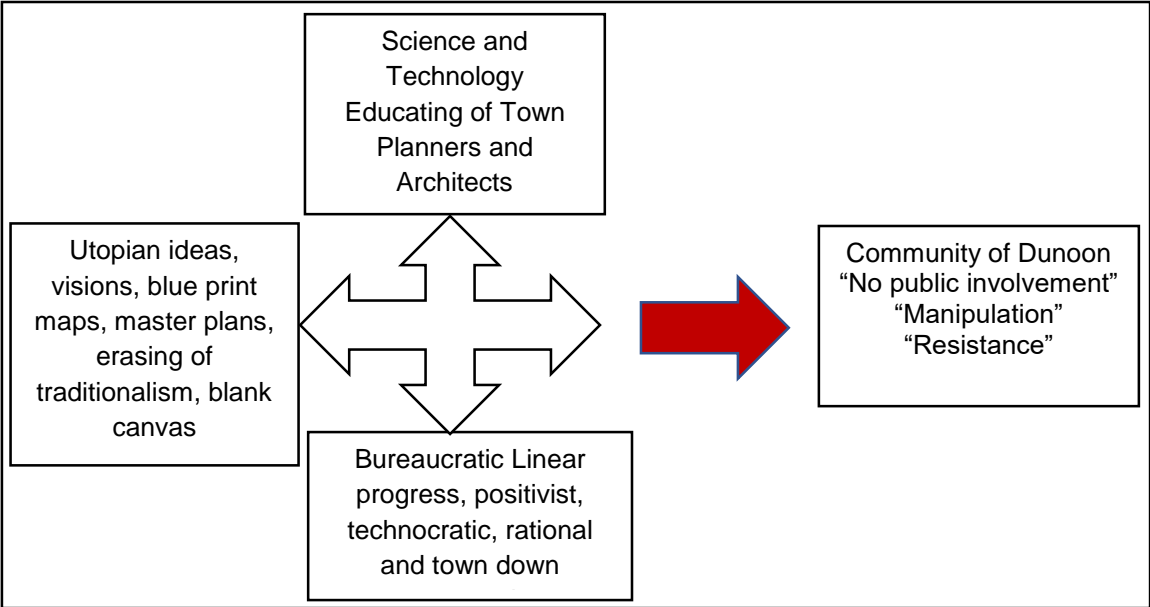
security guards, to the White suburban areas. After their day’s work, they return to their small containers.

According to the modernist philosophers, the idea of separation of urban functions into zones was to “reduce conflict between activities and to maximise the functional operation of each activity” (Dewar, 2004: 11). To facilitate movement between these discrete uses, streets also became specialised in their functions. In the past, roads were multifunctional – for pedestrians, vehicles, places of children’s play and community socialisation. Such designs are found in the urban areas and in the neighbourhood communities but not in low income areas such as Dunoon.

5.3 TECHNICAL INTERVENTIONS AS AN ELEMENT OF MORDENIST PLANNING

This section focuses on demonstrating how technical intervention through the objectification of space has played out in the Dunoon low-cost housing development. Harrison (1996: 225) states that the profession of planning “is a product of a reform movement within modernism that emerged as a reaction to the misery, deregulation and chaos of the 19th century city”. Currently the technical nature of planning for low-cost housing development has ruminant of modern philosophical construct to create a “better society”, bring order to spatial interactions and use appropriate human reasoning to find solutions to particular problems in cities (Scott,2003). In the urban context, modern architects and planners sought to design and create cities to promote industrial efficiency and cater for housing needs on a mass scale. The following diagram describes characteristics of modernist planning that were used to create and develop plans for building low-cost houses.

Figure 5. 2: Modernist planning as a technical intervention in Dunoon



Source: Author, 2017

As shown in figure (5.2) above, the planning of Dunoon utilised science and spatial technology to create a utopian world that would appeal to the housing beneficiaries. This form of intervention was accompanied with the destruction of anything created by the human aspect. Thus, the actualisation of modernist vision through planning is executed in a systematic manner by boreoarctic apparatus such as planners, engineers, EIA specialist and councillors to create and enforce the modernist vision for the good of the public. In the case of Dunoon, it is understood that the planners designed Dunoon as a solution to undo social problems said to be created by informal activities at the Marconi Beam Informal Settlement Informal Settlement and this is expressed by (Resident 8, 5 September 2016) below,

Before my family was moved from Marconi Beam Informal Settlement, we owned two shacks there. One we used for staying ourselves and the other one we rented out to my extended families and we made income from that. I was also selling umqombothi (African beer) in Racecourse that I made myself. Now here in Dunoon, even though I have a house, we still have shacks in my household because it's our way of making a living. It's hard to get a job especially if you are old like me.

The above statement demonstrates how planners have failed to regulate local people with their plans. As stated above, even though planners wanted to prevent these informal activities by moving people to low-cost houses in Dunoon, local people continue with their normal lives and old practices as this is the only way they are able to generate income and survive. For planners and city administrators, the informal activities were synonymous to a myriad of social problems such as crime and drugs, hence the former White suburban areas had some growing concerns over these issues. A master plan, as blueprint, was thus designed as a response to these social concerns; to bring social order. The plan served two purposes:

1. To predefine how the proposed low-cost development would look like and
2. To reconfigure the space in order to bring about social problems as defined by planners and urban administrators. The spatial configuration took the form of rezoning the land into the land use that would subscribe to the master plan prescripts. For instance, the land on which Dunoon was build was previously zoned as an agricultural land that was converted for residential purposes.

The next table further illustrates modernist planning attributes as seen in Dunoon low-cost housing development.

Table 5: 3 Attributes of modernist planning as projected in Dunoon

Attributes of Dunoon as a modernist planning	Explanation
Technical	Before Dunoon was developed, planners conducted a feasibility plan to access if it was suitable to construct low-cost houses, after rezoning took place from a agricultural to a residential area. An Environmental Impact Assessment report was then compiled and approved.
Top down approach	The development of Dunoon was mainly conducted by the planners and in all stages and the local people were not included in decision-making. Even though local people were beneficiaries of these houses, they were recipient throughout all stages of development.
Exclusion of beneficiaries in Decision-making	Local people were not part of decision-making, they were the invisible stakeholders
Uses science and technology to find human solutions	The replacement of informal settlements that were created by local people with low-cost houses, which was created through science and technology.
Erases culture and tradition	Before local people moved to Dunoon, they were engaged in informal activities. Dunoon was constructed in order to prevent those activities from going on. Therefore, in this way planners assumed if they moved them to Dunoon, they would not engage themselves in these informal activities as they were seen as a negative that could not fit into the new modern vision or utopian world that they created for the local people.

Eliminate anything that has a self-created element which is called informal	Marconi Beam Informal Settlement Beam is an epitome the of traditionality and Dunoon is the epitome of a modernist vision
Planners first identify a problem within the behaviour and way of living of the public then they see modernist planning as a solution to those challenges	Marconi Beam Informal Settlement Beam was associated with crime and drug abuse by high income residents in the area. The building and the increase of informal settlements was seen as unhygienic and therefore people had to be moved to Dunoon.

Source: Author, 2017

The table (5.3) above presents the attributes of Dunoon as a landscape of modernist planning. Low-cost houses in Dunoon still resemble modernist planning to create space for the so called good of the public. These houses still resemble a top down approach when it comes to decision-making. Beneficiaries were not consulted prior to the development of these houses. This study argued that low-cost houses are a product of modernist planning as many authors have debated that these houses were built to eliminate the construction of informal settlement in Racecourse. It is assumed that the people were not included in the planning nor development stages of these houses, thus the top down approach. Their culture and traditions were not catered for in the plans as these people initially resided in Marconi Beam Informal Settlement Beam because they were looking for job opportunities. Even in doing so, they were engaged in street vending but none of this was considered in these new houses.

Another technical tool that was used in Dunoon was the Environmental Impact Assessment (EIA), which was conducted before the development of Dunoon. Another reason for conducting an EIA was to allow affected stakeholders (local people) and interested stakeholders (external) to be part of decision-making as development might affect them negatively or positively and to incorporate that into the proposed plan. Scott and Oelofse (2007) argue that in order for a project to be successful, local people need to be actively involved in the development. The study also contended that if local people are not involved in the development of these low-cost houses, that will then trigger long term environmental challenges. In understanding the type of public participation that was conducted during the development of Dunoon low-cost housing, two technical tools (EIA and SIA) are expounded in the following table.

Table 5: 4 Participatory typology in the assessment process

Participation Typology	Some components
Passive Participation	Being told what is going to happen or has already happened. Top down, information shared belongs only to external professionals.
Participation in information giving	Answer questions posed by extractive researchers – using surveys etc. People unable to influence.
Participation by consultation	Consulted and external agents listen to views. Usually externally defined problems and solutions. People not really involved in decision-making. Participation as consultation.
Communication by material incentives	Provision of resources, e.g., labour. Little incentive to participate after the incentive had ended.
Functional Communication	Form groups to meet predetermined objectives. Usually done after major project decisions have been made, therefore initially dependent on outsiders but may become self-dependent, and enabling. Participation as organisation
Interactive Communication	Joint analysis to joint actions. Possible use of new local institutions or strengthening existing ones. Enabling and empowering, so people have a stake in maintaining structures or practices.
Self-Mobilisation	Already empowered, take decisions independent of external institutions. May or may not challenge existing inequitable distributions of wealth and power. Participation as empowerment.

Source: Author, 2017

The table (5.4) above shows types of consultations conducted in an EIA as well as an SIA during the development of a project. In the case of Dunoon, it is concluded that the beneficiaries¹⁹ of the project were told what was going to happen which was that they would be moved from their homes (Marconi Beam Informal Settlement) to Dunoon low-cost housing development. Local people were not given a chance to influence the decision made by the planners, which in this case were

¹⁹ Beneficiaries in this study represent local people of Dunoon low cost housing development.

external stakeholders. They had no input on the developments. It is also assumed that external stakeholders such as planners had the upper hand in this development; they were the key drivers and not the local people. Local people were only consulted and not part of the planners. The top down, information shared only belonged to external professionals. This type of consultation falls under the EIA process and this is evident in the following statement. For instance, (The Councillor of Dunoon, 29 September 2016) argued that;

I don't think the people of Dunoon were consulted. Yes, it's been mentioned that an EIA was consulted but if you look the problems, house shortages and environmental problems you see today in this area (Dunoon), it seems as if local people were not part of the decisions making when these houses were built otherwise we would not be facing the problems we facing today. Clearly what the people wanted, which is employment is different from what planners wanted for the people. Today we have land issues in Dunoon, people are building shacks everywhere, and people are extending the RDP houses even going towards the streets. All this cause the problems you see in this area today. This just shows you the importance of consulting and engaging people in decision-making. These people were told and they had no opportunity to say what it is that they wanted.

To add to the above narrative, (Resident 9, 5 September 2016) who was part of the first group that was moved from Marconi Beam Informal Settlement to Dunoon said;

We were never part of the project, the only thing I can remember is us being informed by the local municipalities that we will be moved to new houses. If how the local municipality got to this decision, we were not informed as the community of Marconi Beam Informal Settlement. Instead we were threatened that our homes (informal settlements) will be destroyed because they were not supposed to be there. During that time, we were living happily in our shacks, they were home to us, we come up with ways to survive and when they moved us...everything we had vanished because you cannot take your shack that you rented out to someone to the new houses. This movement was a huge lose to us because when we come here, we were faced with unemployment and we had to start from stretch and look for opportunities in order for us to take care of our families. Yes people have found ways here but we live in an unhealthy environment, there is waste everywhere because people have taken charge. We use the houses we have to live. We were supposed to have a say in these developments and I do feel that the problems we face today could have been prevented.

And lastly, (Resident 10, 4 September 2016) added;

I am amongst the few people that still own an RDP house here, because most people sold their houses to the foreign nationals and if you look at Dunoon, these people are taking over. People are tired of this life that is why they are moving back to the Eastern Cape where they have freedom. Look most people who stay here from Eastern Cape are not poor, we have big houses there, we have farms. We do not have freedom here because we pay for everything. The municipality charges

us everything. How can we be free when we do not even have government jobs. They don't want to employ us that is why we are renting our houses and selling food. These houses were supposed to bring freedom to us but there is no freedom. Even when we extend our houses, we are given fines. Then what must we do? Clearly these houses were not built to satisfy us as the community but for the government to make money from us.

