GDAŃSK UNIVERSITY OF TECHNOLOGY
Faculty of Architecture

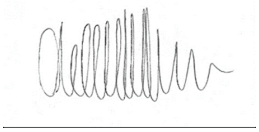
WYDZIAŁ ARCHITEKTURY

The author of the PhD dissertation: Louis du Plessis
Scientific discipline: Architecture and Urban Planning

DOCTORAL DISSERTATION

Title of PhD dissertation: Determining an Architectural Character for Durban Residential Streetscapes

Title of PhD dissertation (in Polish): Wyznaczenie architektonicznego charakteru krajobrazu ulic w dzielnicach mieszkalnych w Durbanie

Supervisor *signature*	Second supervisor  *signature*
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Gdańsk, year 2023

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DESCRIPTION OF DOCTORAL DISSERTATION

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Keywords of PhD dissertation in Polish: Krajobraz ulicy, architektoniczny charakter, Charakter budynku, Niska zabudowa mieszkaniowa, Określenie charakteru, Dogęszczanie miast, Jakość życia

Keywords of PhD dissertation in English: Streetscape, Architectural Character, Building Character, Apartment Building, Low-rise Residential, Determining Character, Urban Densification, Urban Quality of Life

Summary of PhD dissertation in Polish:

W obecnym kontekście globalnym i ze względu na realizację celów zrównoważonego rozwoju, istnieje silna potrzeba dogęszczania miast. Rozwój ten jest jednak także napędzany przez procesy związane z ideą kapitalizmu i „wzrostu gospodarczego”. Takie działanie często doprowadza do zatracenia „genius loci” miejsca, a czasem nawet pomija fakt, że jakość środowiska zbudowanego w dużym stopniu wpływa na zdrowie i samopoczucie mieszkańców miast. Istotnym elementem jakości struktury urbanistycznej jest jego krajobraz wnętrz urbanistycznych– określany w tej pracy jako „charakter krajobrazu ulicznego”. Obecnie decydenci, który zajmują się rozwojem miast, niestety dostrzegają niewielką wartość w aspektach jakościowych tego elementu i są słabo przygotowani do utrzymania lub poprawy istniejącego charakteru krajobrazu ulicznego. Badanie w pracy doktorskiej na przykładzie dzielnicy śródmiejskiej w Durbanie, wykazało, że luką w obecnych badaniach i podejściu praktycznym jest zauważenie znaczenia detali architektonicznych budynków, które wyznaczają i określają wygląd ulicy. Praca wskazuje jak kluczowe znaczenie dla budowy krajobrazu ulicy mają te elementy oraz w jaki sposób pozwalają one na opisanie kontekstu miejsca. W podsumowaniu pracy wykazano, jak te elementy mogą wspierać proces zachowania charakterystycznego krajobrazu miasta. Wyniki te można przełożyć na aspekty praktyczne i wykorzystać je w decyzjach dotyczących zarządzania rozwojem miast w celu utrzymania lub poprawy charakteru krajobrazu ulicznego, co będzie w efekcie finalnym przyczyni się do tworzenia wyjątkowego „genius loci”.

Summary of PhD dissertation in English:

In the current global context and in consideration of the Sustainable Development Goals, there is a strong need for urban densification. However, this development is also driven by processes linked to the idea of capitalism and 'economic growth'. Such development often leads to the loss of the 'genius loci' of a place and sometimes even overlooks the fact that the quality of the built environment greatly influences the health and well-being of city dwellers. An important element of the quality of an urban structure is its urban landscape - referred to in this thesis as 'streetscape character'. At present, decision-makers involved in urban development unfortunately perceive little value in the quality aspects of this element and are poorly equipped to maintain or improve the existing streetscape character. The thesis research, using the example of an inner city neighbourhood in Durban, showed that a gap in current research and practical approaches is the recognition of the importance of the architectural details of buildings that define the appearance of the street. The paper shows how key these elements are to the construction of the streetscape and how they allow the context of a place to be described. The work concludes by demonstrating how these elements can support the process of maintaining a distinctive townscape. These findings can be translated into practical aspects and can be used in urban development management decisions to maintain or improve the character of the streetscape, which will ultimately contribute to the creation of a unique 'genius loci'.

DETERMINING AN ARCHITECTURAL CHARACTER FOR DURBAN RESIDENTIAL STREETSCAPES

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10. Mr Nischolan Pillay – Colleague: Department of Architecture, Faculty of Engineering and the Built Environment, Durban University of Technology

And I saw the holy city, new Jerusalem, coming down out of heaven from God, prepared as a bride adorned for her husband. And I heard a loud voice from the throne saying, "Behold, the dwelling place of God is with man. He will dwell with them, and they will be his people, and God himself will be with them as their God. He will wipe away every tear from their eyes, and death shall be no more, neither shall there be mourning, nor crying, nor pain anymore, for the former things have passed away."

Revelation 21:2-4 ESV

Contents

CHAPTER 1 - Introduction

The contemporary urban environment is dominated by many challenges. These broadly are encapsulated by economic, environmental, and social aspects, but increasingly it is becoming evident that these three aspects are more complex than are currently engaged with. These challenges are not only evident in the local context, but also are global challenges affecting everyone. Numerous suggestions are made within the global environment to deal with these challenges, but these are often high-level policy interventions that do not practically resolve well on the ground. This approach also applies to city planning where the intention of the policy does not necessarily achieve all that is desired in relation to the eventual conditions and built form.

There are three significant aspects at the moment influencing urban development in Africa, though not unique to the continent alone. These are the aspects of population growth and the related rural/urban migration; globalization; and the need to respond to the sustainability agenda. The global population living in urban areas was 54% in 2015 and is projected to rise to 66% by 2050[3]. The three aspects of overall population growth, nett rural/urban migration and migration from beyond the country's borders means that South African urban centres face significant and growing pressure to house and service this growing urban population. This also results in challenges of the environmental and social aspects related to urban development. In response to this, the current major global drive is the *United Nations 2030 Agenda for Sustainable Development*, out of which the *17 Sustainable Development Goals* have been developed.[4] Goal Three and Goal Eleven have specific relevance to this research as it advocates for, amongst other things, the promotion of well-being for all and making human settlements inclusive and sustainable.

Figure 1-1 - Drone imagery by Johnny Miller indicating the significantly disparate urban conditions in Alexandra, Sandton. This is in close proximity to 'Africa's richest square mile'.
Source: (Gbadamosi, 2016)

[3] According to 2017 figures contained in (Teye, J., 2018. Urbanisation and Migration in Africa. *Expert Group Meeting, United Nations Headquarters*, 1-2 November), South Africa remains the main destination country on the continent for migrants

[4] https://sdgs.un.org/goals - THE 17 GOALS | Sustainable Development (un.org)

Part of the argument towards sustainability in the urban development realm is that it is currently based on a global narrative that is focussed on "growth-based productivity" and "high technology solutions" and that there is a lack of understanding of "…the necessity of a holistic integrated understanding of urban life." (James, 2015) What is generally overlooked in the top down policy and numbers driven solutions to urban development currently rolled out across the globe is that *where we live* has an impact on *who we are*. Our environment affects us and our wellbeing. (De Botton, 2007) Factors such as 'liveability', 'quality of life' and 'subjective wellbeing' are often overlooked or seen as something that is tagged on to the end of a development process should resources allow.

Figure 1-2 - Photograph of a portion within the study area demonstrating a high quality of streetscape. Built form is varied, yet showing deference to their neighbours, there is an unobstructed visual link between the building and the street, assisted by the topography. The inclusions of appropriate landscaping within the individual properties and in the public domain adds to the overall quality.

South Africa, like many other developing countries, is currently dealing with the impact of urbanisation, particularly in relation to rural – urban migration, so these issues are just as pertinent as elsewhere. The statistics are that the percentage of the urbanised population for the country has grown from 60.62% in 2007 to 65.78% in 2017 (The Statistics Portal, 2018). The impact of this is keenly observed in Durban, the third largest city in the country. Projected population growth rates derived from census data taken in 2001 and again in 2011 place the average annual percentage increase of 1.13% per annum for the city. The initial 1824 settlement based on the water front edge around the harbour has now grown into a metropolitan city that encompasses approximately 2300 km² and has 3.7 million inhabitants. (eThekwini Municipality, 2017) The founding of the city in the early 19th century means its development has been shaped overwhelmingly by the initial colonial influences and then subsequently by industrialisation. There was a significant period of growth influenced by the modernist era which has subsequently been replaced by post-modernist influences and now very recently by global capital influences.

By recognising that the unique conditions related to urban densification can be a source of understanding for a specific context, this Ph.D. thesis seeks to contextually analyse the contribution of the streetscape by using Durban as an example. The study recognises that though 'sustainable urban development' is a multi-faceted and complex undertaking, the gap in this process is around 'liveability' and how the individual building design contributes towards a 'vibrant' and 'attractive' public experience. (Iovene, et al., 2019)

1.1 Orientation to the Research Document

This thesis is divided into six complementary chapters arranged in a logical successive narrative. Each chapter ends with a summary, which includes specific conclusions. The document contains a bibliography and related annexures after the final chapter.

The first chapter introduces and justifies the choice of topic. It then gives background to the field of study that includes looking at the context of the discipline approach to the study. It then moves on to defining the parameters of the research, which includes the hypothesis, research goals, limitations and definitions of key terms. Following that, the chapter gives information related to the conducting of the study, such as a brief description of the research approach and methods adopted. After that, it discusses the current state of research in the field of study which includes the major areas of discussion in the discipline and the highlighting of key texts related to that. The chapter then ends with specific conclusions.

The second chapter discusses the urban context and influences related to the topic. It commences with giving an overview of major global urban influences that includes the current approach to achieving development goals and an examination of past utopian urban ideas. It then moves on to discussing the rationale for the determination of the study area through discussing current land-use, historical patterns, available secondary sources and suitable range of architectural buildings. The historical development of the study area is then discussed from the first habitation in about 1850 and also includes information related to development influences for South Africa as a whole. The chapter then moves on to present the current condition of the study area, presented in four distinct zones. It moves to the discussion of contextual aspects related to South Africa that influence development, including the influence of the market driven economy, lack of institutional capacity, issues of heritage and issues of crime. Again, the chapter ends with specific conclusions.

The third chapter investigates *Theories of 'Place'*. There are four distinct aspects handled in this chapter, namely *Placemaking, Streetscape Theory, Form of the Street,* and *Timeless Qualities.* These all relate to thinking around the idea of developments being well designed. Pertinent questions such as the role of historicism and utopian planned development feature here. It investigates the intersection between the 'public' space of the street and the 'private' space of the individual building property. It also engages in the post-modern worldview of subjectivity and individualism that is often used to excuse 'bad design' and looks at the notion of timeless qualities that can inform development, irrespective of context and time. Specific conclusions then end the chapter.

The fourth chapter describes the development and use of the research instruments for the study. It starts off with a more detailed explanation of the methodology employed in the study mentioned in chapter one. It then moves on to the explanation of the development of the two types of principle surveys used in the study, namely the *walking survey* and then the *detailed street survey.* A detailed description of the survey criteria that were used in the execution of the surveys is then presented and followed by a discussion on the actual execution of the survey. Again, the chapter ends with specific conclusions.

The fifth chapter presents the study findings. It commences with presenting the collated data related to the walking survey's seven criteria as determined in chapter four applied to the 945 individual building sites in the overall study area. These findings related are then processed in order to identify nodes of significant clustering that in turn are subjected to a selection process to identify three nodes (streets) where the detailed street surveys will deliver the most credible findings in relation to the research goals. The chapter then presents the collated data related to the detailed street survey's 12 categories of identification. The findings from both types of surveys are then synthesized and determine the primary and secondary characteristics of the overall study area related to the identified criteria. The chapter then ends with specific conclusions.

The sixth chapter summarises the overall study with conclusions and recommendations. This includes an overall review of the study and a specific review of the findings. It makes recommendations related to future development in the study area specifically, but across the city of Durban in general. Areas for further studies emanating from this work are also discussed and three particular areas present themselves, namely the

contextual issues of the response to *heritage* and *crime* in current and future developments and the application of *neuro-physiological mapping techniques* in addressing bias related to architectural preferences in the diverse and polarised South African population. The overall document is then concluded, recognising that the character of the urban streetscape has a fundamental impact on the quality of life of the people that use it and that this study contributes to a currently neglected portion of an overall complex discipline approach to achieving contemporary 'sustainable' development goals.

1.2 Justification for the Choice of Topic

Durban is a city that shares the urban reality with many cities, particularly in the developing world, of a significant continual population growth. Recognising the realities of ever-increasing demands on the city fabric that this growth places due to potential urban sprawl, it has followed suit with many other cities in pursuing an approach of densification to contain the sprawl and increase the efficiency of services and infrastructure. An additional layer of consideration is that the local authority[5] has declared the intention of Durban to become Africa's most liveable and caring city by 2030. (eThekwnini Municipality, 2018)

Figure 1-3 - Durban and South Africa placed in a global context.
Source: Author, drawn from Wikimedia Commons

Though similar in many regards to other developing cities, it has some unique aspects of its own. It is located on the warm east coast at the southern end of Africa. Founded in 1824, it has grown rapidly over the last 200 years to become Africa's busiest port and South Africa's third most populace city. Internationally, it is most famous for its beachfront, which is often compared to that of Copacabana beachfront of Rio de Janeiro.

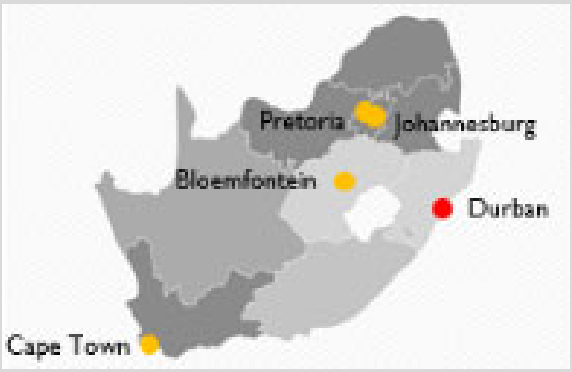


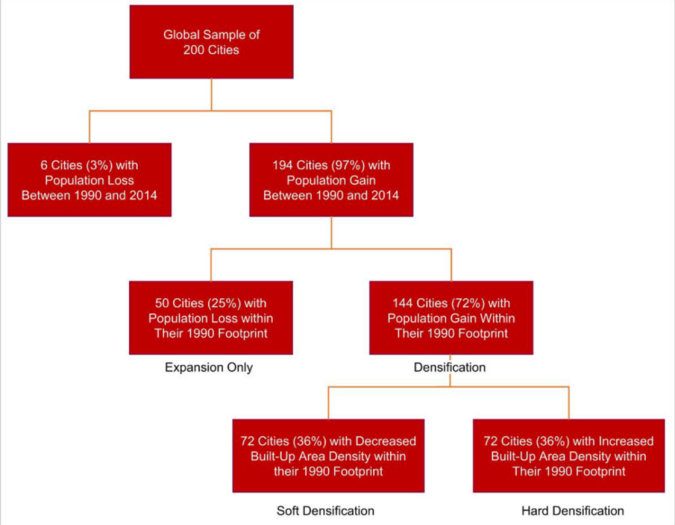
Figure 1-4 - South African map indicating major metropolitan centres - Cape Town is the parliamentary capital, Bloemfontein is the Judicial capital, Pretoria is the Administrative capital and Johannesburg is the largest commercial city, and Durban the 3rd most populace city after Johannesburg and Cape Town and is Africa's busiest port.
Source: Author, drawn from (vecteezy, n.d.)

Established as primarily having its early developmental history under British colonial control, it is different from the other three major metropolitan areas in South Africa in that its initial development was considerably compact due to topography, there remains a variety of density of residential properties in close proximity to the CBD, and these CBD adjacent residential areas still have the opportunity to be fairly pedestrian friendly.

Figure 1-5 - The Durban 'Golden Mile'. At 8km long, it is the longest beachfront promenade in sub-Saharan Africa. It is often compared to that of Copacabana beachfront of Rio de Janeiro.
Source: (First Car Rental, n.d.)

[5] The term 'local authority' is the legal term for the entity of local government in South Africa tasked with providing municipal services, promoting social and economic development, and encouraging a safe and healthy environment within its boundaries. (*Local Government: Municipal Structures Act* - Act 117 of 1998 of the Republic of South Africa, as ammened)

Figure 1-6 A photograph of a typical South African Reconstruction and Development Plan (RDP) housing project in the foreground with the informal settlement whose inhabitants may likely be the beneficiaries of the new housing opportunities. Urban quality and liveability is virtually non-existent, though an improvement if compared to the base from which the beneficiaries come from. Source: (Masombuka, 2010)



Graph 1-1 - Graph demonstrating densification trends between 1990 and 2014 of 200 sampled cities worldwide. It demonstrates the fairly complex global phenomenon related to densification that includes population overall change and density variables for established footprints. Source: (Angel, et al., 2021)

Two specific aspects hinder the proper control of development that addresses the need for "…increased density that is well designed" (James, 2015, p. 3). The first is that the individual building development controls lack an integrated scrutiny in the approval process, relying overwhelmingly on compliance monitoring of basic standards. The second is the pervasive underscoring of 'market globalism' in driving development.

South Africa, like virtually all developing cities globally, faces the significant challenge of providing sustainable housing opportunities to those in informal dwellings[6], and this has significant bearing on the overall global sustainable development goals. Though not directly addressed in this study due to the enormity of that task in itself, it is worth noting that issues of streetscape and quality of life still need to be considered by whatever organisation is involved in the practical provision of this housing. Currently, housing provision for those reliant on government intervention is usually relegated to the notion of 'lowest common denominator' thinking – providing the bare minimum of 'acceptable' standards for the bare minimum cost.

The instruments developed in this study could be used and modified to suit other contexts. In the complexity of urban development with competing goals, increasingly complex interdependent aspects of global and local relationships in constant flux, the argument is to go back to the fundamental of "a beautiful environment to live in" and then extrapolate from there.

Global Urban realities of Densification

The world population is consistently growing and has increased by one third in the last quarter of a century, with the UN estimating that the global population exceeded 8 billion people as of November 2022. The projection is that this figure will rise to 9,7 billion people by 2050. The majority of this growth is in countries with developing economies, where the proportion has grown from 66% in 1950 to 83% IN 2022. Developing economies are projected to

[6] 2019 figures cite 226 000 households (not total population within the households) that live in informal conditions in eThekwini, the metropolitan area that now encompasses the City of Durban along with other local authority urban areas that were consolidated into the metropolitan area in 2000. Metropolis, 2019. *Informal Settlement Upgrading in Durban.* [Online] Available at: https://www.metropolis.org/news/informal-settlement-upgrading-durban [Accessed 09 June 2023]

continue increasing in their proportion of global population growth. (United Nations Conference on Trade and Development, 2022) There is also a significant global trend towards growth of the urban population, with 54% of the global population estimated to live in urban areas currently and increasing to a projected 66% by 2050. (Teye, 2018). Urban centres, specifically in Africa and Asia where the majority of this rural / urban migration is occurring, need to respond to the needs of an ever increasing population.

A 2018 OCED report examined alternatives to urban sprawl in 29 countries. They noted that average population density in cities had increased in slightly more than half of the countries, but that the share of urban land containing areas of very low density had in fact grown in 69% of the countries. Many countries, including Hungary, the Netherlands and Poland, had seen a decrease in urban population density driven by suburbanisation. The overall argument is for a dense and relatively contiguous form of urban development that leads to greater land use and servicing efficiency. (OECD, 2018)

According to Angel, et al. (2021)There are three options for accommodating increased population numbers – cities can build upwards, in between or outwards. The first two options is predicated on city densification, the third option on urban sprawl. In their study, Angel, et al. indicates that 71% of developing cities surveyed explicitly have the goal of containing expansion, and this is achieved through densification.

Challenges with a 'livability' index

In the ever growing urban environment, many cities are looking towards the aspect of 'liveability' and are utilising independently generated liveability indexes to guide their development strategies. Durban has itself declared its intention of becoming Africa's most liveable and caring city by 2030, though it is unclear as to

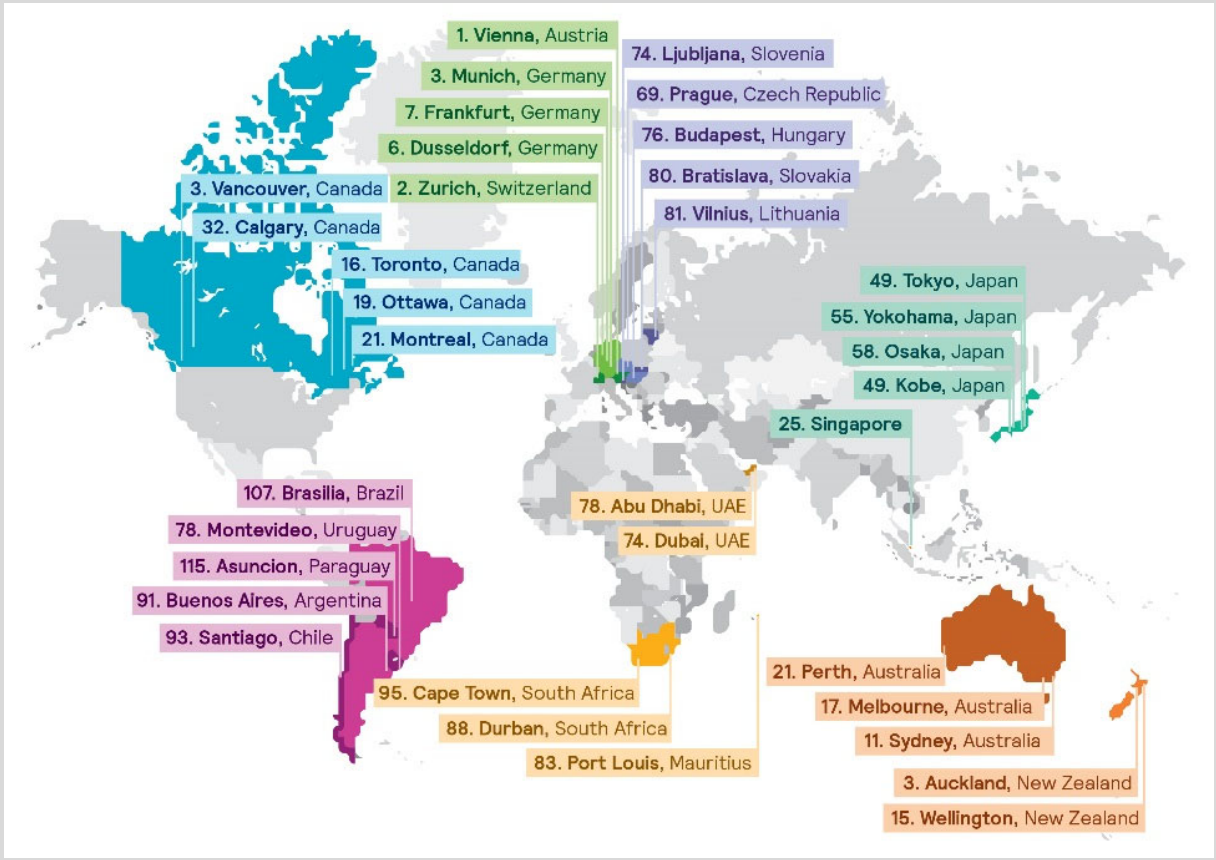


Figure 1-7 - Map of selected ranked cities according to the Mercer Quality of Living Ranking. Durban is ranked 88th, while the highest ranked African city is Port Louis, Mauritius at 83rd.
Source: (Mercer, 2019)

what criteria or metrics will be used to determine the award of this title. There are numerous ranking systems

using various metrics to rank global cities such as the *Economist Global Liveability Index*, the *Monocle Quality of Life Survey*, and the *PriceWaterhouseCoopers Quality of Living Indicators* (Blanco, 2018), but the Mercer *Quality of Living City Ranking* index is the most publicised and has the most details available in the public domain. In addition, this stated intention by the municipality follows very shortly after the publication of the annual Mercer rankings, therefore it would seem that the municipality's intentions are intrinsically linked to it.

This Index is formulated to provide relevant, reliable and standardised data, mainly to inform companies in relation to compensation for their employees. (Anderson, 2019) This acknowledges that most international businesses are in a large part driven by the professional and personal wellbeing of the people they place in cities. More recent surveys now include separate ranking on personal safety, this gives an indication of a shift in global circumstances indicating that this is of major concern, at least to the direct market of the company's research. The Mercer Index seems to be a purely commercial venture, so details are not in the public domain as to specific metrics and methodology. The 2019 Index utilizes 39 factors, grouped into 10 categories in determining the overall ranking, but these are overwhelmingly related to the provision of services.

The primary criticism of the Mercer index is that the metric is geared towards business decisions, mainly for comparison of relative monetary compensation for staff that may be relocating globally. There is no apparent consideration towards any form of aesthetic considerations or quality of space. Port Louis was the highest ranked African City, placed 83rd in the quality of living ranking and 59th in the safety ranking. It is particularly useful to mention the safety ranking, as this continues to be one of the biggest concerns in South Africa. Durban's higher ranking in relation to Johannesburg and Cape Town is mainly due to its high-quality housing, plentiful recreational offerings and good consumer goods availability. However, the city's crime problems keep it from reaching the top 50. (Mercer, 2015) of their 2019 annual ranking.

Durban densification strategy

South Africa, like many other developing countries, is currently dealing with the impact of Urbanisation, particularly in relation to rural – urban migration. The statistics are that the percentage of the urbanised population has grown from 60.62% in 2007 to 65.78% in 2017 (The Statistics Portal, 2018). This is in addition to a net population growth in the country. Projected rates derived from census data taken in 2001 and again in 2011 of the population in Durban projects the 2018 population for the entire metropolitan area of 3.77 million people based on an average annual percentage increase of 1.13% per annum. This will result in a projected net growth of approximately 43 000 inhabitants within the metropolitan area from 2018 to 2019. (eThekwini Municipality, 2017).

In light of this, the eThekwini Municipality (the local authority that Durban is a part of) developed a densification strategy published in 2013. The plan is intended to *"…shift the growth trajectory of the city in a more efficient, equitable and/or sustainable direction."* This is intended to be done through a process *"…that influences the quality and performance of, and the efficiency and sustainability of human settlements".* The strategy to do this includes *"(Identifying) an approach to practical and realistic implementation interventions and tools that can be inserted into the existing (and proposed new) policy, operational and urban management environment of the Municipality so as to unlock impediments to achieving density targets and / or the creation of quality living environments"* (Royal HaskoningDHV, 2013, p. 3).

The strategy states an optimum net density range of between 35 and 112 dwelling units per hectare which equates to approximately 150 to 450 persons per hectare. (Royal HaskoningDHV, 2013, p. 12) The existing low-rise walk-up that this research is focussing on typically achieve the 40/60 dwelling units per hectare and is within the range sought.

The strategy intentionally does not make proposals at local level, but is intended as a guide that structures a metropolitan and regional response. As seen in the diagram illustrating factors influencing density (Figure 1-9) and the hierarchy of spatial plans (Figure 1-8), there is a focus on densification tools such as gross bulk, height, boundary and coverage restrictions, size, shape and typology, but does not incorporate aspects of specific streetscape character or aesthetic considerations. This approach is rather typical of the majority of local authorities and results in a rather narrow focus on 'sustainability', as is highlighted by James (2015)

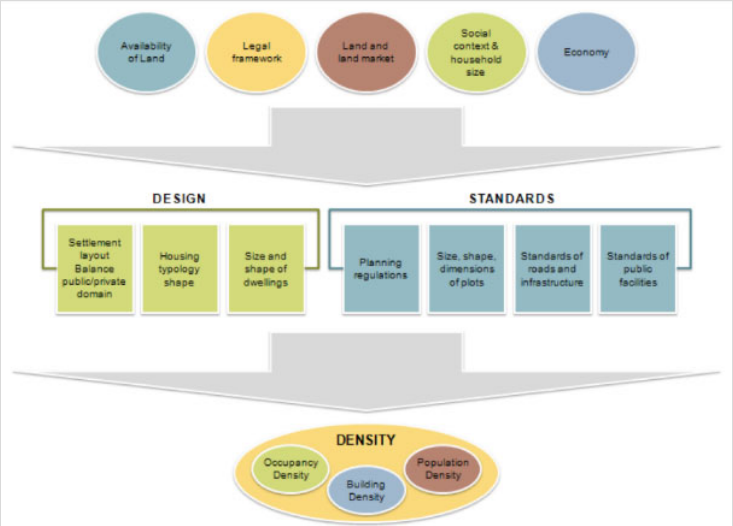


Figure 1-9 - Factors influencing density in the City Densification Strategy. The design component encapsulates aspects such as size, shape and typology, but does not incorporate character or aesthetic considerations.
Source: (Royal HaskoningDHV, 2013, p. 8)

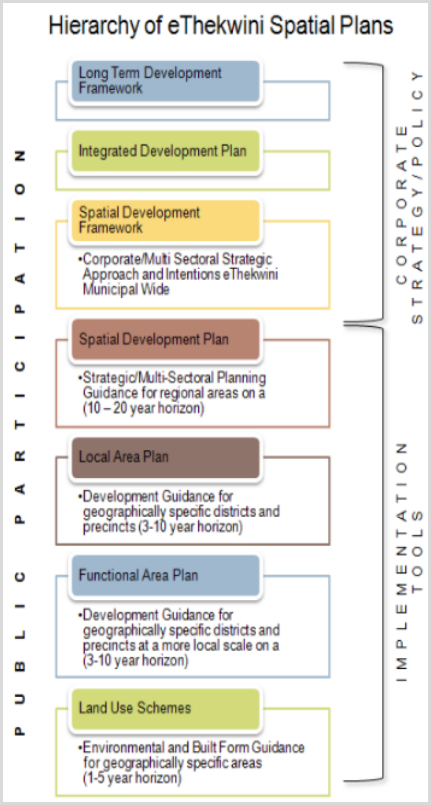


Figure 1-8 - Hierarchy of eThekwini Spatial Plans. In the city's densification strategy, these spatial plans focus on densification tools such as gross bulk, height, boundary and coverage restrictions as it relates to individual developments.

Source: (Royal HaskoningDHV, 2013, p. 4)

The densification strategy seeks to allow for the creation of sustainable human settlements and sustainable resource use and this is what is driving the densification processes within cities across South Africa. The strategy recognises that there is no 'one-size-fits-all' approach to density, and that density measures cannot replace good human settlement design practice. The fact that the proposed research study area underwent a process of densification in the 1930s to 1960s, like the one sought in the 2013 strategy, indicates that there are outcomes that can be directly applicable for the city going forward. It is noted that the area of Berea North has considerably higher residential density than Berea South, where the study area is located (Iyer Urban Design Studio, 2012, p. 11) This supports the argument for densification in the study area as this indicates there is capacity for this densification while still retaining the overall Berea character.

Uniqueness of Durban in relation to other South African cities

Durban is fairly unique in relation to other South African cities. Owing to the topographical constraints restricting the footprint of the original city[7], it was far more compact in its original development than other

[7] The original borough was bounded by the Umgeni River to the north, the Indian Ocean to the east, the Umbilo River to the south and the Berea Ridge to the west. It also contained large portions of wetlands in the form of the Eastern and Western Vleis.

major cities in South Africa[8]. It also the largest city with British Colonial influence[9] for the vast period of its early history, whereas other significant cities have either Dutch or Boer influences[10]. The topographical constraints have led to a fairly unique situation of the seaboard, the CBD and major residential areas being in close proximity to one another. Due to the period of significant densification from the 1850s to the 1900s still being the predominant land use pattern of the residential area adjacent to the CDB, there is a fairly established and homogenous urban scale. Development has taken place with singular subsequent interventions, which allows for the grain to have developed and evolved over time and to be more sympathetic towards the established fabric. Due to the existing grain and pattern, there is potential for the area to undergo further densification based on the historic pattern thereof and still retain its overall character. Durban is also known for its incorporation of vegetation. In the mid-20th century it was known as Southern Africa's Garden City[11]. It still retains the prominence of vegetation within the urban realm and was awarded 1st place in the *Husqvarna Urban Green Space Index* in 2019 with some rather admirable statistics, such as a 60% green space to total urban area, 42% urban green space covered by trees and 18% urban green space covered by grass. (Husqvarna , 2019). This allows for the prominent inclusion of urban greening as a contributing factor of streetscape. The development of the area is also characterised by the use of the architectural style of the day (du jour), so there is a multitude of evolved architectural languages and approaches side-by-side in the urban fabric, which allows for an analysis that would not have a particular bias towards a specific period.

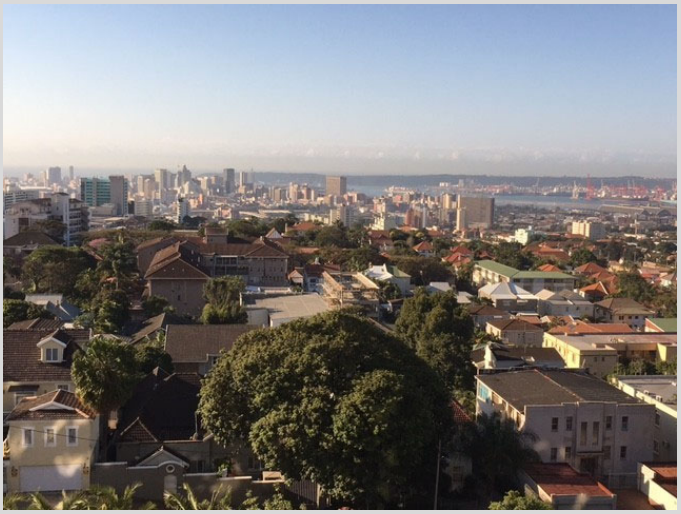


Figure 1-10 View over the Berea from the Ridge towards the Harbour. The tall buildings in the background form the CBD. As noted, the Berea is fairly compact and of significant uniformity of scale. It is also known for the significant occurrence of trees.
Source: (Portfolio Property Investments, 2023)

Design Guidelines as Part of the Approval Processes.

Currently, cities globally are encouraged to direct development of residential areas with the quality of the environment being considered. There is an acknowledgement that physical quality deterioration of the urban environment leads to physical and social problems. (Desyllas, et al., 2006) Local Authorities generally address this through regulations and guidelines for conservation and development of heritage zones (Mahmoudi, et al., 2015). The goal of this research is not to directly interact with the physical and social problems, but rather to note that the physical quality of the streetscape has a broader social impact. (Commission for Architecture and the Built Environment, 2008)

> *"How we design our places and spaces can make us happier and help us to address these [social] challenges."*
>
> *(Social Change UK Team, 2018, p. 5)*

[8] Johannesburg, Pretoria and Bloemfontein are all located on relatively extensive and fairly flat plains that have facilitated outward suburban growth rather than densification.
[9] Port Elizabeth and East London are the other two metropolitan areas founded by British colonists and settlers, but at less than a third of the population of Durban, are considerably smaller.
[10] Cape Town is South Africa's oldest city, established by the Dutch East India Company in1652.
[11] This relates to the incorporation of vegetation, specifically the 'stately indigenous trees' across the city and not to Howard's urban planning movement.

There is an emphasis placed on high quality affordable homes, but this is usually classified in terms of amenity, access and by setting a series of broad principles to achieve. There is also the competing pressures of convincing clients and other professionals to invest in healthy placemaking as the focus is usually on getting to market and meeting housing demand. (Social Change UK Team, 2018, p. 6)

Some internationally based Local Authorities that govern the built environment have more recently started issuing specific design guidelines, such as Toronto (City of Toronto, 2018), Auckland (Auckland Council, 2020) and Melbourne (The State of Victoria Department of Environment, Land, Water and Planning, 2018) that respond to this aspect. Other guidance is available through what could be termed manifestos of interest groups. One such is that of New Urbanism. The 5th New Urbanism Principle is that of *Quality Architecture & Urban Design.* Related are the new urbanism guidelines on density, but these really only list the benefits of increased density, such as creating walkable neighbourhoods. (Zykofsky, et al., 2003) The principles are not particularly well defined as to how this is achieved.

Though the international context seems to have guidelines that are more openly adopted around creating healthy living environments through quality design on spaces that in some instances filter down to aspects of character, the South African context does not embrace this broadly. The South African approaches are aimed at heritage conservation guidelines, such as the *Woodstock Aesthetics Advisory Body* that advises on building aesthetics in the designated heritage area of Woodstock, Cape Town. (Woodstack Residents' Association, 2020)

Formally, *The National Building Regulations and Building Standards Act No. 103 of 1977* (as amended) (South Africa, 1996) is the primary law governing building construction. In it, Local Authorities are made responsible for the administration of the National Building Regulations. Regarding character, appearance and placemaking, Section 7 (1)(b)(ii) is the only aspect that deals with this and states that a local authority may withhold permission for construction if the proposed building:

> *(aa) is to be erected in such manner or will be of such nature or appearance that-*
>
> *(aaa) the area in which it is to be erected will probably or in fact be disfigured thereby;*
>
> *(bbb) it will probably or in fact be unsightly or objectionable;*
>
> *(ccc) it will probably or in fact derogate from the value of adjoining or neighbouring properties;*

The application of this law is given context in section B.5 *Local authority options* of the South *African National Standard - The application of the National Building, Part A: General principles and requirements.*

> *e) It should always be borne in mind that the Act only requires that the local authority should be satisfied that an application complies with the requirements of the Act and hence with the Regulations. Since the technical regulations are functional in nature, the local authority can be "satisfied" simply on the basis that, from its own knowledge and experience, buildings similar to that proposed, sited in similar conditions have performed satisfactorily in the past.*
> (South African Bureau of Standards, 2016, p. 54)

Much of the aesthetic consideration given to the built environment is that of heritage protection. The National Heritage Resources Act No. 25 of 1999 provides for the preservation of building and areas deemed to have heritage value, but this is related to the protection of the existing and historic built fabric. This does not inform future developments unless it has a direct and tangible effect on existing built heritage. Building codes with aesthetic considerations do exist, but are predominantly formulated by private developers to regulate construction on private estates. There are instances where the Local Authority, as a significant or sole developer of a scheme, will develop guidelines for aesthetic consideration for that scheme only (such as the *2008 Umhlanga Node - Precinct Plan* or *2010 Beachfront Upgrades*), but these are project specific and do not apply beyond the confines of the project boundaries.

Contemporary excuses

In regards to urban development, there is a significant trend of poor design either being excused by 'post-modern' worldview of subjective individualism or the economic 'practicalities' of development or a combination of the two. There is also the strong advocacy of a uniform development language being adopted globally. Though seemingly paradoxical in nature, the global language is often one of a capitalist response that uses the worldview of subjective individualism to counter any argument made against the global capitalist driven language and response.

De Botton (2007) argues that the post-modern worldview has permeated society to renounce collective objectivity in favour of subjective individualism with the practical outworking here that 'good design' is a matter of mere opinion and that the developer's opinion that their poor design is indeed 'acceptable' is as valid as any other views. This is in stark contrast to the millennia of collectively mediated urban responses. Prior urban language was a result of an organic developmental process mediated by limited locally available materials and technical skills, and a response to local climate. There also became an accepted established pattern and response within a community, defined by more objective collectivism. Since the age of enlightenment, the critique of the language of architecture has slowly receded into virtual obscurity and much of what our urban environments consist of is banal. (p. 28) De Botton himself, in reaction to society's trend to resignation of the banal is to advocate that "we should be as unintimidated by architectural mediocrity as we are by unjust laws or nonsensical arguments." (pp. 254-255)

The capitalist argument is usually along the lines of 'development is needed, it costs more money for good design, we don't have the money, enforcing stricter requirements will lead to less development, this will lead to a depressed economic situation and lack of needed housing, etc.'. This is a convenient narrative that plays into the role of decision makers that are principally concerned with the short term measurable quantitative aspects of development. The negative externalities[12] that result from poor design are not generally considered. (Desyllas, et al., 2006, p. 17) It is also a bit of a fallacy as "It's not what you spend, it's where and how you spend it". Good design that is cognisant of creating place is better than expensive but ill-conceived design. (Iovene, et al., 2019, pp. 178-180)

The trend towards a globalised development approach is heavily influenced by the recent trend towards a turnkey approach to urban development. This is usually initiated through local authorities either approaching or being approached by international development consortia. The consortia will take care of all aspects – financing, design, construction, sales, and are therefore in almost absolute control of the entire development with the local authority clearly recognising that it is in its own best interest to expedite the development.[13] This again seems to be the outworking of capitalist expediency. It is to be noted that "Scientific evidence contradicting the official industry narrative—which eulogizes new structures favored by the global elite—is silenced by a massive public relations campaign that generates a false reality." (Horáček & Salingaros, 2020)

[12] Refer to *Additional Definitions* in section 1.4.

[13] Du Plessis, L., 2018. Durban's Waterfront Edge–a commentary on its 'Sense Of Place'. *Studia komitetu przestrzennego zagospodarowania kraju PAN,* Volume 188, pp. 314-330 is a local examination of Durban's Waterfront includes specific commentary on a proposal of this turnkey type of development.

1.3 Background to the Field of Study

In terms of urban development, there was an extensive period of near unanimity of construction - the Greeks developed the classical style that was then assimilated and developed by the Romans, which was then later rediscovered and applied in the Renaissance period through the codification and application of built aspects. This applied to the grander articulations of domestic architecture but for the simpler domestic construction, consensus of articulation was achieved in a context due to the limitations of climate, technology and availability of materials. This in turn resulted in strong local architectural identities.

This regionally mediated conformity of language in the built environment was disrupted in the Enlightenment Era through 'eclecticism' becoming fashionable. This, in conjunction with the birth of the 'modern civil engineer' in 1781 with the construction of *The Iron Bridge* in Shropshire, England has led to the even increasing dominance of the rationalist worldview. There have been numerous attempts at pushing back against this trend, such as A.W.N Pugin's advocacy for Gothic Revival in Industrial England, but the overall shift from collectivism to individualism that has its origins in the Enlightenment Era continues to dominate the underpinnings of most aspects of development.

Accompanying the Agricultural and Industrial Revolution was the rapid increase in the population of nations as a whole and a trend towards rural populations moving to urban centres. This trend was sharply accelerated through the needs for rapid urban housing following on from the First World War. This puts immense pressure on urban environments to accommodate steadily increasing populations, most notably in the developing world. Two significant factors affecting 20th and 21st century living are the issues of car dependency and globalisation. The introduction of the mass-produced car has led to the phenomenon of urban sprawl. This has manifested in low-density and fragmented development, which in turn has the impact of increased pollutants from car emissions, loss of open space, and higher per capita costs of providing public services. (OECD, 2018, p. 146) The increasing global capitalism approach continues to equate development with 'enhancing corporate profit taking'. (James, 2015, p. 21).

In the current developmental context, the notion of sustainability is particularly prominent. Concerning the built environment, the United Nations' 17 goals of sustainable development have sustainable cities and communities as goal number 11. Since the 1969 U'Thant Report (followed by the far more influential and prominently known 1987 Brundtland Report) there has been an ever-increasing investigation into the complex nature of the broad field of sustainable cities and built environments. The response has, however, been a general 'technocratic' approach to urban containment through related policy modifications. (OECD, 2018, p. 13) The initial 'triple bottom line' of environment, economy, and society has largely been subsumed as part of 'market globalism' or 'neoliberalism'. (James, 2015, p. xiv). The critical question posed by James (2015), however, is 'What is *good* sustainability?', one that contributes to a positive way of life, as the current narrative is overly simplistic and largely based on rhetoric related to a focus on the 'growth economy'. There has been an expansion to recognise that 'distinctive character' and 'local identity' plays a significant part in creating sustainability in housing. (Dixon & Woodcraft, 2013). The aspect of *Quality of Life* and *Subjective Well-being* also is important, as who we are shaped is by where we live (De Botton, 2007) (Iovene, et al., 2019) and how well homes are designed influences the daily lives of people, their health, and security and wellbeing. (Golubchikov & Badyina, 2012)

Though increasingly there is this encouragement to develop or maintain the physical quality of space, research into urban liveability and streetscape tends to focus on the structural and technical components of the streets within the urban core rather than core adjacent spaces - there is, however, very little guidance, as to what constitutes 'high quality' and how it relates to the built detailing. Components such as vehicle and pedestrian traffic (Appleyard, 1980), (Sauter & Huettenmoser, 2008), (Sanders, et al., 2015); physical street typology (Bosselman, et al., 1999); construction detailing of street elements (Mackett, et al., 2008), (Forsyth, et al., 2008); commercial signage (Portella, 2007); and landscaping and other ecology aspects (Layne, 2009) predominate. Though there is a focus on the structural, there is still research that has been conducted into the aspects of attachment to streets through their defining character, such as by Shamsuddin & Ujang (2008).

The focus in the past has been more around policies and procedures as they relate to heritage conservation, but the shortcomings here are that this relates more to the historic preservation of the existing rather than the contemporary development that is informed by the context and not attempting to duplicate the context.

In the context of this study, the argument is that quality of life and subjective wellbeing is enhanced through experiencing good streetscape and neighbourhood character, and this in turn is influenced by good architectural character. Streetscape speaks of the interface between the public and the private realm, and is usually associated with the technical components that are contained within the 'road reserve'. Neighbourhood character encompasses all elements in a given discernible area that contribute to the overall 'place', including the tangible and the intangible. Architectural character speaks of the overall composition of buildings that are contained within a neighbourhood and that usually line the public/private interface of the streetscape.

1.4 Defining the Hypothesis, Research Goals, Limitations and Key Terms

This section sets out to define the parameters under which the study will take place. It includes defining the Hypothesis, defining the Research Goals, setting out the Limitations and defining Key Terms.

Hypothesis

There have been co-ordinated and deliberate moves towards addressing the blight of bad design in certain developed countries, such as the establishment of the *Commission for Architecture and the Built Environment* (CABE) in the United Kingdom. This is in response to recognising the effects of bad design and an attempt to practically foster and encourage good design.