The above statements demonstrate poor public participation in the development of low-cost houses in Dunoon. It is evident that local people were not included in the early planning and development stages for these houses that were built for them. Because of that, environmental challenges emerged. Local people were invisible to the planners and were rather the recipients of these houses. Even though planners assumed that these houses would change the lives of the people for the better, it is evident that these houses were only built for external stakeholders to be able to control local people on how they should live. Local people have been deprived their freedom and have resisted these plans and this is evident from the environmental problems emerging in Dunoon. In trying to unfold the type of public participation conducted in Dunoon, key stakeholders also gave their views about involving local people in the development of low-cost houses. For instance, (Official 3 of the City of Cape Town²⁰: Solid Waste Directorate, 1 September 2016) gave the following opinion on whether local people need to be included when low cost house are developed;

Yes, because according to Batho Pele principles, people must be engaged on anything that will affect them or their livelihood. Therefore government must disclose their plans to the community first.

Meanwhile (Official 2²¹ of DEA&DP: Land Use Directorate, 1 September 2016) not quite see the need to involve local people in the process of developing low-cost houses and said;

They can get involved in the planning and the specifications of it. Absolutely because you have to hear their specific opinions about the area and also people can influence the way the houses are constructed.

Lastly, (Official²² 1 of the DEA&DP: Waste Management, 2 September 2016) said ;

It is crucial to include the public because people want to, especially when you upgrading a settlement people want to know the when and how. Also for job creation. It's crucial to include the public when developing.

²⁰ Official 3 is City of Cape Town under the Solid Waste Directorate.

²¹ Official 2 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Land Use Directorate.

²² Official 1 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Waste Management Directorate

From the above statements presented by the key stakeholders, it is evident that the local people need to be involved when low-cost houses are developed. However, it is still unclear as to which stages the local people need to be involved. The key stakeholders gave different narratives at when the public needs to be consulted. For instance, (Official 3 of the City of Cape Town²³: Solid Waste Directorate, 1 September 2016) said;

When the funding is made available and the government has identified the land for building so as to get the response.

Meanwhile (Official 2²⁴ of DEA&DP: Land Use Directorate, 1 September 2016) said;

They should be involved with the planning of it, where and how can they stay in the specifications made for them.

Lastly, (Official²⁵ 1 of the DEA&DP: Waste Management, 2 September 2016) said;

When people are fed up. And theft. You need to have the community buying into the benefits of building low-cost houses or you going to damage. Poor public participation and no public participation can lead to delays and damages.

The key stakeholders further suggested that poor public participation during the construction of low-cost houses during and after might trigger problems. For instance, (Official 3 of the City of Cape Town²⁶: Solid Waste Directorate, 1 September 2016) said;

(a) Lack of cooperation from community leaders. (b) The process is hijacked by people outside the communities intended for. (c) Vandalism of built structure. (d) Misallocation of house. (e) No proper tracking of individuals issued with houses, as people can own more than one house if the community leaders are not consulted.

Meanwhile (Official 2²⁷ of DEA&DP: Land Use Directorate, 1 September 2016) said;

It is very difficult to do public participation because it slows things down so maybe the public participation should be more accessible to the person that will be affected.

²³ Official 3 is City of Cape Town under the Solid Waste Directorate.

²⁴ Official 2 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Land Use Directorate.

²⁵ Official 1 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Waste Management Directorate

²⁶ Official 3 is City of Cape Town under the Solid Waste Directorate.

²⁷ Official 2 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Land Use Directorate.

Lastly, (Official²⁸ 1 of the DEA&DP: Waste Management, 2 September 2016) said;

Problems that emerge from poor public participation will result to damage of houses which is what we see today in the high number of townships as well as delays to finish building these low-cost houses.

Lack of public participation has resulted and triggered environmental problems in Dunoon. The question here is who gets to be involved and part of the designing stages and implementation of these low-cost houses? In an answer to this question, (Resident 11, 5 September 2016) argued that:

We were not involved at all in the planning of these houses. These people came to us with plans showing the location of these house. As small as they are, we were thus expected to accept them. There is no social facilities such as sport field and the clinic or hospital ...we still waiting for the government to build us proper houses.

Meanwhile (Resident 12, 5 September 2016) who has been residing in Dunoon for over 20 years added and said;

I have been living here for more than 10 years now. When these houses were built, I was staying in Marconi Beam Informal Settlement and I was in amongst the first families to move to Dunoon. I can tell you that we did not participate in anything related to these houses, no one come to us to communicate as to what was happening. We were never consulted about anything instead we were to move to Dunoon. Our informal settlements were destroyed afterwards.

From the views presented above, local people were not part of the development and the construction of the low-cost houses but were rather told as to what would happen. Even though they would have wanted to be part of the decision-making process and for their opinions and views to be included in the plans and taken into consideration, they were not. This concludes that planners often exclude local communities that they are building for. Their views are not part of the plans but only the views of the planners matter and this is a top down approach. This approach often leads and triggers environmental problems in the low-cost housing development. The next question is who gets to be involved and part of the designing stages and implementation of these low-cost houses? When building low-cost houses, there are various stages in the process which

²⁸ Official 1 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Waste Management Directorate

local people need to be a part of. These stages were outlined by different key stakeholders such as (Official 3 of the City of Cape Town²⁹: Solid Waste Directorate, 1 September 2016) stated that;

There are about five stages that are understood to undertaken for low-cost housing: (a) Engage the community impacted on the project. (b) Identify land for building low-cost housing. (c) Register names of people who will require the houses. (d) Create a database from which the allocation of houses will be based on. (e) Commencement of the building.

Meanwhile, (Official 2³⁰ of DEA&DP: Land Use Directorate, 1 September 2016) gave a short explanation and said;

Planning, land use application, zoning application, then public participation

And lastly, (Official³¹ 1 of the DEA&DP: Waste Management, 2 September 2016) gave a more descriptive view and said:

Purchase the land, get premise, impact assessments, rezoning and that could take 5 years before you even design the township. Design the particular settlement and layout and then also put in the houses of standard in.

From the views presented above, only one key stakeholder mentioned that the public ought to be initially involved before the development of low-cost houses commences. This indicates that public participation is not seen as a significant stage that needs to be conducted prior to the development of low-cost houses. This proves that there is still a huge gap of when beneficiaries need to be included in the houses built for them. This shows that today's practices still exclude communities and that consultations still adopt the top down approach. Now that stages involved in developing low-cost houses were outlined, key stakeholders further explained when they thought it was necessary to include the locals. For instance (Official³² 1 of the DEA&DP: Waste Management, 2 September 2016) said;

People need to be engaged before the project commences, plus the department must know how many houses they must build.

²⁹ Official 3 is City of Cape Town under the Solid Waste Directorate.

³⁰ Official 2 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Land Use Directorate.

³¹ Official 1 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Waste Management Directorate

³² Official 1 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Waste Management Directorate

Meanwhile, (Official 2³³ of DEA&DP: Land Use Directorate, 1 September 2016) gave a different narrative and said;

I don't think they are involved in the planning but when there is a land use planning application then there is a public participation conducted. But I do think people could be more involved more such as to listen to the people and actually ask them what they want.

And lastly, (Official 3 of the City of Cape Town³⁴: Solid Waste Directorate, 1 September 2016) said:

If there is an EIA and even a planning application people must be involved but there is broader involvement with the EIA process and planning process and rezoning application advertise in newspapers and not everybody sees it. Public are involved but mainly if the is an environmental issue.

From the above statements, it is clear that local people are not involved as much as they should be. They are the recipients rather than the main stakeholders who ought to be involved in the development of low-cost houses. To note is that it is unclear at which stage they need to participate. It is also unclear as to how the beneficiaries should be involved and up to what extent. This raises questions as to whether public participation is a stage that is compulsory or if stakeholders do not see it as an essential stage to be conducted in order to ensure the project is successful and sustainable. The next table further illustrates modernist planning attributes as evidenced in Dunoon low-cost housing development. It is evident and clear that an EIA was conducted and not an SIA which promotes that local people ought to be the drivers of the project. Further, it promotes that the locals are presented with opportunities to influence the development built for them. If an SIA was conducted, local people would not have been reactive, the plans and long term environmental problems could not have emerged due to the informal economic activities practised by the local people.

5.4 OUTCOMES OF MODERNIST PLANNING IN DUNOON

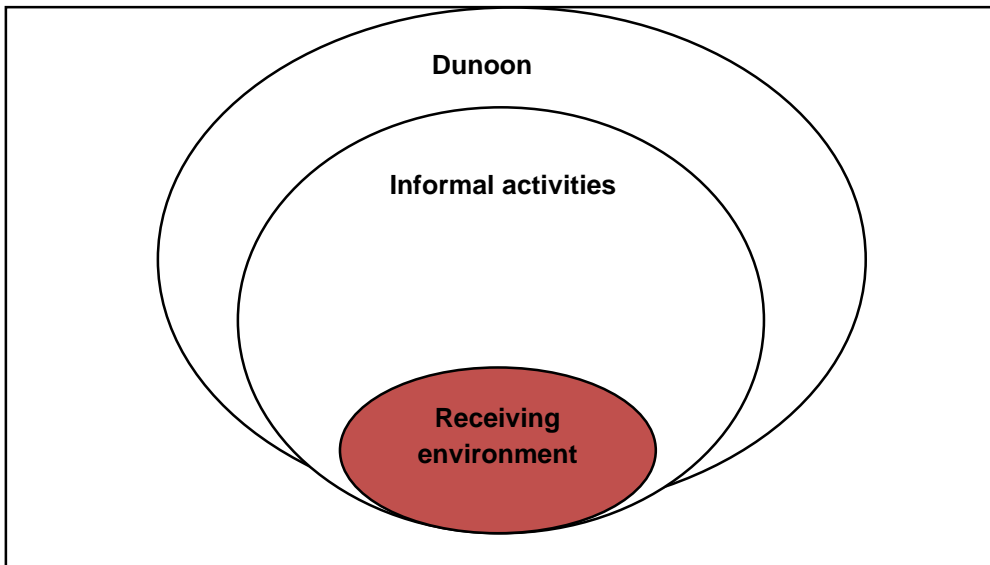
This section focuses on demonstrating how Dunoon low-cost housing serves as an economic space for local residents. Even though planners built these low-cost houses to improve the lives of the local people by providing them with shelter, the findings have revealed that local residents wanted more than just shelter. They wanted opportunities to be able to generate income for survival. It is important to remind the reader that these informal economic activities were

³³ Official 2 is a Representative at the Department of Environmental Affairs and Establishment Planning under the Land Use Directorate.

³⁴ Official 3 is City of Cape Town under the Solid Waste Directorate.

unplanned by the local people. They were a reaction to the low-cost houses, which then have resulted in long term environmental impacts.

Figure 5. 3: Dunoon low cost housing development as an economic space



Source: Author, 2017

The figure (5.3) above diagram demonstrates the relationship between Dunoon and the informal economic activities that local people engage themselves in. These informal activities have an impact on the receiving environment and these impacts are further discussed in the following sections.

Before the local residents were moved from Marconi Beam Informal Settlement Informal Settlement, the study revealed that a lot of informal economic activities were practised by these people in order to survive. In the new houses they were moved into, their needs were not accommodated as this study has revealed. Planners assumed that local people would move away from such activities and adapt into the new space. However, the findings have revealed that local people have created opportunities for themselves in these new developments which are causing negative impacts on the environment. This has been done in the form of informal economic activities, renting out of rooms, renting out of space for backyarders and as well as extending the low-cost houses into a block of flats to make an income. Each of these survival strategies implemented by the local residents are discussed individually below. The findings revealed that residents engage themselves in informal economic activities for various reasons and these reasons are outlined in the table below.

Table 5: 5 Reasons for starting a business

Increase the image of the company and have money to support my family	1
I never liked working for someone else, if you have your own business you work at your own pace	2
Passion, money for survival	1
My brother knows my boss that's how I got the job and I am working for survival	1
School, I dropped out. To avoid being in crime I decided to work here and also to be independent	1
To provide for my family	5
I can't find a job	1

Source: Author, 2017

From the total of 12 businesses interviewed, all said that their main reason for starting a business was for survival. For instance, (Business Owner 6, 29 September 2016) who is selling clothes close to the rank argued that:

I have been selling clothes for more than 8 years and my kids have never slept without food... You see, in Dunoon people always come here to buy even from other places like Khayelitsha and Langa. The word of mouth goes fast here and there are always customers. Yes I am not happy with the condition where I am selling, as you can see I sell next to the rubbish. This is dumped during the night because the Municipalities clean here but because Dunoon has many people. It is worse now that taxi drivers are building flats. Everyone wants to stay in Dunoon.

Figure 5. 4: Informal economic activities Dunoon



Source: Western Cape news, 2016

Another (Business Owner 7, 29 September 2016) who has a “tshisa nyama” close to her added and said;

I am happy here, it's like we have our own city...You will find everything here and there is no need for you to go to Cape Town.....you will find everything you want here. Furniture, food anything. People are really hustling here, as you can see there is not a lot, Dunoon is full, so people here they use what they can to make money even though the working conditions are not good. There is grey water and waste everywhere.

The above statements show that even though the local residents were placed with limited opportunities, they have found their own ways to create those opportunities for themselves so that they can look after their families. Apart from street vending, the local people have also used their small backyard spaces to generate income as indicated in the picture below;

Figure 5. 5: Informal settlements used as rental space in Dunoon



Source: writeopinions.com (2011)

The renting of space to construct an informal settlement is another strategy for the residents of Dunoon to generate income. In most cases, the landlord occupies the main house and then rents out the front and the back space. For instance, (Resident 13, 5 September 2016) who is a backyard dweller said;

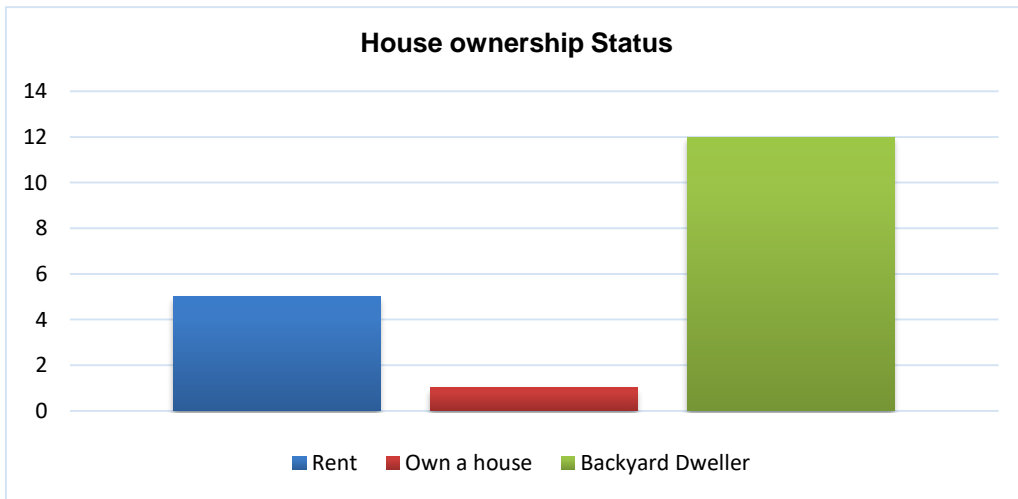
I come here to look for a job all the way from Eastern Cape. I only have grade eight but during the weekend I wash cars at the taxi rank and I make money. Sometimes I fix TVs for people in this room that I also stay in. You see we have a small space here, and even in the yard there is no space but there are shacks (informal settlements) and we all pay to put our shacks. With the money I make atleast I can rent this space for my shack and eat as well. So I am happy here because if you look at other townships they are not like Dunoon. Here even if you have no job and you look, you will find it. I stay with my partner and she works in Parklands which is not far. She uses Myciti and she doesn't have to take many taxis to get there. Life is easy here and people live well with each other as you can see there are foreigners as well.

The above statements demonstrate how Dunoon is an economic space. The statements further elaborate how the local people have used the space they have to generate income for survival by pursuing informal economic activities.

5.4.1 Extension of house for Rentals

The study revealed that even though these houses were meant for families who had been moved from Marconi Beam Informal Settlement Beam to live in these low-cost houses, the high number of people residing in Dunoon were renting, followed by backyard dwellers. Only few people own houses. Despite the large proportion of these communities, few people claimed that they are owners, as depicted below.

Figure 5. 6: Status of house ownership in Dunoon

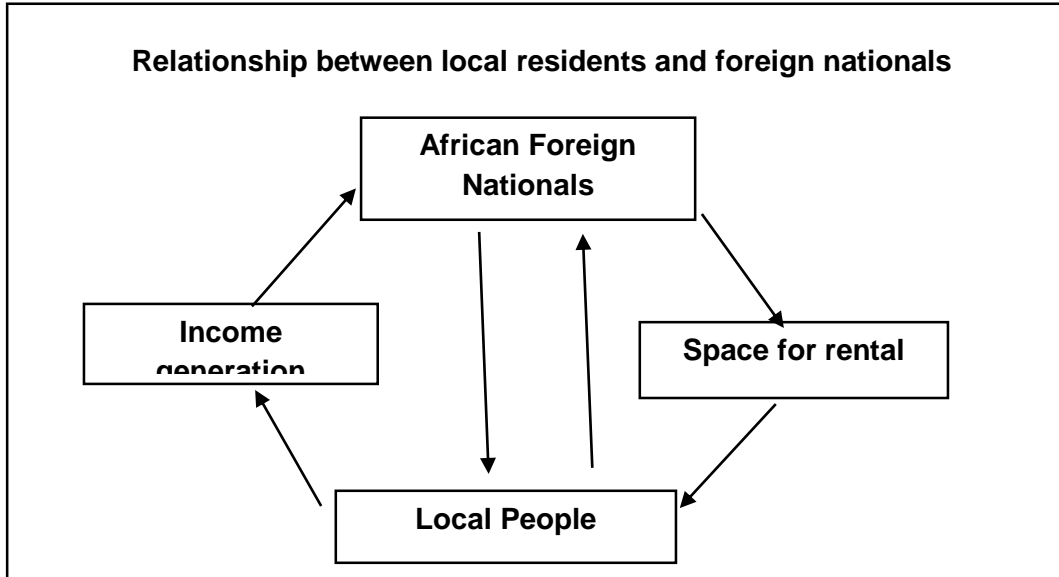


Source: Author, 2017

Figure (5.6) above shows that local people in Dunoon make an income out of their houses through rental and space that they have on their yards for backyard dwellers. The study also revealed that local people use these houses for businesses such as spaza shops, hair salons, clothing stores and for selling fruits. Furthermore, the findings revealed that people running businesses on these low-cost houses are renting from landlords. A high number of the businesses were run by African nationals. As minimal space for entrepreneurial activities or small businesses was provided within the suburb, the people use their yards or garages to engage in economic activities.

The study also revealed that the high number of the African nationals that own businesses and that are working in Montague Gardens and other factories rent these houses. A high number of them also buy these houses from the original owners. During an interview with the Councillor of Dunoon, he revealed that a high number of owners sell these houses illegally to either use the money to start businesses back at home in the Eastern Cape or move in and stay in informal settlements which are less of a responsibility to manage.

Figure 5. 7: Relationship between local residents and African foreign nationals



Source: Author,2017

The figure (5.7) above demonstrates the mutual relationship between local residents and African nationals. As also mentioned above is that as a way of generating income for local residents, they rent out their rooms and space in their yards mostly to African nationals that have businesses in Dunoon and who are mostly working in the surrounding areas and factories. A study conducted by Cooper (2009) showed that Dunoon was the first township to experience xenophobia in 2009 in the Western Cape. A high number of African nationals were chased away and most of the shops were looted by the locals because people felt that the African nationals were taking their jobs. However, findings reveal that the high number of people running businesses are African nationals and seven years later, no xenophobic attack has erupted. In datum, most African nationals revealed that they enjoy staying in Dunoon as the rent is affordable and it is close to where they work.

Figure 5.8: Flats/rooms rented out to African Foreign nationals in Dunoon



Source: GroundUp,2016

Figure (5.8) above shows the growing and spreading of flats that are rented out by local residents to African foreign nationals and as another way to generate income for survival. A number of clustered backyard structures displayed in the image are also used for rental purposes.

For instance, (Resident 14, 5 September 2016) who is originally from Zimbabwe said;

I am happy here, everyone treats each other with respect and I have been operating my business for more than 6 years now.

Another (Resident 9, 5 September 2016) who is from Maputo and owns a hardware shop said;

I moved to Dunoon looking for a job and I stay only for one month and I found a job. Even the rent is affordable here as compared to other townships. I take one taxi to my work, before I used to take 3 taxis.

Lastly another(Resident 15, 5 September 2016) who moved from Khayelitsha said;

It was easy for me to settle in Dunoon because I get along with people and the community treated me well and made me feel comfortable.

The above statements reveal that local residents have built mutual relationships with the African nationals that benefit both parties. The local residents generate income from the African nationals by allowing them to rent their houses and spaces as backyarders. The African nationals also benefit because they get to operate their businesses and they do not have to travel to get to their businesses.

5.5 ENVIRONMENTAL IMPACTS OF INFORMAL ECONOMIC ACTIVITIES IN DUNOON

This section focuses on the outcomes of modernist planning in Dunoon low-cost housing development, and the local people's reaction towards the low-cost houses developed for them. The study argues that the informal economic activities practised by local people have triggered long term environmental impacts that are now evident in Dunoon. This section, therefore, briefly discusses these environmental impacts and their impact on the environment. The section further unpacks the causes of these environmental impacts considering that Dunoon is a formally established low-cost housing development. The table below then presents priorities of local residents as opposed to key stakeholders that have triggered these environmental challenges in order to find the source of these environmental impacts or the causes to these problems.

Table 5: 6 Priorities of local residents vs key stakeholders

Local Residents	Key Stakeholders
Seeking job opportunities	Environmental Protection
Survival/Make an income	Behavioural change
Using RDP as space for economic purpose	Building homes for residential purposes
Environmental problems emerge	Poor use of municipal services by communities
Resistance of people to the plans	People need to be educated to use these services

Source: Author, 2017

From the table (5.6) above, it is evident that local people's first priority was to create opportunities that will generate income in order for them to survive and enjoy the life they wanted. Since the planners in the new developments did not consider these opportunities, local residents created opportunities for themselves using the limited space that they had. For instance, (Resident 16, 5 September 2016) who has been residing in Dunoon for over 20 years said;

Initially, my father worked at the Racecourse, my mother and my three siblings then moved to Marconi Beam Informal Settlement to stay with him. My mother didn't work so we survived through my father's income and grant money. We then moved to Khayelitsha to stay with my cousins because my father lost his job. Because Khayelitsha is far from town, after years we moved to Dunoon. We are renting here. Dunoon is close to town and other opportunities and now we are selling food and sometimes I get part time jobs in Montague Gardens. Life is better here because you can't stay a month without a job, people create jobs for themselves here. Ya...we are happy but

as you can see, the space is small and there is waste everywhere because Dunoon is over populated everyone wants to live here.