> *Badly designed places impose costs on their occupiers, their neighbours and on society. A key reason why these costs are often not taken into account is that they are not paid by the people that make the decisions but by the wider community.*
>
> *Dr Richard Simmons, town planner and chief executive of the Commission for Architecture and the Built Environment, (2006)*

The author wishes to similarly positively contribute towards the perpetuation of a well designed and developed environment, principally in the study area, but also with the intention of influencing development processes within the entire city of Durban. The author shares similar concerns voiced, such as in relation to development in Stratford-on-Avon in the United Kingdom where "(n)ew development appears to be diminishing the quality and accessibility of the public realm. It seems to be eroding the character and identity of places and putting its long term health at risk." (Kropf, 2001, p. 4). This research provides tangible and verifiable considerations that could be implemented in safeguarding the remaining quality of the built environment and suggesting ways in which this quality could be enhanced with future developments. This type of information is important to developers and those regulating developments according to the *Understanding Neighbourhood Charater - Planning Practice Note 43* (The State of Victoria Department of Environment, Land, Water and Planning, 2018, p. 1) as it allows for a common understanding about the key features of neighbourhood character so that:

- A satisfactory neighbourhood and site description, including the identification of the key features of the neighbourhood, is provided.
- The design response derives from and responds to the key features identified in the neighbourhood and site description.
- The residential development proposal respects the existing or preferred neighbourhood character and satisfies all the neighbourhood character requirements of the residential development provisions in planning schemes.

This research also recognises that neighbourhood character is a product of a process of evolution over time. This requires that a position around heritage and conservation needs to be taken and their influence on subsequent development. There are two principle positions, that of *historical urban identity*, but now more recently an *authentic urban identity,* as suggested by Ouf. (2001, p. 73) The Author finds that the approach taken by the local authority at Stratford-on-Avon in the United Kingdom is an apt position and is as follows:

> *"This diversity (of a settlement evolved over time) should be seen as an asset and resource. The various forms that have been developed through active use offer a starting point for new designs which accommodate similar activities. Such a view treats 'heritage' and the historical built environment not as a museum but as a library. The existing forms of an area can be viewed as potential solutions in the continuing task of accommodating human needs in that place. If particular forms of building have proved satisfactory over time and a core of human needs remains relatively unchanged, those forms provide the most sensible starting point for new ones. Local forms of building that have proved most adaptable provide a basis for*

new designs that help both to maintain character and offer continued adaptability."
(Kropf, 2001, p. 18)

To this end, the author has formulated the main and secondary hypotheses and research goals, as outlined below.

The main hypothesis is as follows:

There is a unique urban character of the suburban areas immediately adjacent the Central Business District of Durban which is expressed through the existing streetscape.

The secondary hypotheses are as follows:

1. *The buildings with their particular architectural character and response form part of the immediate context and streetscape based on the plot layout, form of a building and its exposure to the street.*
2. *Current trends in densification can be directly informed in a positive manner by previous historic periods and trends of densification if they are based on careful research into the unique character of the existing streetscape.*
3. *Streetscape aspects such as uniqueness, definability and attractiveness, which are based on the form of the architectural façade, influence the wider streetscape.*

Research Goals
The **main research goal** is as follows:

Determining the specific urban character of residential suburbs immediately adjacent the central business district of Durban. This encompasses describing their character based on streetscape features, and distinguishing the types of development and areas where low-rise housing has been introduced into an urban fabric that historically consisted solely of single dwelling units.

The secondary research goals are as follows:

1. *Identifying specific and distinct periods of development.*
2. *Identifying the architectural elements of character relating to existing streetscape.*
3. *Determining an overall synthesis of the historical influences and their impact on the streetscape.*
4. *Determining the typology of the streetscape as it relates to the study area.*

In order to move away from the arguably more problematic subjective impression responses, the details of the existing streetscape need to be ascertained, such as the historical influences and outworking of the existing fabric in order to determine what comprises the streetscape rationally and somewhat empirically.

Limitations
The focus is on determining the character of low-rise apartment buildings in established residential areas within the city. The reason for this limitation is that most of the changes in the existing policies are around permitting and encouraging densification and that this should be focussed on increasing residential density. When considering the number of people housed in an area, densification that fosters additional bulk for commercial purposes through land use conversions of previous residential properties decrease the overall population density as housing stock is displaced or removed. The historic low-rise apartment building currently achieves the city's desired densities in their most recent policies.

Additionally, what this study is not examining is the 'basic' housing provision environment where the issue of informal settlements is being addressed, but rather the private capital funded and owned residential development in established areas. This relates to infill development in an existing residential area where issues of constrained government financial resources are not a consideration, but rather the management of the impact that profit driven development has on the existing neighbourhood character. Conclusions and recommendations from this study, however, could benefit not only the current and future development of the study area and similar urban areas, but also inform housing provision generally.

The study also recognises that for feasibility of the amount of research undertaken, reasonable geographical limits need to be set in order to achieve the research goals. The overall area of residential suburbs adjacent the CBD (classified as the Berea) that aligns with the research goal is 24,68km^2. A reasonable sample area of 1,47km^2 has therefore been determined, with the process detailed in Chapter 2.2.

Definition of key terms

In order to place parameters on the research to be undertaken, it is essential that key terms are defined in order that they then direct the research undertaken and to focus the outcomes. This is specifically necessary given the variance that exists in the understanding of key terms. The same or similar terms have different interpretations, dependent on location, time and background of individuals. These definitions were instrumental in framing the further research, specifically as they challenged pre-conceived notions.

The author spent considerable time in defining the aspects of *Neighbourhood character, Architectural character* and *Streetscape*. These terms are well utilised in the heritage conservation realm, but are similarly defined to reinforce the underlying premise thereof. The Author, though heavily influenced by the heritage practice definitions due to their abundant use and refinement over significant time, wished to avoid the shortcomings associated with 'historic romanticism'[14], particularly given the challenging aspects of *culture* in the South African context.[15]

The Author also recognises the very close association between *Neighbourhood Character*, *Streetscape* and Architectural Character, but these three terms are defined separately. All three terms have to do with the narrowing of aspects that contribute towards character. *Neighbourhood Character* and *Streetscape*, though heavily influenced by *Architectural Character*, encompass more contributing aspects and are involved in a higher order sense of place with *Neighbourhood Character* encompassing a large area and *Streetscape* looking at the interface between public and private realm. *Architectural Character* is more narrowly defined, and relates to architecturally specific elements that in turn contribute towards the other two aspects. In highlighting the importance of the three terms, Ahmed Ouf describes the features that contribute to the traditional urban fabric to include the traditional street patterns; land subdivisions; and architectural character. (Ouf, 2001, p. 75)

There was also considerable consideration given to the notion of *low rise residential buildings,* there is considerable variance across the globe, but the author ultimately is guided by the local context and practice, shaped primarily by local and national regulations.

This section also includes additional terms that are commonplace in the South African context to Built Environment practitioners, but would be unfamiliar to an international audience.

Character:

The notion of *character* is an important one to establish as this is often assumed by those using the term. Discussions around character are often personal and impression based, and are linked with individuals' perceptions of attractiveness rather than character. (Jivén & Larkham, 2003), (Kropf, 2001). Kropf suggests that the features that contribute towards the distinctive identity of an area create the character of an area. "Another way of saying 'character' is to say identity or distinctiveness. Character is the combined effect of all those features that make a place identifiable." (Kropf, 2001, p. 5) He also notes that "…character is only possible to identify by comparison and the contrasts between one place and another." (Kropf, 2001, p. 7)

A common mistake to make is to say that an area has no character, when in fact it may not have a particularly appealing or distinctive character. The use of the phrase belies the fact that all areas have a definable character, though it may not be described as desirable. This is identified by recent planning guidelines. "It is common for some areas to be described as having 'little or no character', and other areas as having 'lots of

[14] Cromley, E. C. (1987) Public history and the historic preservation district, in: J. Blatti (Ed.) *Past Meets Present*, pp. 30–36 (Washington, DC, Smithsonian Institution Press), Quoted in (Jivén & Larkham, 2003, p. 75)

[15] South Africa currently has 11 official languages (Sepedi, Sesotho, Setswana, siSwati, Tshivenda, Xitsonga, Afrikaans, English, isiNdebele, isiXhosa and isiZulu) each representing a distinct major cultural group. This excludes minority groups, such as the First Nations Indigenous groups such as San and KhoiKhoi.

character'. These sorts of descriptions confuse neighbourhood character with attractiveness. All areas have a character in the same way that all people have a personality. In some areas the character may be more obvious, more unusual, or more attractive, but no area can be described as having no character." (The State of Victoria Department of Environment, Land, Water and Planning, 2018, p. 1) It is therefore important to define *Neighbourhood Character, Streetscape* and *Architectural Character* correctly.

The Author therefore defines *Character* for the purposes of this research as the identifiable distinctiveness that results from the combined effect of features and attributes.

Neighbourhood Character:
In defining the term *Neighbourhood Character*, it is best to equate this to the physical level at which the term applies, namely that a neighbourhood is a geographical or spatial area of discernible containment. This containment includes identifiable functions as well as a set of social networks.[16] "The human activities that have taken place and continue to take place in a settlement also make a significant contribution to character." (Kropf, 2001, p. 7) For the purposes of this research, which is inherently built environment focussed, the social network aspects are not factored in due to the vastly divergent aspects that this would introduce to this research that would divert focus away from the main and secondary hypotheses.

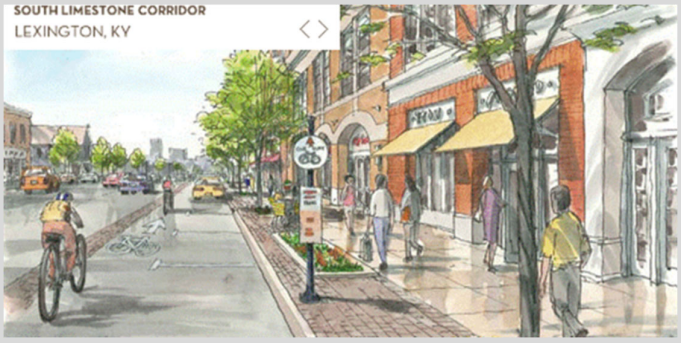


Figure 1-11 - The artist's rendering of a proposed renovation of streetscapes in Lexington. It captures the idea that the cumulative impact of every property, place and piece of infrastructure establishes neighbourhood character. Source: (Morris, 2009)

In relation to the definition of neighbourhood character, the case highlighted by Dovey (2009) underpins the problem often faced in this regard. The city of Melbourne undertook their 'Melbourne 2030' metropolitan strategy, aimed at densification through compact city principles. The need by the authorities for maintaining 'neighbourhood character', a primary criterion for assessing residential development applications, was often in conflict with policies of densification. This conflict was compounded by a lack of clear definitions as to what constituted 'character', which in turn led to fairly ambiguous interpretations being given by community members objecting to the change of character that new developments would create. (Dovey, et al., 2009, p. 32)

In attempting to address this shortcoming, The State of Victoria Department of Environment, Land, Water and Planning has released documents to try and address this shortcoming, the most relevant recent document being *Planning Practice Note 43 – Understanding Neighbourhood Character.* (The State of Victoria Department of Environment, Land, Water and Planning, 2018). Of particular relevance is the following definition.

> *"Neighbourhood character is essentially the combination of the public and private realms. Every property, public place or piece of infrastructure makes a contribution, whether great or small. It is the cumulative impact of all these contributions that establishes neighbourhood character"*
>
> *(The State of Victoria Department of Environment, Land, Water and Planning, 2018, p. 1)*

[16] Schuck, A. & Rosenbaum, D., 2006. Promoting Safe and Healthy Neighborhoods: What Research Tells Us about Intervention. In: K. Fulbright-Anderson & P. Auspos, eds. *Community Change: Theories, Practice, and Evidence.* Washington, D.C.: The Aspen Institute, pp. 21-60

What this does highlight is the multiple facets that contribute to neighbourhood character, but specifically in terms of this research, the built infrastructure linked to individual properties contributes to overall neighbourhood character. The term *Townscape* therefore is more appropriate in considering how this research will be directed as it provides more clarity of what aspects will be examined that contribute towards Neighbourhood Character. Referring to Haswell (1984,9) (Haswell, R.F., 1984, An Historic Townscape Conservation Scheme for Natal, Pietermaritzburg: Natal Town and Regional Planning Commission Report), Bjorvig (1994) states "The term townscape means the overall appearance of a town or city, or part thereof: the impression created by buildings, streets and gardens, resulting from a host of land uses." This definition does however focus on 'appearance', which negates the evolving human and temporal aspects of 'character'.

The Author therefore defines *Neighbourhood Character* for the purposes of this research as the combined effect of physical features and attributes of the public and private realms of an area that result in making that area identifiable. These physical features include the impression created by the individual components of buildings, streets and landscaping.

Streetscape:
The aspect of Streetscape starts to encapsulate the notion of character at a more specific level and responds mainly to physical attributes of the public/private interface. "Streetscape is defined as either the transition space between the private and public realms or the delineating zone between an individual and society" (Fiske 1987; VicD.I. 2001) as quoted in (Tucker, et al., 2004, p. 136). It also incorporates how individuals use and maintain this interface. (Kropf, 2001, p. iii) It has a fairly significant role in the definition of *Neighbourhood Character*, but is often seen as fairly technical in terms of guidelines issued by local authorities that relate specifically to it. This is borne out by the discussion of Streetscape in numerous local authority publications, such as *The Councillor's Guide to Urban Design* (Commission for Architecture and the Built Environment, 2003) and typified by the description of streetscape by Karl Schmid as:

> *"The distinguishing character of a particular street as created by its width, degree of curvature, paving materials, design of the street furniture and forms of surrounding buildings."*
>
> *Karl Schmid (2014)*

This technical definition is somewhat more ameliorated in the definition of the 'character of a streetscape' in the Australian Environmental Planning Act of 1979 as quoted in Tucker, et al. (2004), included below.

> *"[The character of a streetscape is defined by the] spatial arrangement and visual appearance of built and landscape features when viewed from the street."*
>
> *Tucker, et al. (2004, p. 134)*

Another related term that pertains to streetscape is that of urban street edge. This obviously is related to an urban context in its conception, but the definition equally applies to the interface of this transition zone. The contemporary definition of the term by Uttley, Simpson, and Qasem (2018) describes the urban street edge in the following manner:

> *"The indoor/outdoor interface spanning street and building that often defines the character, spatial qualities, functions, and ultimately, people's overall experience of the street"*

Uttley, Simpson, and Qasem (2018)

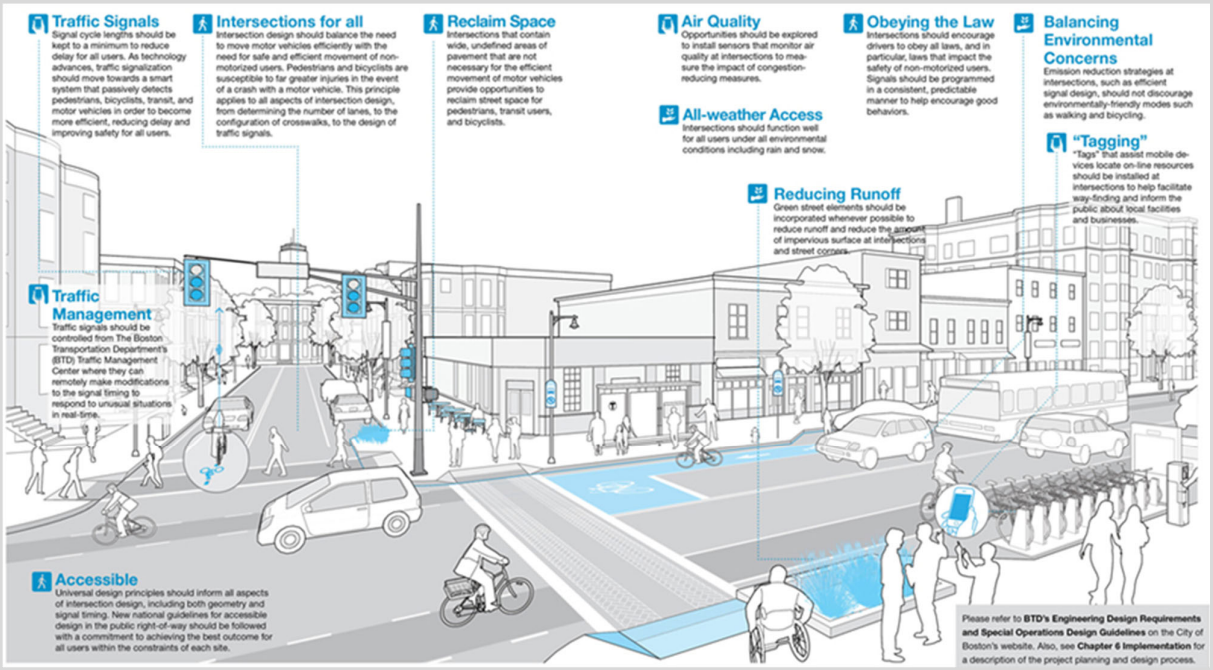


Figure 1-12 - An image from the Boston Complete Streets Design Guidelines. This captures the overwhelming prevailing concept that civil engineering considerations and civil infrastructure are the primary considerations of streetscape.
Source: (Toole Design Group, 2015)

In terms of the contribution of streetscape towards neighbourhood character, Kropf (2001) notes its importance. "The character of a town or village has a lot to do with the character of its streets and lanes - not just the way they look but also the way they are used and cared for." He further goes on to note that numerous features, whether seen as significant or not, contribute to the distinctive character of the streetscape. "All the seemingly minor features that make a place different add up to a distinctive character." (Kropf, 2001, p. iii). He also notes that it "… involves both the various objects we recognise and the way they are arranged." (Kropf, 2001, p. 13)

The above definitions illustrates a current more technical and component driven approach, particularly by local authorities, that is limited to the actual street and adjacent pavement treatment and the components that are incorporated into it, but that there is a recognition of the way in which individuals recognise various objects and their arrangement in this zone of interface between the public and private realm of the built environment.

The Author therefore defines *Streetscape* for the purposes of this research as the spatial arrangement and visual appearance of various objects that shapes people's overall experience of the interface between the public and private realm along a street.

Architectural Character:
A good working definition for architectural character comes from the Preservation Briefs series of the National Park Service – Technical Preservation Services. It states:

> *"Character refers to all those visual aspects and physical features that comprise the appearance of every historic building. Character-defining elements include the overall shape of the building, its materials, craftsmanship, decorative details, interior spaces and features, as well as the various aspects of its site and environment." (National Park Service - Technical Preservation Services, 1988).*

The challenge is the determination of what actually constitutes the aspects of these character-defining elements. Much of the writings of these aspects relates to a definition on a generic level that then relies upon the interpretation of the assessor for a building or site to be assessed. This, in turn, relies upon the assessor having the necessary skill and judgement, something that is problematic in the current local context. This shortcoming is highlighted by numerous sources, such as Dovey, et al (2009).

What the definition of the National Park Service does highlight is the overwhelming sense that architectural character is intrinsically linked with a sense of historic romanticism. This research, however, does not intend primarily for the focus to be on preservation, but rather in guidance for future development with the focus being on the public interface, not the interior spaces. The definition of the physical features that comprise the appearance of these historic buildings is however very useful in defining the architectural aspects.

The previous definitions of Character, Neighbourhood Character and Streetscape speak of the inclusion and arrangement of specific objects that contribute towards character. Chapter 4 is where the author more extensively deals with fleshing out the components for analysis to determine what constitutes the 'arrangement of specific objects'.

The Author therefore defines *Architectural Character* for the purposes of this research as the combination of physical features that comprise a building and its site that contribute to the overall experience of the architectural object. This includes form, materials, details and the overall arrangement of these aspects in the formation of the architectural object.

Low Rise Residential:
There is no universally accepted definition for this term, but the general definition that can be applied is the one defined by the Department of Planning and Environment, New South Wales (2017) and is as follows:

> *Townhouse/terrace housing and small scale residential apartment buildings, typically of 2-4 storeys in height.*

In some instances, such as by the City of Portland (2013), the height is defined as between 1-6 stories. The fundamental design consideration driving low-rise development in South Africa is the height requirement at which lifts (elevators) must be provided. Section 4.44.1 Part T: Fire protection of the South African National Standard - The application of the National Building states "Any building of more than four storeys above or below the level of escape doors shall have at least one lift, accessible from all the floors." (South African Bureau of Standards, 2016)

There are numerous different types of buildings that fall under the general definition of 'low rise residential buildings'. Some local examples of these include the following:

- Flats (Apartment Buildings)[17],
- Maisonettes,
- Simplexes
- Duplexes

[17] The South African term 'flat' is used for the more internationally known 'apartment building' and is defined in the applicable Town Planning Scheme for the area as "…a building or buildings with two (2) or more storeys comprising of self-contained dwelling units, each having a separate entrance and forming part of one or more storeys." (eThekwini Municipality, 2019, p. 29)

- Multiple Unit Developments

Figure 1-13 - Range of housing types as defined by the New South Wales Department of Planning, Industry and Environment. There are variations in definitions between planning authorities across the globe, but typically the 4 storey restriction is most common for Low Rise Housing.
Source: (New South Wales Department of Planning, Industry and Environment, 2015)

Apartment Buildings

In some international contexts, such as in Auckland, the term apartment building, though primarily residential in use, may also include commercial uses on the ground floor. (Auckland Council, 2020) This is not the local practice, 'flats'[17] are purely residential in use. Buildings that have both residential and other commercial functions are colloquially defined as a 'mixed use building', though this specific building terms does not appear in the Town Planning Scheme. The Scheme refers rather to a zoning type that provides for land use or buildings that have "Residential and Commercial activities that compliment or function alongside of each other." (eThekwini Municipality, 2019, p. 100) The zoning precludes the inclusion of 'flats' on 'the ground floor'. Another trend in international practice is that car parking associated with the apartment building is often located in the basement of the building (Auckland Council, 2020), this is not the trend in South Africa, and certainly not in the study area. Parking is usually located at grade, beneath the building when on a slope or to the rear of the site.

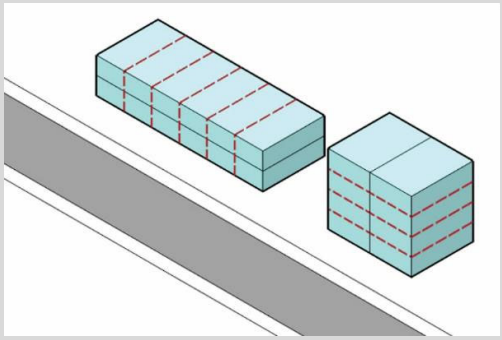


Figure 1-14 - Illustration indicating the difference between terraced housing (left) and apartment building (right). Terraced housing units are separated by vertical party walls and may be over more than one floor, apartment buildings are separated horizontally and are usually (though not exclusively) contained to one floor.
Source: (Auckland Council, 2020)

Additional Definitions

Adaptation means changing a place to suit the existing use or a proposed use. (Australia ICOMOS, 2013, p. 2)

Assessment Officer (also commonly referred to as a Plans Examiner) is the individual assessing the development proposal on behalf of the Local Authority principally in relation to compliance with building codes. There are

additional departments such as Town Planning, Health, Stormwater and Transport that scrutinise plans separately to ensure compliance with their specific requirements.

Conservation means all the processes of looking after a place so as to retain its cultural significance. (Australia ICOMOS, 2013, p. 2). *Conservation* in relation to heritage resources, includes protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance (KwaZulu-Natal AMAFA and Research Institute, n.d.)

Cultural Significance means of aesthetic, architectural, historical, scientific, social, spiritual or technological value or significance. (KwaZulu-Natal AMAFA and Research Institute, n.d.)

Development, as per the KwaZulu-Natal AMAFA and Research Institute (n.d.), means any physical intervention, excavation or action, other than those caused by natural forces, which may in any way result in a change in the nature, appearance or physical nature of a place or influence its stability and future well-being, including

a. Construction, alteration, demolition, removal or change of use of a place or a structure on the place.
b. Carrying out any works on or over or under the place.
c. Subdivision or consolidation of land comprising a place, including the structures or airspace.
d. Construction or putting up for display signs or hoardings.
e. Any change to the natural or existing condition or topography of land.
f. Any removal or destruction of trees or removal of vegetation or topsoil.

Fabric means all the physical material of the place including elements, fixtures, contents and objects. (Australia ICOMOS, 2013, p. 2)

Listed Buildings is a building deemed to be of historical value that appears on a register intended to list such buildings. In the Durban context, the term *Listed Building* refers to any building that is contained in Annexure B to the Town Planning Scheme *Central Scheme of eThekwini Municipality* (eThekwini Municipality, 2019), namely *Listed building and objects.* This annexure in turn draws extensively from the publication *A revised listing of the important places and buildings in Durban* by Brian Kearney (1984), Emeritus Professor of Architecture at the University of KwaZulu-Natal.

Liveability is the life skills and milieu that allow for living in ways that enhance well-being. (James, 2015, p. 22)

Local Authority is the juristic entity that has responsibility for all public services and facilities in a particular area, which includes administrative authority over the built environment such as forming policy and regulation and ensuring compliance thereof in addition to National policy, regulation and law. eThekwini Municipality is the overarching Local Authority related to the study area with Durban Central being the region within the Municipality which the study area falls.

Negative externality is a cost that is incurred by a third party as a result of consequence of a transaction or action of the party that undertook the transaction or action. The concept of *externalities* is primarily an economic term, initially credited to two British economists in the late 19th Century, Henry Sidwick and Arthur C. Pigou. (McConnell, Brue and Flynn's 2008 *Economics: Principles, Problems, and Policies*). Dr Richard Simmons, the chief executive of the UK's Commission for Architecture and the Built Environment (CABE), uses the terms to describe the consequences of 'bad design', where the design imposes costs on occupiers, neighbours and society at large that outweigh the utility and value that accrue to the community as well as their owners through development. (Desyllas, et al., 2006, p. 17)

Orthodox planning in the context of this research is a highly technical, largely state-centred planning activity that privileges the public interest and mediates the private-sector interest to favour development based on the general well-being of the public and seeks to provide amenity for them. Modern orthodox suburban planning was widely implemented throughout the world during the 20th century, though the South African application thereof included spatial planning that incorporated severe racial segregation. (Hansmann, et al., 2018)

Place, as per the KwaZulu-Natal AMAFA and Research Institute (n.d.), includes –

a. A site, area or region.
b. A building or other structure (which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure).
c. A group of buildings or other structures (which may include equipment, furniture, fittings and articles associated with or connected with such building or other structures).
d. An open space, including a public square or a street.

Preservation means maintaining a place in its existing state and retarding deterioration. (Australia ICOMOS, 2013, p. 2)

Setting means the immediate and extended environment of a place that is part of or contributes to its cultural significance and distinctive character. (Australia ICOMOS, 2013, p. 3)

1.5 Information on Conducting the Study

The goal of any academic research is to answer questions about a phenomenon of interest. The question should be topical, relevant and significant for it to be of value. In order to ensure that the question is answered in a credible manner, the research should be undertaken in a systematic, rigorous, and logical manner that is based on reliable resources. (Mgutshini, 2019)

The methodology has an overall qualitative approach due to the aims of the study being around determining influences, significances, trends and providing insights of the streetscape. All existing research encountered on streetscape is also qualitative, though there is a trend towards more metric based validation in findings, such as in (Iovene, et al., 2019). "Describing neighbourhood character requires a qualitative assessment and the exercise of judgement about which features and characteristics determine the neighbourhood character of an area." (The State of Victoria Department of Environment, Land, Water and Planning, 2018, p. 3)

At a conceptual level, this study is multi-method in focus, has an interpretive approach of studying things in their natural habitat, and includes the studied use of a variety of empirical materials. (Denzin & Lincoln, 2012) It includes an inductive process (Creswell & Poth, 2016) and utilises a focus on interpretation and meaning and use of multiple tactics. (Groat & Wang, 2013)

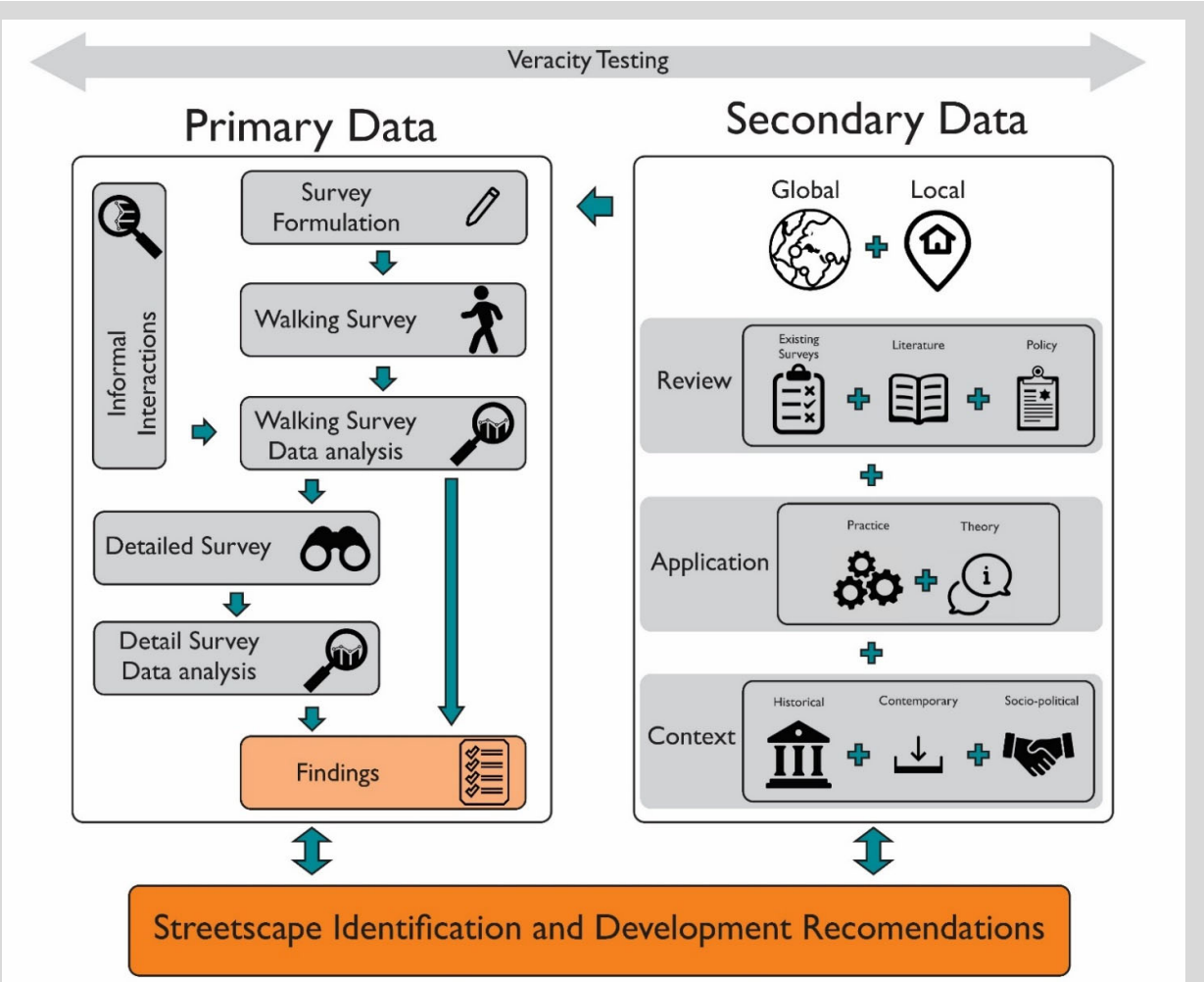


Figure 1-15 - A graphic demonstration of the overall research methodology process.

The planned research activities are cyclical and iterative in nature as informed by Mertler & Charles (2008). The process comprises of four stages: namely *planning*, *acting*, *developing* and lastly *reflecting*, as adapted from Parsons & Brown (2002).

The outline of the four stages is as follows:

Stage 1: The planning stage

This consists of the following two steps:

1. Identification of the research problem:

Identifying and limiting the topic – In this case the research aims to explore the aspect of streetscape as it relates to low-rise residential developments in an established urban environment. Aspects are identified through a broad reading into the topic and a critical assessment applied to narrow the field of research based on relevance to context.

2. Theoretical research - literature review in terms of:

Gathering relevant information – information was gathered through conducting a thorough and comprehensive study of recent and historical literature and theories. This literature was then reviewed and synthesized into an in-depth analysis of the subject matter. The literature consists of a broad range of sources that are published mainly in books, journals and articles.

Stage 2: The acting stage

This consists of conducting Empirical research with analysis:

The researcher conducted precedent studies related to the topic, principally on the processes and categories of analysis used in similar studies. This was combined with insights and findings based upon unstructured interviews of relevant stakeholders and the literature review. Due to the iterative and cyclical nature of the research plan, there is overlap between *The Acting Stage* and *The Development Stage* as there is a notable measure of these two stages informing one another. The practical steps for the acting stage are:

- Collecting relevant secondary data.
- Conducting in situ research.
- Analysis of selected cases.
- Analysing the comprehensive body of data.

The process of research related to findings is demonstrated graphically in this image. It demonstrates the different levels of primary and secondary data being incorporated into the findings and the acknowledgement of the aspects of veracity testing throughout.

Stage 3 The development stage

As mentioned before, due to the cyclical and iterative nature, there is notable overlap between stage 2 and stage 3. This consists of the following two steps:

1. Development of primary data collection tools

The principle data collection tools are site surveys. A broad base of literature sources was used to formulate the specific categories contained in the surveys and includes eight types of sources.

2. Testing of tools

The collection of the raw data underwent an initial testing process where a small sample was piloted initially and the surveys then adjusted based upon findings related to the process. The survey method of collection also allowed for modification as the raw data collection was underway to include for specific categories that presented themselves on site that were not accounted for in the initial formulation. An additional source of

verification was the unintended informal interactions with inhabitants of the study area. Their unstructured and informal discussions gave insights to the researcher that was recoded and considered as part of the validity process.

Stage 4 - Synthesis and interpretation of research results:

This stage principally is about determining overall findings. This is through the processing of the raw data into determining trends based upon the correlation of individual findings. This systematisation then presents solutions to the research goals. This then ultimately leads to a summary of the research and the formulation of conclusions.

In this process, the researcher has acknowledged the need for validity, reliability, dependability and credibility in the research approach. Therefore, the appropriate use of metrics has been used in enhancing the validity of the research.

1.6 Current State of Research in the Field of Study

The process of undertaking this research into the aspect of *streetscape* firstly required extensive theoretical research to be undertaken. This allowed for the historical background to be outlined on the one hand and the appropriate research apparatus to be developed on the other. The main tool of analysis was a review of the available literature related to the subject and of scientific texts that referred to issues addressed in this work. Due to the broad spectrum of conditions influencing the research, the subject is included in multidisciplinary research that intersects between urban planning, architecture, sociology, culture and art, and philosophy. However, the conclusions formulated in this thesis through empirical research relate directly to issues of architectural design as this is the particular gap identified in the current state of research.

The analysis of the state of the research was divided into two parts:

- Review of Published Scholarly Work
- Review of Published Professional Work

The research journey related to the streetscape theme was initiated by the guidelines for low-rise residential developments for the City of Toronto, the reference is as follows:

- City of Toronto, 2018. *Townhouse and Low-Rise Apartment Guidelines,* Toronto: City of Toronto.

This particular guideline was found to be extremely informative in the methodical way it addressed infill development in areas that had historical and established character. It also approached infill from a streetscape experiential approach and not from a dominant conservationist approach. The recognition of overall character being an indispensable part of enhancing the streetscape while not defaulting to historical pastiche was particularly attractive in approach. The approach of providing clarity while allowing flexibility to the development process also resonated with the intrinsic shortcoming identified in the local development process.

Other publications with similar themes aiming to provide guidance for appropriate development are usually commissioned by local authorities or quasi-governmental agencies that are motivated by protecting the character and experience of the urban environment.

They include the following:

- Auckland Council, 2020. *Auckland Design Manual - Apartment building Design.*
- Commission for Architecture and the Built Environment, Great Britain; Office of the Deputy Prime Minister; Alan Baxter & Associates, 2002. *Paving the way: how we achieve clean, safe and attractive streets : a research project.* London: Thomas Telford.
- Dodds, A., 2012. *New research highlights rising demand for homes and businesses in walkable neighborhoods.,* Washington, DC : Smart Growth America.
- The State of Victoria Department of Environment, Land, Water and Planning, 2018. *Understanding Neighbourhood Character - Planning Practice Note 43,* Melbourne: The State of Victoria Department of Environment, Land, Water and Planning.

Research with specific design issues are not as common, but the study by Iovene et.al. has been most informative, specifically as its approach is data driven. The reference is as follows:

- Iovene, M., Boys Smith, N. & Seresinhe, C., 2019. *Of Streets and Squares.* s.l.:Create Streets Ltd..

Particular major themes emerging from the initial background research to urban development relevant to informing the study are that of densification, appropriate response to context, and sustainability.

A significant additional theme that emerged when interacting with other practitioners and academics on the subject of this research was that of heritage. Many assumed when hearing the introduction to the study that it was primarily related to traditional conservation issues. This then led to the need to review the overall framework on internationally accepted conservation matters, chiefly through the review of all relevant International Council on Monuments and Sites (ICOMOS) charters, as follows:

- ICOMOS, 1964. *International Charter for the Conservation and Restoration of Monuments and Sites (The Venice Charter 1964),* Venice: ICOMOS.
- ICOMOS, 1978. *Summary Report on the 5th General Assembly of ICOMOS,* Moscow: ICOMOS.
- ICOMOS, 1987. *Charter for the Conservation of Historic Towns and Urban Areas (Washington Charter 1987),* Washington, DC.: ICOMOS.
- ICOMOS, 1994. *The Nara Document on Authenticity.* Nara, Japan, ICOMOS.
- ICOMOS, 2003. *The ICOMOS Charter – Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage (2003),* Victoria Falls, Zimbabwe: ICOMOS.

This indicated a gradual move away from conservation of individual physical artefacts towards acknowledging and including more intangible aspect of value that include context. There were also two particularly insightful journal publications that assisted in shaping the response to the aspect of heritage, namely:

- Jivén, G. & Larkham, P., 2003. Sense of Place, Authenticity and Character: A Commentary. *Journal of Urban Design,* 8(1), pp. 67-81.
- Ouf, A., 2001. Authenticity and the Sense of Place in Urban Design. *Journal of Urban Design,* 6(1), pp. 73-86.

Jivén & Larkham's work primarily looked at the evolution of the 'sense of place' over the last century, indicating the fluid understanding thereof that results in either a 'temporal' or 'experiential' approach being taken. Ouf's work looks at the contrast between a 'romantic historicism' and an 'authentic experience' approach to urban heritage.

Another text that was often mentioned by practitioners and academics in discussions on the topic was *The Death and Life of Great American Cities* by Jane Jacobs (1961) who argued for 'the importance of self-organisation and organic development'. She based much of her analysis on observations made during walks along streets, visits to shops and personal experience of urban life. Some of her findings are insightful, especially around the need for neighbourhoods generating 'exuberant' diversity, but the main argument seems to be around the 'economic yield' that buildings should produce. (pp. 150-151). The overt 'observational' approach to findings in addition to the 'economic' rationale underpinning the research made this text less relevant to this work.

Another significant theme that emerged in the investigation into the research background was the movements borne out of a concern for public health and wellbeing in reaction to the industrial and post-industrial city development. Three specific movements presented themselves, namely the City Beautiful Movement, the Garden City Movement, and New Urbanism. The City Beautiful Movement was prominent in the United states in the 1890s and 1900s and reacted to the 'perceived ugliness' of the city resulting from industrialization by emphasizing the necessity of order, dignity and harmony through the application of classical architectural principles. (Sowder, 2020), (Huggins, 2006). The more prominent Garden City Movement proposed by Ebenezer Howard also appeared at the turn of the 20th century in England. It proposed a third alternative to the binary thinking of the time that one is either bound to city life or village life 'in which all the advantages of

the most energetic and active town life, with all the beauty and delight of the country, may be secured in perfect combination…' (Howard, 1902, p. 15) However, these early movements would be short-lived and of little practical influence due to the rapid uptake of the mass-produced automobile and urban consequences to the First World War that followed shortly thereafter leading to a greater urban migration and urban sprawl. More than half a century later, the privately-owned development of *Seaside, Florida* that aimed to create a 'stately, pedestrian-oriented atmosphere that emphasizes public spaces and waterfront access' subsequently became known as a process of Neotraditional Planning (Fulton, 1996, p. 5). Later proponents of the movement classified their theories under descriptions such as 'neotraditional planning', 'neotraditional development', 'traditional neighbourhood development', 'transit-oriented development' and 'pedestrian pocket creation'. (Fulton, 1996, p. 10), but this was formalised into what is now known as 'New Urbanism' leading on from the 1993 formation of the Congress for the New Urbanism and the subsequent 1996 charter thereof. The charter has 10 themes, which include *Quality Architecture and Urban Design*, *Increased Density*, *Sustainability*, and *Quality of Life*.

Issues relating to psycho-social issues and public health as shaped by the cultural environment are also considered. It is worth noting that in order to sustain social life, a positive and sustainable mode of urban living should be developed. The following sources view this beneficially:

- Desyllas, J., Nicholson, R. & Simmons, R., 2006. *The Cost of Bad Design,* London: Commission for Architecture and the Built Environment.
- Horáček, M. & Salingaros, N., 2020. Architects as Physicians. *Inference - International Review of Science,* 5(2).
- James, P., 2015. *Urban Sustainability in Theory and Practice - Circles of Sustainability.* New Yrok: Routledge.
- Mouratidis, K., 2019. Compact city, urban sprawl, and subjective well-being. *Cities - The International Journal of Urban Policy and Planning,* Volume 92, pp. 261-272.

An extremely informative and inspiring read was Alain de Botton's *The Architecture of Happiness*. The reference is as follows:

- De Botton, A., 2007. *The Architecture of Happiness.* London: Penguin Books.

This particular book addresses a number of themes pertinent to this research in an accessible yet thorough manner. The first theme of particular relevance is 'where we are' influences 'who we are' – our physical space reflects the type of life we wish to lead. It influences our mood and countenance. The second theme of relevance is that, though in current development circles it is convenient to dismiss in favour of the post-modernist ideal of individualism, there are actually such things as accepted universal principles of design. He then goes on to discuss the five principles of *order, balance, elegance, coherence,* and *self-knowledge*.

Other books with similar themes are as follows:

- Simitch, A. & Warke, V., 2014. *The Language of Architecture: 26 Principles Every Architect Should Know*. Massachesetts: Rockport Publishers.
- Ruskin, J., 1907. *Seven Lamps of Architecture, The.* London: George Allen & Sons.

Simitch and Warke's book is focused on discrete principles that are applied to the design process, so they give insight into improving the overall design artefact. Ruskin's work is an historical text related to capturing some of the aspects related to the arguments put forward by the likes of A.W.N Pugin for a revival of Gothic Architecture in response to the identified shortcomings of the architectural response of the day driven by the socio-political and technological aspects of the day. It gives insights into the arguments of the day for similar challenges faced today, but looks specifically at a style from a moral perspective that embraced a polemic tone.

The nature of this thesis required that an analysis of texts related to practical materials also be analysed. This is in order to bridge the divide between the theoretical texts that discuss approaches, thoughts and principles, though rarely taking them to practical resolution or demonstration. Technical guides, including those for design and restoration, were analysed. Two significant building related guides to note are:

- Kropf, K. (., 2001. *Stratford-on-Avon District Design Guide,* Stratford-upon-Avon, UK: Stratford-on-Avon District Council.
- National Park Service - Technical Preservation Services, 1988. *Architectural Character—Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving their Character.*

Similarly, there is a significant amount of information published related to technical aspects of streetscape design. This usually focusses on the civil infrastructure and is confined to the publicly owned space. This highlighted the findings that publications related specifically to streetscape tend to be technical in nature and focussed on civil infrastructure. They do, however, assist in suggesting some design principles and aspects to be considered in relation to the overall streetscape experience. Two very insightful technical guides in this regard are:

- Young, A., Bradbury, A. & Cameron, A. e. a., 2007. *Manual for Streets.* London: Thomas Telford Publishing.
- Young, A. & Jones, P. (., 2010. *Manual for Streets 2.* London: Chartered Institution of Highways and Transportation.

What also emerged as particularly relevant in the local context, though also addressed globally, was the significant and pervasive issue of the built environment's response to crime. The primary research area is around Crime Prevention Through Environmental Design (CPTED). The main issue related to the current streetscape environment is that of subsequent *target hardening*.

- CSIR, n.d. *Introduction to Crime Prevention through Environmental Design (CPTED),* s.l.: Centre for Scientific and Industrial Research (South Africa) - Building and Construction Technology Division
- Kruger, T., Landman, K. & Liebermann, S., 2001. *Designing Safer Places - A Manual for Crime Prevention Through Planning and Design,* Pretoria: CSIR Building and Construction Technology.

1.7 Chapter Conclusions

The chapter to date has included the current background to the issue of architectural streetscape and character, both in terms of global and local trends and influences, and also the state of research into the field. Despite the considerable exemplary work being undertaken in the field of sustainable urban development, the local context in Durban has significant shortcomings in its approach to managing and guiding development in a manner that takes appropriate response to streetscape into account. This is not a unique circumstance at all, but James identifies "(p)art of the problem is that too many people have convinced themselves that, given the complex challenges of the current circumstances, we are already doing the best that we can given the circumstances." (James, 2015, p. 9)

The study therefore identifies significant aspects undermining the established streetscape in the study area. They are as follows:

- Increasing Contraventions to Town Planning Scheme.
- Displacement of established residential function for commercial enterprise.
- Increasing 'poor' design approvals justified by 'densification'.
- Lack of proper acknowledgment and research into existing streetscape character.
- Lack of interest in the urban character and specifically how architecture contributes to this at building scale.
- Concern over current changes in the established neighbourhoods.
- The post-modern worldview of 'subjectivity' that seems to 'excuse' bad design, ugliness or a-contextual interventions.