To add to the above statement, (Resident 6, 5 September 2016) who has been on the taxi business for more than eight years said;

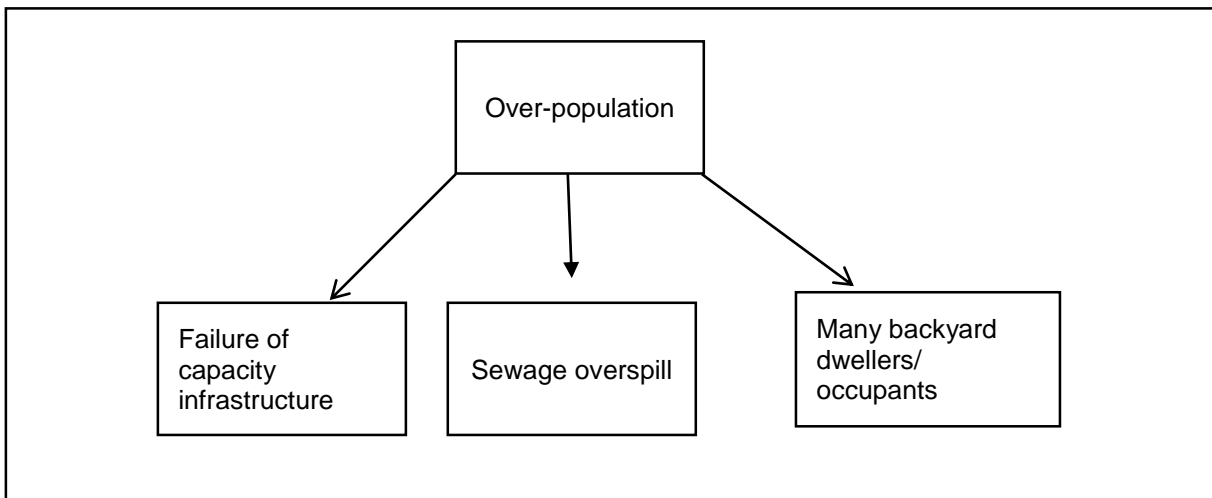
I work for myself, I decided to join taxi business because I didn't find a job. Me and my colleagues we have 'umbutho' we each contribute certain percentage of money and we save it. So, this month let's say I will get money, next month it will be someone else. With that money, I have managed to extend my father's house and rent it out. So that is another way I am making money. The only problem is we do not have space now we are forced to build flats on top of RDP house because we use the other space for backyarders. So you can just imagine the waste generated. To run flats is costly because every weekend the pipes get blocked. There are small pipes and it's hard. We need more land from the municipality so that we can build properly. This is costing us. Now we even going to the road. Yes, it's nice that we have many people that are always looking for a place to stay but it is also costly because you have to pay more water, more electricity and fix every day.

The above statements indicate that the opportunities created by local people in order to be able to leave under harsh economic realities. In the next section, the study presents factors/sources that have triggered tremendous impacts as well as their impact on the surrounding environment. The causes are briefly discussed below.

5.5.1 Overpopulation

The findings of the study depicted that over-population to be the first source of environmental problems in Dunoon and the outcomes triggered are discussed below.

Figure 5. 8: Overpopulation as a factor of environmental problems in Dunoon



Source: Author, 2017

Overpopulation is one of the major social problems in Dunoon that trigger environmental problems. The challenge of overpopulation is an example where infrastructure capacity is exceeded since the sewage system of Dunoon was designed to accommodate a small population in the formal houses. The informal development within the area is causing an overuse of the infrastructure, which is a risk to human health and the surrounding environment. The extending of houses and converting them into blocks of flats is also causing over population. The overspill of sewage drains into the storm water system may pollute the natural water system, which will then kill existing species in the natural water systems. For instance, (Resident 8, 5 September 2016) who stays with her family in the flats said;

Before, we did not have flats in Dunoon, people only rented space in their yards for shacks. But now it is like people are competing, people are converting their houses into flats. So you can imagine a house that was initially staying five people now accommodates more than five families because these flats are fordable. That's why me and my family moved from our shack to stay in the flats. There atleast there is electricity, a shower and a proper toilet. The problem is we have one tap and often water is a problem. Even with electricity, it goes all the time and the yard is small so when we do our washing, we have to hang inside our rooms. But it's nice to stay in flats as compared to a shack. I am happy here but there is waste everywhere and dirty water everywhere. This is not good for our health and for the health of our children.

In addition to the above statement, (Resident 3, 5 September 2016) argued that;

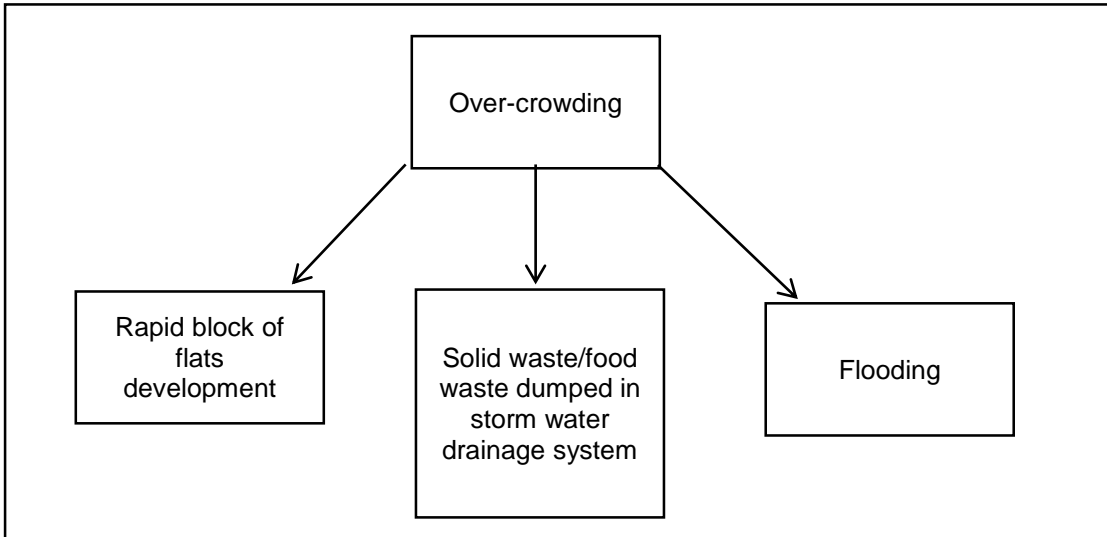
Showers block because of the drains (as they are full) and cannot accommodate the growing population of people moving into the flats. For the sewage waste, by the time they build Dunoon, the waste pipes are small to accommodate the current population of people living there. So the City of Cape Town needs to change the current pipes to accommodate large population of people. So overpopulation to me is the cause of all these problems we are facing in Dunoon.

From the above statements, it is clear that environmental problems such as sewerage spills are caused by the over population in Dunoon. Backyard dwellers and establishments of blocks of flats in Dunoon cause this overpopulation. Many people move from other townships to stay in Dunoon because of affordable rent and human self-created opportunities. The second cause of environmental problems in Dunoon is overcrowding.

5.5.2 Overcrowding

The findings also revealed that overcrowding is the second source of environmental problems in Dunoon and this is briefly discussed below.

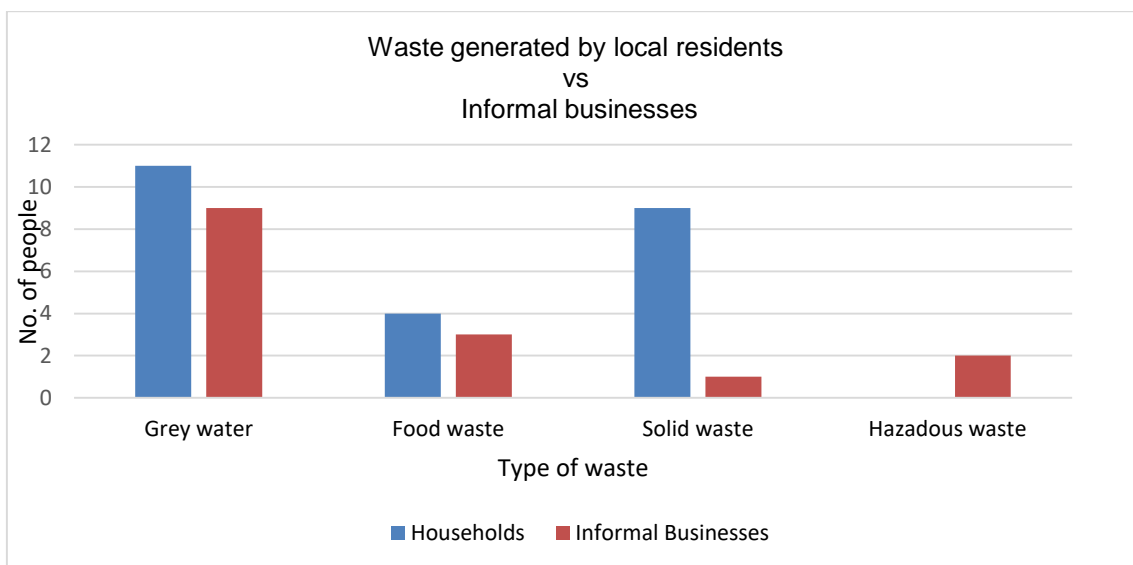
Figure 5. 9: Overcrowding as a factor of environmental problems in Dunoon



Source: Author, 2017

Overcrowding is the second cause of environmental problems in Dunoon. Besides water pollution through sewage overflows, environmental pollution is also caused by solid waste entering the storm water drainage system from the streets. Different waste components get carried away with the storm water and also accumulates in the natural water systems. While part of the waste is carried away with the storm water, other waste blocks the storm water drainage system which can cause flooding and can be a risk to the health and lives of people and their property. For instance, the graph below compares the type of waste generated by household residents as opposed to local informal businesses in Dunoon.

Figure 5. 10: Waste types generated by local residents and informal businesses in Dunoon



Source: Author, 2017

The figure (5.10) above demonstrates that the most waste type generated by households in Dunoon is solid waste as compared to grey water which is mostly generated by local informal businesses. This variation might be caused by various reasons. For instance, (Business Owner 8, 29 September 2016) who owns a food business said;

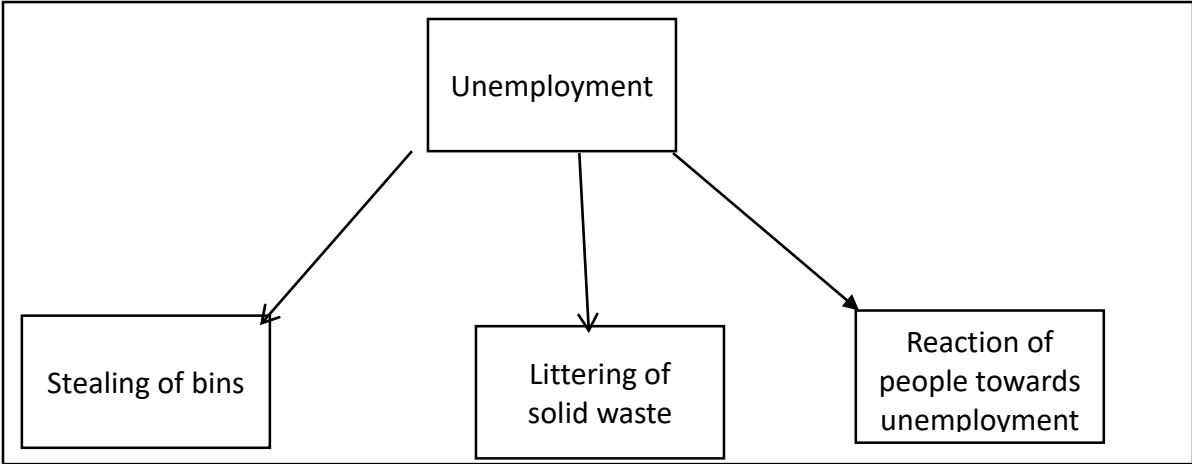
I am renting this container from my landlord, I don't pay for water, I use the one from the public tap here at the rank but the problem I have is waste which is dumped at the back of my container. Ever since they built these flats, Dunoon is overcrowded and the people dump waste here. Sometimes it's because the bins are full or they get stolen. The government needs to build us proper facilities. You see my customers do not even have space to eat, they stand.

The above statement supports the high number of grey water generated by informal businesses in Dunoon, since most businesses have to use water in their operations. They do not pay for the water and this can trigger people to misuse it because there is no monetary value attached to it. The following factor discussed is unemployment which also triggers environmental impacts in Dunoon.

5.5.3 Unemployment

The findings of the study also revealed that unemployment is the least cause of environmental problem and this discussed below.