Figure 1-16 - Aerial view of a recent development within the study area. The trend of 'drive-up' developments (where occupants can drive up to their front door of their unit on an upper floor) is growing across the greater Berea. Source: (RE/MAX, 2022)

In the current context, the on-the-ground practicalities in the study area are allowing for a once model streetscape to be increasingly compromised. There are increasingly contraventions to the Town Planning Scheme in addition to significant land-use changes. This is discussed in more detail in Chapter 2.4. The current development process of approval is also assessed in isolation from the context and places no real value judgement on design quality. There are also issues related to the design quality of current and recent developments that are plainly just poor and driven by a lowest cost rationale. Three significant development trends have emerged in the study area, these are the provision of student housing, the erection of physical barriers along property boundaries in response to security concerns and the erection of drive-up residential units. All these aspects materially affect the established streetscape. The attached images are of a recent 'drive-up' development and that of a recent construction of a so-called "boutique" hotel and student residence nearing completion where turn of the 20th Century Verandah house and maisonette once was. It typifies that densification is being achieved to some extent, but in a manner that compromises the established character and streetscape.

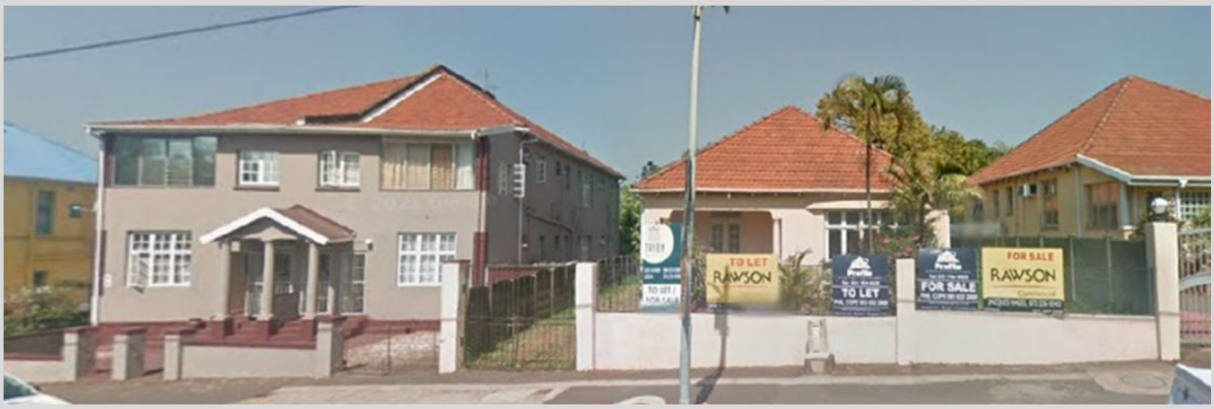


Figure 1-18 - Google streetview image captured in September 2013 indicating the original buildings that have been replaced by the ones depicted in the below image.
Source: (Google Street View, 2013)

Figure 1-17 - Image from January 2023 indicating the development of what is most likely student accommodation in the final stages of construction to the left and the Che Guevarra Boutique Hotel centre.

The current urban environment is under significant pressure to develop in order to accommodate the ever-increasing urban population, and the need for this development to respond to the sustainable agenda is overwhelmingly translated into the need for densification. In order to respond in a way that promotes *positive sustainability* that fosters a flourishing, vibrant, and resilient environment that enhances well-being, the current developmental approach heavily influenced by the thinking of the globalist growth economy needs to move beyond mere simplistic rhetoric to embrace the multiplicity of sustainability that includes quality of life and well-being aspects such as good streetscapes. The enhancement, or at least the maintenance of good streetscapes is acknowledged as one of many facets required to promote sustainable urban environments, but it is one in which little practical guidance and seems to exist at the implementation level, especially in regards to the elements that frame the public realm, namely the architectural façade and property boundary treatment. It is within this context of the quality of the streetscape declining with subsequent developments in the study area that guidelines can be *considered for* future development to guide the *application* of the *established principles* of streetscape in the study area.

CHAPTER 2 - URBAN CONTEXT AND INFLUENCES

The discussion over city development is a particularly complex one, and a comprehensive discussion on this would be far too onerous to incorporate into this thesis. The aim of the discussion of the urban context and influences is to frame the discussion concerning the practical developmental circumstances in the study area and to highlight relevant aspects that have a significant bearing on the discussion. The main framing of this section is to recognise the existing city policy that seeks to densify the city. (Royal HaskoningDHV, 2013). The main discussion points, therefore, are around compaction and sustainability in the current urban development context.

In light of this framing, the chapter, therefore, commences with giving an overview of major global urban influences. It looks at the three major urban influences of a global nature, namely the drive towards sustainable development with its overwhelming current 'growth economy' rhetoric, the examination of the three approaches to the Compact City notion and then a look at major utopian movements that have a direct bearing on this study.

The second section of the chapter deals with the rationale for the determination of the study area by discussing current land-use, historical patterns, available secondary sources and a suitable range of architectural buildings. This is to validate the selection of what is a representative sample for findings related to the overall architectural character of Durban residential streetscapes.

The historical development of the study area is then discussed from the first habitation in about 1850 and also includes information related to development influences for South Africa as a whole. A useful infographic on the planning processes, socio-political occurrences, architectural trends, development trends and land use is included here.

The chapter then moves on to present the current condition of the study area, presented in four distinct zones. It includes sketches that highlight the typical conditions for each section. It also includes a discussion about the increasing contraventions to the Approved Town Planning Scheme. The Scheme is the only current local authority mechanism in place that has some measure of character retention ideals but is limited to a higher level 'form-based' application.

It moves to the discussion of contextual aspects related to South Africa that influence development. This includes the influence of the market-driven economy and a discussion about the short-sightedness of roleplayers and the lack of consideration for 'negative externalities'. It goes on to highlight the lack of institutional capacity at the local authority to deal with development that addresses design quality that currently is best practice elsewhere. It also deals with two very pertinent issues - heritage in a multi-cultural environment with significant diversity and historical baggage and issues of crime and the current response of target hardening activities negatively changing the historic streetscape. Again, the chapter ends with specific conclusions.

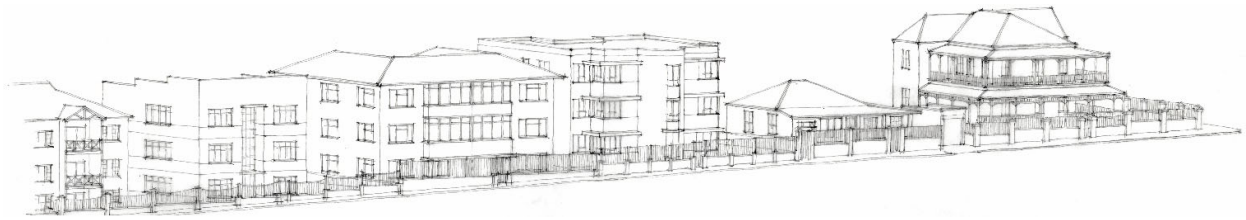


Figure 2-1 - 1st streetscape image capturing the architectural elements for a portion of Ferguson Road.

2.1 Major Global Urban Influences

The major global urban influences that will be discussed are Sustainability, densification and the outworking through the notion of the Compact City and Utopian Ideals. The proceeding two aspects are an outworking of the issue of sustainability increasingly needing to be addressed globally, not only in terms of the simple definition of the continued survival of the species but also to recognise that the issue of sustainability has more recently come to recognise that what we are sustaining and how that influences our quality of life is a central component to address. The utopian ideals of the late 19th and early 20th century that are discussed here are in that regard anticipating what would become accepted development narratives in the early 21st century.

Sustainability

The notion of *Sustainability* concerning the built environment is a relatively new concept. The 1969 report of the Secretary-General of the United Nations *Problems of the Human Environment* (more commonly referred to as the 1969 U'Thant Report) saw one of the earliest reactions to the global impact of human development on the planet. This genesis then continued with several other global initiatives[18] in trying to meet the needs of human development while simultaneously sustaining the ability of natural systems to provide for such development, with one of the more influential subsequent UN-led initiatives being The Brundtland Commission of 1987 and the associated report *Our Common Future* (more commonly referred to as the 1987 Brundtland Report). The main objective that was derived from this report was "to meet the needs of the present without compromising the ability of future generations to satisfy their own needs". Of great concern and impact in the global urban realm was that of urban sprawl – the lack of containment of urban development resulted in greater resources being consumed in developing new urban developments beyond the established urban boundaries and the resources required with the associated support infrastructure. This was followed by the 1992 Earth Summit, out of which *Agenda 21* and the *Rio Declaration* emanated. The most significant recent international event was the 2015 *UN 2030 Agenda,* out of which the Sustainable Development Goals have been developed.[19]

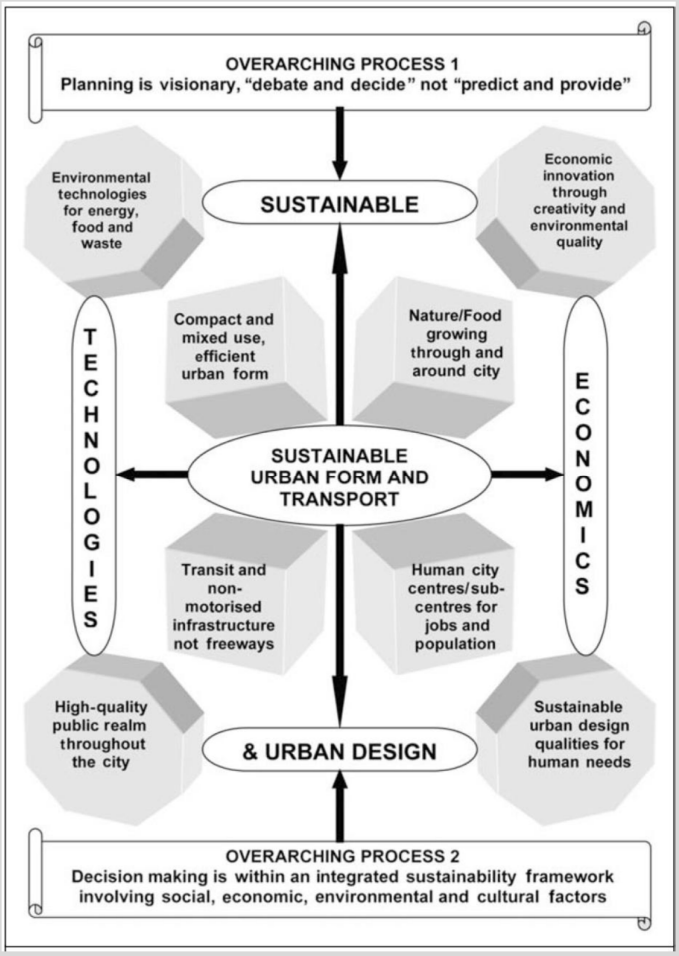


Figure 2-2 – A model of sustainable urban design recognising multiple complementary factors. The model is primarily based on issues of urban planning and design with a focus on transport.
Source: (Kenworthy & Laube, 1996)

There is a vast body of knowledge concerning the discussion of sustainable cities. Much of it incorporates the notion of efficiencies that the integration of Information Technology can have on data collection that can then influence strategic decision-making, usually incorporated into

[18] (Hansmann, et al., 2018) notes the influence of the 1970 publication *The Ecologists Blueprint* around the same time as U'Thant Report
[19] https://sdgs.un.org/goals - THE 17 GOALS | Sustainable Development (un.org)

the Smart Cities Movement. There is however an underlying unfortunate framing of the notion of sustainability, which is slowly being addressed. In the early 21st century, the discussion was "…routinely reduced to a question of physical survival in an environment of continuing degradation and depletion". (Durack, 2001) The focus, therefore, was and still is on consumption reduction, such as the work undertaken by the Organisation for Economic Co-operation and Development (OECD, 2018) and evident in the UN Sustainable Development Goals[20]. This approach is also a hallmark of the local urban development strategy. (Iyer Urban Design Studio, 2012, p. 24). Increasingly though, the aspect of 'social' sustainability as part of the triple bottom line[21] of sustainability is receiving greater attention. Earlier disquiet over the narrow focus of sustainable development can be seen in the development of a conceptual model thereof by Kenworthy & Laube (1996). Critics, such as James (2015) are also vocal about the current narrow definition of sustainable development focussed on 'growth-based productivity' and 'high technology solutions'. In light of this overly simplistic narrative that is largely based on rhetoric aimed at the 'growth economy', he asks the most pertinent of questions, summed up as follows: *What is good sustainability that contributes to a positive way of life?* (James, 2015, p. 4)

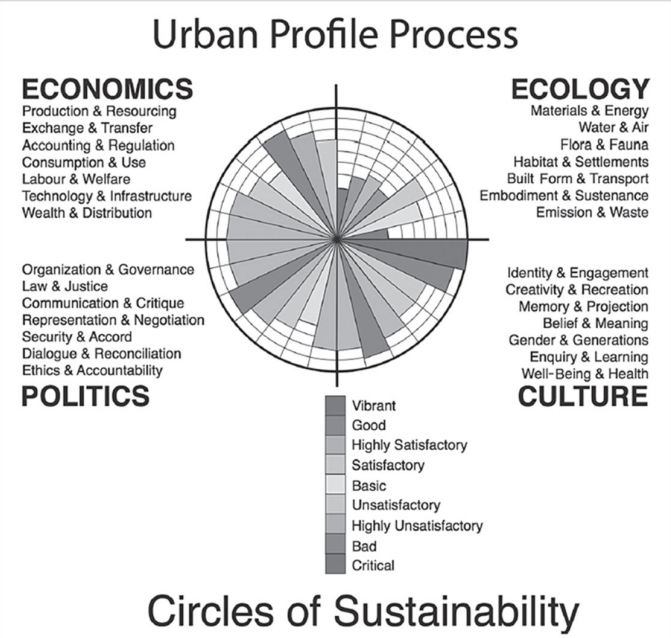


Figure 2-3 – The Circles of Sustainability process developed by James produces a radial bar chart summary of the sustainability profile of an area or city that moves beyong the narrow definition focussed on the 'growth economy'. Source: (James, 2015, p. xii)

In light of this question, there are numerous proposed definitions to address contemporary thinking. In the early 2000s, O'Connor & Faucheux (2001) recognised that sustainable urban development should enhance natural and cultural capital, increase well-being, justice and social awareness and pursue economic development for all in an inclusive and complementary manner. Yigitcanlar & Kamruzzaman suggests that the definition considers environmental quality, economic prosperity and social justice and, more recently, expanded definitions argue for the inclusion of the governance domain. (2015, p. 14678) The City of Toronto suggests a definition that looks more specifically at sustainable design as one that "…is an approach to developing sites and buildings to be less resource intensive and to improve the economic, social, and natural environment we live in." (2018, p. 10) In recognition that "…sustainability intersects with other social conditions, such as resilience, liveability, adaptation, innovation and reconciliation, as basic conditions of positive social life", James recognises the necessity of a holistic integrated approach to urban life. (James, 2015, p. xvi). He has therefore suggested a way of measuring *good* urban sustainability through an Urban Profile Process and named it *Circles of Sustainability*. It measures four aspects, each with seven sections on a scale of critical to vibrant to produce a radial bar chart summary of the sustainability profile of an area or city.

[20] The indicator for Target 11.4 of the SDG is the closest that the 17 goals comes to practical action related to built environment character aspects. The indicator is *Total per capita expenditure on the preservation, protection and conservation of all cultural and natural heritage, by source of funding (public, private), type of heritage (cultural, natural) and level of government (national, regional, and local/municipal).*

[21] The traditional triple bottom line of sustainability is for environment, economy, and social. Fieldson (2004) *Architecture & Environmentalism: Movements & Theory in Practice* gives a well-considered view of the history of sustainability within the architectural field.

The Compact city

One of the principle questions posed within the context of sustainability is how to deliver on its goals as it relates to the urban form post-Brundtland. One aspect that has emerged is the discussion of the planning system used in urban forms, and the advocating of a compaction of the city. This has led to the Compact City movement. Welbank (1996) acknowledges that there are often conflicting individual opinions on the matter of *The Compact City*, but that the discourse collectively seeks to present thinking on the best option available. Within the movement, there seem to be three positions that are taken. There is either the *Centralised*, *Decentralised* or *Compromise* position. Breheny (1996) acknowledges that the discussion should be not only based on which urban forms will most effectively deliver the greater environmental protection, but when taking the broader economic, social and cultural factors into account, there may be dramatic implications for the lifestyles of urban dwellers.

The argument about the relevance and measurable benefits of the compact city continues though, such as Neuman (2005), where it is argued that process rather than form is the important aspect of achieving a sustainable city. More recent research tends to have shifted the focus from the principle discussion of the higher-level positions towards the aspect of investigating liveability (specifically through the aspect of *subjective well-being* (SWB))[22] at a neighbourhood level concerning density considerations, such as typified by the work of Mouratidis (2019).

The Centralised Approach

The Centralised approach speaks mainly to the notion of travel distances. Resource consumption and emissions associated with travel are reduced by correspondingly reducing the travel distances through compacting the urban population. A component of this approach is Hillman (Hillman, 1996). He acknowledges that through compaction, there will be implications for an individual's lifestyle. Aspects such as the idyllic access to personal space and low-density habitation will be curtailed. Due to the ecological imperative associated with the inconspicuous consumption of resources (mainly energy in his frame of reference), immediate action is, however, required. This argument of resource efficiency in compaction is still valid, with current research, such as by Morris (2019), still indicating the ecologically sustainable benefits of compaction.

The Centralists seem to be driven by a view of urban life that is influenced by the 'pavement-café' way of living. This almost nostalgic view of urban life in the idyllic historic cities of Europe underpins their support of the approach in terms of the quality of living that this potentially offers. Breheny notes one of the major critiques of the 'idyllic' approach is that though some choose high-density living, many individuals are 'trapped' in this situation by circumstance. He also notes that there are high-density urban areas that usually include aspects of being architecturally interesting that have remained popular over time, but that this is usually the exception.

The centralists also are concerned about the social polarisation that tends to result from the practical outworking of a decentralised approach. (Hillman, 1996, p. 37) Those with greater financial means relocate to areas that are developed with a particular socio-economic market in mind – only certain groups of people will be able to afford property in the outlying areas. There is the suggestion that decentralists seem to be driven by a self-interested perspective. There is also the argument put forward that governments seem to favour the narrative that transport infrastructure expenditure will adequately address the issues of sprawl. (Hillman, 1996, p. 38)

Detractors, such as Neuman (2005) suggest that compact city advocates have been successful in that they have tapped into existing widespread dissatisfaction with urban development approaches in the recent past. They are quick to point out that there is little evidence that exists regarding the benefits of compact cities that is unequivocal. The research, they argue, is open to interpretation and is shaped to support a line of argument or

[22] Subjective well-being (SWB) refers to individuals evaluating certain aspects of how they experience and evaluate their lives by essentially conducting real-time assessments of experience, emotional state, or sensations at one end of the assessment methodology (associated with the shortest time unit) and overall evaluations of life satisfaction, purpose, or suffering at the other end (the longest reference periods or no particular reference period). (National Center for Biotechnology Information, 2013)

is inconclusive. Neuman (2005) cites aspects such as inconclusive findings linking higher densities to reduced automobile trips, arguing that while short trips may decrease, travel distances for specialised employment, unique shopping or singular leisure pursuits can be independent of urban density considerations. The same approach is used in arguing about urban form concerning energy consumption -citing an increase of 9% in overall consumption of buildings between the 1950s and 2000 as opposed to a corresponding 3% increase in transportation energy consumption in the United States. (Neuman, 2005, pp. 12-13)The author does question this argument as the increase in travel would occur with or without urban compaction, it is the level to which urban compaction can restrain the growth in travel requirements. This also does not factor in aspects such as improved efficiencies in transportation technologies offsetting actual travel. The net consumption does not take lifestyle changes over the last half a century into account, we travel more, we use greater electronic technology, and our buildings cater far more to our subjective well-being.

The generally more accepted position is that with an ever and rapidly increasing global population, the compact city paradigm is a necessity in mitigating the environmental consequences of this urbanisation. This position has been endorsed as a future development strategy by leading institutions, such as the European Commission and the United Nations. (Mouratidis, 2019, p. 262) According to a series of texts by Mouratidis, (2017) (2018), compact development can offer the following benefits:

- Easy access to facilities, people, and workplaces.
- Easier access to other areas.
- Association with larger social networks.
- More opportunities to make new acquaintances.
- Higher frequency of socializing.
- Stronger social support.
- Higher personal relationships satisfaction.
- Residents of compact cities have been found to walk more compared with residents of low-density areas.

The Decentralised Approach

The Decentralized approach, as advocated by Stretton (1996), rejects the notion of consolidation in favour of wholesale transportation reform. The premise operated under is that the impact on sustainability is primarily in the transportation aspects of the city. The question is, therefore, whether to take a direct approach of reforming transport through the reforming of the transportation network or indirectly through the compaction of the existing urban form. (Stretton, 1996, p. 45). The direct experience of Stretton is with Australian cities, which once again is more similar to the South African context as opposed to the European counterparts due to both countries being primarily influenced by the same colonial influences and period of development. Many European city cores are by nature far more developed in terms of transport infrastructure, their development preceding the industrial revolution and the consequential urban sprawl that characterises many late colonial cities, such as Durban.

Low-density development can offer quietness, access to nature, higher perceived safety and cleanliness, and stronger neighbour ties. (Mouratidis, 2017) Decentralists in a more global context are generally seen as 'the good lifers' – those who seek to live in dispersed communities and are sometimes characterised by living on the land and having anarchic values. (Breheny, 1996, p. 29). (The Durban context is not all that dissimilar, with the post-1990s development of new metropolitan areas developing to the north of the Durban city core such as Umhlanga and Ballito saw a significant investment in residential developments principally supported by the more urban wealthy seeking to escape the deteriorating security situation in existing urban and suburban areas and to be closer to work as numerous large companies exited the CBD in favour of new office space further north due to the associated lack of infrastructural development and increase in crime in the CBD. Numerous security complexes (Estates) were developed to cater for the relocating population. Umhlanga became a new commercial hub, while Ballito attracted many residents with its allure of a lifestyle more directly connected to the recreational activities offered by seaside and estuary living. This does seem to indicate a realisation of the concern noted of decentralisation having a negative effect on cities. (Breheny, 1996, p. 31) This tendency

towards moving away from the urban core rather than intensifying development within it is an ongoing concern. (Neuman, 2005, p. 11)

The Compromise Position

As with most approaches, the extreme positions on the arguments on either side have their problematic areas. The Centralists focus on an idyllic and romantic notion of the city or the overwhelming density of habitation with little regard for the dramatic implications this would have on the existing lifestyles of urban dwellers. The Decentralists on the other hand seem to rely on an unsustainable land-use model, benefitting the select that can afford to own larger plots of land beyond the city core and to commute privately. Breheny (1996) highlights the concern that there is a tendency for one viewpoint within the discourse to swamp all other considerations. In this context, compromisers question the more fundamentalist views of both camps. Breheny questions the approach of centralists in light of what he sees as the inevitable decentralisation trend that continues in the built environment. Scoffham and Vale pursue the argument that urban development should be at the individual neighbourhood level and that it focuses on local identity and a sense of autonomy from the larger city context. (Scoffham & Vale, 1996).

Figure 2-4 - Proposals for 'The Next Generation Community', Canada, by the firm Partisans. It is mooted as an extension in the tradition of the garden city and is aimed at bringing 21st-century building, infrastructure and architectural thinking to its envisaged 150 000 inhabitants in a rural setting. Source: (Harrouk, 2019)

Breheny argues again that Ebenezer Howard's views on urban development expressed in the Garden City Movement fall quite close to the compromise position in that the movement favoured containment, and urban regeneration, and attempted to marry the best of town and country living.

Though not clearly articulated as a compromise position, but rather an argument against the Compact City, authors such as Neuman (2005) argue that city form is not the determining factor in sustainability, but rather process. Neuman has concerns about returning to a circumstance of overcrowding in the city, recognising that the need for light and air for urban dwellers is what led to the formation of the planning profession and that urban compaction may now cause a paradox in the recent movements towards the compact city, smart growth, healthy communities and with new urbanist efforts.

The Conflict in the Compact city argument

There is much conflicting discussion and evidence around the perceived benefits that individuals experience around compaction. Garcia and Riera (2003) indicate that lower densities and more open space in the urban fringe increased an individual's perceived welfare. The study concluded that densification should be considered at a local level though, rather than abandoning the notion of compaction. Another more recent area of study is that of *Subjective Well-being*.

The case study by Song and Knaap (2004) of Portland, Oregon, indicated mixed results: a compact form within a context of metropolitan growth management improved some measures of livability, while aspects such as mixed land use saw only marginal improvements while external transportation connectivity decreased.

Regarding Subjective Well-Being, the far more recent works of researchers such as Ettema & Schekkerman (2016) and Mouratidis (2019) indicate that understanding the role of this aspect as it relates to the built environment can provide important input into the urban planning debates, particularly as it relates to the social aspect of city sustainability, but as with previous persistent criticisms, there is an acknowledgement that there is little empirical evidence as to how SWB is shaped by compact versus low-density urban form.

(Mouratidis, 2019, p. 261) Studies suggest that neighbourhood environmental quality and safety positively contribute to SWB (Ettema & Schekkerman, 2016).

Findings of Mouratidis in recent studies of Oslo, Norway, suggest that compact city residents, at least those in Oslo, do have higher levels of personal relationship satisfaction and perceived physical health as opposed to those living in low-density environments. There are lower levels of emotional response to the neighbourhoods and higher levels of anxiety, but these could be attributed to the different lifestyles that compact city residents lead in terms of economic and social pressures as opposed to a direct correlation to the urban form determinants.

Mouratidis' studies reveal that the major concerns of compact city residents relate to perceived circumstances of safety, noise and cleanliness. It was noted that as the emotional response of individuals towards the compact neighbourhood in which they live increases, the impact of the feelings of anxiety decreases resulting in a significant positive association of compactness with life satisfaction. (Mouratidis, 2019, p. 261)

The review of multiple sources of publications regarding urban compaction all does point towards a circumstance where compaction needs to be considered at the neighbourhood level rather than at a macro scale. "Conflicting data" is presented and the conflict is argued, but this is concerning different studies being conducted on different urban environments. There does indeed seem to be a perpetuating circumstance of polarized points of view by proponents on either end of the spectrum, as initially highlighted by Breheny (1996), and a perceived over-zealousness in trying to justify a universal standpoint with an individual study outcome. Within the paradigm of a qualitative research methodology, it is by its very nature virtually impossible to determine unequivocal findings – these studies are contextually specific and result in identifying significant trends.

The Compact City in the Durban Context

The broader argument of compaction needs to be evaluated in terms of the current densification and other developmental approaches currently underway in the metropolitan area of eThekwini. The mainstream Centralist arguments are fairly unrealistic from the traditional quality of living point of view. The notion of a 'pavement-café' approach is not historical to the South African context – outdoor living is usually contained within the private realm with courtyard or open spaces being used within the property boundary, not on the interface between the private realm and the street edge, let alone spilling out from private into the public realm. Approaches that emulate this are fairly new and quite deliberately implemented, such as the Umhlanga Rocks New Town precinct. Where there are instances of a more organic development of this type of activity, these are isolated and the public/private interface is not initially designed to facilitate this.

The argument of compaction that forms part of the Centralist argument is quite relevant to the context of the study area. The existing fabric was significantly influenced from the 1930s to the 1960s with a significant trend towards densification with the numerous instances of consolidation of sites that previously contained single dwelling units to construct low-rise apartment buildings. This compaction (of a specific nature) is arguably what has led to the unique streetscape character experienced in the study area. The concern of businesses abandoning the urban core where planning policies do not actively dissuade this was profoundly realised in the Durban CBD, the mass exodus of businesses. The lack of an integrated development plan across the metropolitan area before the incorporation of the metropolitan local authority resulted in competition between the then-independent local authorities, basically facilitating the relocation of businesses from the CBD to the 'new' town centres being formed.

In regards to the decentralist approach, where proponents such as Stretton argue for transformation reform, there are significant transformation reforms underway in the eThekwini metropolitan area, mainly in the form of the phased implementation of a rapid bus transportation system. This principally is to redress the circumstances that developed as a result of the segregated development of the urban realm under apartheid planning. Non-white citizens were relocated from urban core areas to 'townships' well removed from the urban core. The legacy that this has resulted in is the large portion of low-income households being located relatively far away from working opportunities and the urban core compelling individuals to travel significant

distances each day using fairly unreliable publically owned and/or privately owned public transport systems. The implementation of the BRT system is in response to the existing needs of a significant portion of the metropolitan population rather than in response to a position on densification. There have been spin-off effects, such as residential densification within proximity to stations, primarily speculative at this stage, as the phased approach to implementation of the BRT system currently is to be completed in 2030, but to date, there have been numerous delays in the implementation of the project. This speculative development is private developer-driven, and there is no particular strategy by the local authority to deal with this sort of development beyond general building regulations that are historical.

The research of Mouratidis highlights the issue of fear of crime as a particular issue that needs to be dealt with by compact city urban forms. This is no different in the Durban context, where the crime statistics indicate that the fear is not unjustified.

The concern of the author, like that of Breheny, is that one viewpoint swamps out all other considerations in the argument around sustainability and the urban form. The overwhelming focus in the contextual discussion of the built environment seems to be on the rhetoric of 'development' and job creation. This must be seen in light of a vast backlog in housing in South Africa and a government with limited resources to be able to address this. This framework does not apply here though, the study area is overwhelming to the point of almost exclusion of private ownership, and there is no public housing currently or proposed for the area. All past and present developments of low-rise apartment buildings are developed by the private sector. This means that the developments are driven by 'what the market will bear' as opposed to any strategic vision for an environment that seeks to be more liveable for people.

Utopian Planning

James notes that "Across the late twentieth century, generalized utopian alternatives have faded away. Not only have the projection of blueprints for change become unfashionable and the genre of utopian novel writing died; we have also come to distrust deeply the residual utopianism of our urban planners." (James, 2015, p. 10) Though they are now 'unfashionable', many have grappled with the issue of appropriate urban character, specifically as it relates to architecture and the streetscape that is enclosed by it. Four specific movements will be discussed in this regard, namely: The City Beautiful Movement, The Garden City Movement, Neotraditional Planning, and New Urbanism.

The City Beautiful Movement

The City Beautiful Movement was prominent in the United States in the 1890s and 1900s that sought to promote Beaux-Arts-inspired elements in the urban realm. Its major proponent was Frederick Law Olmsted. It reacted to the 'perceived ugliness' of the city resulting from industrialization by emphasizing the necessity of order, dignity and harmony through the application of classical architectural principles. (Sowder, 2020), (Huggins, 2006). Little attention was paid to the visual elements of urban cities, the technological 'advances' of the Industrial Revolution (or the overwhelming influence of 'economic science' in Ebenezer Howard's words (Howard, 1902, p. 15)) taking precedence in urban environments. A fundamental idea that emerged was that the city did not have to be a symbol of economic development and industrialization, but could provide an enhanced aesthetic environment for its inhabitants. (The New York Preservation Archive Project, 2016) The Utopian ideals of the movement sought "…to create beautiful, spacious, and orderly cities that contained healthy open spaces and showcased public buildings that expressed the moral values of the city." (Sowder,

Figure 2-5 - View of the main square in Mariemont, Ohio. It demonstrates the strong emphasis on public buildings and public space and incorporates the 'naturalistic' element.
Source: (City-data.com, 2020)

2020) It sought "…to incorporate an ideal of village life into modern urban settings." (Fulton, 1996, p. 7)

According to Huggins (2006), the elements that the movement advocated for include:

- Public buildings that reflect classical architecture
- Streets be lined with trees
- Towns provide landscaped public parks with fountains and statuary
- The inclusion of other civil infrastructure around servicing (such as sewer systems, garbage collection, etc.)

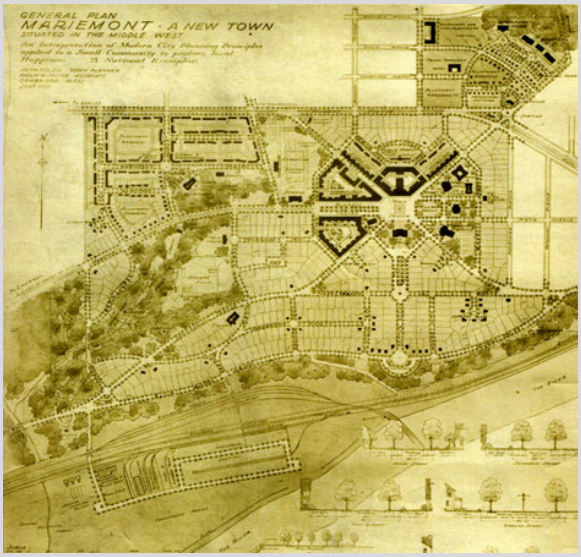


Figure 2-6 – The historic General Plan of the new town of Mariemont, Ohio, developed by John Nolen. Nolen was a prominent practitioner of 'The City Beautiful' movement. Classical principles of order and symmetry influenced by the Beaux-Arts tradition are incorporated. This plan includes a series of street sections indicating the inclusion of trees to line the streets. Source: (Hopper, 2010)

Figure 2-7 - Contemporary Aerial photo of Letchworth, the first development of a 'Garden City' in 1910. It indicates the urban planning principles of a civic core with layers of radial development along radial avenues and significant green spaces in execution of the original theories of Howard remain intact. Source: (Letchworth Garden City Heritage Foundation, 2020)

The Garden City Movement

The Garden City movement was initiated by the English layman[23] Ebenezer Howard, who published the book *To-Morrow: A Peaceful Path to Real Reform* (1898) (reissued under the revised title of *Garden Cities of to-morrow* (1902)) in reaction to the 'endemic problems of the industrial metropolis' of the time such as 'overcrowding, pestilence, miscegeny, prostitution and latent Bolshevism'. It provided a solution that was predicated on addressing the more disagreeable aspects of industrial city life (Schrader, 1999, pp. 395-397). According to Stubbs, Ratcliffe & Keeping in Hansmann, et al. (2018, p. 15), the orthodox planning process that dominated the study area from the mid-20th century onwards is embodied in the Garden City Movement, being based on planning and property development principles that aim to achieve an environment based on 'amenity and environmental quality'.

The Garden City Movement sought to address the overcrowding due to urban/rural migration by providing the answer to 'how to restore the people to the land' and address 'the problems of intemperance, of excessive toil, of restless anxiety, of grinding poverty…' (Howard, 1902, p. 13) with the goal of making 'the country more attractive to a work-a-day people than the town – to make wages, or at least the standard of physical comfort, higher in the country than in the town; to secure in the country equal possibilities of social intercourse, and to make the prospects of advancement for the average man or woman equal, not to say superior, to those enjoyed in our large cities.' (Howard, 1902, p. 14) It did so by offering a third alternative to the binary thinking of the time that one is either bound to city life or village life 'in which all the advantages of the most energetic and active town life, with all the beauty and delight of the country, may be secured in perfect combination…' (Howard, 1902, p. 15) This was done through a process seeking to create a less formalistic "sense of place" than the City Beautiful movement through the notion of emulating village life in the modern urban development (and thus, according to Howard (1902, p. 14) make it more 'attractive' to migrants than the

[23] Most of Ebenezer Howard's life was spent at a firm that produced official Parliamentary reports in England. He had no formal education in the built environment, but was widely read and thought deeply on social issues. (Reps, 2002)

inner city). It did so by including green natural areas, parks and walkways that isolated neighbourhood activity from the street. (Fulton, 1996, p. 8)

Figure 2-9 - Contemporary view of Meadow Way, Letchworth. This forms part of one of the original segments of development. Generous pavements lined with trees are bounded by semi-detached double storey houses with garden frontages.
Source: (Hilton, 2011)

Figure 2-8 - Contemporary view of Campers Avenue, Letchworth. This forms part of a later development in the city neighbouring the initial core development. The influence of the motor vehicle more evident, with more front garden spaces taken up for parking. The street treatment is less generous and more utilitarian with landscaping being relegated to private properties. Built form treatment remains fairly constant.
Source: (Habiloid, 2020)

The first Garden City development in South Africa was in Pinelands, Cape Town and was established in 1919, with the first house being occupied in February 1922. It was also the first attempt at a town-planned area in South Africa. It was designed by the offices of Louis de Soissons, the same firm responsible for Welwyn Garden City, with Albert John Thompson being seconded from the office for two years to be on site. (Pace, 2019) (South African History Online, 2019) Specific original design aspects included were:

- A specific emphasis on road layout and network, with a range of roads for heavy traffic; cyclists and light vehicles; and pedestrians.
- The inclusion of two railway stations within the development
- Preservation of existing trees along roadways to create natural avenues
- Houses were unique from each other, but attractive, comfortable and low-cost

Pinelands converted from a trust to a Municipality in 1948 and has since been merged into the City of Cape Town Metropolitan Municipality. The loss of direct control of the development of the area by the trust with the emphasis on Garden City Principles means that there has not been such a rigorous control of those principles being exercised in subsequent developments and interventions.

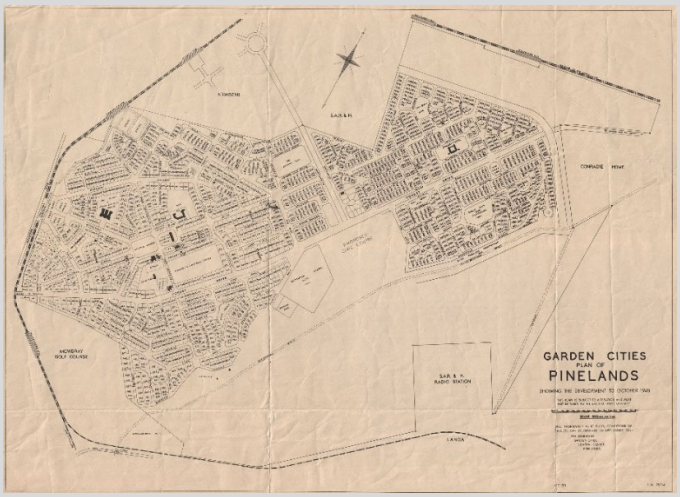


Figure 2-10 - Map of Pinelands in 1948, including the proposed civic centre. The Central Square is unusually off axis to the main road (Forest Drive), but a radial links it to the Pinelands Train Station. The more radial planning of the south section is not emulated in the more densely built northern section.
Source: (Garden Cities, 1948)

Neotraditional Planning and Seaside, Florida

Seaside is a privately-owned development aimed at being fashioned into an 'old-fashioned beach town' that created a 'stately, pedestrian-oriented atmosphere that emphasizes public spaces and waterfront access' with traditional wood-framed cottages that resulted in a phenomenon which has come to be known as 'neotraditional planning'. (Fulton, 1996, p. 5) It was the first form-based code since Haussmann's 19th-century Paris and New York City's efforts of 1915–1916. (Salden, n.d.) It aimed to break the surrounding trend of 'condo-and-motel-strip' developments and acknowledged that in a more holistic approach to a sustainable community, multiple individuals would need to design individual buildings allowing for growth and evolution over time with input from a variety of sources. (Fulton, 1996, pp. 9, 11), (Salden, n.d.). Planning started in 1978 and was completed in 1985 by Andrés Duany, and Elizabeth Plater-Zyberk, with contributions from Léon Krier. (The Seaside Research Portal, n.d.)

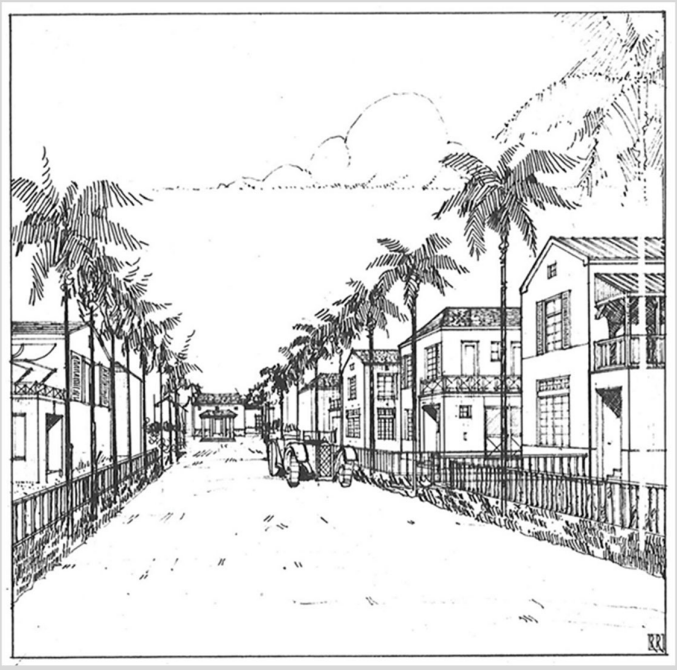


Figure 2-11 - A illustration attached to the Urban Code of Seaside of a possible outcome for the application of 'Typre VII', one of eight types in the code.
Source: (Salden, n.d.)

The original code itself had eight classification types that applied to private residential and commercial buildings. This classification was based on lot type, and dealt with major elements, such as building heights; and the location and scale of yards and verandahs, outbuildings, and parking. Though there existed an architectural code that determined the syntax of individual elements, materials and the like, it was noted as being of less

Figure 2-12 - A Google Street image from 2017 of Forest St, Seaside, Florida. The buildings seen flanking the street are as a result of the 'Type VII' urban design code. Though fairly contrasting to the the artists' impression above, there is still a strong, discernable and pleasant character that has evolved due to the simple and clear design code.
Source: (Google, 2017)

importance than the urban code in the development of the community. The code relies on an organization based on building form, not a clustering of similar economic and social groupings, to achieve a more sustainable community. The ongoing success of the implementation of the code is attributed to its simplicity and clarity. (Salden, n.d.)

Fulton (1996, p. 11) indicates that the design codes for the development provide for the following important aspects to define the streetscape:

- The dominant street width is merely 5.5m
- Lot sizes and setbacks are mandated
- Landscaping is regulated
- Architectural designs of individual buildings vary dramatically

Because of its small size (32 hectares containing 750 residential units) and resort-based economy, the development was criticized as merely being a prototype for a 'community-based development'. There were no schools, places of worship or supermarkets, only high-end retail and gourmet food shops. (Binkley, 1995. Quoted in (Fulton, 1996, p. 10)

New Urbanism

The first formal statement of 'New Urbanist' ideas was developed in 1991, known as the Ahwahnee Principles[24], and was a list of 23 principles divided between aspects of *Community and Regional Principles* and *Implementation Strategy*. (Local Government Commission, 1991) This was shortly followed by the formation of a small "invitation only" group, the *Congress for the New Urbanism in 1993*. The Washington, DC-based non-profit organisation has now grown to currently have over 2600 members. (Congress for the New Urbanism, n.d.). This organisation then formulated the now-recognised New Urbanism Charter. Before this organisation's formation, proponents of the movement classified their theories under descriptions such as 'neotraditional planning', 'neotraditional development', 'traditional neighbourhood development', 'transit-oriented development' and 'pedestrian pocket creation'. (Fulton, 1996, p. 10)

The *Charter of the New Urbanism* formulated a charter aimed at developing an agenda for action in 1996 at their fourth conference that sought to address primarily the modern urban development failings of placeless sprawl, but later also dealt with the 'erosion of society's built heritage' as well as social inequalities and environmental deterioration. They aim to restore existing urban centres from their recent disinvestment and seek to have sprawling suburbs reconfigured into communities of 'real neighbourhoods' that preserve built legacy. (Congress for the New Urbanism, n.d.); (Congress for the New Urbanism, 2001) (Fulton, 1996, p. 10) Most relevant to this current research is that this movement of a multidisciplinary group of broad-based citizenry advocates for contextually appropriate and place-sensitive development. "…urban places should be framed by architecture and landscape design that celebrate local history, climate, ecology, and building practice." (Congress for the New Urbanism, 2001)

The Charter itself has 27 principles, divided into three sections that deal with the various scales of urban planning (the region; the district; and the block) that address the physical, social, economic and environmental goals they wish to achieve. Though many, if not all of the principles are relevant, two that have specific relevance to this research need to be highlighted.

- Principle 17 – "The … harmonious evolution of neighborhoods … can be improved through graphic urban design codes that serve as predictable guides for change."
- Principle 19 - "A primary task of all urban architecture and landscape design is the physical definition of streets and public spaces as places of shared use."

[24] The Alwahnee Principles "…paved the way for the Smart Growth movement and New Urbanism. These principles provide a blueprint for elected officials to create compact, mixed-use, walkable, transit-oriented developments in their local communities." (Local Government Commission, 1991)

Additional principles from the Charter that are of relevance to the current study are the following. These have been organised into the themes advocated by the New Urbanism Organisation:

1. 7 - Increased Density
   The Charter encourages infill development over peripheral expansion (Principle 4). Ostensibly, there is not much opportunity for traditional infill in the area, though there are isolated examples of front or back of property densification and the more prevalent consolidation of properties containing individual houses to create multi-unit housing developments.

2. 6 - Traditional Neighbourhood Structure
   The Charter encourages respect for historical patterns and precedents (Principle 6).

3. 9 – Sustainability
   The Charter recognises that the development of an engaged citizenry that takes responsibility for their neighbourhoods is linked to the aspect of creating identifiable areas (Principle 10). Buildings should also respond to their local climate and setting to 'provide their inhabitants with a clear sense of location, weather and time' (Principle 26).

4. 5 – Quality Architecture and Urban design
   The Charter advocates for individual architectural projects to be contextually integrated into their surroundings. (Principle 20). It also acknowledges that the urban realm should be 'interesting to the pedestrian' (Principle 23). This should be as a result of being informed of the 'local climate, topography, history, and building practice.' (Principle 24).

   The character of the façades that line the streets are an important component of achieving an interesting environment – reinforcing or improving upon an existing good character leads to a more 'interesting' experience that is contextually relevant.

In addition to the above commentary on the Charter, additional aspects from the 'Principles of Urbanism' (New Urbanism, n.d.) should be highlighted.

1. 1 – Walkability
   A pedestrian-friendly street design includes building close to the street (including balconies and doors that face the street); and appropriate landscaping (including trees along the pavement).

2. 3 – Mixed-Use and Diversity
   The inclusion of a mix of types of functions and uses to encourage a diversity of people and activities. In the study area, there are very limited numbers of mixed-use developments, the global planning trend of the past century to single-use zoning has overwhelmingly shaped the urban planning of South Africa, not taking the added complexities of the outcomes of racially segregated planning policies of the Apartheid years.

3. 5 – Quality Architecture and Urban Design
   Here, though covered in the Charter discussion above, it is worth noting again that there should be an 'emphasis on beauty, aesthetics, human comfort, and creating a sense of place'.

4. 7 – Increased Density
   The motivation for increased density is for 'more efficient use of services and resources, and to create a more convenient, enjoyable place to live.' The aspect of a more enjoyable place to live should be particularly noted – treating the urban environment as a machine to tune to achieve maximum system efficiency from, to the exclusion of the aspect of place, can result in banal, uninspiring and mechanistic roll-out of generic developments.

New Urbanism emphasizes beauty, aesthetics, human comfort, and creating a sense of place. (NewUrbanism.org, n/d) There is a recognition that Human scale architecture and that beautiful surroundings nourish the human spirit, but again there is nothing offered in terms of guiding 'beauty' being constructed. There is a heavy domination of a social compact reliant on infrastructure that leads towards nurturing a social ideal. "New Urbanism strives for a kind of utopian social ideal, although most New Urbanists focus on a community's physical infrastructure in the belief that community design can create or influence particular social patterns." (Fulton, 1996, p. 1). The simple aspect of 'promoting a positive image of "town life"' that attempts to address the shortcomings of a 'lack of community' in the combined domain of public and private is arguably its strongest point and aligns with the research question in promoting deliberate and meaningful imagery. The argument is that the traditional neighbourhood offered better alternatives to their contemporary counterparts in that "…their physical forms are more adaptable and, ultimately, permit a more satisfying life." (Fulton, 1996, p. 4)

There is a specifically defined development trend found particularly in the United States of America and referred to as *WalkUPs* (Walkable Urban Precincts). These are characterized as having higher-density buildings, multiple modes of transportation, and many different real estate products in the same place. (Dodds, 2012) This seems very closely aligned with the 'New Urbanism' movement, as many of the elements contained in the charter of New Urbanism put forward by The Congress for the New Urbanism correspond. (Congress for the New Urbanism, 2001) The fundamental difference between New Urbanism and WalkUPs is that the latter seems to focus more on the character and feel of appealing and sought-after inner-city spaces. In certain instances, developers are then trying to export this lifestyle and feel into peri-urban areas. (O'Connell, 2012)

Comparisons

Some visual comparisons have been drawn between the residential form of Letchworth and the study area. These have been due to the building form and the inclusion of landscaping in the development.

Though there are influences of Garden City principles on the layout and land-use arrangements (also noted by Hansmann, et al. (2018, p. 16) and integration of natural landscaping, the Berea is notably different in the overall urban planning and resultant urban form and integrated inclusion of social amenity. Letchworth has a defined civic centre with a radial-based street network that supports this layout, and Glenwood has an orthogonal-based street network with certain linear-based non-residential developments that have evolved.

The holistic planning of Letchworth for integrated and self-supporting community development is not evident in Glenwood – the residential development certainly facilitated the middle-class residential needs of those associated with working in the adjacent harbour and industrial area, but this was not concurrently and deliberately planned. The educational, health and recreational facilities are certainly included in Glenwood, but their placement is less purposeful and integrated into a broader strategy, it is more diffuse.

The area still contains an abundance of vegetation, but the incorporation of purposeful avenues of tree-lined streets is limited – much of the pavement landscaping is reduced to the incorporation of trees on fairly standard-width pavements. The only significant avenue of trees in the study area is a portion of Lena Ahrens Road, other trees planted on pavements are less purposeful and regular. A published remark in 2018 by Ward Councillor Chris Pappas indicates the continuing effects of a lack of resources negatively affecting landscaping in the area. "Of equal concern is the replacement of trees that have died or fallen. A once lush green area is slowly losing its forest feel." (Walford, 2018) The planting of the building line reserve, particularly the street-facing reserve, on private property has contributed significantly to the incorporation of vegetation in the area, but the impact this has on the public realm of the streetscape is increasingly reducing with the ever-increasing proliferation of boundary walls, particularly those that have solid and 1.8m or higher.

2.2 The Rationale for the Determination of the Study Area

In determining the study area, the following overall criteria were utilised to further determine the area:

- It must be within a major residential area in the original city boundary.
- It must be within a defined area contained within a comprehensive architectural study to date[25].
- It must demonstrate under cursory investigation some unique character that is derived from an evolved development. It should not be an area that demonstrates a static period of development.
- It must fall within an area that demonstrated some level of containment of development, i.e. not be significantly affected by sprawl.

The exercise then consisted of overlaying historical and contextual plans that complied with the four points above, and a suitable area was identified that falls within a defined area of historical development that also forms part of the more contemporary urban densification zone. These specifically use the following resources:

Figure 2-13 - The 1892 Plan of the Borough of Durban, Natal. Ward 3 is used as an overlay in determining the study area.
Source: (Lynsky, 1892)

1864 borough boundary map – This is the first relatively detailed drawing available in archives indicating specific streets within the municipal boundaries outside of the CBD following on from Durban receiving municipal status in 1845. The map is a hand-drawn line map and is overlaid as a transparent layer on the composite map that follows.

1892 Durban Corporation plan of the Borough of Durban – This indicates the specific demarcation of six wards within the borough boundaries. There are only two of the six wards (Ward 3 and Ward 5) that are primarily residential – Wards 1, 4 and 6 include considerable commercial land-use activities and Ward 2 includes the harbour industrial activities. Ward 3 is selected as it is more contained than Ward 5.

1982 Upper-Glenwood boundary according to Kearney[25] - The map showing the listed areas (inside face of the front cover) is rather diagrammatic, therefore a more precise overlay is not possible. It does, however, generally correspond to the Ward 3 boundary of the 1892 map without the narrow protrusion east and also extends a bit further south judging by individual listings. It does add to the veracity of the selection of the study area as there is at least an 80% overlap.

The boundary of the 2012 *Berea Urban Core Extension - Phase 2 - Development of a FAP / Landuse Management Framework* - This is the most recent comprehensive study conducted within the central area of the eThekwini

[25] *A revised listing of the important places and buildings in Durban* by Brian Kearney (1984). This covers a listing that spans from 1840 to 1940, therefore a considerable amount of low-rise residential apartment buildings in the study area and indeed for the greater Berea are not covered as they were constructed after the date of listing.

Municipality (Local Authority) that deals with an overwhelmingly low-rise residential area, published by *Iyer Urban Design Studio* (2012). The outline of the 2012 study is traced and transposed onto the base map.

This resulted in the identification of a study area of 1,47 square kilometres in size that complied with the overarching criteria.

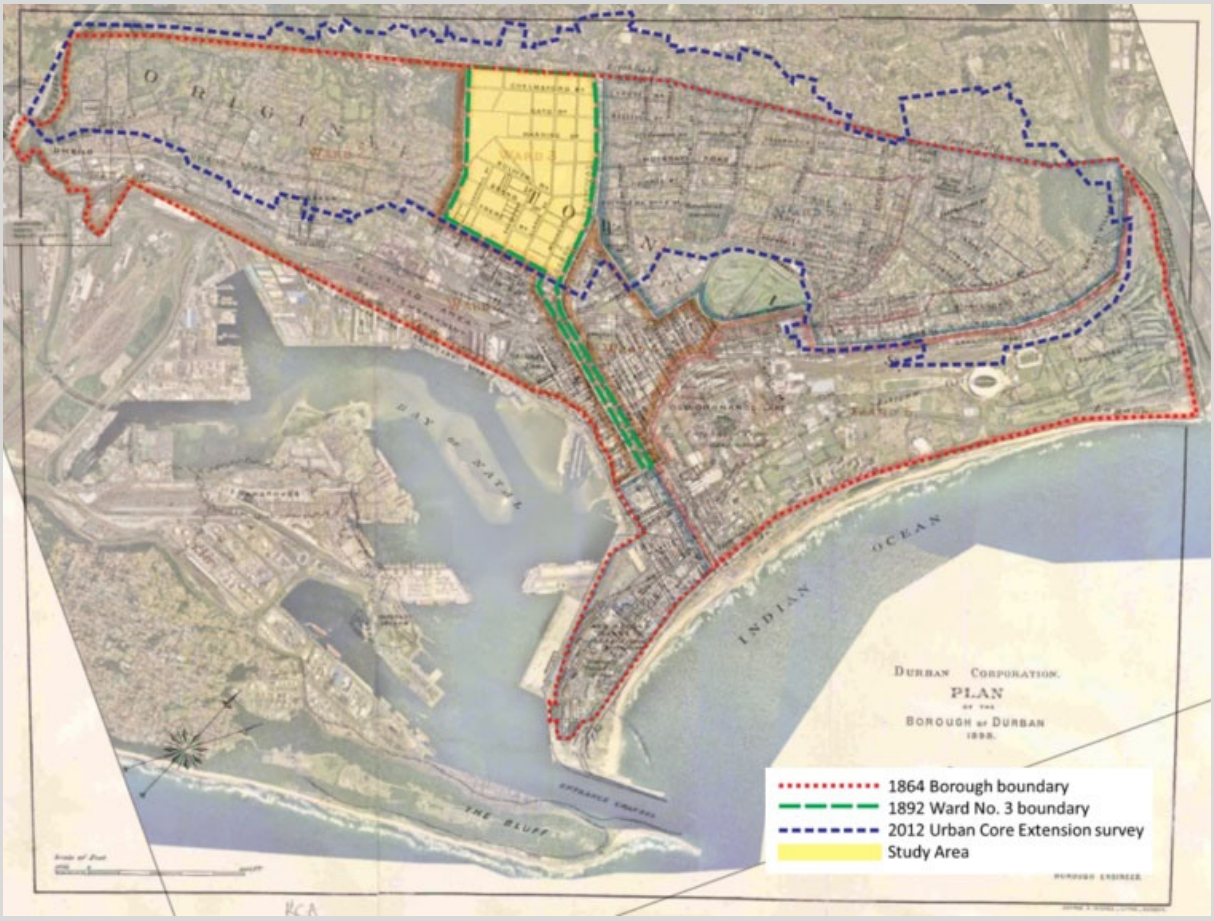


Figure 2-14 - A composite map of central Durban, including the harbour. The overlapping of the 1864 Borough boundary, the 1892 Ward no. 3 boundary, and the 2012 Urban Core Extension survey boundary suggests a natural choice for the study area.
Source: Author, drawn from (Paterson, 1865), (Lynsky, 1892), (Iyer Urban Design Studio, 2012)

Figure 2-15 - A panorama facing south of the study area. The fine grain of the area with a predominance of smaller scale apartment buildings interspersed between single dwelling houses and other small-scale multiple unit buildings is evident. To note in addition is the prevalence of trees across the study area.

2.3 Historical Development of the Study Area

There are three major periods of development within South Africa as a whole, and this is evident in the study area. These directly correspond to political periods of Colonisation, Nationalisation and Democratisation. The graphic below is a synthesis of the overall development influences and effects. It includes *planning processes*, *socio-political occurrences*, *architectural trends*, *development trends* and *land use*.

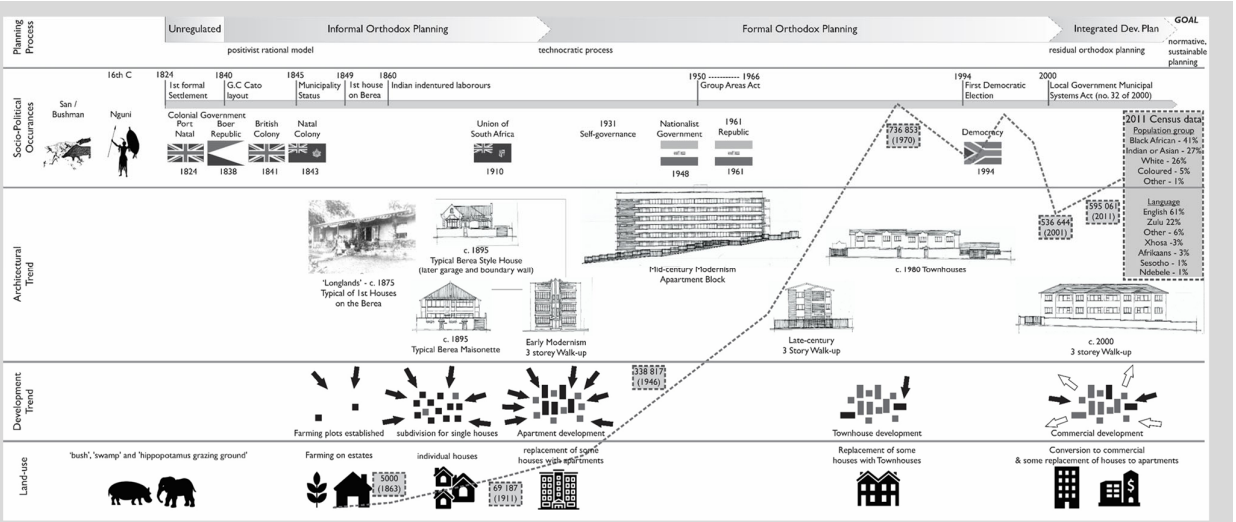


Figure 2-16 - Graph demonstrating major developmental issues for Durban. The broad areas are Planning Process, Socio-Political Occurrences, Architectural Trend, Development Trend, and Land Use. It also includes information on the population profile within the 1890's borough boundaries. Note: a larger version at A3 size is attached as Appendix B

The historic development of the Berea was based on modern 'orthodox' suburban planning principles underpinned by a largely technocratic and state-led process. Orthodox planning can be described as an ensemble of ideas on planning and property development principles to achieve an environment based on "amenity and environmental quality". (Ratcliffe, et al., 2009) However, orthodox modern planning is widely criticized for its reconceived utopian assumptions of how cities should function, which have little to do with how cities work in reality, particularly in the area of densification. (Hansmann, et al., 2018, p. 15) Though the planning process changed to one that is based on an Integrated Development Plan (IDP) post-1994, the practical implementation is still overwhelmingly orthodox. Currently, the spatial structure of the greater Berea has been described as "A series of Residential Neighbourhoods, that distinguishes between a set of detached housing Neighbourhoods; a set of neighbourhoods that are dominated by the development of flats – some of which are medium–rise older walk-up flats and a set of newer higher-rise flats" (Iyer Urban Design Studio, 2012, p. 17)

Development from Colonial Settlement up until the Establishment of the Union

The original inhabitants of the greater area in which Durban is situated were the people group now collectively called the Khoi/San, a mixture of nomadic hunter-gatherers and pastoralists with a complex heritage due to the variety of groups that make up the collective. (Barnard, 1992, p. 27) (eThekwini Municipality, 2011). The Khoi/San were displaced by Nguni-speaking people that derived from the larger Bantu Expansion of people groups originally based in central Africa. (eThekwini Municipality, 2011) (de Luna, 2014) Due to the limitations of available documentary evidence, it is difficult to determine dates related to the Khoi/San or Nguni activities in the area with any great certainty, (Marks, 1967, p. 530) but by the time of the arrival of the European settlers in the early 19th Century, the Zulu nation (one of the branches of the Nguni speaking people) inhabited the greater area, though no permanent settlement existed in the surrounding area of the bay.

Vasco da Gama briefly visited the bay in 1497 but likely did not disembark onto land. Numerous subsequent European shipwreck survivors found their way to the area but were not of significant numbers and did not remain to establish ongoing settlements. The initial formal settlement of the city only occurred in 1824 after the 1823 survey of the Port of Natal. The initial settlement of the town of Durban was confined to the northern edge of the bay, with a smaller Boer Settlement to the west of the bay. There is some early intrigue with control of the settlement changing between the British and Boer settlers, but this was resolved with the establishment of the Colony of Natal in 1843.[26] Only in about 1849 was the first house on the Berea constructed. Subsequent development on the Berea still mainly referenced the British settler ideas of residential buildings but with topography, climate and material availability playing far more of a modifying role.

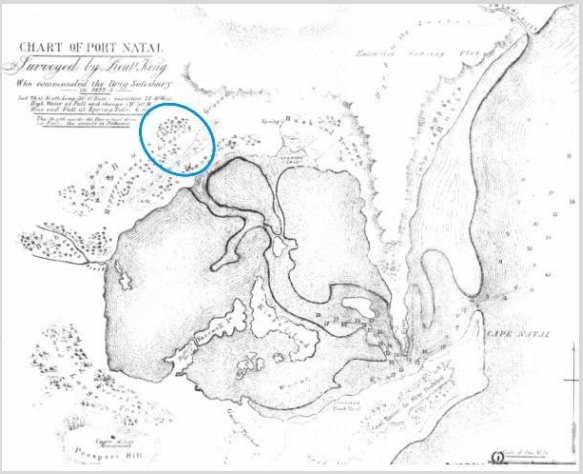


Figure 2-17 - The 1823 survey of the Port of Natal. The approximate location of the study area is circled above. The survey indicates the study area was covered in sections of 'bush', 'swamp' and 'hippopotamus grazing ground'.
Source: (King, 1823)

The Elephant House, so named as the wooden verandah posts that were damaged by elephants on several occasions during the immediate period after being built, was constructed in about 1849 and was the first house on the Berea. It is now the oldest remaining house in Durban. It underwent considerable restoration work in 1976 and now is used as a Bed and Breakfast. (Bland, H, 2020). The verandah house was 'exceptionally appropriate' to the humid subtropical climate of Durban which is typified by high humidity during summer and the small diurnal temperature variations and the very mild winter conditions. The verandah sheltering the building envelope from the sun and rain and the narrow footprint aided with cross-ventilation allowed for this 'exceptionally appropriate' response to these conditions. (Kearney, 1984, p. 69)

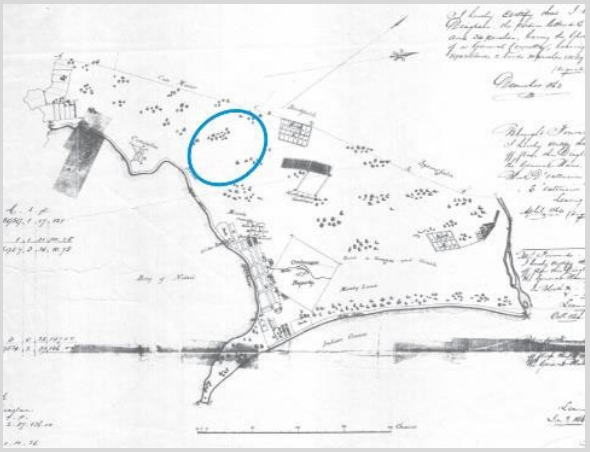


Figure 2-18 - Portion of a map with multiple authors spanning from 1857 to 1865. This particular portion shown (referred to as a 'Diagram') has been added in 1863 by Henry Waddington, a Civil Surveyor. At the time, there is limited expansion beyond the original settlement boundaries along the harbour edge. The significantly smaller settlement of Congella by the Boers can be seen along the western edge of the bay. The Study area itself (encircled) is still indicated as 'Marsh' (Swamp) along the eastern edge and 'Dense Forest' for the remainder.
Source: (Tanner, et al., 1865)

Figure 2-19 - 'Longlands' (c. 1875) is an example of the typical homes first built on the Berea. The brick and iron roofed structure with vertically proportioned windows and wrap around verandah. The canvas awnings would later translate into the bracket profiles included on later houses.
Source: (Kearney, 1984)

[26] As the initial development of the early city was confined to an area outside of this research study area, minimal details are given here. Bjorvig, A., 1994. *Durban 1824-1910: The Formation of a Settler Elite and its Role in the Development of a Colonial City* gives a comprehensive accounting of the early city should readers have an interest.

During the 1850s, the rapidly expanding population necessitated the 'opening up' of residential sites beyond the initial confines of the town – the location of the Eastern and Western Vleis[27] making expansion immediately adjacent problematic. This led to plots being sold beyond the core settlement in other areas, such as on the Berea. (Ellis, 1998, p. 81) After the opening of the toll road, land on the Berea was in high demand, fetching "…£18 15 an acre for plots on the high slopes – £10 15 lower down" (The Mercury's Durban 150th anniversary supplement as quoted in (Bjorvig, 1994, p. 120)). This equates to plots being about 75% more expensive in the high slopes than at the base of the Berea, most likely due to the drier soil conditions, better views and more prevalent sea breezes during the hot and humid summer months. By 1863, maps show the demarcations of properties extending beyond the initial settlement area along the northern edge of the bay into the area known as the Berea. These were in four isolated pockets, of between 10 and 14 individual properties each. These pockets were not located within the study area but located along the existing roads to the Umgeni and Umvoti Rivers and the main link into the interior to the then town of Pietermaritzburg (now the provincial capital).

Figure 2-20 - Recent image of the restored Elephant House. The long, narrow building with wrap around verandahs typifies the earliest buildings on the Berea, such as 'Longlands'.
Source: (Bland, H, 2020)

Figure 2-22 - Image from 1890 of the Tollgate at the top of Berea Rd, the road constructed in 1850 and the Tollgate constructed in 1865. It indicated the 'wooden iron' buildings (buildings with wooden frames clad in corrugated iron sheets) that were prevalent at the time in the town as an example of the more 'primitive' construction used and also indicates the thick bush in the background the covered the study area. Still prevalent in the area are houses that emulate the overall form and planning, though constructed out of brick. Currently only one 'wooden iron' structure remains in the study area (date of construction unconfirmed), located at 35 St Johns Avenue. It is secluded from most passing traffic and therefore relatively unknown.
Source: (Millett-Clay, 2012)

The trend of extending into the Berea with the formation and development of properties continued, as seen in Tanner's map - (1867). Demarcated properties are shown on maps for the first time within the study area, indicating their origins between 1863 and 1865. This was at a time when the population of the settlement had grown to approximately 5 000 inhabitants. (South African History Online, 2011) These plots were established adjacent to the main roads of the area, namely Umbilo, Berea and Ridge Road[28]. Umbilo Road led southwards from the outskirts of the original settlement, past the settlement of Congella to the community established along the Umbilo River, the southern boundary of the townlands. Berea Road, 'opened up' in 1850, ran westwards and was the

[27] A 'Vlei' is a South African term for low-lying, marshy grounds. The Easter and Western Vleis, covering extensive areas in 1845 were subsequently drained from 1850 onwards, resulting in them being much reduced in 1870, making more land available for development. (Ellis, 1998, p. 86)

[28] The eThekwini Municipality continues with its programme of renaming streets in an attempt to enact transformation from the segregated past, with the first names officially changed in 2007. Berea Road (South) was renamed King Dinuzulu Road (South) – the original Berea road was split into a north and south carriageway with the construction of the N3 national highway in the early 1960's. Ridge Road was renamed Peter Mokaba Ridge. Berea Road was named after the biblical settlement of Berea and referred to the small mission station constructed in the area. Ridge Road was a neutral term of topography. The renaming was due to their prominence rather than associated heritage.

primary link between the town of Durban and the interior of the country, with Pietermaritzburg being the next major town along this important commercial link. (Ellis, 1998, p. 85) This 'spine' up the incline of the Berea topography is where significant commerce activities were located to service the expanding suburbs. Development within the study area continued steadily, with the fringes of the study area along the major routes indicated in 1865 now being infilled. Some secondary roads (such as Moore and Davenport Roads) within the study area had been "carved…out of bush" by early settler families after which they were initially named. (Savides, 2008) These parcels indicated are large in size, with between one and six parcels occupying a block rather than the individual portions that they are today. By 1870, Durban was a clearly defined town, complete with Central Business District, gardens and parks and outlying residential areas with 870 houses in the borough. (Ellis, 2002, p. 37)

The subsequent two decades underwent a period of residential growth, particularly in the edge between the harbour edge and the study area and a strip to the west of the road to the Umgeni River to the north. This is most likely due to the more favourable building conditions as the land was less steep. By 1875, the extension beyond the original settlement along the edges of the harbour contained 36% of the total buildings in Durban. And by 1880, 50% of the total buildings in Durban were located beyond the initial settlement grid. (Bjorvig, 1994, p. 106)

The proceeding decade of development from the 1870s shows only a small portion of the study area had undergone further subdivision. The remaining properties remained much as they were. Before the discovery of gold in 1886 on the Witwatersrand (approximately 600km inland), Durban was a non-industrial port town dominated by merchant capital centred on the sugar industry. (Brookfield & Tatham, 1957, p. 46) There was growth of over 6000% in the trade through the port between 1845 and 1880 facilitating the rapid urban growth during that period. (Bjorvig, 1994, p. 105). The 1886 discovery of gold inland and the subsequent extensive railway development to link the mines to Durban, the closest port, completed in 1895, led to further rapid growth and 'real prosperity'. (Brookfield & Tatham, 1957, p. 46) (Bjorvig, 1994, p. 106)

Up until 1849, all of the settler residential buildings were contained to the original grid of the settlement along the banks of the harbour, but by the 1890s, commercial enterprises were displacing the historical residential occupation. This, in addition to the rapidly growing number of inhabitants needing to be accommodated, meant that the Berea was rapidly being developed. Though there was a brief period of Boer control of the settlement, the vast majority of the time of the formative period of the settlement was under British control, and therefore overwhelmingly reflects British colonial influences.

Figure 2-23 - The 1879 '... Diagram of the Town ...Durban and of the certificates...' Much of the text on the document is unreadable due to deterioration over time, but the layout of the study area parcels is quite distinguishable. The image on the left is the full extent of the drawing with the image to the right being a close up of the study area.
Source: (Robarts, 1879)

Figure 2-25 - 'Nithsdale' – 127 Teignmouth Rd, Umbilo, circa 1895. The house, though located further south than the study area, is typical of many of the single storey houses of the middle-income population of the time. Typical features are the protruding gable portion with faceted bay window, elaborately decorated ventilator and finial at the apex of the facia; the wrap around verandah with slender timber posts and decorative brackets; the sliding sash windows with delicate mullions and slightly arching lintols; and corrugated iron roof. The property boundary was defined by hedges, demonstrating the active use of vegetation and the open visual quality to the street.
Source: (Kearney, 1984, p. 75)

Figure 2-24 - 'Nithsdale', 2015. The overall form has been retained along with certain elements, but significant alterations have occurred. The original corrugated iron roof has been replaced with quarry tile; the timber verandah posts and ballustrades have been replaced with precast concrete columns and brick piers and walls. The finnial to the gable barge board is no longer and the slightly arched timber sash windows have been replaced by aluminium versions. Most of these adaptations are due to insect or weather damage to the original timber elements, quite a common occurance. What is also to be noted is the solid boundary wall topped with spikes and electric fencing, resulting in a significant change to the interface between the building and the street.
Source: (Google South Africa, 2015)

Durban has a distinctively Victorian British legacy, especially from the formation of the Colony of Natal until the formation of the Nationalist Government. The British tended towards the creation of conspicuous images of authority and order in their streetscape and an enclosed urban landscape similar to those of contemporary England was sought. A significant difference though was that vegetation was utilised to achieve a sense of order in many instances. "Avenues of trees with lines of houses fronting onto the road compensated for the lack of terraced façades." (Bjorvig, 1994, p. 121) The practical identifying characteristics of this 19th Century British-dominated residential development were the cottages with an informal front garden and roads lined with trees.[29]

Figure 2-26 - 203 Bulwer Rd, 2015. This listed building is typical of the houses of the wealthier at the turn of the 20th century. Features are as per the single-story houses such as 'Nithsdale' above, but over two stories, with the projecting gable end and bay window, wrap-around verandah and timber detailing. This house has subsequently been converted to commercial use with owners that have appreciated its historic value, therefore it has been restored and well maintained. The low boundary wall with pillars may have been original, but the palisade infill with electric fencing topping is recent. The visual transparency of the boundary wall means that the relationship between the building and street is only minimally compromised.
Source: (Google South Africa, 2017)

The British settler-dominated character of the built environment was mainly enforced by a framework of restrictive conditions being placed onto title deeds and on specific municipal by-laws[30] being passed from time to time. The by-laws that pertain to the study area during the time usually prescribe aspects related to the types of buildings

[29] The Dutch settlements contrasted in this aspect in that the gardens tended to be at the rear of the property.
[30] By-laws are a type of legislation (law) made by local authorities that only apply to the area of control of the local authority.

that are permitted to be constructed, the construction materials that may or may not be used and the inclusion of servitudes within properties. (Hansmann, et al., 2018, p. 18) This would have managed aspects of character at a high level, but the social influences and established norms rather than legal prescriptions would have had the most profound impact on the construction of individual buildings.

Development from the Union up until Democracy

The vast majority of the grain, form and layout of the study area was firmly established by the turn of the 20th century, this was established by a local framework that was more ad-hoc in nature and reflects a civic and social-driven approach that referenced the colonial homeland. The approach to the ongoing development of the area underwent significant changes in the 20th century, though the formalisation of a larger and far more structured framework would not significantly alter the overall urban character of the area, the only significant change in terms of character that occurred for the most of the 20th century was the development of apartment buildings. Towards the turn of the 21st century, there was significant erosion of the residential use of properties, with commercial activities displacing residential land use, though much of this was in the form of businesses occupying the residential buildings and making adaptations to the structures to suit the new use. Throughout the period, racial segregation was imposed up until the first democratic elections in 1994. The legacy of this racially-based planning system still impacts broader social aspects, particularly around inequality of access to housing and amenities at a national level – those fortunate to live in the study area are privileged concerning many others as they benefit from a neighbourhood designed around the provision of amenity and environmental quality.

The exporting through the port of gold discovered in the Witwatersrand area in 1885 then led to significant resources becoming available for the development of the city and also drew greater numbers of immigrants. (Brookfield & Tatham, 1957, p. 46) The development framework correspondingly had to respond to this. In terms of a specific integrated planning framework, it is generally accepted that the 1910 formation of the Union of South Africa[31] is the start of the use of orthodox town planning frameworks to guide urban development in South Africa. In addition, other legislative activities had significant impacts, most notable was the Public Health Act of 1919. It viewed disease in racial terms and promoted racial segregation as a solution to the urban health problems emanating from the crowded living conditions of Africans. (Hansmann, et al., 2018, p. 15) Additional significant legislation that has a spatial impact regarding segregation was the 1920 Housing Act which provided the mechanism for funding for segregated housing 'for the poor' and the 1934 Slums Act which allowed for the demolition of inner city 'dilapidated suburbs', where non-whites resided.

It is only during the apartheid era from 1948 onwards that these frameworks were intensely applied, mainly to implement the large-scale and radical spatial segregation of the apartheid government, the main planning mechanism of implementation being that of residential zoning based on race. The 1950 Group Areas Act legislated segregated neighbourhoods, causing great displacement of people to comply with the racial classification of the neighbourhoods. This formalized at a macro urban level the tendencies of spatial segregation that had existed from the beginning of colonial times.

From the 1930s onwards there was a significant trend within the study area (and across the Berea in general) for the consolidation of a few single-dwelling residential sites to construct low-rise residential buildings. This was in response to the ever-present demand for residential accommodation close to the urban core and within the existing borough boundaries. Though the existing tendency of the population up until this point was towards lower density single dwelling buildings of varying scales of building and plots and the related elaboration of the structure (the occasional maisonette or semi-detached building accounting for variations to the overwhelming trend), the continued demand for accommodation coupled with the growing international trend for apartment living seemed to have spurred on private developers and the local authority to build low-

[31] The Union of South Africa, established on the 31st May 1910, resulted from the unification of the Cape, Natal, Transvaal and Orange River colonies and included territories that were formerly part of the sovereign Boer states of the South African Republic and the Orange Free State that were defeated by the British in the Second Boer War. It was a self-governing dominion of the British Empire until the 1931 passage of the Statue of Westminster, when it became fully sovereign. On the 31st May 1961, the country became a republic.

rise residential buildings. (Townsend, 1998, p. 9) The financial viability of projects involving the consolidation of existing sites required a higher unit yield. Much of the development of the period indicates 3 – 4 storey buildings, as beyond this height, the requirement for mechanical lifts would add significant initial and ongoing costs to be factored in. The terrain of the Berea allowed the added benefit of multi-storey buildings to exploit the more distant harbour and sea views that many of the existing single-storey houses did not have due to the extensive vegetation in the area.

Much of this new low-rise apartment building development was to cater for the wealthier segment of the population, but in line with the property prices varying between the bottom and top of the slope, the size and elaboration of the apartments constructed also reflected their associated land values. (Brookfield & Tatham, 1957, p. 60)Commercial activities were still overwhelmingly restricted to the strip along King Dinuzulu (Berea) Road, with only two mixed-use buildings outside of this strip of development being noted as constructed during this period that currently remain.

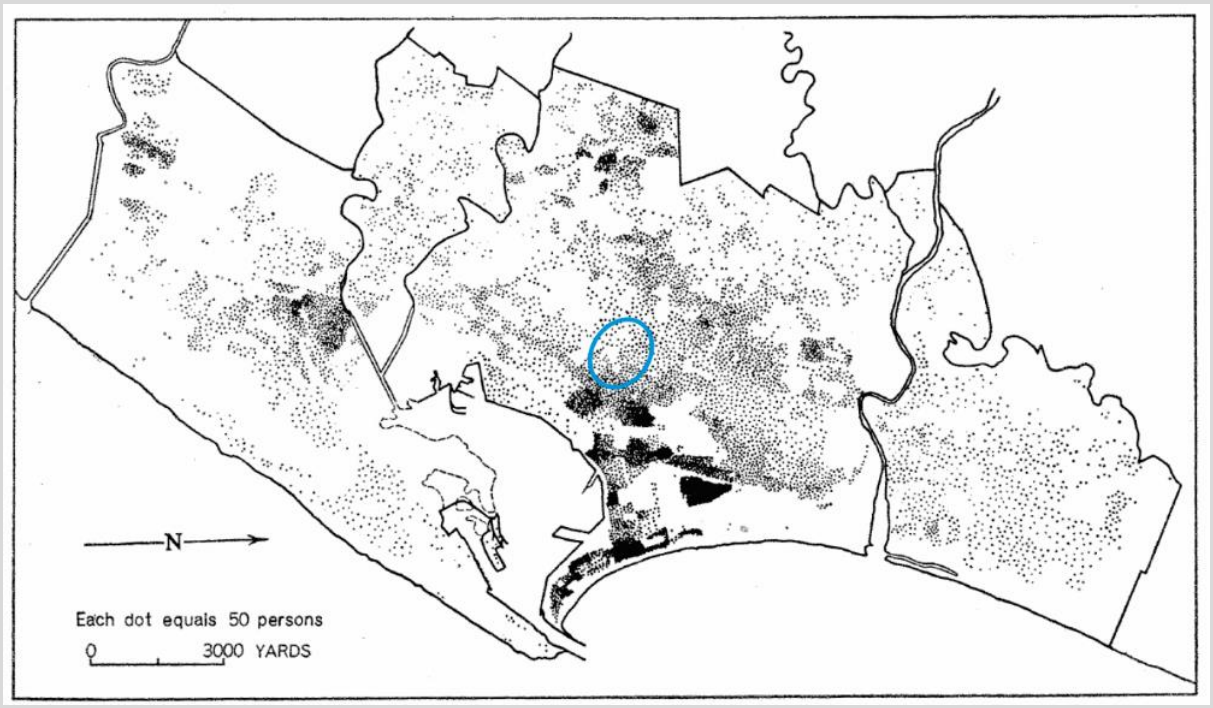


Figure 2-27 – The population density across the city of Durban in 1957. Outside of the densely populated historic urban core immediately adjacent the harbour, the strip of the Berea (including the study area encircled in blue) contains a significant population density, demonstrating the desirability for residential occupation in the area that endures.
Source: (Brookfield & Tatham, 1957, p. 55)

Though orthodox town planning was already introduced, it took until the early 1950s to be properly applied in Durban. (Hansmann, et al., 2018, p. 16) The period saw the development of 'orthodox' suburban planning frameworks based on the modernist tendencies adopted elsewhere on the globe at the time, but with racial overtones being applied. It was influenced by the Garden City Movement of the time in which the focus was on addressing the public health concerns of the industrial city by way of planning that focuses on providing neighbourhood-scaled amenities and driven by the ever-increasing population. The mechanisms used to provide this 'environmental quality' to residents included the specific implementation of zoning, densities and sanitation requirements in the consolidated 1952 town planning report, and made provision for substantial space for parks, open spaces, schools and hospitals. (Hansmann, et al., 2018, pp. 18, 19) The Berea Town Planning Scheme came into effect in 1954, and reserved considerable space for single-story houses, but also included zoning for apartments and other institutional functions. What is to note is that this formalized a

framework that echoed much of what was already established in the study area – the major schools[32], the main hospitals[33], other institutional buildings[34] and the significant park[35] all were well established by the time the orthodox-based town planning scheme came into effect. By 1956, the total population in the city was 591 000 (Brookfield & Tatham, 1957, p. 46), which represents a growth of almost 120 times the population over the last century. Only about 42% of the 'white' community that comprised the city's population then were born in the province, the rest were immigrants from elsewhere. (Brookfield & Tatham, 1957, p. 46) This then would result in a large portion of 'immigrants' in the study area (mainly from elsewhere in the Union of South Africa, but also almost 20% from the United Kingdom). Data extrapolated from Brookfield & Tatham indicate that the study area had approximately 1.5% 'Asiatic' residents at the time. It listed no breakdown of groups, but it is unlikely that there would have been any other group besides 'European' that would have exceeded his percentage. (Brookfield & Tatham, 1957, p. 60) This is a practical outworking of the implications of systemic racial segregation.

Figure 2-28 - The first zoning map of Durban - 1952. The study area is encircled in blue. The zoning along the Berea reserved considerable space for single story houses, but also included zoning for apartments and other institutional functions.
Source: (Hansmann, et al., 2018, p. 19)

In the late 1950s, the study area continued with its trend of densification observed in the past as demand for residential accommodation close to the urban core remained strong.The Berea Town Planning Scheme and related frameworks of the local authority that impacted spatial development were consolidated into a single set of revised regulations in 1973 (with subsequent revisions) (eThekwini Municipality, 2017) that incorporated

[32] Glenwood High School (1 ZK Mathews Rd) and Glenwood Prep (8 Bath Rd - formerly Parkview Primary School) were constructed in 1910.
[33] St Augustine's Hospital (107 J.B. Marks Rd - formerly known as the Sanatorium) was established in 1892 to treat tuberculosis patients and Entabeni Hospital (148 Mazisi Kunene Rd) was established in 1930.
[34] St. Martin's Diocesan Home for Children (239 Clark Rd) was established in 1896, Berea Presbyterian Church (459 King Dinuzulu Road) was constructed in 1886.
[35] The prominent triangular site of what is now Bulwer Park has appeared in planning maps as far back as 1879

the zoning for high-rise residential in places. (Hansmann, et al., 2018, p. 19) Much of the current framework for development is a legacy of this almost 50-year-old scheme.

Figure 2-29 - Population distribution across the city of Durban in 1957 - the study area encircled in blue. Though racial segregation was commonplace since the establishment of the colonial settlement, the radicalisation thereof post the implementation of Apartheid in 1948 meant significant wholesale relocation of certain race groups. The study area would have historically had an overwhelmingly 'European' (white) population, in excess of 98% at this time.
Source: (Brookfield & Tatham, 1957, p. 56)

Development after the First Democratic Elections

In 1994, with the first democratic elections in South Africa, there were significant physical planning framework changes that needed to be undertaken in an attempt to redress the racial spatial planning of the previous century. Hansmann, et al. (2018) noted the following in this regard. The first significant change was the introduction of Integrated Development Planning (IDP) which was incorporated as a requirement in the Local Government: Municipal Systems Act (no 32 of 2000), which seeks to shift the highly technical orthodox planning approach that is based on a positivist methodology to a normative and sustainable planning approach. The intention is to allow for the transformation of the current relatively mono-functional settlement arrangements to promote compact city ideals and principles of new urbanism that "…promote an integrated multifunctional Berea." (p. 25). The IDP in turn informed the 2002 Interim Land Use Guidelines and then the 2012 Urban Core Extension Plan, the latter seeking to rationalise zones within the urban core extension area and to introduce land-use intentions. This was primarily motivated by the recognition of the considerably

increased land-use pressure from commercial entities to take over residential sites and buildings in the Berea post-2000.

The city has commissioned two significant projects to address the changes in land use, namely the 2002 Interim Land Use Guidelines project and the 2012 Urban Core Extension plan, in which there was an attempt to rationalise zones and introduce land-use intentions. (Hansmann, et al., 2018, p. 16). The 2002 project is later noted for its "…inability … to guide and manage development, as intended, (which) led to the realization that there was a missing piece in the hierarchy of plans, as the indicative SDFs contained insufficient detail to guide and manage development, and more particularly was not providing an appropriate and sufficiently detailed framework for modifying the then Town Planning Schemes." (eThekwini Municipality - Development Planning, 2012, p. 28)

The subsequent Berea plan of 2012 noted the area as having a significant and distinct character and 'fine-grain' nature, though it had started to undergo potentially significant changes.

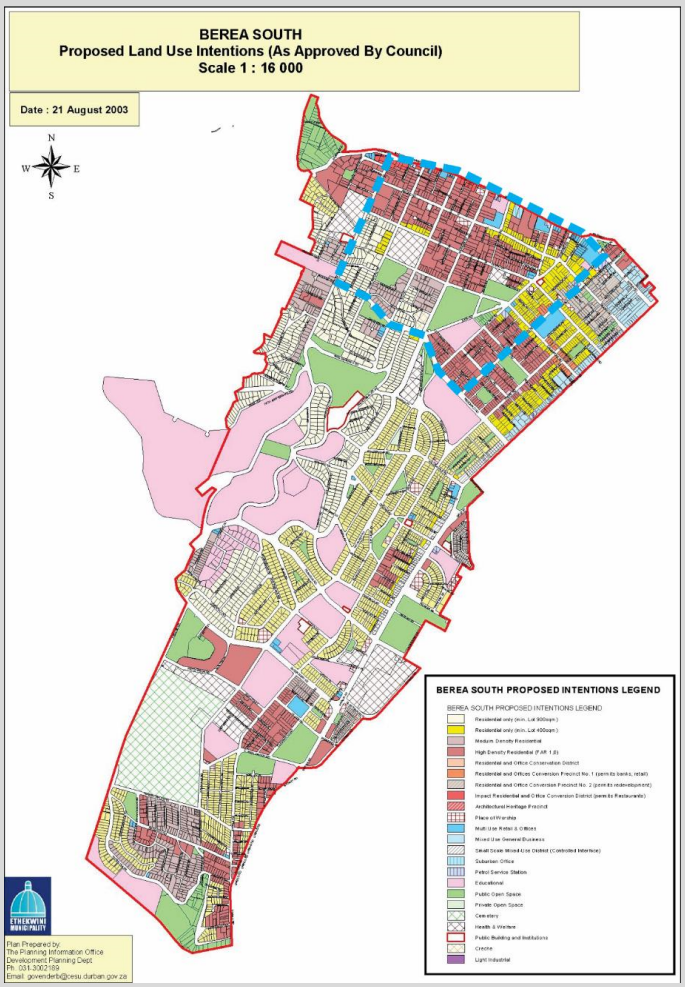


Figure 2-30 - The 2003 Council approved Land Use intentions emanating from the 2002 Interim Land Use Guidelines Project. The study area is demarcated with the blue line. This proposal did not factor in the significant commercial encroachment into the area. It also allowed for high density residential land use across the majority of the study area (with a Floor Area Ratio of 1.0). This FAR would correspond with the definition of low-rise residential apartment buildings proposed in this study. The lack of mixed-use residential and commercial zoning is to be noted.
Source: (eThekwini Municipality - Planning Information Office, Development Planning Department, 2003)

"The area boasts architectural significant and valuable buildings, as well as tree lined streets, combined with a set of vibrant mixed communities. However modern and emerging life-style trends, coupled with market forces, has lead (sic) to changes within this area, and the penetration of other uses challenges the existing scheme and current infrastructure."

(Iyer Urban Design Studio, 2012, p. 11)

The plan itself, therefore, was more strongly normative in its outcomes to address the shortcoming of previous approaches. It contained elements of new urbanist principles related to developing "well contained, safe and secure residential neighbourhoods, well-structured open space systems, focus on human-scale mixed-use business clusters; and supportive public transport service" (Iyer Urban Design Studio, 2012, p. 25). The focus of this intervention is around identified nodes of transition, overwhelmingly from residential to commercial in an attempt to respond to existing pressure by this encroachment, particularly due to their cumulative effect. "These trends (for conversions to offices and restaurants) are beginning to create a 'Domino effect' and are starting to threaten the integrity of the various residential neighbourhoods. (Iyer Urban Design Studio, 2012, p. 17) The suggestion in the 2012 plan was for non-residential uses to be contained

within proposed Mixed-Use Districts only. The plan also suggests the development of parking reservoirs to mitigate the increased parking requirements resulting from the conversion to commercial activities. (Iyer Urban Design Studio, 2012, p. 17) – this has the potential to negatively impact on streetscape where buildings that contributed to the streetscape were demolished to put up a parking lot. An example of this is the demolition of 136 Helen Joseph Road to create additional surface parking for the retail food store next to it.

Another major finding of the 2012 Berea Urban Core Extension report was the importance of vegetation in defining the character of the Berea, specifically in the Berea South portion in which the study area falls. Not only does this add to the visual character of the area, noted previously as a deliberate intervention influenced by colonial tendencies, but also the much-needed response to supporting fauna and flora in the suburban realm in an attempt to address the need for broader ecological sustainability. "The Berea is a well vegetated area with many tree-lined streets that are part of the character of the area in particular Berea South. New development and redevelopment should be encouraged to retain existing trees and avoid large scale removal of vegetation; especially for 'sustainability' reasons." (Iyer Urban Design Studio, 2012, p. 18)

Figure 2-31 - The 2009 historic Google streetview the site of a historic residential house being demolished and construction underway of a parking lot for the commercial building to the right. The house to the left has also subsequently being converted to a commercial property. The below image is a close up of the development proposal render affixed to the wall. Note, the addition of vegetation to 'soften the appearance' in the render is not in the completed product.
Source: (Google Street View, 2023)

In 2013, a significant piece of legislation came into effect, namely *The Spatial Planning and Land Use Management Act 16 of 2013* (Republic of South Africa, 2013). It is a single piece of national legislation that provides a consolidated framework for all spatial planning and land use that facilitates the relationship, monitoring and co-ordination across different spheres of government so as "to provide for an inclusive, developmental, equitable and efficient spatial planning system." (Government of South Africa, 2020). This single piece of legislation is based on the application of a normative framework and links normative-based principles within the spatial development framework to land-use management zoning schemes. (Hansmann, et al., 2018, p. 16) This is the main legislative catalyst for the revision of the previously applied scheme.