Figure 5. 11: Unemployment as a factor of environmental problems in Dunoon



Source: Author, 2017

The findings have revealed that unemployment is another factor that triggers environmental impacts in Dunoon. Unemployment is associated with local people reacting to the fact that they are deprived of jobs by the local municipality to clean and manage their own environment. Instead, people from other areas are employed. Therefore, this has resulted in the residents having a

laissez faire attitude towards cleanliness. They litter their environment because there is no sense of belonging and pride towards the environment they reside in. For instance, (Resident 1, 5 September 2016) who has been staying in Dunoon for more than 15 years said;

I am unemployed, I have been applying for jobs but I have not received any luck...Most of the time I am in my house because I have to look after my small child while my husband is at work. These municipality trucks they come in the afternoon and workers they wait for the truck to leave then they do as they please, visit their friends and roam around the streets the whole day. When the truck comes later, they act as if they are working but we see them as the community. That's why the bins are always full and they stay here in the street over the night. The next day when we wake up the dogs have torn the plastic bags and waste is everywhere.

(Resident 6, 5 September 2016) gave a similar narrative and said;

Well all I can say is the municipality needs to employ us to clean our own street. You find that in some street people that stay there take turns and clean on their own. We know our community more than the outsider so you can not hire someone from another township and leave us here.....Rather hire us and we will do the job well.

And lastly (Resident 6, 5 September 2016) said;

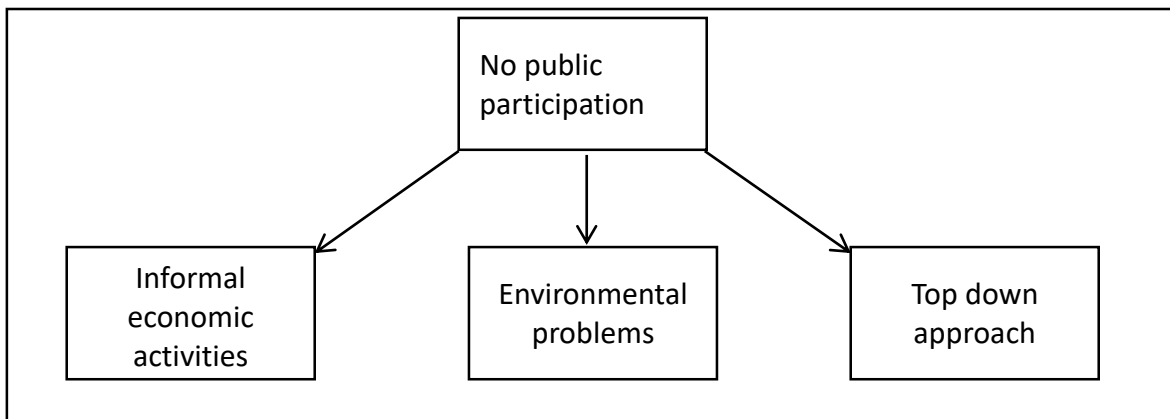
These people are lazy, they get paid and they don't even do their job. That's why people still these bins because they stay there over night. The truck only goes where there is a clear street and because some houses are shacks, they have small street and the truck does not pick waste there. If the municipality does not employ us, atleast they need to have someone to watch these workers and see if they are doing their job. Our people also need to be educated because others are just ignorant, they see the bin but they still dump on the floor.

From the above statement, it is evident that the local people litter because they want to be prioritised and given opportunities by the local municipality so that they can manage and look after their environment and so that they may have pride in their community. The last factor that triggers environmental impacts in Dunoon is lack of public involvement by local residents.

5.5.4 Lack of public participation

The findings of the study also revealed that lack of public participation in the development of low cost houses of Dunoon has triggered environmental problems and this is aspect is further discussed below.

Figure 5. 12: Lack of public participation as a factor of environmental problems in Dunoon



Source: Author, 2017

Due to all the challenges and issues mentioned, it seems like the people are voiceless and seldom consulted. No engagement of the community seemed to be incorporated into the planning of the low-cost housing settlement of Dunoon as it can be seen that the needs of the people staying in Dunoon were not met. No bottom-up approach was applied but a top down planning approach resulted in failed planning and caused all the environmental challenges addressed in this chapter.

The importance of incorporating principles of sustainability in urban development planning is evident in the suburb of Dunoon. Social, economic and environmental aspects must be integrated in the planning to pro-actively prevent the exceedance of social, economic, environmental and infrastructural capacity. Through stakeholder engagement and the involvement of the community, the challenges of Dunoon could be addressed. To some extent, this may can add value to the everyday life of the inhabitants of Dunoon.

Examining the Dunoon community, it can be clearly seen that planners and policy makers failed to incorporate the everyday lives of the people, who populate Dunoon, in their planning. Considering people's everyday lives for urban development planning is crucial to developing sustainable cities for the people. It seemed to be forgotten that the development of urban areas is not just only an engineering task but also an endeavour to create a living space for human beings where they can live a fulfilling life. Current urban development planning ought to consider principles of sustainability to create a living space for the people today and future generations.

5.6 CONCLUSION

The main aim of this thesis was to provide analytical discussions based on the data collected on the environmental impacts of informal economic activities in Dunoon low-cost housing development. The chapter began by demonstrating how Dunoon low-cost housing development is a product of modernist planning. In this regard, the chapter argued that local people need to be involved in the early planning and design stages of low-cost housing development. They need to be involved in all development stages to ensure that they drive the vision of the development. The chapter further argued that lack of involvement of the local people in the initial stages of decision-making on the project triggered severe long term environmental impacts. The chapter then concluded that long-term environmental impacts in Dunoon are intertwined with the escalation of informal economic activities initiated by the local people to make a living. These informal activities are a form of reaction to the imposed version of development. Thus, the chapter concludes that the environmental problems that emerged out of this pattern of human activities must be analysed by means of conceptualising the Dunoon low-cost housing as a product of modernist planning philosophy.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter provides the conclusion recommendations for the research study. This research study was set out to investigate the environmental impacts of informal economic activities in the low-cost housing establishment of Dunoon, Cape Town. It is crucial to step back and assess if the research has achieved the aims and objectives of the study set out in the introductory chapter. The four main objectives of the study were:

- To identify informal economic activities emerging in the Dunoon area;
- To identify environmental problems in low-cost houses despite the fact that these settlements are formal establishments.
- To determine the nature of environmental problems emerging in low-cost houses despite the fact that these settlements are formal establishments.
- To determine activities that contribute to environmental problems in the Dunoon settlements.
- To gather views of both the residents of Dunoon and relevant government officials with regard to the nature of the problem and solutions towards these environmental issues.

Below is the conclusion remarks, key findings are provided.

6.2 KEY FINDINGS AND CONCLUSION REMARKS

While various scholars have written more about about environmental problems of low-cost housing development from a physically built environment al perspective and human environmental relation have not been considered. Due to the fact that the human aspect has been neglected, this research then has established a connection between the long-term environmental impacts and informal economic activities conducted by people residing in Dunoon. These informal economic activities are forms of coping mechanisms to the harsh economic realities in the urban environment. This study was crucial as it may bring a new dimension in understanding the causes of long-term environmental impacts in low-cost houses. People need to be involved during the early planning and design of any form of houses to prevent these long-term environmental impacts, more especially in the early planning stages of development.

The research study argued that local people need to be involved in the early planning and design stages of any housing development. Local people need to be involved in all development stages and ought to be at the centre of the development. Failure to engage them in the initial stages of decision making in any project may trigger tremendous long-term environmental impacts. The significance of this research study lies in the fact that long-term environmental impacts that emerge in low-cost houses can be traced in terms of the fact that planning itself is still inherently modernist in nature. In other words, it is technocratic, it is very rigid, and it is top-down and does not resonate with the people on the ground.

Based on the information gathered and discussed in this thesis, it is concluded that the low-cost housing development of Dunoon is a product of modernist planning. The main findings of this study are summarised in this chapter together with recommendations. The recommendations provided in this section are suggestions on how the future planning and development of low-cost houses could be improved to prevent long-term environmental impacts and in ensuring that these houses resemble sustainable development where local people are at the centre of the development. Below, the main findings are reviewed.

6.3 LOW-COST HOUSE AS A PRODUCT OF MODERNIST PLANNING PHILOSOPHY

The study argued that low-cost housing development of Dunoon is a product of modernist planning which emerged during the industrial revolution of the 19th century in Britain. The findings depict that the development of Dunoon as the modernist landscape was done through the enforcement of modernist tools such as racial zoning as well as buffering. This began in the early 1990s and was epitomised by the movement of people from Marconi Beam Informal Settlement Informal Settlement to what was later called Dunoon. Local people were moved from Marconi Beam Informal Settlement Beam Informal Settlement because the planners wanted to prevent and destroy informal activities. Thus, this relocation of local people from Marconi Beam Informal Settlement Informal Settlement to the development of Dunoon, resembled the breakaway from the traditional or informal way of living to the new landscape which promised to deliver a “better life for all”. The study found that one of the aims of modernist planning was to eliminate anything that has a self-created element, which is called informal.

Notably, the findings revealed that the movement resulted in detrimental effects or unintended consequences on the environment through the emergence of informal economic activities in Dunoon wherein the local people continued with these activities even in Dunoon. This is evident in the findings as the high number of the residents revealed that before they were moved to Dunoon, they participated in informal activities for survival and now that they were moved to

Dunoon, they had to use the space they have in their low-cost housing development to generate income. This shows that the people's interests were not included in these low-cost houses.

This also indicates that people's views and opinions were not included when the houses were built. The planners who built Dunoon did not cater for their needs and aspirations. While these houses were planned and built for the residents, they are constantly complaining about the quality of these houses. The findings also depict that planners used technical jargons to justify or conceal the instrumental nature of their planning intervention. While Dunoon was developed in the post-apartheid democratic area, the element of modernist planning process is evident in this particular landscape. The planners also ignored the fact that people were not involved in the early stage of planning that culminated in the development of Dunoon as a low-cost housing establishment.

6.4 THE PARTICIPATION OF LOCAL PEOPLE IN THE DEVELOPMENT OF DUNOON

The research presented that lack of involvement of the local people in the initial stages of decision making on the project resulted in local people feeling alienated from the development and this triggered the severe long-term environmental impacts in the low-cost houses. The findings of the thesis depict that the level of involvement of the affected parties in the development of Dunoon low-cost housing may have a positive or negative impact on the environment. The findings revealed that regarding public participation for the development of Dunoon low-cost housing, local people were the recipients of these houses instead of being active beneficiaries throughout the planning and development phases.

The thesis concluded that the beneficiaries of the project were told what was going to happen which was that they would be moved from their homes (Marconi Beam Informal Settlement Informal Settlement) and to Dunoon low-cost housing development. Local people were not given a chance to influence the decisions made by the planners, whom in this case are external stakeholders. They had no input on the developments. The findings of the thesis also revealed that the external stakeholders such as planners had the upper hand in these developments; they were the key drivers and not the local people. Local people were only consulted and were not part of the planners.

The findings revealed there was poor public participation in the development of low-cost houses in Dunoon. It is evident that local people were not included in the early planning and development stages of these houses that were built for them. Because of this, environmental problems emerged. Local people were seen as invisible by planners and were instead the recipients of these houses. Even though planners assumed that these houses would change the lives of the people for the better, but it is evident that these houses were only built for external stakeholders to be

able to control local people on how they should live. Local people have been deprived of their freedom and have resisted these plans. This is evident from the environmental problems that have emerged in Dunoon.

6.5 EMERGENCE OF INFORMAL ECONOMIC ACTIVITIES IN DUNOON

The study presented that the long-term environmental impacts in Dunoon low-cost housing development are intertwined with the escalation of informal economic activities initiated by the local people to make a living. Due to the fact that local people were not included in the development and planning stages of Dunoon, a number of informal economic activities have out-grown in the area because people's needs and aspirations were not included in these developments. The thesis concludes that these informal economic activities are a form of reaction to the imposed version of development (.i.e. low-cost housing). The findings also revealed that even though planners built these low-cost houses to improve the lives of the local people by providing them with shelter, the residents wanted more than just shelter. They wanted opportunities to be able to generate income for survival.