The 1973 scheme has been replaced in its entirety by a revised version in 2019 (eThekwini Municipality, 2019), but much of the underpinnings and responses echo that of the 1973 scheme (with subsequent amendments). The significant changes that affect the study area are the conflation of building types and landscaping requirements. The multi-unit residential types and definitions (such as *cluster housing development*, *duplex flat*, m*aisonette* and *residential building*) have been conflated into an all-encompassing definition of 'Multiple Unit Development' - the definition of 'flat' remains. (eThekwini Municipality, 2017) (eThekwini Municipality, 2019, pp. 27-33). There are also now additional requirements added to the coverage requirements, where not only is a portion of the site to remain free from buildings (as per the previous scheme) but this requirement has been extended to include that the uncovered area requirement is to be "…free of all buildings, parking spaces and driveways, (and) shall be set aside for garden and recreation purposes". (e.g. The General Residential 1

zoning - (eThekwini Municipality, 2019, p. 72)). This aspect of prescribing the inclusion of landscape areas does start to address the 2012 Berea Urban Core Extension report recommendation that existing trees be retained and that the large-scale removal of vegetation be avoided due to them contributing to the overall character of the area. (Iyer Urban Design Studio, 2012, p. 18)

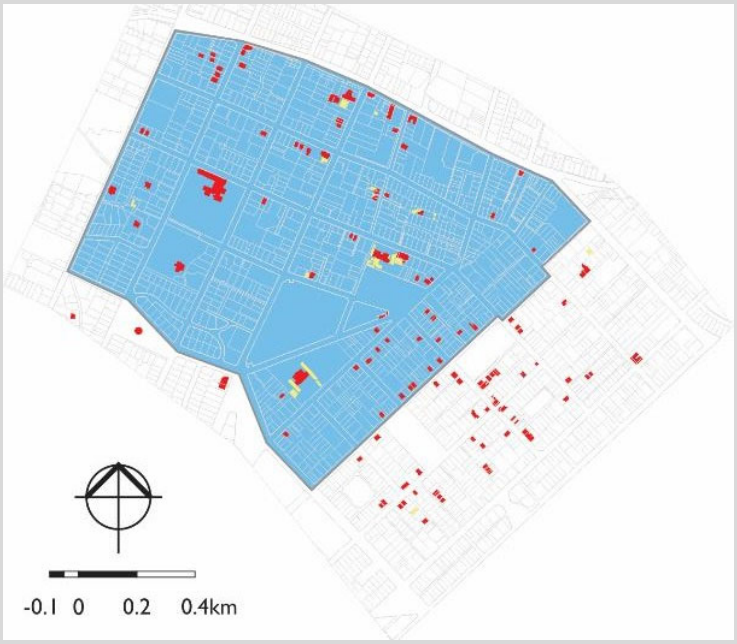


Figure 2-32 - Mapping of Listed Building in the study area and immediate context. There is a fairly even distribution across the study area.
Source: Author, data drawn from Annexure B of (eThekwini Municipality, 2019)

The incorporation of the requirement into the town planning scheme that governs the area is only as effective as the implementation and monitoring thereof, and the sufficient punitive measures being imposed for contraventions thereof. In addition, the current 2019 scheme is still criticized for a mismatch between the conditions of the ground and the framework, particularly in its lack of response to the heterogeneity of the city's populations and economies and a lack of receptiveness to creating sustainable human settlements. (Hansmann, et al., 2018, p. 26)

The encroachment of commercial enterprises into the Berea has significantly accelerated over the last two decades. A recent analysis undertaken by Hansmann, et.al. (2018) of land use dynamics was undertaken between May 2012 and January 2016 across the greater Berea. The changes in land use noted were around the continued applications of converting residential properties into business use, notably for operating fast food outlets, restaurants and commercial accommodation, but this is being met with resistance by existing

Figure 2-33 - 207 Bulwer Rd, this 2017 streetview image indicates very sparse planting on site. This is to be contrasted with the significant vegetation typical of the defining character of the area in the background. This site has recently undergone renovations, in which all vegetation has been removed. Clearly the intentions of the 2019 TPS are having little effect at the level of landscaping in practice.
Source: (Google South Africa, 2017)

residents. (Hansmann, et al., 2018, p. 22). The demographic changes to the area are also of significance, with a 35.9% increase in the overall population in the greater Berea and a 32,5% increase in the number of households noted between the 2001 and 2011 National Census. There is also significant growth in the middle to high-income bracket and that of the no-income bracket, though this could be attributed to the significant influx of tertiary students into the area. (Hansmann, et al., 2018, pp. 24-25)

2.4 Current Condition of the Study Area

The study area is identifiable by four typical conditions, defined primarily by building type. This section will give an overview of these four conditions while also discussing the concerning development of illegal land use and alterations in contravention of the Town Planning Scheme.

Typical study area condition 1

The first is that of the fairly flat portion closer to industrial activities and the port. It was originally a marsh. Currently, the area is still dominated by the development pattern of the late 19th Century but contains numerous early and mid-20th Century low-rise multiple-unit developments and from the turn of the 21st Century continues to have increased commercial conversions of properties.

Figure 2-34 - Map with demarcation of 'typical condition 1'. This consists of fairly flat former marshland closer to the industrial activities of the port.

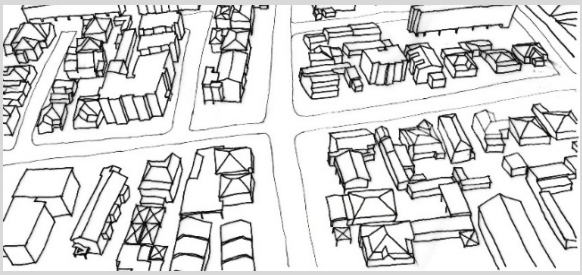


Figure 2-35 - Aerial view of a portion of 'typical condition 1'. the area is still dominated by the development pattern of the late 19th Century.

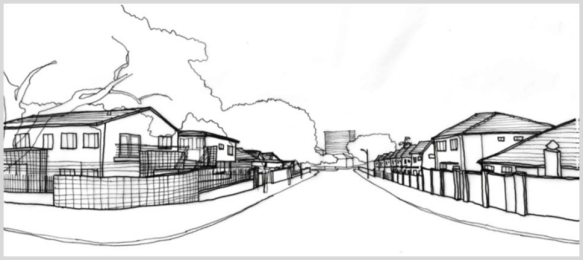


Figure 2-36 - The building foreground right has been consolidated with another neighbouring residential house and converted into a Musalla.

Figure 2-37 - The building depicted foreground left has been converted into a short term 'bed and breakfast'. It has had numerous alterations and additions, such as the 2nd floor added to the main house. The building depicted foreground right has been converted into a medical supply logistics office.

Figure 2-38 - A mid-century modernist apartment building features foreground left and, in the background right, an 8 storey early modernist apartment building.

Typical study area condition 2

The second is located on the ridge in the topography that runs along the western portion of the study area. It is referred to as *The Berea.* The topography slopes fairly steeply from the edge of the former marshlands up to the apex of the study area. Due to the situation receiving more favourable views of the ocean and receiving greater ocean breezes during the hot humid months, the properties continue to cater for the more affluent. The development patterns are very similar to that of the 1st area but also have many instances of total redevelopment on consolidated properties, many with a medical focus.

Figure 2-39 - Map with demarcation of 'typical condition 2'. This consists of a sloping condition to the apex of the 'Berea' ridge with better views and ocean breezes than in 'typical condition 1'.

Figure 2-40 - The perimeter of Bulwer Park contains a number of multi-unit housing developments, with commercial functions on the eastern edge adjacent the park.

Figure 2-43 - Apartment building faces onto Bulwer Park, the largest and most significant urban open space in the study area.

Figure 2-42 - Aerial view of a portion of 'typical condition 2'. the area contains a higher density of apartment buildings from the 1930's onwards, but still evident is the original single dwelling grain from the turn of the 20th Century.

Figure 2-41 - The northern section of Lena Ahrens Rd has a high density of apartment buildings from an extensive period. There are still the occasional single dwelling houses in this section of what is a major route through the area (e.g. foreground left).

Typical study area condition 3

The third condition is located on the southern boundary that runs along the slope from the previous flat marshlands up to the ridge. Like the other areas, it is still dominated by the development pattern of the late 19th Century - the grain remains overwhelmingly of one and two-storey single dwelling houses with expansion mainly occurring with small-scale additions to existing houses.

Figure 2-46 - Map with demarcation of 'typical condition 3'. This consists of predominantly one- and two-storey houses on smaller sites. The grain remains relatively unchanged with additions and alterations mainly confined to individual houses. Most of these additions are of a small nature, but there is a tendency to add a 2nd storey to houses on particularly constrained sites.

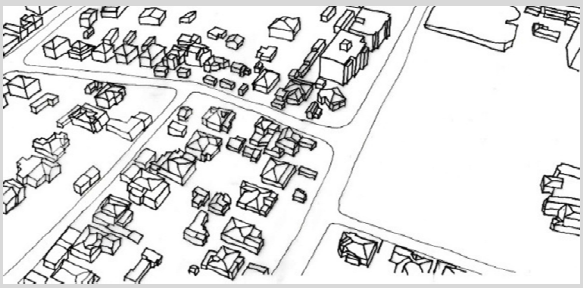


Figure 2-44 - The historical grain from the turn of the 20th century remains prevalent, with minimal construction of multi-unit buildings in this section.

Figure 2-45 - The area has a low scale and plenty of trees. It is typified by the visual of 'pyramidal' clay tile roofs interspersed between trees.

Typical study area condition 4

The fourth condition is located along the northern boundary. From 1850, this edge has served as the route connecting the city center with the Berea, the city to the provincial capital and the major commercial hub of South Africa further beyond. It has catered for a mixture of commercial and residential functions since its inception. In the early 1960s, the road was significantly widened into a multi-lane freeway. This has created a very hard and distinctive edge that separates the Northern Berea from the Southern Berea. Most buildings are still fairly low in scale, but increasingly the remaining residential buildings are being redeveloped into commercial properties.

Figure 2-47 - Map with demarcation of 'typical condition 4'. This is the boundary condition along the main freeway (N3) connecting the city of Durban to the provincial capital of Pietermaritzburg some 80km away and then on to the commercial hub of the Gauteng Province 490km further north beyond that.

Figure 2-48 - the 1960's construction of the freeway led to expropriation of properties on the north side of the original route. The inclusion of commercial activities on the south side of the route is historical and remains prevalent, with some of recent instances of remaining residential single dwelling units being redeveloped into commercial properties.

Figure 2-49- the 8 lanes of freeway in conjunction with the 6 lanes of the onramp roads makes the N3 a very hard edge to the study area.

Contravention to the Town Planning Scheme

The recent trend of commercial displacement of residential stock and illegal land use and alterations to existing structures in contravention of the Town Planning Scheme is of concern. The scheme which is currently the primary means of controlling development is in line with a sense of character from an urban form perspective. There were 82 contraventions from 2012 to 2016 (Hansmann, et al., 2018, p. 21), which equates to almost 2 per month and constitutes a proportion of 18% of formal applications. This demonstrates that there is an issue with achieving compliance by a significant number of developers/owners and that this also indicates that there are problems with the mechanisms in place by the local authority that offer some form of protection against this sort of illegal practice. The majority of these contraventions, at almost 25%, were due to conversion to illegal use of the property, but also significant at the time was an approximate 10% contravention of developing student accommodation to cater for the increased enrolment at the local tertiary educational institutions. (Hansmann, et al., 2018, pp. 21-22) The walking survey data for this research indicates that the trend of property conversion into student accommodation continues and that the informal interactions with residents indicate that developers continue to covert properties without the required consent and that they are exploiting the circumstance for pure commercial profit to the detriment of the neighbourhood character. The residents' attempts at resisting this illegal development trend are met with limited assistance from the local authority. Local Authority Building Inspectors seem unable to stem the tide of illegal construction and conversion of land use. Quite often, individual landowners' only recourse is to sue their neighbours privately for contraventions due to a lack of appropriate consequence management by the local authority.[36] The legal remedies available to the local authority are cumbersome and though the Problem Buildings By-law of 2015 (eThekwini Municipality, 2015) allows for a maximum fine of R500 000 (approx. € 25 000) and/or imprisonment not exceeding three years, there is no indication of anything close to these penalties being imposed. There are even instances where the local authority seems complicit in not following their own policies and procedures and permitting construction that is contrary to what is permitted.[37]

Figure 2-50 - Map indicating the clustering of contraventions to the Town Planning Scheme, the primary (and arguably the only) mechanism implemented by the local authority in an attempt to control the character of developments. The study area includes a significant clustering, with the conversion of properties to student accommodation being of considerable concern to residents in the area.
Source: (Hansmann, et al., 2018, p. 20)

[36] Guy, D., 2023. Glenwood protest for city to do its job. *Independent online*, 14 January.
[37] Broughton, T., 2021. eThekwini municipality withholding incriminating evidence, say Currie Road litigants. *TimesLive*, 15 September.

2.5 Contextual Discussions Related to South Africa

Four specific contextual issues need further discussion concerning the greater discussion of the urban context. These are the overarching market-driven development approach, the local authority approval and monitoring limitations, issues related to heritage, and issues of the built environment's response to crime.

Market-driven Development

The local development environment is overwhelmingly similar to the global norm. The capitalist underpinning of the 'growth-economy' framework is equally as pervasive if not more so, in a country with a perpetual and growing high unemployment rate that stood at 32,9% at the end of the first quarter of 2023. (Statistics South Africa, 2023)

Every work of architecture in the urban environment, every project of civil engineering and urban planning, influences the environment in the context. The unfortunate reality is that in the capitalist-driven development framework of contemporary society, much of the day-to-day changes bring harm rather than good. The great lie that is peddled is that these are just what they are because there is no other choice. In response to the early development of the New Urbanism movement, proponents were "…frequently derided by real estate developers and free-marketeers as social engineers unwilling to accept the real preferences of the American consumer." (Fulton, 1996, p. 3)

According to Simmons (Desyllas, et al., 2006), there are 8 reasons why 'value-based design' is not well received and implemented. These are:

1. Good design is sometimes (but not always) costlier initially. The reduced whole-life costs are not considered.
2. Valuation and accounting methods often give low priority (if any) to design quality as a generator of value.
3. Widely held view amongst a wide range of decision-makers and the general public that design is a matter of taste rather than of value creation.
4. The inherently complex nature of development means it is difficult to be well-informed and make decisions based on a comprehensive understanding of the varied factors therein.
5. The value of good design often results in benefits to others besides the initial developer as the value is often accrued over time and developers do not retain a long-term financial interest in a developed property.
6. Developers usually do not bear the operational costs associated with the development, and end users have little, if any influence in the design and construction phase.
7. If the market is scarce, this will result in almost anything selling, irrespective of the design quality.
8. There may be a significant delay in the value-added benefit from good design manifesting in significant and tangible ways. This means there is a higher perceived risk upfront and a longer time for benefits to become available.

Another key aspect is that negative external costs as the implications of poor design are often disregarded. (OECD, 2018, p. 13) (Desyllas, et al., 2006, pp. 17-18) It should be noted that all development imposes some form of cost on society, including through resource consumption. This can be offset through compensation that outweighs this cost with the development generating some utility and value that accrues to the broader society as well as to the individual owners. Hoever, these costs are usually disregarded because they are transferred to others besides the originators of those costs. In this way, the originators insulate themselves from these negative consequences, and therefore it is of little consequence to them.

As highlighted in the justification for the choice of topic, the problem with poor design in the built environment, as opposed to say poor literature, is that these mistakes are frozen and visible for all to see. De Botton, in reaction to society's trend to the resignation of the banal, is to advocate that "we should be as unintimidated by architectural mediocrity as we are by unjust laws or nonsensical arguments." (2007, pp. 254-255)

He notes (p. 257) that illogical assumptions are informing the development of this current age, and that these are:

1. Man-made beauty is preordained exclusively for some areas only.
2. Urban masterpieces are works of others, not ourselves.
3. Superior buildings cost inordinately more.

De Botton further notes that we could be unfairly blaming a lack of inspiration on poverty by proposing that a tight budget condemns a building to ugliness. As is evident by some examples of past grand architecture, these have been made with meagre means. Similarly, buildings with large budgets also result in ugly architecture (2007, p. 259). Iovene, et al. also support this notion - 'It's not what you spend, it's where and how you spend it'. Good design that is cognisant of creating a place is better than expensive but ill-conceived design. (Iovene, et al., 2019, pp. 178-180) Horáček argues that part of the problem "… is the lack of demand for beautiful architecture among the broader public audience and the disconnection from traditional wisdom among do-it-yourself builders. (Horáček & Salingaros, 2020)

Figure 2-51 - The "most famous house in South Africa" on the 18th February 2020. This was a viral Twitter topic during the preceding days. Located in the Drum Rock lifestyle estate in Nelspruit, Mpumalanga province, this faux Tuscan development is indicative of an inappropriate developer driven language being marketed as the 'ideal home' and unfortunately seen as such by a significant number of individuals.
Source: (Caboz, 2020)

Another significant 'untruth' De Botton highlights (2007, p. 260) is the assertion of the developer that, re-framed in the South African context, their Faux Tuscan or equally banal developments have always sold rapidly and in great quantities and that to question their designs would be to ignore commercial logic and to deny individuals their democratic rights to their own taste. Salingaros notes that Modern buildings are so often dreadful because almost all of the population has been acclimatized to accept their design, despite it contradicting human physiology." (Horáček & Salingaros, 2020)

Approval process and monitoring limitations

Local Authority has adopted a framework to enable densification within the city. The practical outworking of this is that applications from private developers that seek to densify the existing urban fabric in the study area will receive much greater consideration, particularly in regard to applications for rezoning or relaxation of building restrictions, such as building lines and height restrictions.

The current approval process for development plans is laid out in the document *Understanding the Building Plan Submission / Approval Process* (eThekwini Municipality, 2017). The process is generally as follows:

1. Land Use Management (LUMS) needs to do an initial check to ensure overall compliance with zoning and scheme controls and that no restrictive conditions are applicable.
2. The building plan is then assessed by an Assessment Officer for compliance with relevant national and local laws, regulations and standards.
3. Should the assessment reveal the need, the plans are circulated for comment to additional departments, such as fire, transport, health and stormwater. At the moment, no architectural advisory panel exists to refer plans to for further architectural-based input.
4. The Assessment Officer compiles all comments and then recommends a decision to their relevant Team Leader, who will then approve or refuse the application.

For the general application of aesthetic consideration, the Assessment Officer has wide discretion over this matter, but as previously indicated in Chapter One, approval is an overwhelmingly technical consideration around safety and compliance. Plans examiners are usually loathed to make decisions on aesthetic qualities, and their assessments are usually done in isolation – there is no requirement to even include drawings of the surrounding building façades with applications. This aspect is highlighted at numerous meetings of the Architects Institute[38], such as the Heritage Forum[39]. One of the outcomes of this research is to develop a guiding code for the general development of the study area to potentially guide plan examiners in their decisions.

The following are also concerns to be noted with the application and monitoring process:

- The primary step and most influential exercise of control is vested with Land Use Management (LUMS). This equates to ensuring Town Planning Scheme controls are adhered to, and these relate to form, not fine-grain detail.
- A Plan Examiner has a minimum requirement of what equates to two-and-a-half-year post-secondary education. For many older qualifications, this would have only included one year of history and theory-related instruction.
- Plans Examination does not have any Professionally registered Architects within its division.
- There are very limited avenues of practical support available to designers submitting to the council or the plans examiners themselves. The process is governed by a compliance approach to the technical requirement of the National Building Regulations and not to aspects of quality that enhance or maintain the established urban environment.
- There is a lack of recourse against those that contravene local by-laws. The Building Inspectorate division seems to have an inability to consistently enforce by-laws, and there is considerable pushback from clients and designers.
- The formal public participation process and other avenues for general public comment are inadequate. There is no requirement besides 'considering' public comment by municipal decision-makers. Proper implementation of currently required notification (such as sending registered letters to all landowners within a certain radius, and posting notices of applications for changes related to the Town Planning Scheme prominently) is not sufficiently verified.

Young, et al. are clear that uncoordinated decision-making can result in disconnected, bland places that fail to contribute to the creation of thriving communities. (2007, p. 7) Simmons also noted that "A firm that does not have shareholders willing to defer immediate profit in exchange for extra value later on, or which doesn't have the capital to carry higher initial costs, may not see the benefit of investing in good design. This is, of course, an important reason why the planning system has to inject the requirement for quality into the system by insisting on good design." (Desyllas, et al., 2006)

The City of Toronto (2018, p. 8), the Auckland Council (2020) and the Stratford-on-Avon Council (Kropf, 2001, p. 19) are all examples of local authorities which have some best practices that should be considered as part of the approval process. In addition, other interest groups such as the *Commission for Architecture and the Built Environment* (CABE) in the United Kingdom also suggest best practices (2007). A synthesized list of these practices is as follows:

i. Local authorities are to identify strategies to enhance the quality of the living environment through improved spatial relationships, design and materials.

[38] The KwaZulu-Natal chapter of the South African Institute of Architects (SAIA-KZN) is the local voluntary association that promotes the interests of architecture and architects in the province. The role of legislative oversight of practitioners of architectural work was subsumed with the promulgation of Act of Parliament, no. 44 of 2000 that saw the establishment of the South African Council for the Architectural Profession (SACAP).

[39] One such example is the August 2019 Heritage meeting, where the vast majority of the meeting was devoted to the discussion of plans examiners referring submissions requiring additional comment based on Section 7 (as mentioned above). The case in point made no value judgement of the submission, but required the Architects to supply a motivation as to compliance with Section 7.

ii. Local authorities are to establish a balance between the protection of stable residential neighbourhoods and heritage features while allowing for appropriate infill development and intensification .
iii. Local authorities are to work towards streets being attractive and to have their own distinctive identity.
iv. Local authorities are to manage selective stakeholder dominance on development as this often results in "unimaginatively designed streets.
v. Local authorities are to provide best practices and guidance to citizens and stakeholders, particularly land developers, planners, urban designers, architects, landscape architects and City staff in the creation and evaluation of development proposals.
vi. Developers and designers should formulate a comprehensive Design Statement for developments to respond and contribute positively to its natural and built environment through having a detailed understanding of the existing site conditions and the wider area.
vii. Developers and designers should discuss proposals with planning and conservation officers while busy with the design proposal, not after the fact.
viii. Developers and designers should demonstrate, in text and graphics, that the design submitted shares a sufficient number of those characteristics or justify their absence.

This research specifically addresses point iii above with the study findings.

Issues related to Heritage

The issue of heritage is a complex one. Whereas architectural expression in the streetscape is fairly frozen in time, society's definition of their identity and therefore associated heritage is rather fluid. Jivén & Larkham (2003, p. 74) argues that group identity is a key component in the creation of a 'sense of space', but the study area like virtually all of South Africa has a complex social environment. Defining a group identity is somewhat problematic as the South African population is far from homogenous in culture. It is not for nothing that Archbishop Emeritus Desmond Tutu coined the phrase 'The Rainbow Nation'.[40] Statistical data gathering in the 2011 National Census records population groups per defined enumerator areas within the study area under the categories of 'Black', 'Coloured', 'Indian', 'White', and 'Other'.[41] Though there are certain prevalences of population groups in certain enumerator areas within the study area, black, white, and Indian are prominently represented, while coloured and others do also feature. Within these race-based classifications are further layers of cultural variety, as indicated by South Africa having 11 official languages represented in the four main recorded population groups.

This adds even further layers of complexity to what would be a complex determination within a homogenous group. As the purpose of this study is not to strictly conserve the existing fabric of the area without alteration, but rather to inform a contextually sensitive process that informs future development, the author believes that an empirical approach to the analysis of the in-situ environment patently evident to any observer is, therefore, a suitable approach. "Yet, it is the assembly and composition of the elements that are of importance in a visual analysis of streetscape, not whether the architecture sustains a trained critical analysis or whether it is historic or modern, good or bad. Every element, no matter how architecturally adept or clumsy, contributes to streetscape and it is the cumulative effect and interrelationship of the elements that give a streetscape its character." (Tucker, et al., 2004, p. 136)

What also needs to be considered is this prevailing notion of conservation being linked to the static approach of historic preservation - a singular point in time needs to be captured and preserved. This is usually linked with the notion of romantic historicism; the rationale is we preserve particular environments because they speak of times when things were perceived as being 'nicer' by those advocating for the conservation.

[40] *Rainbow Nation* was a phrase coined by Archbishop Emeritus Desmond Tutu to describe the unity of multi-culturalism and diversity of South African people, brought into popular use shortly after the 1st democratic elections in the country in 1994. Bloomberg, 2020. The idea of the ANC losing power is not far fetched: analyst. *BusinessTech*, 02 October.

[41] Data extracted from the GIS database for the area on 16 October 2019.

(Cromley, 1987, p. 32)[42] The complexities of urban areas being dynamic spaces of changing people's and their experiences and therefore their sense of value attached to the area being subject to change are also at odds with the static preservation approach. (Jivén & Larkham, 2003, pp. 74-75)

These aspects do require an acknowledgement that the discussions around authenticity, as it relates to the built environment, are important. This is in light of there being attitudes that can be described as being 'deceptive' or 'slavishly copying' that do occur, particularly within the context of practitioners that are less skilled and engaging in work that requires engagement with the historical context. Jivén & Larkham do note that this form of work should be contrasted with the eclectic post-modern references to past forms and styles - this work, when done well as with any other work, leads to an appropriate object in the urban fabric in the confines of the post-modern paradigm. The discussion on authenticity is usually far more relevant to areas of conservation where more specific requirements are needed to be adhered to concerning materials, forms, and techniques for alterations to the existing fabric.

Individuals within a specific context interpret the architectural environment that they inhabit based on their personal histories and experiences and historical authenticity is not of great significance to many that take part in behavioural research projects on this aspect. (Jivén & Larkham, 2003, p. 77) The notion of a 'historic urban experience' being contrasted to that of 'historical authenticity' is discussed by Ouf (2001). The primary issue here is not of a kitsch inauthentic replication of an historic artefact (which Jivén & Larkham attribute in part to the professional detachment of designers), but rather of a fundamental lack of aesthetic concern and contextual reference when undertaking work that affects the fabric. Though slightly different in outcome from kitsch pastiche being applied to the designs of recent developments in the study area, there may still be a level of professional detachment at play in these works.

Building on the acknowledgement that the authenticity of urban spaces needs to allow for an evolutionary process to be allowed, such authenticity should be reflected in the continuation of traditions and traditional types of function and use. (Jivén & Larkham, 2003, p. 78) This is also affirmed by Principle 27 of the Charter of the New Urbanism – "Preservation and renewal of historic buildings, districts, and landscapes affirm the continuity and evolution of urban society." (Congress for the New Urbanism, 2001) In light of this, Jivén & Larkham advocate that the Swedish integrated approach to cultural heritage is also of value in promoting the authenticity of urban spaces. This approach evaluates heritage under three headings:

- 'document value': the value of the artefact, whether it be expressed in socio-economic, architectural or other terms. This allows discussion over exactly which aspects of any particular heritage artefact are most important (e.g. building façades or interiors);
- 'experiential value': people's experience of this 'document value', including the debate about whether 'experiential value' can persist without the actual 'document value', i.e. if a building is demolished;
- 'strengthening factors' such as age, patina and authenticity. Again these are viewed on a case-by-case basis.

This approach allows for the evaluation of factors including authenticity and contribution to a sense of place to a broader extent than other prevailing systems. It also allows for sensitivity to individual cases and can recognize the natural evolution of urban fabric. (Jivén & Larkham, 2003, p. 78)

When confronted with the topic for this research undertaking, many practitioners in the built environment immediately associate 'character' with 'historical preservation'. While this indeed informs the research, as mentioned before the intention is not for the declaration of a heritage precinct, but rather to use historical contextual developments in the area to inform a process that underpins a framework that results in an enhanced area through future development. "Buildings do not need to be old or historically significant to have a character that is important to people's understanding and enjoyment of an area." (The State of Victoria Department of Environment, Land, Water and Planning, 2018, p. 2)

[42] Cromley, E. C. (1987) Public history and the historic preservation district, in: J. Blatti (Ed.) *Past Meets Present*, pp. 30–36 (Washington, DC, Smithsonian Institution Press), Quoted in (Jivén & Larkham, 2003, p. 75)

It is, however, quite important to have a general understanding of the heritage paradigms of the modern world in general and the province of KwaZulu-Natal specifically. In light of this, certain key documents are reviewed in based on their relevance to this research.

Charter reviews

The main source of charters concerning heritage in the built environment are those adopted by the *International Council on Monuments and Sites* (ICOMOS). Five documents are relevant, namely the 1964 *Venice Charter,* the 1978 *Summary Report on the 5th General Assembly of ICOMOS* (which is a 'complementary text' to the Venice Charter), the 1979 *Australia ICOMOS Charter for Places of Cultural Significance* (otherwise known as the *Burra Charter*), the 1987 *Charter for the Conservation of Historic Towns and Urban Areas (*more commonly known as the *Washington Charter),* the 1994 *Nara Document on Authenticity,* and the 2003 *ICOMOS Charter – Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage (2003)*.

Internationally, the notion and importance of heritage preservation came to the forefront with the Athens Charter of 1931[43] being established. There have been subsequent charters and documents of influence in the international environment that should be noted. These are varied, hence only major documents are highlighted. After the Athens Charter, the Venice Charter of 1964 was formulated, this has had the most significant and lasting impact on heritage conservation to date. The Burra Charter in 1979 and subsequent revisions are still quite influential in the South African context. The 1994 Nara document on authenticity builds on the spirit of the Venice Charter but attempts to deal with the shortcoming around intangible heritage.

Locally, heritage aspects are governed by the KwaZulu-Natal Provincial Heritage Resources Authority (AMAFA). This statutory body was formed by the KZN Heritage Act of 1997. This in turn is informed by the National Heritage Resources Act of 1999. The 1997 heritage act was then superseded by the KZN Heritage Act of 2008, which has subsequently been superseded by the KZN AMAFA and Research Institute Act of 2018.

Pertinent aspects of the above will be discussed briefly in what is to follow. The relationship between current development and the need to address conservation is that by conserving aspects of a place, this often provides a deep and inspirational sense of connection between a community and the context, to their past and current lived experiences. (Australia ICOMOS, 2013, p. 1)

The Venice Charter

International Charter for the Conservation and Restoration of Monuments and Sites, otherwise known as The Venice Charter, was formally adopted in 1964 at the 2nd International Congress of Architects and Technicians of Historic Monuments in Venice. It emphasized regard for historical monuments and the need to preserve the 'full richness of their authenticity' through conservation and restoration. (ICOMOS, 1964)

It does embrace not only the concept of the 'historic monument', but also 'the urban or rural setting in which it is found'. Though it notes that conservation is always facilitated by the monument being made to be of some socially useful purpose, it specifically states that the layout and decoration of the building must not change. The setting must be preserved with no new construction, demolition or modification being allowed. Any extra work must be indispensable to the conservation process and must be distinct and of a 'contemporary stamp'. All periods of the building to be conserved must be respected and the evaluation and implementation thereof cannot rest solely on the individual in charge of the work.

Though this document is still heavily influential in matters of conservation globally, the validity of the document's fairly narrow approach was brought into question within the proceeding decade and a half. (ICOMOS, 1978, p. 11)

[43] *The Athens Charter for the Restoration of Historic Monuments* is the charter adopted at the First International Congress of Architects and Technicians of Historic Monuments, Athens 1931. It is the first international document addressing issues of conservation and restoration and published within the context of the League of Nations. It is of limited current value in light of subsequent ICOMOS charters.

The 1978 5th General Assembly of ICOMOS had prominent discussions around the Venice Charter, with discussion advocating for a 'complementary text' that should include the issues of the 'challenge sent (sic) by contemporary humanists'; clearer definitions between 'restoration' and 'conservation'; interpretations of the importance of modern houses in historic areas; new construction work in relation to historical sites; and consideration for appreciating the circumstances of developing countries in the implementation of guidelines. (ICOMOS, 1978, pp. 11-12)

Figure 2-52 - The Genbaku Dome of the Hiroshima Peace Memorial, Japan. This building is preserved in the same state as it was found after the 6 August 1945 atomic bombing. This illustrates the approach of preserving 'authenticity' of an artefacts' current state, but serves the purpose as an ongoing reminder of the tragic event. Source: (Boccardi, 2006)

The result was a review of the Venice Charter with the aim of producing a complementary text rather than superseding it, with a focus on the development of architectural heritage principles and methods of conservation. Subsequent charters have been formulated to deal with specific areas of conservation that attempt to address the shortcomings of the Venice Charter, such as the Charter for the Conservation of Historic Towns and Urban Areas (Washington Charter 1987), the 1999 Charter on the Built Vernacular Heritage, and the 2003 ICOMOS Charter – Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage.

The fundamental of the Venice Charter is the retention of authenticity, as defined by the period, to an extent that places of historical significance that had been recently damaged in some way would meet significant resistance should there be discussions of reconstruction. There has been a shift in this attitude, with exceptions (such as the 1980 reconstruction of the historic centre of Warsaw, the 2005 reconstruction of the Old Bridge Area of the Old City of Mostar and the 2010 reconstruction of the Tombs of Buganda Kings at Kasubi that were destroyed by fire. (Cameron, 2017)

The Washington Charter

This charter was drawn up to complement the Venice Charter. It defines principles, objectives, and methods for conserving historic towns and urban areas, while promoting 'the harmony of both private and community life' and the 'preservation of those cultural properties, however modest in scale, that constitute the memory of mankind.' (ICOMOS, 1987) It seeks 'the protection, conservation and restoration of such towns and areas as well as their development and harmonious adaptation to contemporary life.' It recognises that conservation activities should form an integral and coherent part of urban and regional planning as it relates to economic and social development policies and practices at every level. It acknowledges that resident participation is essential and that rigidity should be avoided as individual cases may present specific problems. It also advocates for a 'harmonious relationship between the historic urban area and the town as a whole'. It notes that 'New functions and activities should be compatible with the character of the historic town or urban area' and that 'When it is necessary to construct new buildings or adapt existing ones, the existing spatial layout should be respected, especially in terms of scale and lot size.' It also notes that 'The introduction of contemporary elements in harmony with the surroundings should not be discouraged since such features can contribute to the enrichment of an area.' The important aspect to note here is that the contemporary additions should be in

harmony with the surroundings.[44] It also notes that a general information programme on the cultural significance of the area should be set up for residents to encourage their participation and involvement.

Aspects of Character that it highlights amongst the generic listing of material and spiritual elements that express character to be preserved include:

1. Urban patterns as defined by lots and streets;
2. Relationships between buildings and green and open spaces;
3. The formal appearance, interior and exterior, of buildings as defined by scale, size, style, construction, materials, colour and decoration;
4. The relationship between the town or urban area and its surrounding setting, both natural and man-made; and
5. The various functions that the town or urban area has acquired over time.

The Washington Charter, though referencing the Venice Charter and carrying through much of its spirit acknowledges the challenges of the need for change within a heritage urban area. Additions or alterations should be in harmony with the existing, but also of a contemporary feel, there is no overwhelming desire to mimic the existing fabric, only to be informed by the fabric.

The ICOMOS Charter

The ICOMOS Charter – Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage (2003) further acknowledges the challenges posed by various divergent contexts. It recognizes that a rational approach appropriate to the cultural context is desirable and deals with both the Principles of the basic concepts of conservation and Guidelines that are recommended to be followed, though the Principles only have been ratified at the Convention. It reinforces the need for a multi-disciplinary approach, the need to avoid fixed criteria, and the need to retain the integrity of the entire item of heritage – merely retaining the façades does not result in meeting the criteria for conservation. Much of the document deals with the technical aspects of specific conservation techniques, so its relevance to this research is more limited than other charters.

The Burra Charter

The Australia ICOMOS Charter for Places of Cultural Significance, otherwise known as the Burra Charter, was formulated taking into

Graph 2-1 - Flow diagram for The Burra Charter Process
Source: (Australia ICOMOS, 2013, p. 10)

[44] A practical guide to how this has being achieved is the City of Toronto's Townhouse and Low-Rise Apartment Guidelines (2018). Aspects of densification in an area of significant heritage culture have been engaged with without being overly prescriptive and precious about the notions of traditional conservation.

consideration the Venice Charter of 1964 and the subsequent resolutions of the 5th General Assembly of ICOMOS in Moscow in 1978. It was formally adopted in 1979 and has had subsequent revisions adopted in 1981, 1988, 1999 and 2013. There was a significant publication of an illustrated guide to the 1999 charter in 2004. The Charter contains sections on Conservation Principles, Processes, and Practices. One of the fundamental departures from the Venice Charter in this document is the acceptability of reconstruction under certain circumstances. (Cameron, 2017)

It notes that 'places' can be comprised of a range of features and scales, from a tree to an entire town. It also notes that 'cultural significance' includes aesthetic value for past, present and future generations.' The Fabric of a place relates to all the physical materials that make up the place, including elements, fixtures, contents and objects and may define spaces and views. Conservation is related to the retention of a place's cultural significance through a process of looking after it, while preservation means the maintenance of a place to retain its existing state.

It advocates for the use of traditional techniques and materials in the conservation of significant fabric. It also advocates for a sequence of collecting and analysing information before making decisions that affect the cultural significance of a place and that considerations affecting the future of the place (such as the owner's needs, resources, and external constraints) should affect policy development. Visual and sensory aspects also need to be considered in the retention of appropriate settings, and changes to the setting or relationship (such as new construction, demolition and intrusions) that would have an adverse effect should not be permitted. New work should not distort or obscure the cultural significance of a place or detract from its interpretation and should have a minimal impact on its cultural significance. The Burra Charter is seen as more applicable to conservation activities in the province by the KwaZulu-Natal Amafa and Research Institute, the legislated body tasked with heritage preservation and management, as "it deals with multicultural sites and is, therefore, more applicable to conditions in this province". (KwaZulu-Natal AMAFA and Research Institute, n.d., p. 5)

The Nara Document on Authenticity

It is conceived in the spirit of the Charter of Venice, 1964, and builds on it and extends it in response to the expanding scope of cultural heritage concerns and interests in the contemporary world. (ICOMOS, 1994)

One of the shortcomings in previous charters is the aspect of intangible heritage, as much of the previous focus has been around physical objects of heritage being preserved. It recognises that the current global trends towards globalisation and homogenisation along with a trend towards aggressive nationalism are at odds with the essential contributions that relate to the authenticity of the collective memory of humanity. "The Nara Declaration, with its emphasis on cultural diversity and the relative nature of values, encourages heritage practitioners to interpret the Venice Charter through this new lens." (Cameron, 2017)

It attempts to address the issue where cases of cultural value appear to be in conflict. It advocates that 'respect for cultural diversity demands acknowledgement of the legitimacy of the cultural values of all parties.' (ICOMOS, 1994) In the particular context of this study, it is not that there are conflicting values per se, but more so the seeming attitude of dismissal of values of any kind on the whole. It recognises that conservation should be rooted in the values that are attributed to the heritage that is to be conserved and that the ability to understand these values depends in part on information being understood as credible or truthful. It also recognises that judgements about values attributed to cultural aspects should not be based on fixed criteria, but rather a considered and respectful appraisal within the cultural context applicable. The authenticity of the cultural experience may include aspects such as 'form and design, materials and substance, use and function, traditions and techniques, location and setting, and spirit and feeling, and other internal and external factors.' (ICOMOS, 1994)

It recognises that imposing mechanistic formula of standardised procedures be avoided, though does indicate that clear documentation should be available as a practical guide to future treatment and monitoring. It advocates for multidisciplinary collaboration in the appropriate utilisation of available expertise and knowledge. It also recognises that increasing awareness within the public is an absolute necessity in safeguarding issues of

heritage, a greater understanding of the values represented by cultural resources (such as the existing character of our study area) needs to be developed.

One of the conclusions of the Nara Conference was the acknowledgement of the need for a broad interpretation of authenticity that would allow for an evolutionary process of change in urban and architectural form, spurred by socio-cultural change. (Jivén & Larkham, 2003, p. 78)

The KwaZulu-Natal AMAFA and Research Institute Act

The KwaZulu-Natal Amafa and Research Institute Act, 2018 is the provincial legislation that deals with the identification, conservation, protection, management and administration of heritage resources as well as managing the basic and applied research connected therewith. (KwaZulu-Natal, 2018, p. 10) It needs to be read in conjunction with the National Heritage Resources Act, No 25 of 1999. The Provincial Act may add to but not subtract from the National Act but takes precedence over the National Act. (KwaZulu-Natal AMAFA and Research Institute, n.d.).

The numerous aspects of the Act deal with the proclamation of powers, authority, structures, procedures and administrative duties. It is of particular note that The AMAFA and Research Forum, one of the fundamental structures in the Institute, consists overwhelmingly of municipal managers of metropolitan and district municipalities in the province or their nominated delegates, municipal managers from local municipalities as determined by the Executive council that need to participate[45], and three other government deployees excluding the Head of the Secretariat of the Institute. Representatives from outside of government structures are one representative from the University of KwaZulu-Natal and one representative nominated by Ezemvelo KwaZulu-Natal Wildlife[46]. The natural question to ask is about the composition of the forum and its ability and expertise to carry out the intended mandate, but this is not specifically germane to the research at hand.

The KZN Act allows for the proclamation and listing of individual buildings, protection of groups of buildings forming a conservation or protected area and also provides for the general protection of all buildings over 60 years of age. This general age protection was implemented due to the lack of available defined resources within geographical areas, the intention being for local authorities to develop such databases of defined resources requiring protection. (refer to Section 37(2)(b) of the KZN Act) As the Institute deals with all matters about Heritage in the province, it has established a Built Environment Section that handles matters of the conservation of the built environment, supported by Built Environment Committees to review applications and make recommendations. Practical implementation of the mandate of the Act as it relates to the Built Environment is 'based on principles contained in the international charters accepted by UNESCO and ICOMOS, namely the Burra Charter (Australia) and the Venice Charter' (KwaZulu-Natal AMAFA and Research Institute, n.d., p. 7)

In reviewing applications, the following six criteria are used:

1. Architectural Significance
2. Social/Spiritual Significance
3. Historical Significance
4. Technological/Scientific Significance
5. Environmental Significance
6. Intangible Significance

The most relevant criterion for this research is Architectural Significance as it primarily will inform the criteria for fieldwork. The aspects under this criteria are as follows:

1. Intrinsic Design Quality
2. Building Type

[45] There are 10 district municipalities, one metropolitan municipality, and 43 local municipalities in KZN.
[46] Ezemvelo KZN Wildlife is a governmental organisation responsible for maintaining wildlife conservation areas and biodiversity in KwaZulu-Natal Province. It is set up by mandate of the KwaZulu-Natal Nature Conservation Management Act (Act No.9 of 1997)

3. Period
4. Details
5. Technology
6. Association with a prominent architect/builder

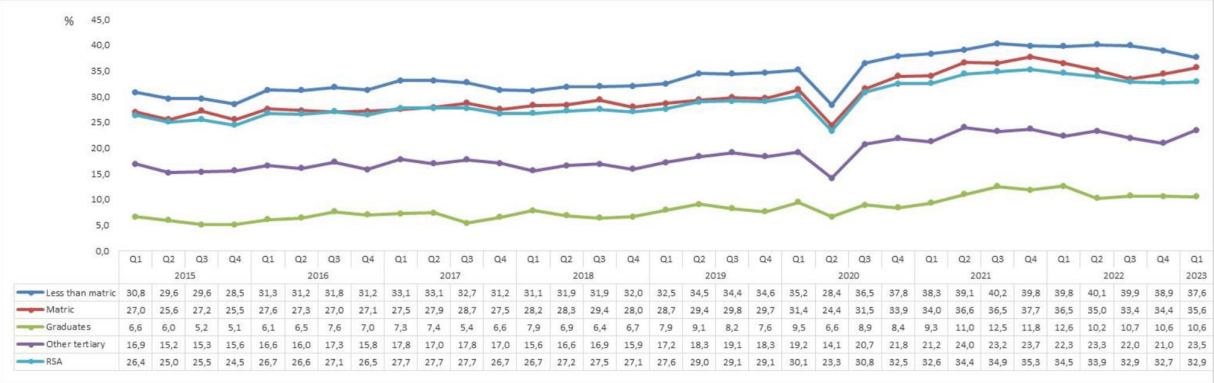
As the research deals holistically with character and streetscape, type, period, technology and association with individuals are of less significance than design quality and details, and these aspects as defined by the heritage resources body informs rather than prescribe the criteria used in the primary research and recommendations emanating therefrom.

Issues of Response to Crime

The issue of crime, particularly housebreaking and burglary, is of significant influence on the local built environment. It is by far the most prevalent crime in South Africa, with 12% of households reporting having at least one instance of housebreaking in the 2021/22 year. This accounts for 75% of all crimes experienced by households. (Statistics South Africa, 2022). This practically means that the built form will respond to this factor quite significantly, usually in the form of ad-hoc post-occupancy security interventions. The Council for Scientific and Industrial Research (CSIR) in South Africa embarked on design-related research to address the issue with the formation of their CSIR CPTED team, which represents one of the most significant built environment-based research initiatives in South Africa around the issue of crime prevention. (CSIR Building and Construction Technology, n.d.) It is acknowledged that a more comprehensive approach to dealing with crime in urban areas is required to adequately address the problem. It needs to deal far more broadly with aspects of law enforcement, social prevention and situational prevention. (Kruger, et al., 2016)

Crime Prevention Through Environmental Design (CPTED) is defined as a multi-disciplinary approach to reducing crime through urban and environmental design and the management and use of built environments. CPTED strategies aim to reduce victimization, deter offender decisions that precede criminal acts, and build a sense of community among inhabitants so they can gain territorial control of areas and reduce opportunities for crime and fear of crime. (International CPTED Association, 2019). Oscar Newman's seminal work on *Defensible Space* published back in 1972 is seen as the genesis of the movement and he is still the dominant theorist on which most current research is based.

The current research is focused overwhelmingly on UK and US circumstances and case studies, and though relevant to informing the South African context, one must be quite measured in the direct translation of findings and information. Statistics indicate that there is a significantly different context for applying CPTED principles and research outcomes in South Africa. The two significant aspects affecting the local data and therefore validity of findings and recommendations are the high underreporting rate and high unemployment rate that influences data comparability.



	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
	2015				2016				2017				2018				2019				2020				2021				2022				2023
Less than matric	30,8	29,6	29,6	28,5	31,3	31,2	31,8	31,2	33,1	33,1	32,7	31,2	31,1	31,9	31,9	32,0	32,5	34,5	34,4	34,6	35,2	28,4	36,5	37,8	38,3	39,1	40,2	39,8	39,8	40,1	39,9	38,9	37,6
Matric	27,0	25,6	27,2	25,5	27,6	27,3	27,0	27,1	27,5	27,9	28,7	27,5	28,2	28,3	29,4	28,0	28,7	29,4	29,8	29,7	31,4	24,4	31,5	33,9	34,0	36,6	36,5	37,7	36,5	35,0	33,4	34,4	35,6
Graduates	6,6	6,0	5,2	5,1	6,1	6,5	7,6	7,0	7,3	7,4	5,4	6,6	7,9	6,9	6,4	6,7	7,9	9,1	8,2	7,6	9,5	6,6	8,9	8,4	9,3	11,0	12,5	11,8	12,6	10,2	10,7	10,6	10,6
Other tertiary	16,9	15,2	15,3	15,6	16,6	16,0	17,3	15,8	17,8	17,0	17,8	17,0	15,6	16,6	16,9	15,9	17,2	18,3	19,1	18,3	19,2	14,1	20,7	21,8	21,2	24,0	23,2	23,7	22,3	23,3	22,0	21,0	23,5
RSA	26,4	25,0	25,5	24,5	26,7	26,6	27,1	26,5	27,7	27,7	27,7	26,7	26,7	27,2	27,5	27,1	27,6	29,0	29,1	29,1	30,1	23,3	30,8	32,5	32,6	34,4	34,9	35,3	34,5	33,9	32,9	32,7	32,9

Graph 2-2 - The rates of unemployment by educational status from 2015 to 2023. The general trend is a steady increase overall to 32,9% in the first quarter of 2023.
Source: (Statistics South Africa, 2023, p. 13)

The research indicates that the percentage of South African households that experience housebreaking is double that of the UK. (Statistics South Africa, 2018) (Office for National Statistics, 2017, p. 4) Practically, this illustrates that there is a far more significant issue that relates to security concerns locally around housebreaking than where the majority of the research is conducted.

The high burglary rate is particularly fuelled by the high unemployment rate (put at 32,9% at the end of the first quarter of 2023). The effect of this is that there is a correlating increase in housebreaking, with the general population taking further ad-hoc measures to further secure properties. It is also to be noted that social support for undocumented and documented immigrants is virtually non-existent, which anecdotally has an impact on certain crime rates, such as housebreaking and theft – without work or adequate support, certain individuals do turn to crime to survive.

The consensus among researchers in the field such as Newman (1996), Cozens (2001), and Kruger et al. (2001) is that if the environment is planned, designed and managed appropriately, certain types of crime can be reduced. Crime is noted as being of a specific nature or type that occurs in a specific location. Though there is a caution that interventions could displace rather than reduce the number of offences being committed, in many instances the appropriate design of the built environment can be more effective in reducing crime than law enforcement and social prevention aspects.

Design features of the physical environment can hinder or enhance the opportunities for crime to occur, therefore the role of environmental design should be considered as part of any crime prevention strategy. (CSIR, n.d.) The aspect of a favourable environment is the one that has the greatest bearing on this research. An unfavourable environment for committing a crime will lead to a reduction in the incidence of crime. The discussion here is the urban and architectural design response that assists in creating an environment wherein crime is discouraged.

Newman's work in *Defensible Space* set the principle concepts on which much of the subsequent research and interventions are based. He structured his work around the following:

- Territoriality,
- Surveillance,
- Image, and
- Geographical juxtapositioning.

There are criticisms of his approach as it focuses on perceptual rather than hard quantitative data in informing recommendations. Due to the nature of the approach focussing on design, there is also a marked absence of sociological and anthropological aspects that do heavily influence the occurrence of crime. His research is also overwhelmingly based on circumstances in the United Kingdom and the United States of America where the general nature and prevalence of crime is quite different to the South African context, as mentioned previously. The author does argue though that as the question is rather narrow as it relates to appropriate design responses to the physical environment, it is acceptable to confine the discussions to built rather than social aspects, as did Newman.

The Charter of New Urbanism also acknowledges that safety and security is an important aspect that needs to be incorporated into the design of the built environment. Principle 21 of the Charter (2001) states that "The revitalization of urban places depends on safety and security. The design of streets and buildings should reinforce safe environments, but not at the expense of accessibility and openness." Many *New Urbanists* do advocate the use of alleys to make the main street frontage more attractive by moving the service components (such as rubbish storage and collection and parking) to the rear of building sites. This may be appropriate in areas with low crime rates, but due to their lack of definition of ownership and lack of territoriality and surveillance, they are greatly discouraged when considering crime prevention strategies. The counter-argument is to encourage 'backyard densification' where living accommodation is included above garages facing alleys (Fulton, 1996, p. 15). This option does not adequately deal with the psychological aspects of living in an area that is perceived to be more vulnerable to crime.

In *Manual for Streets*, Young, et al. (2007, pp. 46-47) highlight the following related principles for reducing the likelihood of crime in residential areas:

- the desire for connectivity should not compromise the ability of householders to exert ownership over private or communal 'defensible space';
- access to the rear of dwellings from public spaces, including alleys, should be avoided – a block layout, with gardens in the middle, is a good way of ensuring this;
- layouts should provide natural surveillance by ensuring streets are overlooked and well used (the current tendency of high solid walls is problematic, and the design trend of facing away from the street is also problematic.)

The five extrapolated points for the South African reality

The nature of CPTED deals with the third aspect of a crime being committed, namely 'a favourable environment' for it to occur in. The goal is to make the environment less favourable, therefore reducing the occurrence of crime. Utilising aspects of internationally based CPTED research and practice, 'Defensible Space' (Newman), and 'Secured by Design'[47], The South African *Council for Scientific and Industrial Research* (CSIR) has extrapolated 5 contextually appropriate points for nationally applicable CPTED implementation. These are:

- Surveillance & visibility;
- Territoriality;
- Access to escape routes;
- Image & aesthetics; and
- Target hardening.

It is noted that these principles should be employed in combination with one another to increase the effectiveness of the design-based intervention. (CSIR, n.d.)This also highlights the aspect that the principles are interconnected at some level, mainly through the strategies that influence them often being common – for example, the erection of fencing can both add to the sense of territoriality as territory is now more physically defined, increases target hardening by creating an additional physical barrier, but may also affect image and aesthetics with certain measures such as barbed wire leading to an undesirable visual appearance.

Since the aspect of access to escape routes deals with crime prevention in the urban civic realm primarily (such as moving through the city as a pedestrian) as opposed to an individual residence, this aspect is not of particular relevance to this study, therefore the remaining four aspects will be discussed. The study *The Impact of Security Considerations on the Public Interface of Housing in Central Durban, South Africa* (Du Plessis, 2019) utilised a street in this research study area as its sample, therefore statistics will be quoted from the 2019 study.

Surveillance and visibility

Passive surveillance is the casual observance of public and private areas by users or residents during their normal activities. Active surveillance refers to surveillance by police or other agents whose express function is to 'police' an area. (CSIR, n.d.) Both active and passive surveillance is dependent on the actual and perceived visibility, in this instance the occupants of the buildings being able to observe the street. Visibility is the degree

[47] Secured by Design (SBD) is a place-based approach to crime reduction that brings together standards of physical security with the broader principles of Crime Prevention Through Environmental Design (CPTED) (Armitage, 2018). This is primarily a UK national project that combines official Police resources with built environment designers in developing standards for allowing premises to be SBD certified.

to which an environment is made visible by elements such as lighting and uninterrupted lines of sight. Good visibility allows for better surveillance.

Surveillance and visibility were achieved historically through the proximity of buildings to the street (before the adoption of the 7,5-meter building line) and living spaces having openings onto the street (wrap-around verandas for the individual houses and balconies and/or large windows for the low rise residential apartments). This allowed for both active surveillance and passive surveillance[48].

Currently, the trend is to retreat into the property, rather than engage with the street edge, only 5% of the sample in 2019 did not have subsequent additional security measures installed along the boundary in the form of fencing. The vast majority is in the form of palisade fencing, which does allow significant visibility to continue, but there are instances of including high solid walls, which reduces surveillance to almost nil.

Figure 2-54 - Witley Court, 1953, 510 Che Guevara Rd. The building demonstrates the tendency of the time to have balconies and large openings facing the street. The palisade fencing is a recent addition.

Figure 2-53 - Glenample, 1951, 453 Che Guevara Rd. The ground floor units have large openings to the street. These would originally have provided significant visibility of the street, but the subsequent adding of a solid high boundary wall and significant tree cover along the inside of the boundary has reduced visibility to virtually nil.

Territoriality

Territoriality is a sense of ownership of one's living or working environments. Territoriality and people's sense of ownership are encouraged when residents identify with the spaces and where the space and its configuration are legible to them. (CSIR, n.d.)

The nature of having well-defined property ownership laws based on the English colonial prescripts means that from early on, defining property boundaries was very clear and fairly visible. In early apartment buildings, the inclusion of a low boundary wall was a virtually universally applied method of this definition. Many of these walls remain, with supplementary fencing added or the original wall extended over time. A building line to properties is also universal, with the vast majority being over 3m. This has resulted in a

Figure 2-55 - Moorehaven, 1948, 375 Che Guevara Rd. The rather familiar sight of the subsequently added fencing of palisade and electric capping to the original low garden boundary wall. The visual flow is definitely compromised, but there is still some measure of transparency.

[48] Passive surveillance is achieved through the use of elements that suggest surveillance is happening and include balconies and large windows facing the street.

'mediating' space between the building façade and the street edge, which would usually contain soft landscaping.

Figure 2-56 - Wyndham, ca. 1950, 408 Che Guevara Rd. This image was taken in 2019, and subsequently a higher fence has been erected. The original low brick garden wall clearly defines the property boundary. Subsequent security upgrades of a low steel railing and gate further reinforce the territoriality being expressed. This portion of garden is not easily accessed, one has to climb over the garden wall to get there. It still adds to the overall streetscape as the visual separation is minimal in comparison to the majority of properties in the area, though more compromised with the subsequent higher fence added.

This initial definition of private mediating space has been ever increasingly reinforced, with the erection of fences – the visual continuity of this transition space being continually eroded to the point where overwhelmingly the visual incorporation of this space into the public domain is severely curtailed. Private property owners are increasingly asserting their control over this space, and though asserting greater territoriality, they are creating a situation where the streetscape suffers. The low-rise residential apartment building ownership model overwhelmingly has a body corporate control structure[49]. Elected trustees manage the affairs of the apartment block on behalf of all owners. This does have the effect of reducing the individual sense of ownership of spaces such as the front of the property, and therefore the extent to which this is cared for. The primary concern exhibited is for security – keeping intruders off of this space, which in turn leads to a sort of no-man's-land. Many of these spaces have no easy access with low garden walls to be scaled. With the heavy dependence on the private motor vehicle, many residents only access the property through the vehicle entrance, thus further reducing the sense of concern and interest in the space.

Image and Aesthetics

The image projected by a building or a public area in the city has been linked to levels of crime and particularly to the fear of crime. This link is often referred to as 'crime and grime'. (CSIR, n.d.)

Figure 2-57 - Hennet Court, 1955, 328 Che Guevara Rd. The lack of maintenance, subsequent installation of visually intimidating security measures such as the barbed wire that is rusting, and the reduction of street surveillance through the construction of a solid boundary wall leads to a compromised image of a sense of security on the street.

From a pure crime prevention point of view, this simply means that a target that appears to be less cared for and of poor visual appearance will not only be a more likely target of crime but also contributes to a higher fear of individuals in the public realm becoming victims of crime. An area of a definable unified character assists in portraying a better visual appearance. In numerous instances in the study area, rather than attempting to continue with a unified language, subsequent developments pursue rather a-contextual and poor design solutions. Existing contextual buildings are also partially or fully hidden by the security and privacy interventions to properties.

[49] Prior to 1971, multiple unit developments were owned by a company in which individual owners would purchase shares in the company in return for exclusive use and occupation of a flat, this is referred to as a Share Block. The 1971 Sectional Titles Act made an alternative ownership model available, where individuals would buy clearly defined units within a development, thus giving them ownership of the unit. Over time, Sectional Title has replaced Share Block developments almost entirely. (Meumann White, 2019)

This aspect of visual appearance is, however, also linked with the need for maintenance. A lack of ongoing maintenance has a detrimental effect on the overall image and aesthetics of the area. Both good design and good upkeep contribute to appearance. Many of the mid-century modernist buildings incorporated face brick walls, thus reducing the painting requirements. The only significant maintenance issue that is prevalent in the older buildings of the area is that of window frames. A lack of proper maintenance of the timber and steel frames (basically, regular painting) has led to significant damage in some instances and the tendency to replace these with aluminium frames. The uncoordinated replacement has led to a compromised aesthetic in some places, where only some windows are changed, or different sections are used for the frames being replaced on the same façade. The recent amendments[50] to the Sectional Titles Schemes Management Act, 0211 (Act No 8 of 2011) place an obligation on the Body Corporate to develop a 10-year maintenance plan and to ensure there are sufficient funds to carry out the plan.

Target Hardening

Target hardening reduces the attractiveness or vulnerability of potential targets by, for instance, the physical strengthening of building façades or boundary walls. (CSIR, n.d.)

The overwhelming approach in the 2019 study sample was to opt for physical strengthening at the boundary in the form of fencing. This is usually done retrospectively, as understandably, the contemporary security concerns did not feature when buildings were initially built. The circumstances indicate that the major factor in determining the target hardening intervention is the perceived effectiveness at preventing intrusions onto the property in the

Figure 2-58 - Targeting hardening include physical barriers, such as this palisade fence and also landscaping, such as this thorny groundcover. The advantage of using soft landscaping in a target hardening fashion is that it does not appear to be a security device, but adds to the overall attractiveness of the streetscape.

Figure 2-59 - Elizabeth Court, 31 J.B. Marks (left) and 39 J.B. Marks Rd. Elizabeth Court has implemented far less visually intrusive security measures, mainly at the building entrance, thus allowing the garden area to be visually flowing, as opposed to its neighbour that has built a solid high boundary wall topped with razor wire (that tends to rust easily in the Durban climate)

[50] The Sectional Titles Schemes Management Regulations referred to in the Act was published and enacted on the 7th October 2016. Body Corporates are 'phasing in' the requirement, though there is no such discretion given in the regulations. The initial capital outlay requirements for sectional schemes that have not been keeping up to date with maintenance can be excessive.

cheapest way possible – aesthetics is of little concern. Different approaches that are visually more suitable are potentially more expensive but also are perceived to be less desirable, the goal being to be territorial about the entire property, including the building line reserve, not to merely stop the intrusion into the building and parking areas. 80% of the properties in the 2019 study utilised razor or barbed wire in some form and 65% utilised electric fencing, usually as additional toppings to fences or walls.

The requirement for physical barriers to openings is a fairly standard requirement for household Insurance coverage[51], in the event of a burglary, a pay-out will be contingent on having the stipulated physical barriers.

In some limited instances, landscaping planting is also used in increased target hardening. This is usually in the form of planting with thorns that create a deterrent for climbing on them.

[51] Insurance requirements are determined on a case by case basis and vary from one insurer to another. Combinations of alarms and physical barriers may be stipulated as a requirement or only have bearing on the premium determination. It is a standard requirement for all openings to have additional physical barriers, or significant changes in premiums are likely. (Alexander Forbes, 2011)

2.6 Chapter Conclusions

The need for cities to respond to the sustainability agenda is evident and unescapable and is part of an overall global development agenda. Society is increasingly aware of the need for our environment to be able to sustain our ever-increasing consumption patterns and our associated lifestyles leading to greater degradation and depletion. (Durack, 2001). The current narrative is overwhelmingly around a technocratic approach of 'growth-based productivity'. (James, 2015) This has translated into a broadly accepted policy on the densification of the urban environment. This densification is typified by the Compact Cities approach which has its fundamental underpinnings in approach to transportation, but again this is not without its faults. The Centralists focus on an idyllic and romantic notion of the city or the overwhelming density of habitation with little regard for the dramatic implications this would have on the existing lifestyles of urban dwellers. The Decentralists on the other hand seem to rely on an unsustainable land-use model, benefitting the select that can afford to own larger plots of land beyond the city core and to commute privately. (Breheny, 1996)

The disquiet over this narrow definition has been growing, and now the issue of our sustained well-being is commonplace. (O'Connor & Faucheux, 2001). Increasingly, more forward-thinking local authorities suggest a definition that includes the improvement of the economic, social, and natural environment we live in. (City of Toronto, 2018). Discussions regarding Subjective Well-Being, such as that of Ettema & Schekkerman (2016) and Mouratidis (2019) indicate that understanding the role of this aspect as it relates to the built environment can provide important input to the urban planning debates, particularly as it relates to the social aspect of city sustainability. These social aspects are at the core of many utopian planning movements of the 19th and 20th centuries. Though generalized utopian alternatives have faded away, many have grappled with the issue of appropriate urban character, specifically as it related to the architecture and the streetscape that is enclosed by it.

The specific study area allows for an investigation into the aspect of the existing streetscape as it relates to current urban development. The area in the past was subject to a period of noticeable residential densification and has a history of noteworthy streetscape character in the broader city, though directed by an orthodox planning process. The area has an enduring character that incorporates the built form, spatial structure, civil amenities and existing ecological aspects. The study area, though undergoing processes of densification (particularly during the mid-20th Century), still has substantial opportunities for increased densities. However, the development of recent times is heavily leaning towards the conversion of existing building stock to commercial entities and the less desirable development of student residences.

The shortcoming in the current development management processes in the local authority allows for ill-conceived and downright illegal development to increasingly occur. There is a lack of capacity and resources available to those entrusted with the role of ensuring *good* design and implementation thereof. International best practices advocate for a normative collaborative approach with role players (Hansmann, et al., 2018). This includes local authorities identifying strategies to enhance the quality of the living environment, providing best practices and guidance to citizens and stakeholders, and ensuring developments to respond and contribute positively to its natural and built environment. "We must always remember that the fates of cities are decided in the Town Hall…" (Le Corbusier, 1987, p. 74)

The study must also note two specifically influential contextual influences in the local development arena. The first is that of heritage. In an environment with a broad range of different cultural groups making up the South African population, each with their own language and culture, the question that always arises is "Whose heritage are we protecting?". With the significant socio-economic and cultural damage inflicted by Apartheid still having a legacy on the urban development environment, an approach that moves away from 'style' and 'language' towards principles is appropriate. The second issue is that of the built fabric's response to crime. The overwhelming response is for target hardening, but this has a detrimental effect on the streetscape, further reinforcing the separation between the public and the private, decreasing a sense of ownership and surveillance and increasing the sense of vulnerability in the public realm. (CSIR, n.d.)

Despite the need for a sustainable urban development model being clearly evident, there are still numerous problematic implementation issues. There is no uniform approach or model that can be applied – each case requires its own individual analysis and diagnosis. The sustainable city is predicated on a holistic vision that is based on many urban planning concepts, strands and hypotheses. One component of this is the physical environment of the streetscape which has a fundamental role to play in the urban inhabitant's quality of life and well-being.

CHAPTER 3 - THEORIES OF 'PLACEMAKING'

The discussion of placemaking first requires us to define the term. It includes the two aspects of *place* and *making*. *Place* is a defined area that may include elements, objects, spaces and views. It may also have tangible and intangible dimensions. (Australia ICOMOS, 2013). *Making* is the act or process of making something or the deliberate shaping of an environment. (Silberberg, 2013, p. 2) The practice of *placemaking* therefore *'The process of shaping of elements, objects, spaces and views within an environment that seeks to build or improve public space and to create an overall 'feel', 'atmosphere', or 'character' that should improve a community's quality of life.'*

Silberberg notes that contemporary placemaking is generally ambitious and optimistic. Practically it "…seeks to build or improve public space, spark public discourse, create beauty and delight, engender civic pride, connect neighborhoods, support community health and safety, grow social justice, catalyze economic development, promote environmental sustainability, and of course nurture an authentic "sense of place." (Silberberg, 2013, p. 2)

Dovey, et al. (2009, p. 38) recognise that there is a complexity that defies separations between the issues that render character as a set of physical elements and the experience of those within a place. It is therefore important to discuss the matter of placemaking in light of the research goals of this document. This will be done through a review of the themes of *Legibility and the City*, *Objectivity in Placemaking*, and *Streetscape Theory*.

Figure 3-1 – 2nd streetscape image capturing the architectural elements for a portion of Ferguson Road.

3.1 Legibility and the City

Kevin Lynch's book *The Image of the City* (1960) considers the visual clarity or 'legibility' of the cityscape – the ease with which its parts can be recognized and organised into a coherent pattern. It divides the components of the city image into five aspects, namely: path, landmark, edge, node, and district. It recognises that a city is perceived by its inhabitants. Time, context and past experiences are also acknowledged as informants of the image. Though *meaning* is identified as one of the three components of analysis of the city image, his study focuses on *identity* and *structure* of the city image – Lynch recognises that the various individual meanings attributed to the same city form make this difficult to gain consistent results. Jivén & Larkham (2003, p. 70) argues that Lynch 'ignored meanings and focussed on structure and identity'.

Lynch recognises that greater precision in image making can be made with more homogeneous classes – this is more complex in the current study context of a rather diverse (rather than homogeneous) range of classes that comprises the South African population[52]. What must be borne in mind is that context within the current urban realm does not seem to be a varied, but rather deliberate creation of images per population grouping, primarily based on historical population segregation through Apartheid planning. There seems to be an abandonment of the notion of 'speaking' of a deliberate image in recent times in favour of a particular developer-driven process that places financial pragmatism as primary - this results in an image based on design and implementation consideration of development rather than what an appropriate image would be. Previous development may have been developer-driven, but the developers were responding to an image seen as desirable within the market.

Sense of Place

Jivén and Larkham (2003) in their paper *Sense of Place, Authenticity and Character: a Commentary,* recognises that character, sense of place and genius loci are often misunderstood in contemporary discussions on the built environment, such as when Jackson[53] writes of atmosphere he indicated that genius loci has also become allied to the concept of the character of a place.

According to Jivén and Larkham, the progression of the theoretical work has been extensive. The first aspect to discuss is that of genius loci, due to its prominence in the writings around the sense of place, including those of Norberg-Schulz. This term has had changes in its meanings applied over the last two centuries. In the 18th century, this primarily applied to an exclusively rural and garden landscape discussion. Subsequently, this concept has become applied to any landscape and any place including urban ones and its use in urban context predominates in the contemporary professional literature.

This broad tradition of the picturesque subsequently led to the townscape polemic and visual analysis in the UK planning from the 1940s, epitomised in the work of Gordon Cullen[54]. Cullen's work introduced a systematic framework in attempting to reduce the spirit of a place to enable visual tradition. The criticism of this is that it did not address the elusive qualities that affect the emotional experience of, and reaction to, places.

Conzen's[55] work revolved around 'townscape' and group identity that is closely linked with the form and history of a place to create a sense of place. The culture and history-conditioned character reflects the

[52] Statistics South Africa, the national statistical service of South Africa, classifies the South African population into five major population groups. These major groups, are however, not culturally or linguistically homogeneous. There are eleven official languages representing significant cultural groups.
[53] Jackson, J. B. (1994) *A Sense of Place, a Sense of Time* (New Haven, CT, Yale University Press).
[54] Cullen, G. (1961) *Townscape* (London, Architectural Press).
[55] Conzen, M. R. G. (1966) Historical townscapes in Britain: a problem in applied geography, in: J. W. House (Ed.) *Northern Geographical Essays in Honour of G.H.J. Daysh*, pp. 56–78 (Newcastle upon Tyne, Oriel Press).
House (Ed.) *Northern Geographical Essays in Honour of G.H.J. Daysh*, pp. 56–78 (Newcastle upon Tyne, Oriel Press).

aspirations of the current and preceding inhabitants. Jackle[56] focused on the expression of the experience of a place being best done by the tourist, and Walter[57] argues that sense, memory, intellect and imagination and expressive intelligibility. (Jivén & Larkham, 2003, pp. 69-70) Needless to say, there are conflicting views between emphasis on collective or individual perceptions, immediate experience versus long-term familiarity and those that would include or exclude the historical paradigm.

The term 'genius loci' has become used with respect to perceptions of the quality of places and urban designs. (Jivén & Larkham, 2003, p. 68) and most prominently is that lately "…genius loci arises most particularly from the experiences of those using places rather than from deliberate 'place making'." (Jivén & Larkham, 2003, p. 67). Many of the recent uses of the term are in planning related exercises, but indiscriminately so. "It would appear, therefore, that planning and urban design in the post-war period have tended to use the terms 'sense of place', 'character', 'appearance' and genius loci indiscriminately and interchangeably." (Jivén & Larkham, 2003, pp. 73-74) They argue that many use generic interpretations and few display the conceptual richness of Norberg-Schulz's approach. It is therefore worth taking a more specific look at his approach shortly hereafter.

The author questions – if 'character' emerges from 'individual and community perceptions, values and experiences' rather than being planned, what is it that is intended through the effort to define it? In this instance, it is the preservation or enhancement of the current quality of space in the study area, which is of merit. Tucker, et al. (2004, p. 135) note that in these varied interpretations and approaches, in people experiencing a particular place, there must have been some shared experiences. The physical environment is static, it is the associations to these physical elements that may change.

Christian Norberg-Schulz

Christian Norberg-Schulz developed his theories related to placemaking over about 30 years. He initially focused on structuralist studies (such as with his 1963 work *Intentions in Architecture)* but then shifted to a phenomenological approach from the early 1970s onwards with works such as *Existence, Space and Architecture* (1971), *Genius Loci* (1980) and *The Concept of Dwelling* (1985) – his trilogy on architectural phenomenology. Elie Haddad (2010) evaluates Norberg-Schulz's interpretation of phenomenology in architecture concerning the project of modernity.

Phenomenology was established at the turn of the 20th century and owes its main thrust to Edmund Husserl, who intended to develop a method of precise philosophical investigation into phenomenology and Martin Heidegger, who desired to found a new fundamental ontology that argues that the structures of "being" are revealed through the structures of human existence. Heidegger's later works tended towards a mythopoeic approach that favours a direct reflection on the nature of elements common to artistic practice, and it is this approach that became influential with Norberg-Schulz. (Haddad, 2010, p. 89) His fondness for plain living and pre-industrial life heavily features in the language that Norberg-Schulz uses. (Jivén & Larkham, 2003, p. 71)

Norberg-Schulz's original intention was to investigate the psychology of architecture. (Jivén & Larkham, 2003, p. 70) In his earlier works, he suggested that the 'crisis' in architecture of the 20th century was created by the failure of modern architecture to take account of essential factors that give significance to the built environment, principally that of the role of perception and the importance of history as a source of meaning. This was not an isolated criticism, but widely held – the inevitable effect on the urban realm by early Modernist ideals can be clearly seen in projects such as Plan Voison (1925).

He argued for a process of "…'schematization', that is how perception leads to the construction of an understanding of the world" (Haddad, 2010, p. 89) This attempt at developing a comprehensive structure of all

[56] Jakle, J. A. (1987) *The Visual Elements of Landscape* (Amherst, MA, University of Massachusetts Press).
[57] Walter, E. V. (1988) *Placeways: A Theory of the Human Environment* (Chapel Hill, NC, University of North Carolina Press).

the dimensions of architecture would include the technical structure, environment, context, scale and ornament.

His later work on 'space' proposed a new approach to the problem of 'architectural space' through the development of the idea that architectural space may be understood as "a concretization of environmental schemata or images, which form a necessary part of man's general orientation or 'being in the world'".[58] (Haddad, 2010, p. 90) This 'space' was qualified as 'existential space' and used concepts such as centres, directions, paths, and domains to qualify this 'existential space', similar to the work of Kevin Lynch. The four levels that comprised this 'existential space' are geography and landscape, the urban level, the house and the 'thing'. He also stressed that the role of the house is as the 'central place of human existence'. For Norberg-Schulz, 'architectural space' is defined as a 'concretization of existential space' and was therefore defined as a qualitative space.

Haddad identifies Norberg-Schulz stressing the lack of essential aspects that make up 'architectural space' in many modern works, especially at the level of urbanism. "…the figural quality of the street and its variations…have all been ignored by architects, which led to deficient urban environments" (Haddad, 2010, p. 91) The work of Portoghesi and some others were identified as exceptions by Norberg-Schulz for their supposed mastery of the understanding of the different levels of 'architectural' and therefore 'existential space' "…through the application of geometry of the interaction between different levels of space, resulting in a balanced relationship between the building and its environment." (Haddad, 2010, p. 92)

Norberg-Schulz then engaged in his most recognised work, *Genius Loci*, which is a photographic essay on architecture. In this work, genius loci is described as "representing the sense people have of a place, understood as the sum of all physical as well as symbolic values in nature and the human environment." (Jivén & Larkham, 2003, p. 70) This focus on the importance of "concrete images" (visual impressions) that constitute our experiences, thus strongly advocating the re-establishment of the lost connection between the various elements that constitute our world, particularly the connection between the man-made and the natural world. This is established through 'visualisation, complementation and symbolization' (Haddad, 2010, p. 93) and he used the four methodological stages of 'image', 'space', 'character' and 'genius loci' in his analysis. (Jivén & Larkham, 2003, p. 71) .

Norberg-Schulz then proceeds to publish *Concept of Dwelling* where there is a "rediscovery of 'dwelling' in its comprehensive totality, leading towards a final overcoming of functionalism and a return to figurative architecture." (Haddad, 2010, p. 95) It deals with the development of the concept from the level of a settlement through intermediary modes of dwelling, urban space and institution to that of individual houses. This is done under the structuralist template of 'morphology', 'topology' and 'typology' being applied to the dimension of 'being'.

Hill House, in Helensburgh, Scotland, 1904 by Mackintosh is suggested by Norberg-Schulz to fulfil the task of dwelling in the modern world as it "reveals the world, not as essence but as presence, that is as material and colour, topography and vegetation, seasons, weather and light." (Norberg-Schulz, 1985, p. 89)

Throughout his work, there is a preoccupation with the disintegrating urban condition and the sense of a loss of place in the contemporary world with its corresponding loss of character and place with only a select few modern architects seeming to achieve the appropriate space and character. His work progressed from a structuralist paradigm to a phenomenological paradigm, though the structuralist template was always applied. His work is, however, criticized by the likes of Hilde Heynen in Architecture and Modernity (1999) for its' simplistic reduction of the problematic to a question of architectural form'. Haddad also mentions the criticism by some of Norberg-Schulz's particular interpretation of phenomenology as influenced by a nostalgic return to Heidegger's "authentic dwelling" and as such a retreat to certain styles or periods. It is worth noting that he did not consider attributes concerning aesthetic values. (Jivén & Larkham, 2003, p. 73)

[58] Yes, the inverted comma and quotation mark together looks bizarre, but it is actually correct.

What is of relevance to this study is the shared concern by the author over the loss of urban quality as an outworking of the contemporary built environment practices in the area. Issues of place relating to character, not only of a style but also of an approach to typology, topography and vegetation. The criticism of the work focussing on a nostalgic and narrowed retreat to certain styles or periods is a valid caution for the study and the notion of 'romantic historicism' needs to be avoided, particularly in the loaded and broad political spectrum of attitudes to the existing historical physical fabric.

What is particularly applicable to the study and to be considered in the primary research is the following. These aspects have relevance towards creating a sense of place through the broad spectrum of Norberg-Schulz's work:

- Morphology, including aspects of scale
- Context and environment, including aspects of topography, views and vegetation
- Typology, including aspects of ornamentation
- Technical structure, including aspects of material and colour and climatic response

Contemporary practice

The post-World War II reconstruction environment had much development that sought to engage with the notion of a sense of place, particularly in the United Kingdom. Thomas Sharp[59] was one such consultant who was sympathetic to the character of the places that he re-planned, such as Exeter. He attempted to sum up the personality of the city and recognised that it required personal attention rather than abstract advice. (Jivén & Larkham, 2003, pp. 71-72). There was recognition of an urban fabric that before World War II had been a result of centuries of steady growth. In the study area, there is not this centuries-old fabric with which to work, many of the historical buildings are from the turn of the 20th century (as can be evidenced by the period mapping undertaken in the walking survey). This does not however negate the principal of embracing a worthwhile existing fabric and building on the existing 'personnalité'.[60]

Jivén & Larkham, (2003, p. 78) suggests that, in the framework of Norberg-Schulz's schema, the contributions of topography, natural conditions and variations, and symbolic meanings, tend to be given less weight than built form, and that physical characteristics need to be places in the context of other aspects, such as activities and intentions, to better account for the notion of character. It should be noted that they acknowledge that the values and attitudes of individuals and societies change over time, hence the author deems it necessary to engage in the notion of objectivity in placemaking, which is discussed hereafter. The author also notes again the complexity as to how a framework that encourages suitable placemaking and character is managed in the study area – this is very reliant on resources, such as finances and well-skilled practitioners and a system from the local authority that facilitates this approach.

Ahmed Ouf and Authenticity

In his journal article Authenticity and the Sense of Place in Urban Design, Ahmed Ouf recognises that urban conservation has dramatically changed over the last 50 years. Since the 1931 Athens charter, the definition of human heritage has been evolving. The fields of archaeology, architecture, urban history and urban design all influence the field, and due to their different areas of interest in conserving human urban heritage, the theoretical and practical developments thereof lead to a complex discipline. He acknowledges that there is a shift to providing not only a historical urban identity but now more recently an authentic urban identity. This has led to new understandings of urban heritage based on experiences rather than historic preservation. (Ouf, 2001, p. 73)

Ouf's paper focuses on the issues of creating an enjoyable overall urban experience primarily while the issue of authenticity is seen as secondary. He highlights the recent practices showing collaboration between archaeologists, planners and urban designers for the sake of creating overall urban experiences that have a historical identity rather than the previous focus on a somewhat ideal of 'monument restoration'. (Ouf, 2001, p. 73) He identifies that those who are involved in urban conservation should focus their attention on

[59] Sharp, T. (1946) *Exeter Phoenix* (London, Architectural Press).
[60] Conzen, M. R. G. (1949) The Scandinavian Approach to Urban Geography, *Norsk Geografisk Tidskrift*, 12, pp. 89.

restoring authenticity rather than conserving the urban experience. (Ouf, 2001, p. 74) This is also, by and large, the experience of the author. Numerous built environment practitioners, when enquiring as to the nature of the study, immediately link the purpose of the study to that of conservation in its authentic sense. He does recognise that historical authenticity is still necessary but should be done with sensitivity. He argues that architectural authenticity is much easier since it focuses mainly on the physical architectural details of a building or part of a building. This is a far more complex task in large urban areas, and virtually a near impracticality to achieve. He notes that the following should be considered:

1. The focus should be on the creation of enjoyable authentic urban experiences rather than on historic preservation.
2. The creation of urban experiences involves physical structures, social practices and community beliefs.
3. The physical historical identity of an urban area might stem from its streets, its urban mass and its overall urban character.
4. Though authenticity is vital to an honest urban conservation project, false accuracy or unnecessary sensitivity is not desired.
5. Authentic urban experiences should be achieved through the adoption of a conservation concept rather than applying a conservation methodology.[61]
6. Numerous alternatives can be considered to preserve the historical identity, depending on local conditions, but the honesty of these alternatives should be observed.
7. Designers should work on augmenting the essence of the local urban heritage through complementary well-designed physical features without losing the authentic place features, as long as they do not conflict with any of the place's authentic physical features.

Figure 3-2 – The Gold Market in Dubai. This is a heritage development project that may be considered complimentary to, rather than following more traditional conservation efforts in the area.
Source: (World Records Union, 2020)

Ouf's underlying argument does tend towards the realities of creating coherent tourist routes due to the financial implications of urban conservation and the need to account for this expenditure. (Ouf, 2001, p. 75) He also demonstrates the different approaches taken in the different cities contained within the UAE that faced rapid urban development. Abu-Dhabi only kept significant buildings and structures related to its early defence. The traditional street patterns, land subdivisions, and architectural character of urban districts are being eradicated. Dubai City retained whole districts, thereby preserving the architectural and the urban identity thereof. These other conservation efforts included the relocation of and re-creation of demolished significant buildings. Sharjah City engaged in conservation and replication efforts in its oldest urban districts as part of an overall multi-nucleus image-making strategy. (2001, pp. 75-76)

[61] "A methodology is the practical process followed for conservation, while a concept in urban conservation is the bonding idea behind the choice of the conserved geographical location, the best conservation methodology, the rehabilitated activities and the management style for the conserved site." (Ouf, 2001, p. 74)

Figure 3-3 – The Beit el-Nabudah Sharjah restoration project follows more traditional conservation techniques within the urban realm, which in turn helps to activate further interventions towards creating a suitable urban historical identity.
Source: (Heart of Sharjah, 2016)

The first project Ouf specifically looks at is the Gold Market in Dubai. This is not a conservation project primarily, but rather a heritage development project that may be considered complimentary to more traditional conservation efforts in the broader urban context. It does not rigidly comply with international standards of conservation (such is the ICOMOS international charters) but has a definite historical identity. The 1985 improvements created a stereotyped image of a shaded oriental bazaar even though the old setting did not have many traditional architectural components and this, Ouf argues, has resulted in a better, but not ideal, local historical identity for the market.

The second project he looks at is Beit el-Nabudah in Sharjah City. It shows the fine balance between authenticity and the creation of an enjoyable, heritage-flavoured urban experience. This was an example of a nucleus conservation intervention meant to ignite further conservation in the area. The conservation focus was on the creation of a traditional place that could be recognised by the local people as a traditional nucleus capable of functioning from the outset. (Ouf, 2001, p. 81) It started with the conservation of two main buildings overlooking the old mosque. The whole composition was structured around an open space that might be considered an outdoor extension of all the surrounding activities, such as the mosque, the market, the *majlis* and the residential quarters. Its strong mental image as a heritage place is attributed to the classical main criteria as mentioned by Relph[62] of strong meaning; definable physical shape; and diversified urban activities. Here the conservation project did adopt ICOMOS standards for the restoration of the buildings surrounding the market. There was however a wider vision to conserve the whole urban setting and the aim of producing a place with a historical identity. Sitescape elements, such as light fixtures, solid fences, and the elimination of vegetation from the streets to the surrounding building's courtyards, were added to the site to augment its historical identity. The site value in terms of a sense of place increased by adding more meaning and functionality to it through associated communal events being hosted there. (Ouf, 2001, p. 83)

The principle of a balance between historicism and a practical understanding of contemporary needs is useful to engage with. The Author argues that it is entirely appropriate to engage in similar thinking for this study area – it is useful to define the most appropriate objective for shaping future interventions. As with Ouf's argument, it is not seen as appropriate for a sense of historic romanticism to dominate the discussion as this tends to lead to the motivation for districts to be declared as worthy of historical conservation, thereby practically freezing them in time and severely limiting future development. In a world where cities are striving towards greater sustainability, densification is a necessary process. What Ouf's work suggests that is of relevance here is that there is an enjoyable urban experience informed by the historical context of the area. Jivén & Larkham (2003, p. 77) do suggest that Ouf's exploration did reinforce the point that the aims of interventions need to be quite clearly stated from the inception. For this study, the aim here is not to advocate for a conservation precinct to be declared, but rather that an informed development framework is developed and implemented.

[62] Relph, E., 1976. *Place and Placelessness*. London: Pion.

3.2 Objectivity in Placemaking

Much of the current contextual discussion about character as it relates to the built form aspect of the streetscape has been shaped by the post-modern worldview that embraces relativism and individualism, where plurality in ways of being and knowing are commonplace.[63] The outworking of this in the built environment amongst the lay person (as opposed to the theorist or the postmodern designer) is this notion that everything is subjective and personal – what is seen as inappropriate by some is attacked as a matter of personal taste and irrelevant when seen through the lens of an individual utilising a 'post-modern' worldview. What this has resulted in is the space in which discussions of the appropriateness of the appearance of the built form are severely constrained. It is also noted by Horáček & Salingaros (2020) that contemporary architecture cannot compete with historic antecedents in terms of beauty and harmony (though one should consider that the historic antecedents that remain may be of higher quality than the ones that are no longer). In the local context, this is even more constrained by the rather emotive aspect of heritage preservation that is often seen to be a colonial imposition. It is therefore important to engage with the notion of objectivity as it relates to placemaking in the urban realm. With the development of neuroscience studies into proprioception or kinesthetic awareness and environmental psychology as robust scientific endeavours, particularly given the technological advances that allow for far easier measurement of unconscious biological responses to visual stimuli, there is an increasingly growing body of quantitative, rational data that dispels the notion of aesthetics and beauty being subjective and personal.

Salingaros notes that the technology now exists where the visual interest can be measured in a subject. It is now empirically possible to "…determine if a building is dreadful or not based on evidence". "A building is attractive when it signals positive physiological characteristics to our organism so that we unconsciously wish to approach it."… "We are thus able to sidestep a long history of art-historical aesthetic debates on attractiveness that never reached any conclusion." (Horáček & Salingaros, 2020)

Aside from this 'high-tech' approach, there are other empirical approaches that are noted. These include practical outworkings of elements such as those listed by (Gunce, et al., 2005) as the components of 'shape grammar'. They are the following:

- Repetition
- Hierarchy
- Alteration
- Harmony
- Gradation
- Contrast
- Dominance
- Unity
- Balance
- Combined ordering principles

Scorn versus Grace

In his book *The Architecture of Happiness*, Alain de Botton illustrates the enduring historical tension between those that 'scorn the visual experience' with ones that engage in 'persistent attempts to mould the material world to graceful ends'. (2007, p. 12) He poses the question, if our environment influences how we feel and that in turn affects our happiness, what will happen to us when we are forced to inhabit certain spaces that are ugly? He suggests that people shut their eyes to much of what is around them possibly to prevent the

[63] The Post-modern worldview refers to the sociological definition and not to the Postmodern architectural era, though the underpinning in the worldview influences the architectural era. Postmodern architecture often focussed on the design approach of form over function that tends to draw from a whole range of sources and is characterised by an aesthetic that is whimsical, decorative and kitsch.

permanent anguish they would experience should they see the environment they inhabit. This idea is also echoed more recently by Horáček & Salingaros (2020), whose commentary is directed towards the banality of modern architecture as opposed to the vibrancy of historical and vernacular counterparts. De Botton also notes that good architecture (in this instance the aspect that frames the streetscape) is an expensive endeavour that always seems stacked against the 'pragmatic' considerations that it competes against. (2007, p. 18)

The author recognises this tension, but still seeks to find a parity – buildings are still being built, and the study area continues to undergo densification, as in the past. The practicalities and pragmatics of climate, materials and resources were engaged with previously, if anything we have more knowledge and technology and innovation available to us now. The concern is that the built form is regressing rather than progressing, much of it influenced by the post-modern worldview where individuality takes precedence over the community and where capitalist interests are seen as primary, virtually to the exclusion of all other considerations. De Botton recognises this ever-shrinking impetus to seek to create or maintain a sense of delight or beauty in the built environment. (2007, p. 28)

De Botton also recognises the grasp of the psychological mechanisms behind taste may not necessarily change people's sense of what they find beautiful, but it may prevent them from reacting to what they don't like with simple disbelief. This is rather relevant to the current context as there seems to be a reactionary approach that is fairly shallow regarding taste and style and language of the built form. This may be a result of a complexity emanating from a wide range of cultures that make up the South African population, as demonstrated by the country having 11 official languages. Each cultural group of themselves will have differing ideals regarding taste and style and language. The author does however argue that greater efforts should be made around having an informed citizenry as it relates to the built environment. Some questions should be posed around what is the responsibility of citizens as it relates to the public realm. Currently, the pervasive attitude reinforced by a particular historic attitude towards land results in a concern that ends at the property boundary and focuses inwards, the needs and desires of the property owner overshadows all other considerations towards the urban. This is evident in the findings of the fieldwork undertaken. As development progresses throughout the decades, building development that once addressed the street edge and had a collective living approach progressed more and more towards individualism hidden behind solid high walls.

A Lineage of Delight

Figure 3-4 - A restored Strawberry Hill House from the garden in 2012. De Botton indicates its construction heralded a major departure in the notion of appropriate 'style' of architecture.
Source: (Chiswick Chap, 2012)

De Botton notes that in the arena of architecture, there was an extensive period of near unanimity of its construction - the Greeks developed the classical style that was then assimilated and developed by the Romans, which was then later rediscovered and applied in the Renaissance period though the codification and application of built aspects. This applied to the more grand composition of domestic architecture. For the simple domestic construction, a consensus of composition was achieved in a context due to the limitations of climate, technology and availability of materials. This in turn resulted in strong local architectural identities. Horáček also notes that "In the past, an architectural language was a tool for harmonizing heterogeneous architectural ambitions." Horáček & Salingaros also note that in the past, beauty and harmony have been seen as interdependent since ancient times. (2020) They do however note that contemporary development should not mimic historical architectural vocabulary but rather echo the underlying morphology and syntax.

Figure 3-5 - Bedford Square, London. This circa 1780's development illustrates the consensus of design inherent in the 18th Century approach to design. Source: (Wikimedia Commons, 2009)

Figure 3-6 - Ker Street, Devonport, 1821–24. John Foulston's Town Hall, Library and Column highlights the abandonment of the long held consensus on 'classical' design principles that had resulted in a unified urban appearance in favour of eclecticism. Source: (Wikimedia Commons, 2008)

It is at the point of the Enlightenment Era that this regionally mediated conformity of language in the built environment was disrupted – De Botton sites the example of Strawberry Hill by Horace Walpole in 1749 as a major departing point. The fairly uniform approach to architectural aesthetics of the previous eras was discarded in favour of an eclectic one, in this mid-18th Century instance, a revival gothic approach.