The findings depicted that local people engaged themselves in these informal economic activities for survival. The study also revealed that these informal economic activities are not a new phenomenon; they were occurring even in Marconi Beam Informal Settlement Informal Settlement. Due to the fact that local people's needs were not catered for in these new developments, local people were placed in an environment with limited opportunities. They then found ways to create those opportunities for themselves so that they could look after their families. Apart from street vending, the local people also use their backyard spaces to generate income.

The study revealed that the high number of people residing in Dunoon rent, followed by backyard dwellers. Only a few people own the houses. Notably, the findings revealed that the local people are generating income out of these houses through rental and space that they have on their yards for backyard dwellers. The study also revealed that local people use these houses for businesses such as spaza shops, hair salons, clothing stores and for selling fruits. The findings also discovered that people running businesses in these low-cost houses are renting from property owners. African foreign nationals ran the high number of the businesses.

The study also discovered that the high number of the backyard dwellers are African nationals most of whom are working in the surrounding areas and factories. Local residents have built mutual relationships with the African nationals that have a mutual benefit for all. The residents generate income from the African nationals by allowing them to rent their houses and spaces

as backyarders. The African foreign nationals also benefit because they get to operate their businesses and they do not have to travel to get to their businesses. The study also revealed that because of this mutual benefit, there is harmony and peace in the area and no xenophobic attacks have been reported ever since 2009.

The thesis then concludes that informal economic activities practised by the local people have triggered long-term environmental impacts that are visible in Dunoon low-cost housing development.

6.6 ENVIRONMENTAL IMPACTS OF INFORMAL ECONOMIC ACTIVITIES IN DUNOON

One of the objectives of the thesis was to investigate the environmental impacts of informal economic activities in the low-cost housing development of Dunoon. The findings of the study revealed that informal economic activities that residents engage themselves in had triggered these long-term environmental impacts in Dunoon. Various factors have triggered these long-term environmental impacts in Dunoon that are drawn from the informal economic activities practised by the local people.

These factors include overpopulation, which is an example where infrastructure capacity is exceeded since the sewage system of Dunoon was designed to accommodate a small population. The increase in backyard dwellers has failed in infrastructure capacity which causes blocked drainage due to unnecessary solids being thrown into the drains such food waste. Blocked drainage may also be due to increased grey water, and this results in environmental and human health impacts.

Overcrowding is the second cause of environmental impacts in Dunoon that is also caused by an increased block of flats and an increased population. Overcrowding triggers illegal dumping of waste on the environment as well as littering. This is due to the fact that bins get full quickly, and also some bins get stolen by some residents especially if left unattended by the municipality workers overnight.

The findings discovered that unemployment is another factor that triggers environmental impacts in Dunoon. Unemployment is associated with local people reacting to the fact that they are deprived of jobs by the local municipality to clean and manage their environment. The study revealed that local people then become uninterested in their environment and do not see the need to look after it.

The last factor identified as the cause of environmental problems in Dunoon low-cost housing development was a lack of public participation. The thesis revealed that during the construction of

Dunoon, local people were not part of decision-making. They were not active stakeholders instead they were recipients of the project. They were told what was going to happen and where they were being relocated. The fact that these people lived through informal economic activities even in Marconi Beam Informal Settlement was not considered in the new development of Dunoon. Their views and aspirations were not incorporated in the plans, and this has resulted in a failure of planning and caused all the environmental challenges addressed in this thesis.

6.7 THE RECOMMENDATIONS

The recommendations provided below suggest improvements that can be made in Dunoon and in future developments of low-cost houses in South Africa to ensure that local people are actively involved in the early planning stages. The recommendations are as follows:

6.7.1 Participation of local people in the development of low-cost houses

The thesis proposes that local people ought to be involved in the planning of any future low-cost houses. Local people need to be actively involved in all the development stages of low-cost houses as they are the key stakeholders. Local people need to be active stakeholders, and their views need to be incorporated into any plans for low-cost houses. By asking them what they need, instead of assuming what they need may prevent long-term environmental problems in low-cost housing developments. As also highlighted in the sustainable development, local people need to be at the centre of any development built for them. They need to be visible stakeholders as well as be part of the entire process.

6.7.2 Social impact assessment as an effective tool for sustainable low-cost housing development

The thesis proposes that for future developments, SIA tools ought to be used to guide the successful development of low-cost housing, which will also ensure that local people's views and opinions are considered in the plans. Social Impact Assessment (SIA) looks at the potential social or livelihood implications; communicates changes to the community, outlines steps to mitigate or enhance negative or positive aspects of change and ensures that the benefits of change do not empower some groups over others. Then if not, the proposed development ought to change. SIA aims to involve as many community members as possible and acknowledges negative consequences, so they can be addressed in an open manner that also involves the public expressing their opinions in decision-making.

6.7.3 Formalising informal economic activities in Dunoon (government interventions)

The thesis proposes that the municipality needs to find ways to formalise the informal economic activities in Dunoon as informal trading is a permanent phenomenon in Dunoon. The municipality may do this by providing infrastructure and funding to support businesses as well as formalising the informal settlements to make provision for municipal services even in such areas. Municipalities must embrace informality as part of features within the municipalities because it is still a long-term occurrence, hence the planning must embrace the dynamics of informality. These include proper community consultations before implementing or providing any services to the people or those areas. Providing services in informal settlements can be a complex strategy because finding a system that is in sync with the dynamics of these communities can be very challenging.

The issues within the communities need to be understood and planning ought to be done around the social cohesions. Understanding the complexity of informal settlements is also critical because there is a very dynamic community. The closer the community is to the CBD the more dynamic the population.

6.7.4 Community empowerment through the provision of local jobs

The thesis proposes that the municipality ought to focus on empowering residents to manage and look after Dunoon instead of employing outsiders. By employing residents to clean their streets and community, this will give them pride in their area, and they will be able to look after it the best they can. They will also get an income and as well as develop skills they can use to apply for better jobs. Local residents may also see the need to educate each other on environmental management because they may have a sense of ownership in their community.

6.8 CONCLUSION

This study suggest that long-term environmental impacts arising in low cost housing developments are as a result of informal economic activities initiated by the local people in order to cope with harsh economic realities. These informal activities are a form of reaction to the imposed version of development. The study recommend that local people need to be involved in the early planning and design stages of low-cost housing development. They need to be involved in all development stages to ensure that they drive the vision of the development. Lack of involvement of the local people in the initial stages of decision-making on the project triggered severe long term environmental impacts. Thus, the environmental problems that emerged out of this pattern of human activities must be analysed by means of conceptualising the Dunoon low-cost housing as a product of modernist planning philosophy. Based on the information gathered and discussed in

this thesis, it is concluded that the low-cost housing development is a product of modernist planning.

REFERENCES

- Ashiru, P. 2015. *The roles of Planners in the Built Environment*. Olabisi Onabanjo University.
- Barnett, C. & Scott, D. 2004. *Contested democratisation: the politics of the environment in South Durban*. Paper presented at the International Geographical Union Congress, Glasgow:15 – 20
- Barry, M. 2006. *Formalising informal land rights: The case of Marconi Beam Informal Settlement Beam to Joe Slovo Park*. *Habitat International*, 30(3), 628-644.doi:10.1016/j.habitatint.2005.03.002.
- Barry, M. and R  ther, H. 2005. *Data Collection Techniques for Informal Settlement Upgrades in Cape Town, South Africa*. *URISA Journal*, 17(1): 43-52.
- Berg, L. 2001. *Qualitative Research methods for the social sciences*. Fourth Edition. California State University, Long Beach.
- Bery, B. 1998. *Qualitative Research Methods for Social Sciences*, Allyn and Bacon, London.
- Blowers, A. & Pain, K. 1999. *The unsustainable city?*, in: S. Pile, C. Brook & G. Mooney (Eds) *Unruly Cities? Order/Disorder*. New York: Routledge: 265–275.
- Blowers, A. & Pain, K. 2001. *The unsustainable city?* in: S.
- Blowers, A. 1997. *Environmental policy: ecological modernization or risk society?* *Urban Studies*, 34(5 – 6):845 – 871.
- Bond, P. 2002. *Unsustainable South Africa: Environment, Development and Social Protest*. Scottsville: University of Natal Press.
- Boyte, H. 2004. *Seeing like a democracy: South Africa's prospects for global leadership*, in: M. Strom, (Ed.) *Lessons from the Field: A Decade of Democracy*, published in the Mail and Guardian, 20 November, 2004.
- Briggs, C.L. 1986. *Learning how to ask: A sociolinguistic appraisal of the role of the interview in social science research*. London: Cambridge University Press.
- Calderwood, D.M. 1953. *Native Housing in South Africa, PhD Thesis*, The University of the Witwatersrand, Johannesburg.
- Calthorpe, P. & William, F. 2001. *The Regional City: Planning For the End of Sprawl*. Washington: Island Press.

- Campbell, H. 2012. *Planning to Change the World: Between Knowledge and Action Lies Synthesis*, Journal of Planning Education and Research, 32(2), 135-146.
- Campbell, M. & Martin, R.1992. Qualitative research as a tool for agricultural and extension education. Journal of Agricultural Education, 33(4), 55-60.
- Castells, M. & Portes, A. 1989. *World underneath: the origins, dynamics and effects of the informal economy*. In *The Informal Economy: Studies in Advanced and Less Developed Countries*. (eds.)
- Chipkin, C., 1998. Preparing for Apartheid in Fisher, R., le Roux, S. and Mare E. *Architecture of the Transvaal, Unisa, Pretoria*.
- Chipkin, C.1998. *Preparing for Apartheid in Fisher, R., le Roux, S. and Mare E.* (eds), Architecture of the Transvaal, Unisa, Pretoria.
- Christoff, P. 1996. *Ecological modernisation, ecological modernities, Environmental Politics*, 5(3), pp. 476–500.
- City of Cape Town. 2001. *Census 2001 – Du Noon*. City of Cape Town. [Online]. Available: <http://www.capetown.gov.za/en/stats/2001census/Documents/DuNoon.htm> [07/07/2017]
- City of Cape Town. 2011. *Census 2011 – Du Noon*. City of Cape Town. [Online]. Available: http://www.statssa.gov.za/census/census_2011/census_products/WC_Municipal_Report.pdf [07/07/2017]
- Cooper, A. 2009. “*Let us eat airtime*”: Youth identity and „xenophobic” violence in a low-income neighbourhood in Cape Town”. CSSR Working Paper, 263: 1-42.
- Creswell, J.W. & Plano Clark, V.L. 2007. *Designing and conducting mixed methods research*. 2nd edition. Sage, Thousand Oaks, CA.
- Cross, J. 2000. *Street vendors, modernity and postmodernity: conflict and compromise in the global economy*. International Journal of Sociology and Social Policy.
- Crush, J. & Frayne, B. 2010. “*The Invisible Crisis: Urban Food Security in Southern Africa*”, African Food Security Urban Network, Queen’s University and AFSUN: Kingston and Cape Town, pp. 1-43.
- Daniels, P.W. 2004. *Urban challenges: the formal and informal economies in mega-cities*. Vol. 21, No. 6, p. 501–511, Elsevier Ltd.

Department of Human Settlements. 2004. *Breaking New Ground – A Comprehensive Plan for the Development of Integrated Sustainable Human Settlements, Republic of South Africa* URL: http://www.dhs.gov.za/sites/default/files/documents/26082014_BNG-2004.pdf [last access: 15-11-2015]

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

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

Dewar, D. 1992. *Urbanisation and the South African city: a manifesto for change*, in: D. Smith (Ed.) *The Apartheid City and Beyond: Urbanisation and Social Change in South Africa* (London: Routledge).

Douglass, M. & Friedmann, J. 1998. *Cities for Citizens*. Chichester, England: John Wiley.

Dryzek, J. S. 1996. *Political inclusion and the dynamics of democratisation*. *American Political Science Review*, 90(1), pp. 475–487.

Dryzek, J. S. 1997. *The Politics of the Earth: Environmental Discourses* (Oxford: Oxford University Press).

Floyd, T.B. 1951. *Township Layout, Shuter and Shooter*. Pietermaritzburg.