The late 18th Century urban development in London experienced a measured reaction against the eclectic tendency birthed a few decades before with the speculative development of housing by the gentry being rather rigidly informed by classical rules and proportions in the pursuit of harmony. This search for an harmonious language was short-lived, with the speculative development of urban England in the early 19th Century turning to the language of whimsy and eclecticism.

The early 19th Century saw the proliferation of the trend of producing pattern books that enabled individuals to reference a wide range of building styles from across the globe and to duplicate any assortment and arrangement of details of their choosing. This rapidly led to the abandonment of regional variations that would have been contextually evolved and responsive to local conditions. (De Botton, 2007, p. 39)

The Eclecticism of the 19th Century was not altogether well received and came under significant criticism for a lack of harmony and unified composition, this is highlighted by the 1836 comments of Augustus Pugin on the matter.

> *"We suffer from a carnival of architecture. Private judgement runs riot. Every architect has a theory of his own."*
>
> *Augustus Pugin in (De Botton, 2007, p. 46)*

This 'carnival' of eclecticism created a dilemma in the search for an appropriate architectural expression in the urban realm. At that time, no real answer emerged, the more accepted view was that it may be irrelevant and even indulgent to raise the question in the first place.

The Emergence of Pragmatism

Figure 3-7 - Joseph Paxton's Crystal Palace (1851) is one of the earliest and well known of the buildings embracing the pragmatism of engineering and mass production while still retaining an element of seduction.
Source: (Wikimedia Commons, 2014)

Following the era of eclecticism was the Industrial pragmatism of the late-18th Century. The emergence of a new type of professional, the engineer, who quickly rose to dominance in the construction field, had a dramatic effect on the discussion of architectural expression. This rise led to the further displacement of the questions of 'style' in the built environment, focussing solely on the issue of pragmatics. De Botton does however note that even in this realm of pragmatism to the exclusion of other aspects, "…despite this indifference, the new men of science seemed capable of building the most impressive and, in many cases, the most seductive structures of their confused age." (De Botton, 2007, p. 47). Crystal Palace and Palais des machines are examples of such.

Figure 3-8 - Ferdinand Dutert's Palais des machines (1889), the largest vaulted building to have been built at its time of construction is another later example of the pragmatism of engineering being the primary design driver.
Source: (Wikimedia Commons, 2016)

There now existed a conflict between the pursuit of technical truth and rationality and aesthetic considerations. It was previously seen that great design relied on the domain of what was functionally unnecessary. The new pursuit regarded technological and functional considerations to the exclusion of all other aspects deemed irrational. This played itself out primarily through the honesty of materials and structural aspects. The emergence of this drive towards rationality and design led to modernists attempting to deal with the mechanical functioning of architectural designs such as in Le Corbusier's early works. The notion of *technology* became the new mantra, and *science* will determine design considerations. This in an attempt to fend off a wide range of criticisms related to design considerations, primarily that of a criticism of appropriate style.

Le Corbusier's work and his early ideology were motivated by the quest for efficiency. Much of this work was influenced by the industrial advances of the time, such as aeronautical advances and the design processes attached thereto which were overwhelmingly driven by pure functionality. Modernists claimed that the point of design is that it *functions well*.

Le Corbusier distilled his architectural approach to defining what the functions of the house should be and modelling design after the functioning. As contained in De Button (2007, p. 57), the function should be:

1. a shelter against heat, cold, rain, thieves, and the inquisitive
2. a receptacle for light and sun
3. a certain number of cells appropriated to cooking, work, and personal life

Figure 3-9 - Le Corbusier's Citrohan Haus in Weissenhof Housing Estate, Stuttgart, Germany, 1927. The language of 'technology', 'science' and 'efficiency' dominated the implementation of his 5 principles in his early works such as here and at Villa Savoy. It did require inhabitants to conform to an entirely different lifestyle, and as such received much criticism and difficulty in finding a willing occupant.

Even with this search for pragmatism and truth, there lay a contradiction in that modernists were trying to evoke an image of a way of life, just as previous eras had sought to revoke the different image but an image nonetheless. Their pursuit of the rational led them to seemingly irrational decisions such as their expensive hand-crafted finishes, importing of expensive materials (such as the application of expensive Swiss mortar) and the implementation of problematic technology (e.g. flat roofs with the tendency to leak) to achieve their industrial finish in their buildings. De Botton illustrates this with the example of the Villa Savoy that is flouted as a 'practically minded machine', but in reality is an 'artistically motivated folly'. (De Botton, 2007, p. 65) This demonstrates that even with the argument of rationality and technicality, designers were still trying to evoke a particular way of life within their designs, and will at times be rather irrational in their decisions to achieve this. Modernists wanted their architecture to speak as well, but of the future.

In the process of design, there is no technical need to limit one's imagination. Science alone cannot tell us how things should look or be. It informs us, it provides constraints, it is not the absolute determinant. Our understanding of what it is to *function well* has moved on from the purely technical to include the prominence of subjective aspects, such as the notions discussed around *Subjective Well Being*. One can also see how rational

Figure 3-10 - (left and right above) The Buchen Housing Estate in Würenlingen, Switzerland by Santiago Calatrava, completed in 1996. Calatrava's qualifications in Architecture and Civil Engineering allow for a fairly unique circumstance where the scientific and rational requirements inform rather than dictate the design response, resulting in a selectively crafted and beautiful design. This housing project is not typical of the type that the firm usually undertakes.
Source: (Santiago Calatrava Architects & Engineers, 2020)

Figure 3-11 - The World Trade Centre Transportation Hub, New York City, by Santiago Calatrava, completed in 2016. The building is supported by "columns of light" which in turn allows for "a powerful symbol of hope and vitality" – this combination of engineering resolution to achieve elegance is a testament to the scarce skill of the rational informing the sublime.
Source: (Hufton+Crow, 2016)

and scientific informing rather than dictating design can result in objects of beauty for the urban realm. One needs only to look at the work of Santiago Calatrava, the celebrated Spanish architect and structural engineer.

The questions that then are posed for this current research are:

1. *What is the current desired narrative that is to be portrayed in the study area?*
2. *How do the scientific and the rational inform rather than dictate the urban interface of the study area?*

Speaking Buildings

With rationalism and pragmatism again turning out not to be the ultimate answer they initially looked like, De Botton suggests that the answer may not lie with the engineers but on something that John Ruskin suggests - that buildings *speak* and on topics which can be readily discerned, such as democracy or aristocracy, openness or arrogance, welcome or threat, a sympathy for the future or a hankering for the past. (2007, p. 71). Buildings speak through quotation (as in referring to other buildings) or through the objects that are specifically used therein. The notion of *beauty* implies the attraction to a particular way of life that is promoted through the architecture that in turn informs the urban edge.

These ideas of a promotion of a way of life are written into building objects. One can see this in the contrast between the aggressive and defiant German Pavilion exhibited at the 1937 World's Fair in Paris and the contrasting gentleness and transparency of the Federal Republic of Germany's pavilion of the 1958 World Exposition in Brussels. One should note that this capturing of an ideal within a building narrative is not isolated to the grand and institutional constructions, the creation of houses that reflect the ideals of their owners became a central ambition of architects throughout the West.

Figure 3-12 - Albert Spier's Germany Pavilion at the 1937 International Exposition of Art and Technology in Modern Life (World's Fair) held in Paris (left) and Egon Eiermann's Pavilion of the Federal Republic of Germany at 1958 Brussels World's Fair (right). The contrast of these two buildings illustrate quite starkly the domineering and imposing design resolution of the Nazi regime in contrast to the transparent and integrated resolution of the Federal Republic government twenty years later. These two buildings very clearly 'speak' of the ideological position of the governments they represent.
Source: (Kopeć, 2012); (Read, n.d.)

Another example suggested by De Botton (2007) of a promotion of a way of life written into buildings is that of the workers housing at Pessac, constructed in 1925. This demonstration of idealism in the modernist idiom as a type of showcase of the ideal modern life has subsequently been modified by those who reside in them. The idea of beauty for Le Corbusier as the original architect did not match those of the workers who inhabited them. Initially, the housing complex met with resistance from the originally intended inhabitants. "The bold Modernist architecture was too avant-garde, and many workers refused to inhabit the apartments." (Brillon, 2016) In addition, the workers' modifications to these houses still followed the same logic of people emulating what they see as appropriate, referencing their past experiences. To these workers, home and beauty spoke of the regional idioms in the outlying villages from where they came. This resulted in them adding pitched roofs and shutters and small casement windows and flowered wallpapers and picket fences to their modernist houses, speaking very much of their vernacular context to their Corbusier's industrial language. There existed a duality of opinion in the housing. The renowned architectural critic for the New York Times, Ada Louise Huxtable, noted in a 1981 article:

> *What everyone remembers with varying degrees of disapproval was Le Corbusier's announced wish to build "a machine to live in," based on the early 20th-century's enchantment with the belief that only good could come from mass production. What everyone has forgotten is what he said in the next sentence. "But since men also have hearts," reads his dedication speech at Pessac in 1926, "we have also tried to insure that men with hearts would be able to live happily in our houses." They have.*
>
> *(Huxtable, 1981, p. 27)*

It is difficult to reconcile the aspect of '…(living) happily in our houses" with fundamental changes to the fabric to transform the housing into something fundamentally different to the original concept. The development has come full circle, though, with the dilapidated housing at the turn of the 21st century now being sought after by prospective buyers and cherished by locals. (Brillon, 2016) This does seem to reinforce De Botton's position that society's expectations vary over time, the best response is to design well and be conscious and considered.

The Pessac example is rather telling of a disjuncture between what is seen as an appropriate language by the instigators and then the inhabitants of the built environment. In the current research area and typology examined, however, there is not as much freedom nor potentially the resources to undertake significant modifications to the fabric. The share block or sectional title nature of the buildings requires a corporate level of control over any intended alterations to the built fabric on individual properties.

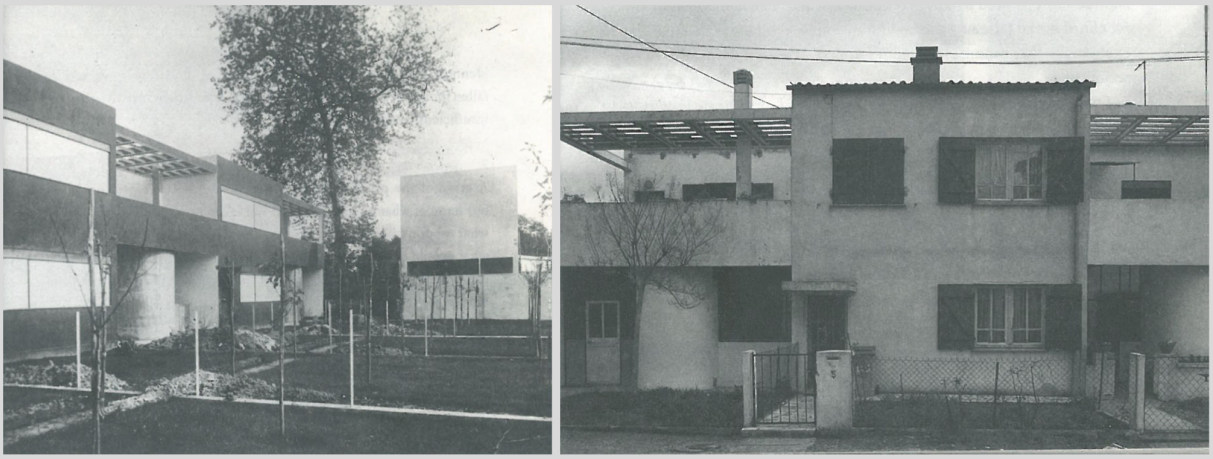


Figure 3-13 - Quartiers Modernes Frugès, Pessac, France, 1920 – 1926. The first image (above left) is taken in 1925. Le Corbusier implemented his vision of 'modern' worker's accommodation. The second image (above right) is taken in 1995. Workers had made modifications to the housing, referencing aspects they were familiar with, such as shutters, small casement windows and fences. The overall condition after 70 years indicated a lack of maintenance leading to overall decay.
Source: (De Botton, 2007, p. 165)

Figure 3-14 - Quartiers Modernes Frugès, The image is taken in 2016, shortly after its listing on the UNESCO's Wolrd Heritage List. The housing has come back into favour, with increasing popularity with residents and visitors.
Source: (Brillon, 2016)

One must be aware that associations people make about elements of the built environment can be arbitrary in nature. These comments can be pressured to be made, leading to statements of value judgements rather than informing comments on their specific architectural virtues. Within our current political context in Durban, this statement is rather relevant. The unfortunate association between colonial and nationalist oppressors and the architecture that they constructed leads to a lack of appreciation of the positive attributes of the urban realm associated with these political movements. The urban interface, which for some speaks of the ingenuity of materials, the harmony of forms, integration of topography and climate considerations, for others is seen as an image associated with oppression and is, therefore, to be dismissed or removed.

One must still acknowledge the expressive potential of any objects within the built environment, though this is increasingly rare. A greater discussion in the public domain as well as in the profession may lead to more individuals becoming more conscious readers and writers of their environment.

3.3 Streetscape Theory

There are two main approaches regarding streetscape theory that the author has distilled, namely the 'contemporary approach' and the 'empirical approach'. The contemporary approach is to focus on the physical aspects of streets and pavement and has a bias towards civil infrastructure aspects. (Tucker, et al., 2004, p. 134) The empirical approach involves comparing how a place looks, and feels, with its physical characteristics using measurable data rather than individual observations. (Iovene, et al., 2019)

It should be noted that streets and roads comprise about 75% of all public spaces. They therefore have a significant impact on the quality of life for the urban inhabitant and their appearance should be of significant consideration. (Young & Jones, 2010, p. 1) It should also be noted that in most prior research into streetscape character, the component of the buildings that line the street are usually treated as insignificant or secondary, though their assembly and composition are important as "…the configuration and character of urban space has a major influence on the perception and subsequent conduct of people who use it." (Tucker, et al., 2004, p. 136) To address the 'component of the buildings' gap that exists in the prior research, the theoretical aspect looks at a more practical approach to establishing a defining character from an existing streetscape. This can allow for future development to be independently assessed against that measure to determine the relative visual or spatial fit. It also recognises that the perceived quality of a building strongly influences the long-term success of the public street and private buildings. (Auckland Council, 2020)

The Contemporary Approach

In reference to Karl Schmid's definition of Streetscape (2014), the aspect that is sought after is the distinguishing character of a particular street. It focusses on the infrastructural aspects such as width, degree of curvature, paving materials, and design of the street furniture, but also mentions the forms of surrounding buildings. Much of the published work on streetscape focusses overwhelmingly on the infrastructural aspects mentioned above, with little devoted to the *form* or *character* that is created by the relationship that is created between the road infrastructure and the building interface that defines the edges of this significant public space.

For this study, the aspect of space is particularly important, and Young et al. would concur in terms of their suggested hierarchy of importance. What distinguishes a *road* from a *street* is that a *road* is a path from one point to another, a *street* incorporates the notion of buildings on one or both sides thereof. The relationship between streets and buildings is a very important aspect contributing to the sense of place. (2007, pp. 17-18) Work in the United Kingdom since the late 1990s has seen an ever-increasing trend to embrace the philosophy that streets should be designed with a greater sense of place. (Young & Jones, 2010, p. 2)

As the currently designed and constructed street patterns are costly civil infrastructure expenditures and are likely to remain in place with minimal interventions for a considerable period, the current interventions need to be appropriate to the modern context, taking into account the ever-increasing number of aspects to be considered and the complexity thereof. Young, et. al. argue that we owe it to present and future generations to create *well-designed places with local distinctiveness and identity* [emphasis author] that will serve the needs of the local community well. (2007, pp. 6-7) One of the particular aspects that Young & Jones (2010) highlights in this regard is recognising sensory and cognitive perceptions of users as important to the overall streetscape experience.

Research by sources such as Young et. al. (2007) also recognises that streetscapes that are successful over several years consider many space-related considerations. The pertinent ones to highlight are the following:

- Where buildings and spaces, and the needs of people, not just of their vehicles, shape the area.
- Where local distinctiveness and identity are considered.
- Where there is a high standard of visual quality.
- Where frontages providing directly accessible on foot and that are overlooked from the street. This is highly desirable in most circumstances as this helps to ensure that streets are lively and active places.

- Where there is coordinated decision-making between the multiple stakeholders involved, particularly the professional and regulatory team.

A considerable concern raised by Young et al. (2007) is that an uncoordinated approach can lead to a loss of design quality. In the context of this study, the author is concerned that the development procedures that are in place and the current process undertaken by the local authority in approving development is focussed on a 'standards approach' to design that gives little to no credence for design quality – little evaluation seems to be done beyond complying with the National Building Regulations and Town Planning schemes. The evaluation of proposals is also rather fragmented, each department gives comments on submissions independently of each other and is only concerned with their immediate requirements. A particular recent example of this mentioned to the author at a KZNIA Heritage Forum meeting was a circumstance where a heritage building renovation required the addition of an electrical substation on the boundary of the property and the city department was relatively inflexible in its requirements and placement. This inflexible and standard compartmentalised approach leads to a compromised streetscape.

Young et. al (2007, p. 20) also indicates that concern over aspects of liability can lead to an over-cautious approach, where designers strictly comply with guidance regardless of its suitability, and to the detriment of innovation. This, it is argued, is not conducive to creating distinctive places that is what the goal should be. In addressing this compartmentalised approach, one must also address the publics' right to look—and indeed to share symbolic possession of the elements that make up streetscape, including the buildings that line it. (Fiske, 1987) This suggests that the owner of the building and its designer has some obligation to provide a public front.

An Empirical Approach

The empirical approach recognises that there are methods of investigation utilising measurable data that are increasingly being used in the 'sense of place' research field. It often includes artificial intelligence techniques, high-tech equipment and national polling. This is in contrast to the previous reliance on personal interpretation and judgment in qualitative observational studies, not quantitative empirical ones. The approach recognises that there is no 'universal' approach, but can provide a range of good answers that are backed up by metrics.

A particularly useful text to offer practical guidance in streetscape design that is based on extensive data is *Of Streets and Squares.* (Iovene, et al., 2019) Based on Iovene's suggestions primarily, the following key principles should be noted.

1. Streetscape preferences are generally knowable, consistent and predictable. People seem to care far more that buildings should fit into their surroundings rather than be a representation of the current times. (Iovene, et al., 2019, p. 76) This does need to be tempered with the developed first-world context underpinning these findings due to their samples. It is, however, quite conceivable, as, this correlates with the principle of 'coherence' suggested by De Botton (2007) in that there is evidence of significant values and characteristics contained in the context being applied in individual developments.
2. Mental health is positively influenced by living in attractive places. This is reinforced by findings in *Understanding the Pursuit of Happiness in Ten Major Cities* by Leyden, K. et al (2011); *Soul of the Community 2010 Overall Findings* by Soul of the Community Project, (2010); a 2015 Ipsos MORI survey *Design influences public support for new build homes.*
3. The vibrancy of the façades that line streets is important. This specifically should address what can be appreciated at eye-level and at a walking pace. (Iovene, et al., 2019, p. 76) This is a component that is also recognised in programmes such as LEED for Neighborhood Development. (Welch, et al., n.d.)

This, however, should bear coherence in mind and not result in overly complex façades. In 2001, Zacharias concluded "People consistently prefer moderate levels of visual complexity but also tend to like inherent order"[64] Tucker et al. (2004, p. 135) also concurs with the approach of moderate complexity and this can be

[64] Zacharias, J. (2001). *Pedestrian behavior and perception in urban walking environments*. (p.11).

from patterns formed by elements within the environment. It should also note that there is a preference towards some form of symmetry.[65]

Iovene suggests ten generic steps that designers should follow that data demonstrates are popular with more people more of the time (2019, pp. 5-7). These are as follows:

- Gentle density is your friend – but 'fine grain' it!
    - Between 3 to 7 storeys high
    - Coverage of between 45 – 65%
    - Density of 50 – 150 unites per hectare
- When it comes to greenery, little and often is normally the best.
    - It is better to have frequent green spaces inter-woven into streets than combining them into larger spaces at greater intervals.
    - Greenery and street trees improve public spaces (as long as they are maintained and do not create fear of crime).
- Benches and statues should be structured, not randomised.
    - Relates mainly to the use of public spaces such as squares and parks.
- Beauty matters.
    - Popular places have 'active façades' that 'live' and have variety in pattern.
    - They have streets that bend and flex with the contours of the landscape.
    - They are not designed by a committee. (Unfortunately, they do not expand as to what is meant here).
    - More finely-grained developments also tend to be more long-lasting and resilient, better able to adapt to changing needs. Their organised complexity attracts, interests and reassures at different scales. The most beautiful cities are intense, coherent and rich in architectural detail. Individuals' health correlates more with 'scenic-ness' (the apparent beauty of the image of the outdoor environment) than with greenery being included.
- Mix it up!
    - Places with a textured mix of different land uses, and active façades, are nearly always more successful. Active façades incorporate openings (doors, windows, shopfronts) at far more regular intervals, allowing for a greater variety of use (mainly in regards to a mixture of commercial activities occurring along the edge) and greater visual stimulation through controlled variety.
    - Mixed land use is also more walkable
- Edges attract and protect
    - Relates mainly to the use of public spaces such as squares.
- People like to feel enclosed… up to a point
    - The street height-to-width ratio is normally best between 0.75 to 1.5
- It's not what you spend, it's where and how you spend it
    - Good design that is cognisant of creating a place is better than expensive but ill-conceived design.
- Walkability works but does not quite mean maximising space to walk
    - "More walking is encouraged by beautiful engaging façades, regularly spaced trees, and frequent small parks, the presence of resting places…"
    - Plant trees every 8 to 15 metres, depending on the street type.
- Do people say they like it? And do they mean it?
    - The need for empirical data to guide decisions.

[65] Cárdenas, R. A., & Harris, L. J. (2006). *Symmetrical decorations enhance the attractiveness of faces and abstract designs.*

Empirical data is assisting advocates for good streetscape design to counter the 'subjectivity' defence offered by those that have little concern for the negative externalities that may result from their actions. It is an approach that should be more rigorously applied in the containment and densification debate.

3.4 Chapter Conclusions

The discussion around the narrative of what way of life we wish to portray in currently built environment interventions is sadly lacking, and this seems to be a global phenomenon. What is to be built and more importantly how it is to be built within the current context does not feature on the agenda of those making policy and directing implementation within the city. Density and commercial interests dominate. By acknowledging the expressive potential of built environment objects, discussions around what is to be expressed and how it is to be expressed are encouraged as this may lead to individuals becoming more conscious readers and writers of our built environment. The question of 'what needs to be built and how it needs to be built' speaks directly to the aspect of 'placemaking'. In reviewing the theories related to 'placemaking' as they relate to the research goals, the author returns to the following saying by Karl Friedrich Schinkel - "To turn something useful, practical, functional into something beautiful, that is architecture's duty". In the realm of densification of the urban environment due to increasing population numbers, we again must not lose sight of the fact that the physical environment influences our health and wellbeing. It is not just about providing adequate accommodation in a quantitative sense but recognising that uniqueness and variety are essential components to foster and nurture in the physical urban realm.

Simmons notes that in the development 'system', circumstances that lead to bad design are fairly constant. These are a culture of viewing costs narrowly and in terms of seeking the least initial cost, the misalignment of how we calculate value, the ease at dismissing negative externalities, the misunderstanding of what good design looks like, and the impetus to build quickly. It is in this context that the underpinning theory of placemaking is discussed in this chapter.

There is a variety of related theories and positions that relate to aspects such as 'sense of place', 'character' and 'streetscape'. This has been an evolving issue since the period of the enlightenment age, but more particularly after the Second World War. Time, context and past experiences are contributing factors to the overall 'sense of place'. It also involves issues of tangible and intangible aspects being increasingly recognised as important, as demonstrated by the subsequent changes in ICOMOS charters. There are also discussions on the aspect of *authenticity* that historically have dominated the discussions and drive towards conservation. Ouf Different theorists, such as Cullen, Conzen, Jackle, Jackson, and Walter have added different perspectives and dimensions to the discipline, and these mainly are distilled into two approaches with each approach having a different perspective. The first is the *temporal perspective* with a sense of place being experienced over an extended time or as a snapshot in time. The second is the *subject perspective* where the sense of place is related to either an individual experience or a mediated group experience. All have their unique benefits and challenges.

The main aspect of this research project is that it acknowledges the evolving construct of life and the unsuitability of wholesale-imposed language in terms of aspects of coherence and self-knowledge. This *element-based* approach is usually applied to greenfield sites and depending on the elements imposed, can cause a rather paradoxical sense of place, such as at Poundbury that seems disconnected from the psychological and practical demands of its contemporary society. It is therefore that this research project identifies a *principles-based* approach based on an analysis of streetscape elements as an appropriate response.

The contemporary approach to determining streetscape character recognises the multivalent aspect of the determination thereof, but the challenge is that it is overwhelmingly dominated by the reliance on expert opinions from discipline-related practitioners, and with the ever-decreasing deference shown to what is deemed as mere subjective opinions that do not align with the 'growth-economy' mentality that is pervasive of development, even those claiming to be more embracing of the 'sustainability' agenda. Modern research methodology and technology have given the tools in which a greater measure of empirical-based findings can be presented. The overall hope with this approach is that these data-driven findings will carry far more weight with the actual development decision-makers.

Tucker, et.al. accepts that "streetscape character cannot be easily distilled into a single measure but still works towards an improved comparative method of analysis that would be useful for design assessment within local government development control plans. Cultural and social dimensions of streetscape character have been observed as an important part of how one locality is distinguished from another, but a tool that identifies the visual characteristics of a streetscape might allow these subjective dimensions to be discussed as they relate to the built form." (2004, p. 135) The argument of subjectivity is, however' increasingly receiving more 'pushback'. More and more research is empirically showing that beauty is important, and that what most people like in the built environment is knowable, consistent and remarkably predictable. (Iovene, et al., 2019, p. 76) Works, such as by Leyden, indicate that mental health is positively influenced by living in attractive places and that the vibrancy of the façades that line streets are important.

The local context is particularly challenging as there is no real sense of a collectively mediated culture and society in South Africa as a whole. The study area is not homogenous, different groups, cultures and architectural periods comprise the rich tapestry of the area. This is increasingly complicated with the issue of the area and much of the associated architectural language associated with the practical outworking of the 'separate development' approach to Apartheid and reticence towards anything overtly associated with the colonial or nationalist oppressors. Niemeyer, in his work for Brazilia, tried to deal with the similarly difficult matter of appreciating the colonial past without being overwhelmed by it. This would suggest that rather than discarding the architectural character that exists in the study area due to a lack of perceived current value as it relates to a previous 'regime', a mediated and contextual approach is called for by echoing the underlying morphology and syntax in an area.

Dovey, et al. (2009, p. 38) recognise the paradox in that the concern for maintaining a 'sense' or 'feel' of a place is threatened by the desire to reduce what that is to a series of fixed features that "turn character into caricature." The question is though, what is the alternative in the current context as it is currently up to the skill and desire of the individual designer and the willingness of the client to apply 'sound' design methods and to produce 'good' architecture? There are no real 'quality of design' resources or mandatory procedures to follow in a division that is under-resourced for ensuring quality streetscape specifically related to the façades that line these streets.

In the desire to maintain and enhance a specifically crafted local identity, many local authorities are attempting to engage in creating useful support mechanisms that can be used by decision-makers and developers in being able to guide what is to be 'echoed' in the underlying morphology and syntax of a development. These include issuing practical guidelines or design codes, such as those by The City of Toronto (2018, p. 8), the Auckland Council (2020) and the Stratford-on-Avon Council (Kropf, 2001, p. 19). It is with similar motivation for the production of a usable resource that is contextually appropriate that the research is being produced.

CHAPTER 4 - DEVELOPMENT AND USE OF THE PRIMARY RESEARCH INSTRUMENTS

The empirical nature of the study requires that findings be informed by metrics, as opposed to the more common approach of observation reliant on interpretation from a knowledgeable or expert discipline practitioner. This specifically is to address the practical realities related to urban development where the actual decision makers are not well versed on discipline aspects of quality and are motivated by metrics rather than what is seen as 'mere opinions'.

The methodology has been crafted to allow for the determining of influences, significances, and trends and provide insights into the streetscape in the study area with an overall qualitative outcome that contains veracity testing through the appropriate use of metrics. It was identified that this required the development of a two-part survey approach. The formulation and execution were in line with an iterative and cyclical development approach considering the need for veracity testing.

The systematic approach to the development of the primary research instruments is addressed in this chapter and includes the following:

1. Identification of four major themes to be considered in the development of the instruments.
2. The development of a walking survey.
3. The process of node identification based on data from the walking survey.
4. The development of a detailed street survey.
5. Capturing data from informal interactions for correlation purposes.

Figure 4-1 – 3rd streetscape image capturing the architectural elements for a portion of Ferguson Road.

4.1 Methodology

As highlighted in Section 1.5, the methodology has an overall Qualitative approach due to the aims of the study being around determining influences, significances, and trends and providing insights into the streetscape. This is in line with the research into existing literature. There is however a move towards empirical methods being incorporated to engage in veracity testing rather than solely relying on 'expert opinion' that exercises individual judgement. (Iovene, et al., 2019) (The State of Victoria Department of Environment, Land, Water and Planning, 2018, p. 3)

The overall research process comprises four stages.

- Stage 1: The planning stage. This consists of the identification of the research problem and theoretical research, primarily through a literature review process.
- Stage 2: The acting stage. This consists of conducting Empirical research with analysis.
- Stage 3 The development stage. This consists of the development of primary data collection tools and the subsequent testing thereof.
- Stage 4 - Synthesis and interpretation of research results. This consists of the raw data being systematically processed to lead to specific findings that in turn are synthesized into a summary of the research and the formulation of conclusions.

Type	Name
Town planning / Building regulations Local	Central Scheme of eThekwini Municipality (eThekwini Municipality, 2019)
Town planning / Building regulations International	Townhouse and Low-Rise Apartment Guidelines (City of Toronto, 2018)
	Auckland Design Manual – Apartment Building Design (Auckland Council, 2020)
Urban infrastructure	Manual for Streets (Young, et al., 2007)
	Manual for Streets 2 (Young & Jones, 2010)
Case studies international	Evaluation of Architectural Characteristics for Conservation Decisions of Değirmendağı, İzmir, Turkey (Kaplan, et al., 2010)
	Of Streets and Squares (Iovene, et al., 2019)
Case studies national	Berea Urban Core Extension – Phase 2 – Development of a FAP / Landuse Managment Framework (Iyer Urban Design Studio, 2012)
Technical guides	Architectural Character—Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving their Character (National Park Service – Technical Preservation Services, 1988)
	The Heritage Legislation and its Impact on the Built Environment (KwaZulu-Natal AMAFA and Research Institute, n.d.)
Academic Papers	Sense of Place, Authenticity and Character: A Commentary (Jivén & Larkham, 2003)
	Authenticity and the Sense of Place in Urban Design (Ouf, 2001)
Survey - National	A revised Listing of the Important Places and Buildings in Durban (Kearney, 1984)

Table 4-1 - Primary sources used to determine the Streetscape Aspects to be analysed. Extensive types of sources were used to allow for a broad range of information to add to the overall veracity of findings and in line with having ascertained that a collaborative broad range of disciplines contributes to the field of research.

Chapter Four specifically speaks of the development and use of the research instruments, therefore *Stage 2: The acting stage* and *Stage 3 The development stage* is most pertinent, though the planned research activities are cyclical and iterative in nature. (Mertler & Charles, 2008) During the Stage 1 literature review process, a specific note was taken of texts that had overall relevant subject matter to the research goals of determining specific characteristics. This information was collected in the form of a spreadsheet that then enables the correlation of relevant attributes in sources to then be later considered as primary sources to inform the process of developing the survey research instruments.

Having ascertained in texts such as Ouf (2001) & Young et al. (2007) that a collaborative approach that represents a broad range of disciplines is advocated for the practical determination and guiding of developmental processes, further texts derived from a range of disciplines were reviewed. This includes texts related to urban design, urban planning, urban infrastructure, architectural, and archaeological disciplines. The types of texts included regulations, policies, guidelines, case studies, technical guides, surveys and academic papers. This approach also increases the aspect of veracity as there is the use of correlation of aspects within multiple source types. These sources also incorporated the notion of macro and micro levels of focus.

In dealing with a more empirical approach to the qualitative aspects of character, specific criteria for examination needed to be determined. This is particularly important in the context of the study area where themes and trends need to be identified from what is an area of varied influences. This is

not about the preservation of an existing language, but rather the extension of an established character through the application of principles.

The research required that two surveys were developed. The first was a walking survey and the second was a detailed street survey. This was due to the impracticality of conducting an in-depth survey on all 945 buildings identified in the study area. The Walking survey provided an overview of all the buildings in the study area that would then enable the determination of a representative sample of identified streets for a detailed survey. The initial research to inform the formulation of the surveys was a review based on the range of texts identified above. The review included the capturing of aspects mentioned in the texts onto a spreadsheet. This led to the initial identification of aspects, which under review identified 4 distinct themes that these categories fell into. The spreadsheet capturing was then revised based on these four themes and individual aspects were then identified, firstly for the walking survey and then for the detailed street survey. The Walking survey process and results were then incorporated into the process of developing the detailed street survey in line with the cyclical and iterative nature of the research methodology.

The steps involved in the development and execution of the primary research tool of the walking survey are as follows:

1. Overall elements related to streetscape are captured onto a spreadsheet as mentioned in reference texts.
2. Extraction of elements related to the higher-level elements of a walking survey from the spreadsheet.
3. Synthesis of elements based on correlation and relevance.
4. Formulation of the walking survey. This resulted in an overall broad qualitative assessment of land use, form, condition, and response.
5. Sample testing of the walking survey.
6. Review of criteria and process.
7. Execution of the walking survey.
8. Mapping of findings of the walking survey.

The steps involved in the development and execution of the primary research tool of the detailed street survey are as follows:

1. Extraction of elements related to a detailed street survey from the spreadsheet
2. Synthesis of elements based on correlation and relevance, including review of findings and observations from the walking survey.
3. Formulation of the detailed street survey. This resulted in an overall broad qualitative assessment of land use, form, condition, and response.
4. Sample testing of the detailed street survey.
5. Determination of clustering of results from the walking survey.
6. Evaluation of identified nodes to determine 3 streets for conducting the detailed survey.
7. Data capturing onto online forms with onsite review and modification.
8. Processing of 11240 points of raw data to determine metric-based prevalence per item.
9. Dominant and secondary characteristics identified per an aspect of each category identified.
10. Overall synthesis of processed data used to formulate narrative for each category.

The methodology used a wide variety of sources to increase the aspect of veracity. The qualitative findings were specifically informed by specific metric-based data. What has resulted is the overall determination of the character of the streetscape of the study area supported by credible and verifiable data.

4.2 Survey Review

The initial step in the process of determining the primary research instruments was a review of the eight texts that include regulations, policies, guidelines, case studies, technical guides, surveys and academic papers. Categories of analysis concerning the specific research goals emerged, and correspondingly each of the sources was analysed to determine the appearance thereof. The purpose was to capture individual aspects mentioned in these texts for later correlations and consolidation. In that process, the following four distinct categories emerged into which individual aspects were captured.

- Context related
- Heritage related
- Specific Building components
- Best Practice Recommendations

Context Related Components

This particular section deals with specific criteria definition as it relates to context-related matters. While analysing source documents, 13 categories of analysis concerning the context emerged, and correspondingly each of the sources was analysed to determine the appearance thereof. Of interest is that the design manuals developed by the City of Toronto (2018) and Auckland Council (2020) feature very prominent in the 13 aspects while all other sources ranged between none and six. This can be explained since the design manuals are specifically developed to guide individual architectural building design, whereas the other sources deal with larger-scale issues related to urban morphology and town planning or architectural conservation that focuses on detailed elements.

Type	Name	Building footprints	heights	facing distances	relationship to neighbouring building / spaces	ground floor uses	setbacks	building entrances	site circulation	parking	Utilities servicing	refuse servicing	topography relationship	Planned vision governed by regulations
Town planning / Building regulations Local	Central Scheme of eThekwini Municipality	■	■			■	■							
Town planning / Building regulations International	Townhouse and Low-Rise Apartment Guidelines	■	■	■	■	■	■	■	■	■	■	■	■	■
	Auckland Design Manual - Apartment Building Design	■	■	■		■	■	■	■	■	■	■	■	■
Urban infrastructure	Manual for Streets	■	■				■							
	Manual for Streets 2	■	■				■	■						
Case studies international	Evaluation of Architectural Characteristics for Conservation Decisions of Değirmendağı, Izmir, Turkey													
	Of Streets and Squares			■	■	■	■							
Case studies national	Berea Urban Core Extension - Phase 2 - Development of a FAP / Landuse Managment Framework		■		■									
Technical guides	Architectural Character—Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving their Character													
	The Heritage Legislation and its Impact on the Built Environment	■	■	■	■		■						■	
Academic Papers	Sense of Place, Authenticity and Character: A Commentary													
	Authenticity and the Sense of Place in Urban Design													
Survey - National	A revised Listing of the Important Places and Buildings in Durban	■			■		■						■	

Table 4-2 – Elements related to context as appearing in the relevant sources. The Auckland and Toronto building regulations have the most comprehensive range of elements.

Heritage Related Components

This particular section deals with specific criteria definition as it relates to heritage-related matters. Though the author was at pains to separate the notion of conservation from experience in Chapter Three, (specifically referencing Ouf's work), the discipline of architectural heritage gives particular insight into details that contribute to the overall character of a building specifically, and the site to a lesser extent. While analysing source documents related to the seven types of sources, again 13 categories of analysis concerning heritage emerged, and each of the sources was analysed to determine the appearance thereof. Of interest is that the design manuals developed by the City of Toronto (2018) and Auckland Council (2020) again featured quite strongly, while all other sources ranged between none and six. This can be explained since the design manuals are specifically developed to guide individual architectural building design, whereas the other sources usually deal with principles that require expert professionals to implement in individual circumstances.

Type	Name	Architectural features	rhythms	Respect Existing Proportions	Respect urban grain	Respect scale	Respect existing visual relationships	Preserve existing heritage building views	Incorporate heritage landscape design	Front yard setback to align with adjacent built form	Transition to fit in with adjacent built forms and frame street	Mere historical façade retention discouraged	Respect existing topography	Respect existing materials
Town planning / Building regulations Local	Central Scheme of eThekwini Municipality													
Town planning / Building regulations International	Townhouse and Low-Rise Apartment Guidelines	■	■	■	■	■	■	■	■	■	■	■	■	■
	Auckland Design Manual - Apartment Building Design		■	■	■	■	■	■		■	■		■	
Urban infrastructure	Manual for Streets													
	Manual for Streets 2													
Case studies international	Evaluation of Architectural Characteristics for Conservation Decisions of Değirmendağı, İzmir, Turkey													
	Of Streets and Squares													
Case studies national	Berea Urban Core Extension - Phase 2 - Development of a FAP / Landuse Managment Framework				■	■								
Technical guides	Architectural Character—Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving their Character	■	■											
	The Heritage Legislation and its Impact on the Built Environment	■	■	■	■	■						■	■	■
Academic Papers	Sense of Place, Authenticity and Character: A Commentary													
	Authenticity and the Sense of Place in Urban Design													
Survey - National	A revised Listing of the Important Places and Buildings in Durban													

Table 4-3 - Elements related to heritage as appearing in the relevant sources. The Auckland and Toronto building regulations again have the most comprehensive range of elements.

Specific Building Components

This relates to a more technical component, as can be seen from the table where technical guides dominate the attributes listed. It relates to the physical manifestation of the building in form, articulation and detailing, but due to the nature of the literature shortcomings highlighted previously, the historical separation between 'public' and 'private' zone studies means that certain sources are building focussed to the exclusion of the experiential contribution to the streetscape in their work. This is a particularly useful basis for a survey as it is specific and component-based, but is limited to building components in isolation.

Type	Name	Materials	building heights	street widths	Placement on site	Setback (building line)	overall building typology	Fenestration composition	Fenestration surrounds	Floor mouldings	Eave mouldings	Balconies	Shape	Roof and Roof Features	Projections	trim and secondary features	Craft details	Variety in a pattern	Symmetry
Town planning / Building regulations Local	Central Scheme of eThekwini Municipality		■		■	■	■												
Town planning / Building regulations International	Townhouse and Low-Rise Apartment Guidelines				■	■													
	Auckland Design Manual - Apartment Building Design	■	■		■	■	■					■							
Urban infrastructure	Manual for Streets		■	■															
	Manual for Streets 2		■	■															
Case studies international	Evaluation of Architectural Characteristics for Conservation Decisions of Değirmendağı, İzmir, Turkey	■	■	■			■	■	■	■	■	■							
	Of Streets and Squares																	■	■
Case studies national	Berea Urban Core Extension - Phase 2 - Development of a FAP / Landuse Managment Framework		■																
Technical guides	Architectural Character—Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving their Character	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■		
	The Heritage Legislation and its Impact on the Built Environment	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■		
Academic Papers	Sense of Place, Authenticity and Character: A Commentary																		
	Authenticity and the Sense of Place in Urban Design																		
Survey - National	A revised Listing of the Important Places and Buildings in Durban	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	

Table 4-4 - Elements related to specific building components as appearing in the relevant sources. As can be anticipated, the more technical related sources contain a wider range of elements.

Best Practice Recommendations

This section deals with both higher-level and specific recommendations for improved streetscape design. It broadly deals with the interaction with historical and physical contexts; aspects, details and relationships that influence experience; and servicing and amenities. This includes generic statements such as "improve public realm connectivity" where practical aspects for this need to be derived. An example of a derived aspect of this connectivity would be visual connectivity through the lack of physical barriers between the street and the building. It also includes very specific items such as *buildings having direct access from the street.*

Though this is a survey exercise, it is useful to include what the sources recommend in design processes to determine if they are applied in the current fabric. This would translate into the recording of components that influence the aspect listed here, such as the detail of the boundary wall treatment, which in turn impacts the visual permeability from the street to the building and affects public realm connectivity.

Type	Name	Enhance public realm connectivity	Design buildings to conserve existing cultural heritage	New bldg typologies to respond to context	New buildings to allow for transition of scale	Direct access to buildings from street	Well designed entrances and front spaces	Buildings to frame edges of streets, parks & open spaces	Developments to allow high quality land- streetscaping	Servicing located away from view and public realm	Locate buildings to allow for sunlight and sky views	Reduce overlooking conditions between buildings	Enhance privacy while maintaining 'eyes on street'	Bldgs. to relate to ex. slope & blend with topography	Architectural elements & materials to enhance QOL & experience of public realm.	Design statement formulation
Town planning / Building regulations Local	Central Scheme of eThekwini Municipality															
Town planning / Building regulations International	Townhouse and Low-Rise Apartment Guidelines															
	Auckland Design Manual - Apartment Building Design															
Urban infrastructure	Manual for Streets															
	Manual for Streets 2															
Case studies international	Evaluation of Architectural Characteristics for Conservation Decisions of Değirmendağı, İzmir, Turkey															
	Of Streets and Squares															
Case studies national	Berea Urban Core Extension - Phase 2 - Development of a FAP / Landuse Managment Framework															
Technical guides	Architectural Character—Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving their Character															
	The Heritage Legislation and its Impact on the Built Environment															
Academic Papers	Sense of Place, Authenticity and Character: A Commentary															
	Authenticity and the Sense of Place in Urban Design															
Survey - National	A revised Listing of the Important Places and Buildings in Durban															

Table 4-5 – Suggestions of best practices as appearing in the relevant sources. Yet again, the Auckland and Toronto building regulations have the most comprehensive range.

4.3 Walking Survey Formulation

Walking Survey Components
Height
Topography
Predominant Period of Construction
Condition of Current Fabric
Design Quality
Street Relationship

Table 4-6 - Derived components for the walking survey related to the review of aspects related to components of streetscape as per the five classes of data reviewed.

The two-stage primary research data collection starts with the walking survey. This is the tool that provided an overview of all the buildings in the study area and the data gathered from it would then enable the determination of a representative sample of identified streets for a detailed survey.

The aspects that would provide a suitable overview were determined through the review of the relevant texts mentioned previously related to physical form, current condition and design-related quality. It is in line with the suggestion of providing key prompts for the area around the pattern of development and built form, scale and character. (The State of Victoria Department of Environment, Land, Water and Planning, 2018, p. 2) To enable a broader range of streetscape influences and experiences, the walking survey included the aspect of the period of construction. The following section of the document goes into greater detail in describing the survey criteria utilised.

The data collected and processed will give high-level indications of streetscape character, but will primarily be used to determine smaller areas of study through correlation determination for the identification of nodes of potential detail study that would best fit the research goal outcomes. Selected nodes would then undergo the detail street survey where greater detail will be investigated to determine more fine-grain findings.

Survey Criteria Description

To guide the qualitative assessment of the walking survey for the overall study area, not only were specific aspects of the survey required, but a clear definition of how to classify the different building conditions experienced. This included the use of sample testing and subsequent review of the classifications to ensure that the definitions catered for the actual conditions on the ground and not merely assumed. This is another illustration of the cyclical and iterative research process.

Building Height

This particular aspect of the walking survey dealt with the capturing of the primary massing aspect of height. It noted that an important aspect was the overall number of habitable floors and if parking was accommodated in some form within the primary building volume. There were three categories identified.

- The **Number of floors** was typically either 2, 3, or 4 stories due to the typology investigated and the limitations of the research. Due to the topography conditions that exist, parking in a semi-basement configuration is treated separately from habitable floors.
- The **Number of floors with bottom floor parking at grade** as the number denoted habitable space. This is in addition to the entire ground level at grade being given over to parking.
- The occurrence of a **Semi-basement** concerning the main entrance level. This could be in the form of individual garages or open plan configuration if for parking, or a split level if for habitable space. Overwhelmingly, it caters for vehicles and this is due to a slope allowing for the primary habitable floor to be anchored to a higher point on the site and vehicles to be accommodated beneath this floor when the slope is sufficient to allow headroom.