Frayne, B., Pendleton, W., Crush, J., Acquah, B., Battersby-Lennard, J., Bras, E., Chiweza, A., Dlamini, T., Fincham, R., Kroll, F. and Leduka, C. 2010. *The state of urban food insecurity in southern Africa*. Urban food security series. (2).

Gibbs, D. 1998. *Ecological Modernisation: A Basis for Regional Development*. Department of Geography and Interdisciplinary Research Institute for City and Regional Studies, University of Hull.

Govender, T., Barnes, J. M., & Pieper, C. H. 2011. The impact of densification by means of informal shacks in the backyards of lowcost houses on the environment and service delivery in Cape Town, South Africa. *Environmental Health Insights*, 5(23).

Haarhoff, E. 2011. *Appropriating modernism: Apartheid and the South African township*.

Hajer, M. & Kesselring, S. 1999. *Democracy in a risk society? Learning from the new politics of mobility in Munich*, *Environmental Politics*, 8(3), pp. 1–23.

- Hajer, M. 1995. *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process* (Oxford: Oxford University Press).
- Hall, Sir.P. 1988. *Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century*. Oxford: Blackwell Publishers.
- Hallowes, D. & Butler, M. 2002. *Power, poverty, and marginalized environments: a conceptual framework*, in: D. McDonald (Ed.) *Environmental Justice in South Africa* .Cape Town: University of Cape Town Press.
- Harvey, D. 1973. *Social Justice and the City*, Oxford: Blackwell.
- Harvey, D. 1989. *The Condition of Post modernity: an Enquiry into the Origins of Cultural Change*:Oxford B. Blackwell.
- Haughton, G. and Hunter, C., 1994. *Sustainable Cities, London: Jessica Kingsley*. Regional Studies Association.
- Hayson,S. 2009. *Unprecedented Innovation: A Case Study of the Marconi Beam Informal Settlement Beam Affordable Housing Project*. Development Action Group.
- Hobson, J.1999. *New Towns, The Modernist Planning Project and social justice: the cases of Milton Keynes,UK and 6th October, Egypt*. No.108.University College London.
- Holston, J.1986. *The Modernist City: architecture, politics and society in Brasilia*, Doctoral Dissertation, Yale University, UMI facsimile.
- Holston, J.1998. *Spaces of insurgent citizenship*, in Sandercock, L. (ed.) *Making the Invisible Visible: a multicultural planning history*, Berkeley/ Los Angeles/ London: University of California Press.
- Huber, J. 1985. *Die Regenbogengesellschaft: Ökologie and Sozialpolitik*.*The rainbow society: Ecology and Social Politics*. Frankfurt: Fisher Verlag.
- Irving, Allan. 1993. *The Modern/postmodern Divide in Urban Planning*. University of Toronto Quarterly. Summer: 474-488.
- Jacobs, Jane. 1961. *The Death and Life of Great American Cities*. New York: Vintage
- Johannes, L. 2012. *Gated communities in South Africa: The case of Featherbrooke*. *Masters in Political Studies*. Masters Thesis.The University of the Witwatersrand.

Lee, N. & George, C. 1998. *Environmental Development in Developing and Transitional Countries*. Wiley: Chichester.

Ley, David. 1989. *Modernism, Post-modernism and the Struggle for Place.*” In James Agnew and James Duncan (eds.). *The Power of Place: Bringing Together Geographical and Sociological Imaginations*. Boston: Unwin Hyman: 44-65.

Locke, J., Berkeley, G., Hume, D.1960. *The Empiricists by John Locke, George Berkeley, David Hume* | PenguinRandomHouse.com. [online] PenguinRandomhouse.com. Available at: <https://www.penguinrandomhouse.com/books/103022/the-empiricists-by-john-locke--george-berkeley--david-hume/9780385096225/> [Accessed 17 Sep. 2018].

Low, N. & Gleeson, B. 1998. *Justice, Society and Nature: An exploration of Political Ecology*. London: Routledge.

Mabin, A and D Smit 1997. *Reconstructing South Africa’s cities? The making of urban planning 1900-2000*, Planning Perspectives .12(2).

MacDonald, S. & Headlam, N. (undated): *Research Methods Handbook Introductory guide to research methods for social research*. Centre for Local Economic Strategies Express, Manchester.

Magalhaes. F. & Eduardo. R. 1998. *Facing the Challenges of Informal Settlements in Urban Centers: The Re-urbanization of Manaus, Brazil*. Published by: Inter-American Development Bank. Washington, D.C. Sustainable Development Department.

Marsh, J. & Oelofse, C. 1998. *Risk Assessment: Auslinks Environmental Training Manual for Development Facilitators*. Cape Town: Environmental Evaluation Unit.

McDonald, D. A. 2002. *Environmental Justice in South Africa*. Cape Town: University of Cape Town Press.

McNeill, P., 1990. *Research Methods*. London: Routledge.

Moe, Richard and Carter Wilkie. 1997. *Changing Places: Rebuilding Community in The Age of Sprawl*. Boston: Henry Holt & Co.

Mol, A and Spaargaren, G.1993. *Environment, modernity and the risk-society: the apocalyptic horizon of environmental reform*. International Sociology, 8(4):431-459

- Mol, A. 1995. *The Refinement of Production: Ecological Modernization Theory and the Chemical Industry*. The Hague: cip-data Koninklijke Bibliotheek.
- Mooney, G., Pile, S. and Brook, C., 1998. On orderings and the city. *Unruly Cities?: Order/Disorder*. 310.
- Mottier, V. 2005. *The interpretive turn: History, memory, and storage in qualitative research*. *Forum: Qualitative Social Research*. 6(2). Retrieved July 11, 2006, from <http://www.qualitativeresearch.net/fqs-texte/2-05/05-2-33-e.htm>
- Murphy, J. 2000. *Ecological Modernisation*. *Geoforum*. (Eds) 31 (1):1 – 8.
- Murphy, J. 2000. Editorial—ecological modernisation, *Geoforum*, 31(1):1–8.
- Napier, C.J. 2008. *Public Participation and Ward Committees: The Case of the Tshwane Municipality*, *Journal of Administratio Publica*, 33(2):163-181.
- National Department of Tressury, 2015. *Chapter 20: Informal Settlements*. [<http://www.treasury.gov.za/publications/igfr/2015/prov/06.%20Chapter%206%20-%20Human%20Settlements.pdf>]
- Natrasony, S. & Alexander, D. 2005. *The Rise of Modernism and the Decline of Place: The Case of Surrey City Centre*. Canada.
- Ncapai W. 2005. *Participatory rural appraisal: An approach to people centred development in South African transformation context*. Department of Social Development. Eastern Cape.
- Neuman, W. L. 2013. *Social Research Methods: Qualitative and Quantitave: Peasron Education*. Ltd.
- Newman, P. & Jeffrey, K. 1999. *Sustainability and Cities: Overcoming Automobile Dependence*. *Washington*: Island Press.
- Norville, P. 2003. *Environmental Management issues related to low-income housing in Saint Lucia*: 2-16.
- Nyama, C. 2008. *Investigating aspects of corporate citizenship on private game farms: the case of Mtshenzezi Game Reserve in Makana Municipality*, Eastern Cape Province.
- O’Riordan, T., Preston-Whyte, R., Hamann, R. & Manqele, M. 2000. *The transition to sustainability: a South African perspective*. *South African Geographical Journal*, 82(2):1 – 34.

- Oelofse, C. & Patel, Z. 2000. *Falling through the net: sustainability in Clermont township in Durban*, South African Geographical Journal, 82(2): 35–43.
- Oelofse, C. & Patel, Z. 2000. *Falling through the net: sustainability in Clermont township in Durban*. South African Geographical Journal, 82(2):35 – 43.
- Oelofse, C., Scott, D., Duenez, R., Houghton, J., Oelofse, G. & Wiseman, K. 2002. *Ecological modernization or alternate approaches: new tools for sustainability in South Africa*. Paper presented at the International Association of Impact Assessment (IAIA) Conference, Britz, 7 – 9 October.
- Oelofse, C., Scott, D., Oelofse, G. & Houghton, J., 2006. *Shifts within ecological modernization in South Africa: Deliberation, innovation and institutional opportunities*. Local Environment. 11(1): 61-78.
- Oelofse, C. and Dodson, B., 1997. *Community, Place and Transformation: a Perceptual Analysis of Residents' Responses to an Informal Settlement in Hout Bay*, South Africa. Elsevier Science LTD.
- Patton, M. Q. 2002. *Qualitative research and evaluation methods*. Thousand Oaks, CA: Sage.
- Pepper, D. 1998. *Sustainable development and ecological modernization: A radical homocentric perspective*. Oxford Brookes University, UK.
- Piper, L. 2011. *Not Waiting for Jackie O: Lessons for Public Participation Advocacy in South Africa* Journal of Africanus, 41: 30-42.
- Pulido L. 1996. *A critical review of the methodology of environmental racism research*, Antipode, 28:2.
- Reja U., Manfreda K.L., Hlebec V., and Vehovar V. 2003. *Open-ended vs. Close-ended Questions in Web Questionnaires*. Journal of Developments in Applied Statistics:159- 157.
- Relph, E. 1987. *The Modern Urban Landscape*, London: Croon Helm
- Robins, S. 2002. Planning 'Suburban Bliss' in Joe Slovo Park, Cape Town, Africa, Vol 72, Issue 04, November 2002: 511-548.
- Robinson, P. 1997. *Cato Manor: a legacy of South Africa's past or a model for reconstruction?* South African Planning Journal 42.

- Rollins, L. 1991. *Seizing the Gap: - A Potential Feasibility of Utilizing Open Urban Spaces for Informal Housing- A Case Study of Milnerton*. Unpublished Honours Thesis, Department of Environmental and Geographic Science, University of Cape Town.
- Rosenberger, I.K. 2009. *Sustainable Low cost housing- A review of three low cost housing development in Gauteng Province*. Master
- Rubin, A. & Babbie, E. R. 2005. *The Research Methods in Social Work*, 5th Ed, Thomson Learning, Belmont.
- Sandercock, L. 1998. *Framing insurgent historiographies for planning*, in Sandercock, L. (ed.) *Making the Invisible Visible: a multicultural planning history*, Berkeley/ Los Angeles/ London: University of California Press.
- Scott D., Oelofse C. & Guy C. 2002. *Double Trouble: Environmental Injustice in South Durban*. *Agenda*, No. 52, Sustainable Development: An Oxymoron?. 50-57. Published.
- Scott, D. & Oelofse, C. 2000. *Social Impact Assessment of Large General Landfills in the North Zone of the Durban Metropolitan Area*. Durban: Durban Solid Waste.
- Scott, D. & Oelofse, C. 2001. *Social impact assessment as a development tool: principles and practices in a developing context*, in: *Proceedings of the Local Chapter of the International Association of Impact Assessment (IAIA) Conference, White River, 7 – 10 October*: 262 – 279.
- Scott, D. & Oelofse, C. 2005. *Social and environmental justice in South African cities: including 'invisible stakeholders' in environmental assessment procedures*. *Journal of Environmental Planning and Management*, 48(3): 445–468.
- Scott, D. 2003. *'Creative Destruction': Early Modernist Planning in the South Durban Industrial Zone, South Africa*. *Journal of Southern African Studies* 29(1): 235-259.
- Scott, D., Oelofse, C. & Guy, C. 2002. *Double trouble: environmental injustice in South Durban*. *Agenda*, 52: 50 – 57.
- Scott, D., 2003. *'Creative Destruction': Early Modernist Planning in the South Durban Industrial Zone, South Africa*. *Journal of Southern African Studies*, Vol. 29(1): 235-259.
- Smit, W. 2000. *The impact of the transition from informal housing to formalized housing in low-income housing projects in South Africa*. 15-18 June 2000, Copenhagen.
- Solomon, D. 2003. *Global City Blues*. Washington: Island Press.

Sowman, M. & Urquhart, P. 1998. *A place called home: Environmental issues and low-cost housing*, Juta and Company Ltd.

Talja, S. 2005. *The social and discursive construction of computing skills: Research Articles*. Journal of the American Society for Information Science and Technology, 56(1):13-22.

Taylor, C. N., Hobson Bryan, C. & Goodrich, C. G. 1995. *Social Assessment: Theory, Process and Techniques*. Christchurch: Taylor Baines and Associates..

Tongco M.D.C. 2007. *Purposive Sampling as a Tool for Informant Selection*. *Journal of Ethnobotany Research & Applications*:147-158

WCED.1987. *Our Common Future (Brundtland Report)*; United Nations—World Commission on Environment and Development: Geneva, Switzerland.

Yin, R. 1994. *Case Study Research. Design and Methods* Sage publication, Summary document, 2nd edition: Thousand Oaks.

Yose, C. 1999. *From Shacks to Houses: Space Usage and Social Change in a Western Cape Shanty Town*. Masters of Social Science thesis, Department of Social Anthropology, University of Cape Town.

APPENDIX A: COMMUNITY QUESTIONNAIRE

Survey number:

My name is Yonela Makabeni and I am currently doing my second year Masters in Environmental Management at Cape Peninsula University of Technology. I am doing a research on the “Environmental impacts of informal economic activities in low cost houses of Dunoon community”. The purpose of these interviews is to get a better understanding on the environmental impacts that are caused by long term, ongoing informal economic activities which are seen visible in low cost houses such as Dunoon. What causes these environmental impacts and how can they be addressed to prevent long term environmental damage. I would like you to participate in my interviews as I will not take more than five minutes of your time. The survey should only take 4-5 minutes to complete and be assured that all answers you provide will be kept in strict confidentiality. This questionnaire is anonymous and there is no way of tracking your identity of information.

Please tick on the appropriate box provided to answer

Date:

Please circle next to your answers

A. DEMOGRAPHIC STATUS

Total number of household members

1. What is your gender?
 - a) Female
 - b) Male

2. Please specify your ethnicity.
 - a) White
 - b) Coloured
 - c) Black South African
 - d) African
 - e) Asian

- f) Other (Specify).....
3. What is your marital status?
- a) Single, never married
 - b) Married or domestic partnership
 - c) Widowed
 - d) Divorced
 - e) Separated
 - f) Other (Specify).....
4. What is the highest degree or level of school you have completed? *If currently enrolled, highest degree received.*
- a) No schooling completed
 - b) Nursery school to 8th grade
 - c) Some high school, no diploma
 - d) High school graduate, diploma or the equivalent
 - e) Some college credit, no degree
 - f) Associate degree
 - g) Bachelor's degree
 - h) Master's degree
 - i) Professional degree
 - j) Doctorate degree
 - k) Other.....

SECTION B: SOCIO-ECONOMIC ACTIVITIES

1. What are the main income sources of your family?
-
-
2. If you are not working, please circle relevant answer below.
- a) Retired
 - b) Student
 - c) Housewife (Only for female spouses)
 - d) Cannot find a job
 - e) Pregnant
 - f) So ill that he/she cannot work
 - g) Too old
 - h) Too young
 - i) Handicapped
 - j) Does not need to work
 - k) Looks after house works
 - l) Looks after elderly
 - m) Looks after children

- n) Not allowed to work (e.g. female members)
- o) Does not want work
- p) Other (please specify).....
- q) Not applicable

3. Who are you working for?
- a) My own business (gets all or a share of the profits)
 - b) Family business (Works with a wage)
 - c) Family business (unpaid)
 - d) Small enterprise (less than 10 workers)
 - e) Medium or large enterprise
 - f) (More than 10 workers) State which industry (e.g. factory)
 - g) Government
 - h) Not applicable
 - i) I do not know

4. How long have you been living here as household/family?
YEARS

5. Have you -as a household- ever lived in another place, such as another village, another township or abroad for three or more months at one time? If yes, where have you lived before?

Yes (state which city/township/village)..... No (Skip to the next question)

6. Why did you move here? (Circle as much as relevant)
- a) Schooling of children
 - b) Look for work
 - c) Start new job
 - d) Escape drought/ famine
 - e) Escape a family conflict
 - f) Other (specify)

7. Had any of your relatives/friends lived here before you came?
- a) Yes
 - b) No

8. Did they help you with your settlement?
 If yes (state how).....

9. Was it easy to settle here or did you experience any difficulties when you came? Please explain

SECTION C: HOUSING

1. What is your ownership status of your house?

- a) Owner of the house
- b) Renter
- c) Backyard dweller
- d) User not paying rent
- e) Other.....
- f) I do not know

SECTION D: ENVIRONMENTAL MANAGEMENT

1. What type of waste do you generate in your household?

- a) Solid waste
- b) Grey water
- c) Food waste
- d) Other (Specify).....

1. What type of wastewater system do you have in your house?

- a) Common sewerage system
- b) Septic tank disposed regularly by municipality
- c) Septic tank disposed regularly by him/herself
- d) Discharged directly to the land
- e) Other (please specify).....
- f) I do not know

2. How are the solid wastes disposed?

- a) Municipality collects regularly
- b) Disposed to a predefined landfill
- c) Disposed irregularly
- d) Other
- e) I do not know

3. How many people reside in your household?

.....

4. How many people reside in your backyard?

.....

5. What problems are you currently facing in your household?

.....

6. What do you think is the solution to the problems?

.....

7. What do you think happens to the waste if it is not properly disposed and left in the environment?

-
.....
.....
8. What do you think are environmental impacts associated with Low cost houses? (Refer to Dunoon?)
.....
.....
9. What do you think causes those environmental impacts?
.....
.....
10. Why do these environmental problems emerge despite the fact that Dunoon is a formal establishment?
.....
.....
11. What mitigation measures can be taken to minimise these environmental impacts?
- a) Individual.....
.....
 - b) Community.....
.....
 - c) Municipality.....
.....
12. Any additional comments?
.....
.....
.....
.....

APPENDIX B: QUESTIONNAIRE FOR INFORMAL BUSINESSES

Survey number:

Questionnaireis for Business owners

Please circle next to your relevant answer.

- a) shop worker
 - b) Car wash worker
 - c) Street vendor
 - d) Other.....
2. Is your business registered or not registered?
- a) Yes
 - b) No
3. How long have you been operating?
.....
4. Why did you decide to start your own business?
.....
.....
5. Do you use water for your business?
- a) Yes
 - b) No
6. If yes, where do you get it?
.....
.....
7. What type of waste do you generate from this business?
- a) Solid waste
 - b) Grey water
 - c) Food waste
 - d) Other
8. How do you dispose the wastewater?
.....
9. Do you generate any waste from your business?
- a) Yes
 - b) No
10. If yes, how do you dispose the waste?
.....
.....

11. What type of waste do you generate from this business?

- a) Solid waste
- b) Grey water
- c) Food waste
- d) Other

.....

12. What happens to the waste?

.....

.....

13. How do you dispose it?

.....

.....

14. What do you think happens to the waste if not properly dispose?

- a) Human health

.....

.....

- b) Environment

.....

.....

15. What do you think are environmental problems that arise from informal businesses in low cost houses?

.....

16. What are the factors that cause these environmental impacts?

.....

17. Why are these environmental problems emerging despite the fact that Dunoon is a formal establishment?

.....

18. What do you think can be done to minimise/prevent these environmental impacts?

- a) Individual

.....

.....

- b) Community

.....

.....

c) Government

.....
.....

Additional comments

.....
.....
.....

APPENDIX C: GUIDING QUESTIONS FOR KEY INFORMANTS

Guiding Questions for Key Informants: Face to Face Interview

Please tick relevant block

- DEADP; Waste Policy & Minimisation
- DEADP: Land Use Management
- City of Cape Town: Solid Waste Unit

1. What is your definition of a low cost house?
2. What are the stages involved when developing low cost houses?
3. Do you think that people are included in these stages?
4. Do you think that it is crucial to include the public when constructing these low cost houses and why?
5. Up to which extent should the public be involved when developing low cost houses?
6. What are the problems resulting from poor public participation during construction of low cost houses and after?
7. What are the environmental problems associated with low cost houses?
8. What are the underlying factors that contribute to environmental problems in low cost housing development?
9. What causes these environmental impacts in the first place?
10. Would you say that people's day to day activities have an impact (whether positive/negative) on the environment and why?
11. Why are these environmental problems emerging despite the fact that Dunoon is a formal establishment?
12. How can these environmental impacts be minimised?
13. Do you think an EIA is an effective tool to prevent environmental issues in low cost houses and why?

APPENDIX D: ETHICAL CLEARANCE



P.O. Box 1906 • Bellville 7535 South Africa •Tel: +27 21 953 8677 (Bellville), +27 21 460 4213 (Cape Town)

Office of the Chairperson Research Ethics Committee	Faculty of Applied Sciences
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The Faculty Research Committee, in consultation with the Chair of the Faculty Ethics Committee, have determined that the research proposal of Yonela Makabeni for research activities related to the MTech / DTech: MTech: Environmental Management at the Cape Peninsula University of Technology requires / does not require ethical clearance.

Title of dissertation/ thesis:	Environmental effects of informal economic activities in a low cost housing settlement, case- study Dunoon, Cape Town
--------------------------------	---

Comments (Add any further comments deemed necessary, eg permission required)
Research activities are restricted to those detailed in the research proposal.

 Signed: Chairperson: Research Ethics Committee	<u>24/April/2017</u> Date
---	------------------------------

APPENDIX E: CONCENT LETTERS



Directorate: Waste Management
Eddie Hanekom

ENVIRONMENTAL EFFECTS OF INFORMAL ECONOMIC ACTIVITIES IN LOW COST HOUSING SETTLEMENTS, CASE STUDY DUNOON, CAPE TOWN.

I, Eddie Hanekom Director: Waste Management at Department of Environmental Affairs and Development Planning, agree to participate in Yonela Makabeni (210247231) interviews.

Regards

Eddie Hanekom

30 May 2016



DEVELOPMENT MANAGEMENT: REGION 1

Yoësa Mabentsela
Tel: (021) 483 2893 Fax: (021) 483 3633
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**ENVIRONMENTAL EFFECTS OF INFORMAL ECONOMIC ACTIVITIES IN LOW COST HOUSING
SETTLEMENTS, CASE SUTY DU NOON, CAPE TOWN**

I Yoësa Mabentsela agree to participate in Yonela Makabeni (021 483 2893) interviews, as she will use the information for her study and in completion of her Mini-thesis at Cape Peninsula University of Technology.

Regards,

Yoësa Mabentsela

A handwritten signature in black ink, appearing to read "Yoësa Mabentsela".

01 September 2016



CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

UTILITY SERVICES
SOLID WASTE MANAGEMENT

Elijah Ngqondoyi
Professional Officer: Business Improvement

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E: Elijah.Ngqondoyi@capetown.gov.za

**ENVIROMENTAL EFFECTS OF INFORMAL ECONOMIC ACTIVITIES IN LOW COST HOUSING
SETTLEMENTS, CASE STUDY DUNOON, CAPE TOWN.**

I Elijah Ngqondoyi agree to participate in Yonela Makabeni (210247231) interviews, as she will use the information for her study and in completion of her Mini-thesis at Cape Peninsula University of Technology.

Regards

Elijah Ngqondoyi

A handwritten signature in black ink, appearing to read 'Elijah Ngqondoyi', written over a horizontal dotted line.

05 July 2016



Councillor L C Makeleni

Ward 104

DUNOON - CAPE FARMS-DISTRICT 8 (West of N7 Freeway, north of the Dunoon,
Kilnney Gardens, Milnerton, Table View, Parfildardt built-up areas)

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September 29, 2016


ENVIRONMENTAL EFFECTS OF INFORMAL ECONOMIC ACTIVITIES IN LOW COST HOUSING SETTLEMENTS, CASE STUDY DUNOON, CAPE TOWN.

As Councillor of Dunoon Township I agree to participate in Yonela Makabeni (210247231) interview and also grant her permission to conduct further interviews with the residents of Dunoon. The information gathered will she will be used in her study and in completion of her Mini-thesis at the Cape Peninsula University of Technology.

For more information, please do not hesitate to contact me on the above numbers.

Regards

Cllr Makeleni


LUBABALO CHADRECK MAKELANI
Councillor, City of Cape Town
Commissioner of Oaths
For the Republic of South Africa