Interaction with Topography

This classification is split into two aspects, namely the primary relationship in elevation[66] between the built form and the primary street edge, and the design strategies around access to the building from the primary façade. In some instances, one of each aspect applies to a property. There were nine options utilised to capture the date, namely:

[66] Elevation here refers to difference in height and not the synonym for a façade/ side of a building.

- **The primary built form above the street edge**. The property slopes upwards from the street access and the primary built form is built above the level of the Primary street edge.
- **The primary built form at grade with street edge.** The building is built level to the primary street façade. There are minimal adaptations of the original natural ground level and generally the site is flat.
- **The primary built form below the street edge**. The property slopes downwards from the street access and the primary built form is built below the level of the primary street edge.
- **The primary built form along the slope of the street edge, bottom attachment**. The primary street edge is on the long edge of the property and the property slopes across it. The primary built form is built attaching to the lower point. There will be either a built retaining wall circumstance or an embankment created by earthworks. The building may step to accommodate the slope.
- **The primary built form along the slope of the street edge, mid-point attachment**. The primary street edge is on the long edge of the property and the property slopes across it. The primary built form is built attaching to a mid-point along the slope. There will be either a built retaining wall circumstance or an embankment created by earthworks.
- **The primary built form along the slope of the street edge, top attachment**. The primary street edge is on the long edge of the property and the property slopes across it. The primary built form is built attaching to the higher point. There will be either a built retaining wall circumstance or an embankment created by earthworks. The building may step to accommodate the slope.
- **Bridge access**. Access to the building is via an inclined bridge. This typically is to incorporate parking beneath the building in a semi-basement circumstance while still complying with the height limit imposed either by a town planning requirement or more likely, the requirement to have an elevator should the building exceed three additional stories above the level at which entrance is achieved from the site boundary. There will be either a built retaining wall circumstance or an embankment created by earthworks. In some instances, the slope is rather gradual, so the embankment is not significant. The building may step to accommodate the slope. In some limited instances, there is an inclined path with retaining walls to contain the fill beneath the path. Though not a bridge, for this study, it is still classified as such due to the outcome achieved being quite similar.
- **Stair Access**. Access to the building is via a flight of stairs as opposed to the building attaching directly to the natural ground level via a path. This could be in conjunction with a simple embankment, garden retaining walls or garages built in a manner that acts as retaining structures.
- **Garages as retaining**. Garages are built in a manner that they act as retaining structures along the property boundary. The built primary built form is then built behind the garages on the platform created by this retaining circumstance. Though historical precedents are quite prominent, this currently is not permitted by the application of both town planning regulations of what is permitted to be constructed within a building line and traffic regulations around points of access to a site.

Typology

The typology identification is a critical component in being able to identify the buildings that comply with the low-rise apartment limitation. It also speaks to the prevailing land use of the individual building. The zoning across the area is fairly uniform (as discussed in the sub-chapter Historical Development of the Study Area), therefore typology is an important data set for analysis. There are 12 typologies identified, namely:

- **Apartment Building**. The more common term adopted locally (included in official documentation, such as the *Central Scheme of eThekwini Municipality,* the Town Planning Scheme applicable to the study area) is *Flat*. This refers to "a building or buildings with two (2) or more storeys comprising of self-contained dwelling units, each having a separate entrance and forming part of one or more storeys." (eThekwini Municipality, 2019, p. 31) The need to distinguish between low-rise and medium-rise has meant that the author has applied the restriction of fewer than 6 floors. There is a separate category for 6 floors or more.
- **Duplex**. The local definition is a flat with living accommodation on not more than two floors. (eThekwini Municipality, 2011) This terminology appears in historic local authority documentation, but has subsequently been incorporated into the broader term *multiple unit development* and no longer features in the most recent Town Planning Scheme. As the distinct typology definition had a bearing on the historical development of the area, it is deemed significant to still distinguish this from *Maisonettes*.
- **Maisonette.** Sometimes also referred to as a *pair of maisonettes.* It is defined as a building designed or constructed or adapted to contain two self-contained dwelling units, together with such outbuildings as are ordinarily used therewith. Again, this terminology appears in historic local authority documentation, but has subsequently been incorporated into the broader term *Multiple Unit Development* and no longer features in the most recent Town Planning Scheme. As the distinct typology definition had a bearing on the historical development of the area, it is deemed significant to still distinguish this from *duplex.* In certain circumstances, the maisonette approach has been extended to include a pair of self-contained units on the ground floor and a pair of self-contained units on the upper floor. The differentiation between Maisonette and a Duplex can more clearly be defined by the number of party walls – a Maisonette only has one, and a duplex can have multiple though both are limited to two floors.
- **Mixed-Use Building**. This type is included for interest sake in the walking survey but is not incorporated in any significant form into the research undertaken as it is beyond the scope of the limitations of the study. This refers to "Residential and Commercial activities that compliment or function alongside each other. Mixed use areas which would accommodate residential, office and commercial activities." (eThekwini Municipality, 2019, p. 100)
- **Commercial Building**. This type is included for interest sake in the walking survey but is not incorporated in any significant form into the research undertaken as it is beyond the scope of the limitations of the study.

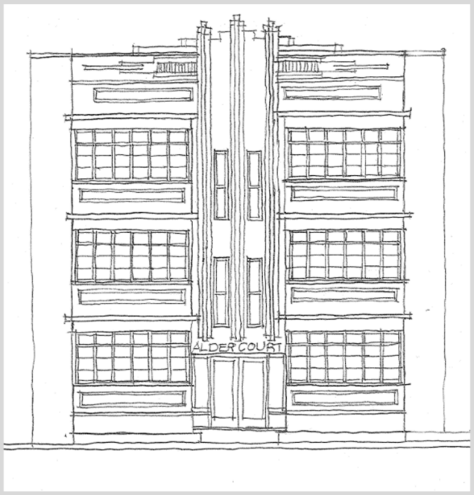


Figure 4-2 - Alder Court (7 Woodburn Place) is a small Art Deco apartment building with six units. It forms part of the Woodburn Place exemplary streetscape and is built virtually on the front property line.

Figure 4-3 – Colleen Court (199 Clark Rd) is a late century duplex. It is included to demonstrate the increasing tendency in the area towards designing more 'simple' buildings.

Figure 4-4 - Phumula *(64 Hunt Rd) is an exquisitely detailed and maintained Union Period maisonette. Of interest is that there are separate open staircases in the centre of the composition to the two upper floor units.*

- **Building Converted for Commercial Purposes**. (Transformed) This category is included for interest sake in the walking survey but is not incorporated in any significant form into the research undertaken as it is beyond the scope of the limitations of the study. It is noted that these buildings may well originally have been within the scope of the research before their conversion, but the conversion process would have affected their current character. It is a broad category that encompasses multiple building typologies, such as residential houses and apartment buildings.
- **Single Residential House.** This may be a single or multiple-storey building with or without ancillary buildings on the site (such as standalone garages and outbuildings). It is typically inhabited by one family unit. This typology is included for interest sake in the walking survey but is not incorporated in any significant form into the research undertaken as it is beyond the scope of the limitations of the study.
- **Institutional.** This is for certain public civic functions not catered for under other classifications and typically includes schools and children's homes. The types of land use defined in the Town Planning Scheme is "Institutions such as hospitals, nursing homes, sanatorium, clinic, convalescent home, orphanage, retirement centre, or other buildings used as a public or private institution" (eThekwini Municipality, 2019, p. 83). Due to the significant urban incorporation of large healthcare facilities in the area, this has been identified as its own category.
- **Religious.** This refers to "A church, mosque, temple, chapel or other place for practicing a faith or religion and ancillary uses ordinarily associated thereto." (eThekwini Municipality, 2019, p. 113)
- **Semi-detached.** This is a typology that is considered similar to a *duplex*. The principle difference is that semi-detached is a single-floor dwelling with one party wall shared. This is not a definition included in the local authority scheme.
- **Medical.** This classification is for large healthcare facilities, such as hospitals, day hospitals and step-down facilities. Small healthcare practices have been identified under either Commercial (if purpose-built) or Conversion to Commercial (if a residential property has been converted for this purpose). There is a large number of single houses that have been converted to house small medical practices around St Augustine's Hospital towards the west of the study area.
- **Medium and High-Rise Apartment Buildings.** Though not prevalent, there are a limited number of medium (dispersed) and high-rise apartment buildings (along the western edge along the ridge in the topography) of the study area. There is no universally accepted definition for these terms, therefore the SANS 10400 part T regulations on Fire Protection (South African Bureau of Standards, 2016, p. 43) will apply indirectly where a building of over 18m in height will require partially enclosed staircases – practically this works out to any building of 6 stories or more. Buildings with less than 6 habitable floors above the natural ground level at the entrance will not be classified in this category.

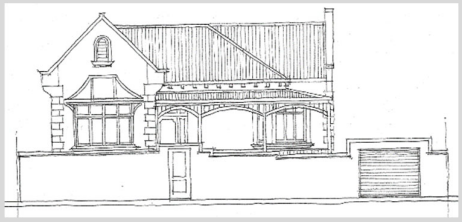


Figure 4-5 - (434 Clark Rd) is one of a number of single residential houses from the Colonial Period that still remain in the overall study area. This house still retains the original detailing of the timber verandah posts, brackets and balustrades. The solid boundary wall and garage door access is a far more recent addition, the typical boundary detail would have been to have a low wall with pillars and cast iron or metal railing infill. The image specifically is included to demonstrate the subsequent compromise of the original streetscape.

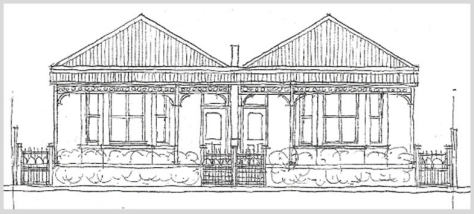


Figure 4-6 - 34/36 Cohen Ave is one of a number of simplexes from the Colonial Period that still remain in the overall study area. Overall details still remain consistent with the original design, including the pedestrian and vehicle gates to the property. This particular unit has hedges as infill to the boundary wall, which was a typical detail of the period.

Figure 4-8 – Villa el Toro, *(297 King Dinuzulu [Berea] Rd). Union Period three story apartment building, one of a select few in the study area. This is included under the general period of 'Colonial'. The arched balconies have been glazed in at some point between Kearney's survey and this one.*

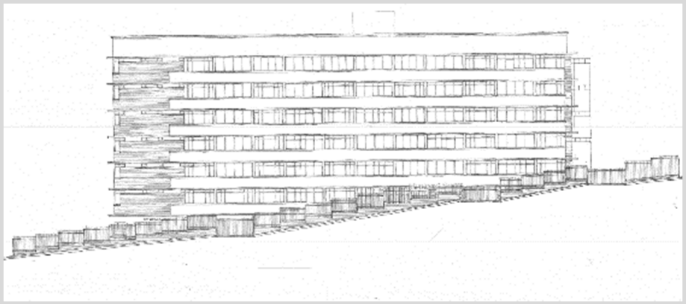


Figure 4-7 - Benzelia *(276 Helen Joseph Rd) is one of a number of Mid-Century Modernist Apartment Buildings in the overall study area. It includes extensive use of contrasting face brick and plaster panels, strip and corner window configurations, parapet roof detailing and specific use of the topography. The original low face brick wall is still in existance, but an additional palisade fence has been erected.*

Predominant Period

As the prevailing trend was that designers would utilise the architectural language of the day (*de jure*) it is a fairly useful mechanism for determining overall periods of construction for the building itself. With over 900 buildings in the walking survey area, reviewing microfiche records at the local authority would be extremely time-consuming and due to the lack of 'archive standard' curation of these records, there would be numerous gaps. The aerial photography available for the period that covers the vast majority of the construction of buildings in the study area, namely the 1937, 1953, 1959, 1967, and 1968 photography, is of varying resolution and makes individual analysis of buildings difficult to undertake. The visual determination of the period based on identifiable details is therefore separated into six categories, namely:

- **Colonial**. Including Victorian and Edwardian and the 'Berea Style'. Predominant style pre-1930s, but extended beyond. Few 'multiple unit buildings' exist during this period, much of it was focused on single houses. These usually include neo-classical details such as doric columns or settler details such as the incorporation of pediments to roofs, bay windows, and filigree to verandas and sash windows.
- **Early Modernism**. Principally building of Art Deco and International Style and their derivatives. Typically, Mid-1930's to late 1940's. Typical details include expression and articulation of pure form, corner windows, vertical and horizontal plaster bands and flat roof articulation.

- **Mid-century Modernism.** Typically late 1940s to early 1960s. An emergence of an expression of tiled roofs. Formal articulation favoured cubic expression and the interplay of protruding and receding planes.
- **Late Modernism.** Typically, from the 1960s to the 1980s. Buildings demonstrate the restrained pragmatism of the Modernist ethos quite extensively. Buildings are of simple form with little articulation in planes, materials often included painted, but unplastered brickwork. Standard components (such as windows) feature almost exclusively. The structural grid is clearly expressed.
- **Late Century.** Typically, developments from the end of the 20th Century. Usually of smaller scale, with some examples of the addition of limited stylistic elements to a generic form (such as textured plaster and Spanish clay roof tiles). Generally of a non-distinct or generic stylistic articulation.
- **Contemporary**. The much-used term relevant to a marker of time is post-democracy. This does not necessarily indicate a philosophically linked design articulation with the post-1994 period in South Africa, but rather an indirect response to increased deregulation.

Figure 4-9 - Evershed *(89 Hunt Rd) is one of a number of Late-Century Modernist Apartment Buildings in the overall study area. It utilises the contrasting face brick and plaster wall panels, but also uses the face brick breezeblocks for screening elements to external staircases, walkways and in constructing balustrade walls. Double pitched clay tile roofs and standard individual steel window configurations become the standard for these buildings. It still utilises the slope to include parking beneath the building (not visible in the street elevation). The Palisade fence is a far more recent addition, as per the majority trend of constructing subsequent physical barriers along the boundary in the study area.*

Figure 4-10 - Canberra *(65/69 Ferguson Rd) is one of the few Late Century Apartment Buildings in the overall study area, and forms part of one of the detailed street surveys. The use of plaster walls almost exclusively and the hipped gable over balcony volumes is common for the period, as is the double-pitched clay tile roof. The specific concentric square with diagonals timber balustrade module is also rather common for the period. The plaster brick pillar and steel panel infill is original, thought the electric fencing topping and stingray spikes is a subsequent addition.*

Figure 4-11 – 242 on Brand Road *(242 Brand Rd) is one of the most recent developments in the overall study area. It is an exercise in 'reduction' including that of balconies to almost unusable depth. There is a mirror of this form along the sites long axis and the space between is asphalted over with shade cloth car-ports constructed for parking purposes. The solid boundary wall is original, with the electric fencing topping added very shortly after construction.*

Condition of Current Fabric

This particular aspect speaks to the integrity of the original building being retained through any subsequent changes and appropriate maintenance. This includes how well-considered any potential interventions have been in their subsequent execution. The argument is that the condition of the current fabric is a good high-level indicator of the overall effort in maintaining the streetscape as a whole.

- **Excellent Condition**. Current fabric is as per the original, or where alterations have been made, these are visually indistinguishable from the original. Details and elements are as per the original, with no modern material substitutions. Very minor services have been added, but in a manner and location to not detract from the overall fabric and integrity. Building maintenance has been implemented timeously and no significant need for any maintenance is evident.

- **Satisfactory Condition.** The current fabric retains a majority of the original integrity. There may be minor alterations (such as the changing of original window frames), but it is done with the overall effect of the value of the overall fabric being retained. Minor defects evident requiring routine maintenance.

Figure 4-13 - 76/78 Hunt Rd. This 'Colonial' duplex has two units, each over two floors. In this particular instance, one unit is classified as being in a 'poor condition' as it requires a considerable amount of maintenance and this impacts on the overall building. The property ownership is usually separate for this period of construction, so it is difficult for the owner of the adjoining unit to practically influence ongoing maintenance. The formation of Sectional Title ownership addresses this shortcoming to a significant extent, though interpersonal relationships work better when there are larger numbers of owners that make up the sectional title.

Figure 4-12 – Whitley Court (510 Che Guevara [Moore] Road). A Mid-Century Apartment Building in excellent condition, partly due to the original material choices, but the particular landscaping upkeep is evident of an overall level of care taken in the property.

- **Poor condition.** The overall fabric of the building has been quite evidently compromised. This could be in the form of additions out of character with the original form (such as the insensitive enclosing of verandas or additions to the overall built form), or the hap-hazard and un-coordinated changes of elements of the fabric (such as piecemeal changes of window frames). There is significant maintenance required to address what is a neglect of routine maintenance.
- **Derelict.** The building appears to be in a state of significant disrepair and may be abandoned or hijacked.

Design Quality

The overall design quality of the individual building will have a direct bearing on the quality of the experience of the streetscape that it contributes towards. Intrinsically and even if sub-consciously, humans recognise the level of effort taken in designing a building, as noted by Sussman & Hollander (2018), and therefore the higher the design quality of the building as exemplified through the execution of appropriate details, the higher the quality of the experience of the streetscape. The walking survey, therefore, has four categories that have been derived to classify individual buildings, namely:

- **Exceptional**. The building is an exemplary example of its particular period. It exhibits an abundance of the typical details of the style. Overall form and massing are well considered. Details are incorporated skillfully and are considered well executed. Noteworthy period materials are skilfully applied. The building utilises opportunities given by the topography and context well.
- **Good.** The building is a good reflection of its particular period. Overall form and massing are considered. Details are incorporated sufficiently and are considered adequately executed. Noteworthy period materials may feature in places. There is evidence that the building utilises opportunities given by the topography and context.
- **Adequate.** The building reflects the typical details of its particular period. Overall form and massing conform to the general trend of the style. Typical details are incorporated sparingly and are done so in a perfunctory manner. Noteworthy period materials seldom occur. The building gives gestural rather than meaningful acknowledgement of the topography and context.
- **Poor.** The building is a poor reflection of the style. Overall form and massing are unrefined and somewhat indistinguishable in terms of the style. Typical details are scarce and their execution is sub-standard. Considerations of topography and context are not evident.
- **Compromised.** The building itself or elements on the property have been added, removed or altered to a degree that the overall design integrity of the building or a significant element of it has been significantly and noticeably compromised. Common instances include enclosing verandas with walls and additions of volumes that are not in keeping with the overall composition of the original building.

Street Relationship

The relationship between the building and the street is an important one, and when trying to determine the 'best practice' approach to the recommendations from situations in the study

Figure 4-14 - Algwen (72 J.B. Marks Rd). This is part of one of the detailed street surveys. This building demonstrates exceptional design quality. It skilfully incorporates early- and mid-century design elements into a regional version of the International Style.

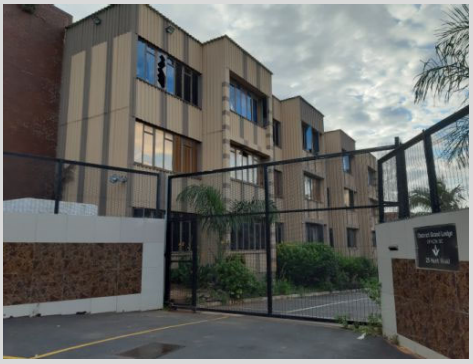


Figure 4-15 - Kilwinning (23 Hunt Rd) - photo from 2021 indicating the radical change in material definition of the façade. This is one example of 'compromised design quality'. The plaster and paint walls have now been covered with corrugated sheeting (of poor detailing) in what the Author's wife describes as 'shack nouveau' treatment, referring to the almost exclusive use of this sheeting to make informal dwellings, which are colloquially referred to as 'shacks'.

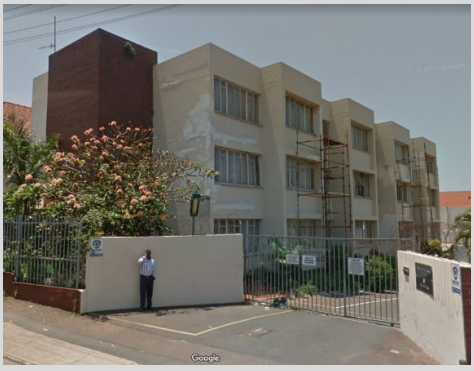


Figure 4-16 - Kilwinning (23 Hunt Rd) – Streetview from 2017 indicating the primary elevation in a state much like when constructed, though under minor repairs for hairline cracks in the plaster.
Source: (Google Street View, 2017(a))

area, a ranking of the street relationship is critical. The overall determination takes a combined qualitative assessment of aspects such as visual quality, overall composition, scale and detail, visual connection, treatment of the boundary, and treatment of the space between the boundary and building façade. The walking survey, therefore, has five categories that have been derived to classify the quality of this relationship, namely:

- **Exceptional**. The building exhibits an exceptional relationship with the street. The façade is well executed and adds significantly to the visual quality of the street in overall composition, scale and detail. The boundary definition between the street and the property is defined but has little if any physical barrier present. Landscaping within the property building line is well maintained and considered and incorporates predominantly soft landscaping. The main façade is oriented towards the street and living areas overlook the street.
- **Good.** The building exhibits a good relationship with the street. The façade is considered and adds to the visual quality of the street in overall composition, scale and detail. The boundary definition between the street and property is defined and may comprise a physical barrier, but is visually quite open. Landscaping within the property building line is well maintained and incorporates predominantly soft landscaping. Living areas overlook the street.
- **Adequate.** The building exhibits an adequate relationship with the street. The façade does not detract from the visual quality of the street in overall composition, scale and detail. The boundary definition between the street and the property generally comprises a physical barrier but is visually permeable. Landscaping within the property building line is evident and incorporates a mix of hard and soft landscaping. Living areas may be orientated in favour of climatic or parcel sides as opposed to the street edge. The building is set back from the required building line.
- **Poor.** The building exhibits a poor relationship with the street. The façade detracts from the visual quality of the street in overall composition, scale and detail. The boundary definition between the street and the property comprises a solid, impervious physical barrier or retaining wall. Landscaping within the property building line is limited and hard landscaping predominates. Living areas may be orientated in favour of climatic or parcel sides as opposed to the street edge. The building is set back from the required building line.
- **Currently Compromised.** The building displays evidence of a good quality of design and incorporation of landscaping, but due to the subsequent erection of an impervious physical barrier, the relationship to the street is significantly compromised.

4.4 Process of Node Identification for Detailed Surveys

To determine detailed characteristics of the streetscape, a more detailed survey needed to be undertaken to identify specific elements related to buildings and their interface with the street. As the application of the detailed survey to all 945 buildings within the study area would be considerably difficult due to their sheer volume, a process of identifying representative nodes was required. This process involved the following steps undertaken to identify individual nodes of streets in the study area where these detailed surveys could be undertaken.

1. The manually recorded walking survey data was to be mapped.
2. Each criterion was to be mapped separately with the individual types represented by unique and distinguishable coloured hatch.
3. Specific grading of desired circumstances would then be isolated to identify where desired examples are located for the criterion.
4. The isolated examples from one criterion were then overlaid onto similar maps for other related criteria to indicate overlaps and thereby identify locations of correlation.
5. Distinctive nodes were then identified based on the overall correlations identified.
6. The nodes were then subjected to an analysis of their attributes related to the ability to reveal findings related to the overall research goals.
7. Selection of the nodes to undergo detailed surveys based on outcomes of the analysis of the ability to reveal findings.

The mapping of the manually recorded walking survey data was done manually on CAD. Six individual drawings utilising the local authority GIS building and property outlines were used as a base. The building outlines were then hatched according to the assigned coloured hatch related to their type. Data verification was applied to the data capturing through the cross-verification of the number of hatching instances to the overall number of buildings. Spot checks were also conducted. A maximum overall variance of less than 5% was observed, which is well within the range of this type of analysis.

The isolating of specific grading of instances was again manually conducted, with the CAD programme selecting all instances of identified colours of hatches. These were then copied onto new layouts. The hatch was then replaced by a circle. This enabled the circles for a criterion to be converted to an outline and another to remain solid and when overlaid would visually indicate the correlation of aspects.

The layouts with the correlation exercise applied then revealed areas of significant clustering. Areas of significant clustering were then identified as nodes of concentration. These nodes then underwent a review of their attributes regarding the overall research goal. This included the occurrence of noteworthy instances of the aspects and variety of built responses and the extent to which they could deliver findings of the overall research goal.

4.5 Detailed Street Survey Formulation

Detailed Survey Components	
General Cadastral	Site Properties
Site Relationship	Landscaping and vegetation
Overall Built Form	Roof forms and details
Façade Materials	Elements and Details – Entrance
Elements and Details – Windows	Elements of Articulation
Security Elements	Site Servicing

Table 4-7 - Derived components for the detailed street survey related to the review of aspects related to components of streetscape as per the eight types of texts reviewed.

The detailed street surveys form the second stage of the primary research data collection. This is the tool that will identify principle character elements through the identification of specific details related to individual buildings and their relationship to the public realm.

As with the walking survey, the aspects that would enable the identification of the principle character elements were determined through the review of the relevant texts mentioned previously, though specifically related to specific elements of an architectural and public/private interface.

The data collected and processed from these second-stage surveys will give specific indications of streetscape character, deriving primary and secondary characteristics based on rates of occurrence.

Survey Criteria Description

To guide the qualitative assessment of the walking survey for the overall study area, not only were specific aspects of the survey required, but a clear definition of how to classify the different building conditions experienced. This included the use of sample testing and subsequent review of the classifications to ensure that the definitions catered for the actual conditions on the ground and were not merely assumed. This is another illustration of the cyclical and iterative research process.

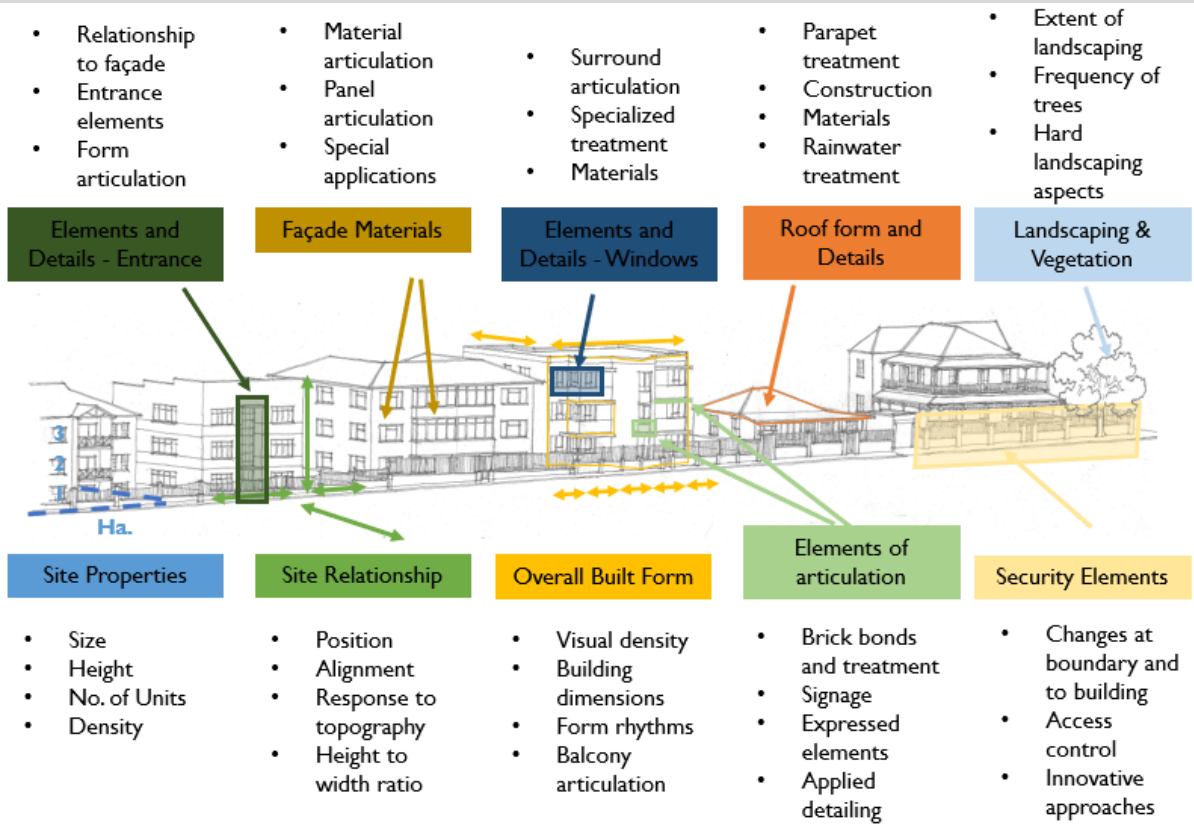


Figure 4-17 - Illustration of the 10 out of 12 categories of identification used in the Detailed Street Survey. Examples of particular criteria per category is included with each of the categories. The remaining two categories are General Description *and* Site Servicing.

General Description
The General description section deals with site identification aspects and are comprised of two distinct types, namely data processing-related identification aspects and general site properties. The data processing aspects include aspects such as street name, street number, geographical coordinates, ERF number, and building name. These are for primary data processing purposes mainly and have little bearing on overall findings but are useful when identifying specific buildings to illustrate individual examples. The general site properties include the capturing of zoning, period of construction and number of units per building (to allow for the calculation of density values).

Site Servicing
Specific site servicing elements are included as these can have a fundamental impact on the visual appearance of the streetscape, and the literature surveyed indicates a variety of servicing aspects that generally may apply. This generic range was then specifically reduced to include only those aspects relevant to the specific study. The three aspects specifically investigated therefore are parking, the inclusion of electrical substations and then minor servicing aspects such as water and electrical meters, fire hydrants and telephone infrastructure.

Parking has the most prominent impact as the requirement of the amount of parking accommodation required and how this is catered for has significant visual implications. The location of garages, carports or open bay parking is considered in relation to the streetscape, with a range of approaches noted from the accommodation of parking to the rear or practically hidden from the street with its limited streetscape impact to the inclusion of garages along the entirety of the property boundary having the most significant streetscape impact.

Electrical substations have the next impact on the streetscape. It was noted that there is an increasing requirement for the inclusion of substations and their relative size exposed along the property boundary over time. Where these are included in properties and visible from the street, their size and location are important factors influencing the visual quality of the streetscape.

The third aspect of water and electrical meters, fire hydrants and telephone infrastructure has an impact, but not as significant as the other two due to the limited size of the visible infrastructure.

Servicing related to refuse removal does not have a visual impact on the street as refuse yards are located towards the back of buildings in Durban and custodial workers that are almost universally employed by the body corporate for individual buildings will transfer all collected refuse to the kerb on collection day.

Site relationships
This aspect deals primarily with the interaction of the overall individual building form in relation to its surrounding. Aspects considered here are how long the overall street block is, how long the individual property boundary is along the street edge, the setback of the front façade from the property boundary, the setback from the side boundaries and the sighting of the building in relation to the street level (especially if there is a slope and how this could be innovatively used to the benefit of the overall streetscape). This allows for a determination of the overall and more specific built-form circumstances to be determined, including heights in relationship to opposite and surrounding buildings and pavement edges. Another important aspect is noting if the property is a corner site and if it then addresses both street-facing edges or if the secondary street façade is treated as a side façade which usually means minimal detailing and often has service components attached or exposed.

Public boundary edge treatment
The survey includes the determination of details related to the pavement and the property boundary treatment facing the pavement. This relates to the inclusion of landscaping and the treatment of any boundary wall. The landscaping aspect looks at the inclusion of vegetation (such as planting beds) and trees specifically on the pavement. It also includes constructed planters along the property boundary. The inclusion of natural vegetation has a significant impact on the streetscape experience, often enhancing the built experience. The treatment of the boundary wall is a significant aspect of the streetscape experience as it often determines the visual penetration into the property and the views of the built façade. It also significantly contributes towards

the overall impression of the individual utilising the public realm that the property frames. In light of the significant securitisation that is experienced in the study area, the boundary wall is usually the most significant aspect to be modified to respond to the increased need for heightened security, and details thereof are often to the detriment of the established streetscape.

Private boundary edge treatment
The treatment of the zone between the property boundary and the building façade also has an impact on the streetscape experience. This zone is usually comprised of soft landscaping with elements of other hard landscaping. These details of landscaping and the maintenance thereof contribute to the experience from the street, but increasingly this is being altered by the subsequent construction of boundary walls. Depending on the composition of this wall, the amount of soft landscaping in the property and the details thereof are obscured to varying levels. The survey captures what is visible in terms of planting, constructed planters and the treatment of any garden paths.

Security elements
Security considerations for residents usually evolve in response to the situation of the time at hand. In historical instances, there was limited need for prevention of crime to be considered, therefore these buildings are increasingly subject to ad-hoc security additions, which are primarily considered for their practical value of deterrent and cost and not for impact on overall character. As indicated in the sub-chapter on the *Contextual Discussions related to South Africa*, there is a significant and real national problem related to residential crime, and though *reported* residential burglary incidences have decreased over the last 15 years, the incidences of *reported* residential robberies have increased[67]. The instinctive response has been to add physical layers of security, most prominently security walling or fencing to the property. Though there historically were boundary walls, these were low and used to gesturally define the border between private and public realms. Additional property walls have been constructed on virtually all properties in the study area. These barriers have a variety of manifestations, from the visually impermeable solid brick and block wall to the visually permeable palisade or 'ClearVu' fencing.

The visual permeability is not the only aspect of the effect of the streetscape experience, but many of these barriers have additional enhancements to the top of them, ranging from fairly innocuous electric fencing to quite visually oppressive razor wire coils or mesh, or rather brutal broken glass shards embedded into concrete. The razor wire coils of poorer quality also tend to weather poorly and then result in rust stains running down walls, which further detracts from the visual appearance.

There are also measures of security enhancements to the façades of buildings. Almost uniformly present are burglar bars at the ground floor level, but there are also some instances of electric fencing being attached to the façade. These security measures, particularly the perimeter boundary treatment, have a significant visual presence and therefore are significant elements of character definition. It is therefore essential to detail their manifestations.

Overall Built form
Several aspects contribute to the overall built form, such as the overall volume of a building and how this is delineated utilising arrangement, rhythm and articulation. There is also the infrequently used aspect of *Visual Density* and the appearance thereof, also termed *Visual Weight.* This is more prominently found in the discourse on the disciplines of visual and graphic design. Bradley, in his publication *Design Principles: Visual Weight and Direction* states that "Visual weight is a measure of the force that an element exerts to attract the eye." (Bradley, 2014) The more an element attracts the eye, the greater its visual weight. Precise measurement of a design element is difficult, it is primarily based on experience and judgment. The fundamental aspects in the architectural discipline that dictate visual weight is around the density of

[67] The difference between burglary and robbery in the commission of theft is that robbery includes the use or threat of violence against the victim. In many instances, the increased physical security measures implemented in properties across South Africa has made burglary more difficult, therefore criminals are now increasingly shifting their modus operandi towards theft when the residence is occupied and many physical security measures are not operational (such as locked security gates, electronic alarms active, etc.)

articulation, such as the range of material finishes used, the variation in forms evident and the level of detailing employed as either integrated or applied usage. These principles are dealt with more comprehensively in his publication *Design Fundamentals – Elements, Attributes, & Principles.* (Bradley, 2018)

Part of the exercise on determining streetscape character, therefore, requires judgement-based determination through the experience of the visual composition and weight of the buildings that comprise elements in the streetscape. The survey, therefore, includes the elements of building height, depth, delineation of massing, overall built form rhythms, plan forms, approach to overall composition in front elevation (such as symmetry) and the inclusion and detailing of balconies in addition to the evaluation of overall visual density.

Roof form and details
The roof, as the 'fifth façade' and evident for the most part to the street is an important aspect to consider. In some instances, the prominence of the visual aspect of the roof is considerable. Aspects of articulation, construction, material and detailing have an important effect on the visual appearance of the street, especially given the lack of uniformity across the study area. The variety of approaches evident includes the articulation of a parapet wall in addition to exposed mono-pitch and exposed double-pitched roofs with a range of end termination approaches. It also includes the application of rainwater treatment in the form of the location of gutters and downpipes.

Façade surface treatment
The surface appearance of materials, particularly on the façade, contributes to the overall character. This is particularly if there is a variation in the appearance in contrast to other elements and can be used to great effect in achieving the condition of 'active façades' that 'live' and have variety in a pattern (Iovene, et al., 2019, pp. 5-7) by utilising the finished properties of different materials to good effect. This can also include the variation of application or finish to a common material, such as face brick laid in a different bond or with a different finish. This aspect also identifies where special material conditions are being used, such as applied finish to walls such as cladding or tiling, or the use of non-standard materials such as glass bricks.

Elements of articulation
This element of survey deals with elements that are not fundamental to the overall fabric of buildings, but never-the-less contribute to the overall character of the streetscape. This includes decorative elements such as filigree associated mainly with colonial buildings, but also building signage, which is far more prominent in apartment buildings and therefore becomes a defining characteristic.

Elements and Details - entrances
The elements and details of entrances are a considerable contributor towards engagement between a building and the street, therefore specific attention is given to this component in the survey. This relates to the nature, placement, composition of elements and elaboration thereof. This includes if entrances are specifically articulated through aspects such as clearly defined volumes in the overall building and how they relate to the overall façade. It also includes the placement of the door in the overall composition of entrance elements and the detailing of these doors. The third aspect is the definition of the capping element to the entrances, i.e. if there is parapet elaboration over the entrance or the roofing detail to entrances.

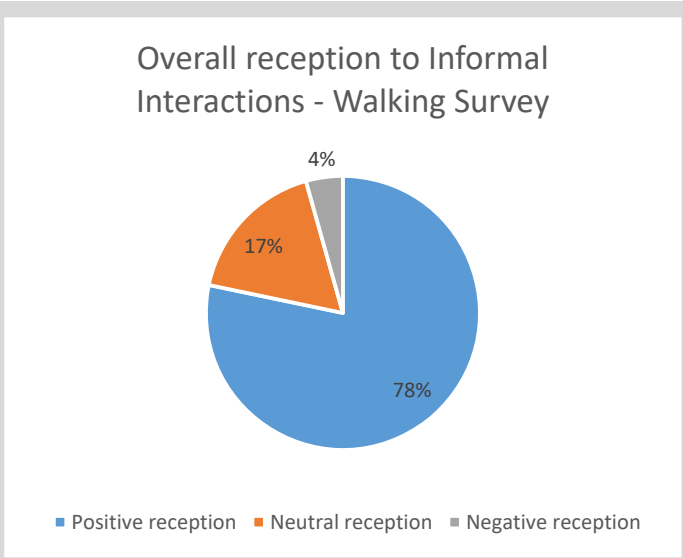
Elements and Details - windows
Windows are an intrinsic part of façade articulation, often representing the primary aspect of establishing a recognisable pattern. They are the most common recognisable collection of elements within a façade as they are usually articulated separately rather than being incorporated into elements that read as a grouping, though this is also quite common. It is therefore important to survey these as elements on their own. This is separated into three distinctive components. Firstly, there are the material aspects, such as the types of windows used, the frame material used (as this has a direct bearing on the mullion thickness and conversely the visual appearance due to the relative slenderness ratio of the frame) and the condition of the frames. The second aspect is if any special windows or materials have been used, such as shutters or stained glass. The third aspect is the composition details associated with the windows, such as cills, lintols and groupings suggested primarily through the treatment of these elements.

4.6 Informal Interactions

Though the initial research plan did not include any types of interviews of community members (such as formal, informal, structured, semi-structured, unstructured, etc.), as soon as the walking survey began, it became evident that useful insights could be gained from recording and incorporating the unsolicited interactions that occurred with individuals while conducting the walking survey. The author and his research assistant would not attempt to engage individuals at all while conducting the visual survey, but people's natural curiosity as to what two individuals with clipboards were doing pointing to a building would prompt these individuals to approach us.

Aspects to note:

1. The researchers would not approach any individuals and would not attempt to engage them beyond a polite "hello" should individuals take specific notice of us and make deliberate eye contact.
2. Principally, the author would engage with individuals should they initiate a conversation while the research assistant would either continue recording visual aspects of the building in the area or remain relatively unengaged but nearby.
3. The author, when questioned as to what was happening would initially respond that he was conducting a survey of the buildings in the area for his doctoral studies. After a few initial interactions, should the individual seem to wish to engage further and not merely move on, the author started adding that he was not from the local authority and was not a developer and had no connection to either. This was to address the almost unanimous initial weariness demonstrated by individuals who continued to engage with the author that would virtually immediately disappear once this aspect became evident.
4. The author would allow the individuals to guide and control the conversation, there were no pre-determined questions formulated in advance in anticipation of individuals engaging the researchers, nor were there any formal objectives for these interactions formulated by the researchers – the author was just interested in the qualitative indications that could be derived from these interactions.



Graph 4-1 – The reception by individuals that approached the author while conducting his walking survey were overwhelmingly positive. It is to be noted that the interactions were not planned to be a component of the research nor initiated by the author, but it became evident as the walking survey progressed as a valuable source of informal secondary information.

5. There was no recording or note-taking during these interactions. At the end of the day of fieldwork, the author would record general comments once returned from the site.
6. Very shortly after starting to make notes on these interactions, a small range of fairly common aspects discussed emerged. These were then categorised and captured on a spreadsheet for later data-driven verification of findings. These aspects were, however, not probed in subsequent interactions with individuals that approached the author to limit author bias in the outcomes of these discussions.
7. The data sample is very small, and should not be taken as a fair representation of a sample group in the study area, particularly given the disparity between the demographic data of the area and that of the respondents.

4.7 Chapter Conclusions

In the development context where decision makers are often more swayed by metrics and 'hard data' rather than intrinsically knowable qualities based on experience and judgement, the approach has been to include the aspect of metrics. The survey approach enables the identification of elements with quantitative certainty. The approach has its limitations, as reducing the complex issue of character and experience to a checklist approach has the risk of focussing on the parts and excluding the 'greater than the sum of the parts' acknowledgement of the experience of the streetscape. There are varied arguments, but the author suggests that in the specific context of a lack of capacity for those intrinsically involved in the urban development realm, a process that results in specific guidelines will be a marked improvement on what is currently happening.

The utilisation of a broad range of texts and sources with systematic processing has allowed for a credible determination of aspects to be utilised in the survey formulation and acknowledges the current need for consideration of aspects usually seen as in the domain of a specific discipline such as planning, conservation or design.

The walking survey formulation resulted in the ability to define high-level characteristics across the 945 buildings in the study area. The node identification allowed for a credible process whereby points of correlation could be mapped and distinctive nodes that respond to the research goals identified. It also enabled the ability to select the most relevant nodes for detailed street surveys. The detailed street survey allowed for a review of character elements that reduces the possible bias by those tasked with identifying overall streetscape character, specifically in this context of a broad base of socio-political and period responses. The subjective and preference bias in more generic surveys is significantly curtailed. And can lead to overall assumptions being challenged about what makes up the streetscape character.

CHAPTER 5 - STUDY FINDINGS

This chapter deals with the primary data gathered related to this research and the presentation of that data. As indicated before, there are three phases of the primary data gathering, namely conducting the walking survey, identification of nodes for detailed street surveys, and then the detailed street survey. The data is gathered and presented in a way that underscores that. Athough the study is based on qualitative findings, these are underpinned by an iterative process that utilises metrics to add veracity to the findings. A synopses of character elements based upon the review of the primary data is presented at the conclusion of the chapter. This synopsis is done using a narrative approach. By utilising this approach, the research recognises that though there are the individual quantifiable attributes, these contribute to an overall situation where the character of the streetscape is 'greater than the sum of its parts'.

This chapter therefore deals with these discussions in five main sections, namely the walking survey of the study area, the node identificaion for the detailed street survey, the detailed survey of selected streets of the study area, the informal interactions while undertaking the walking survey which adds another source of correlation to the findings, and finally the Synopses of character elements.

Figure 5-1 – 4th streetscape image capturing the architectural elements for a portion of Ferguson Road.

5.1 Walking Survey Findings

The walking survey is the first phase of the primary data collection for the study. The formulation of the survey is dealt with in the previous chapter and details how the six categories used for data collection are determined and how individual circumstances are categorised. This survey is applied to the entire study area of 1,47 square kilometres that includes the 945 individual properties. This enables a determination of high-level indicators of characteristics for the streetscape of the study area. It will then also enable clustering of significances to be identified for more detailed analysis to be conducted in the second phase of the primary data collection. The findings are categorised by the identified aspects to follow.

Building Height

Due to the fundamental nature of the research, that being of low-rise residential apartments, this classification is one of the most important. The number of habitable floors from entry level is capped at four stories as defined in chapter one. There are circumstances where additional floors exist (Brierley), but conform to the classification as the design utilises the slope of the site and a bridge access arrangement to meet the regulations around height limits. The rationale for the height has been discussed in greater depth in the previous chapter, but primarily relates to fire escape regulations, principally the requirement of a lift (elevator) to be included should the height exceed 4 floors from ground level.

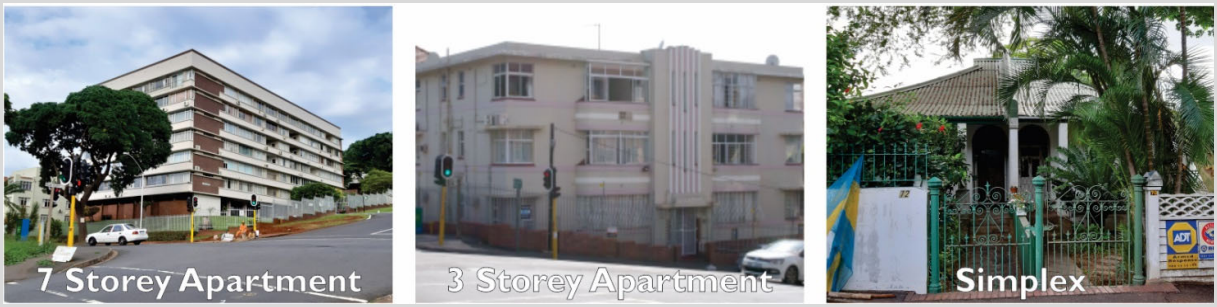
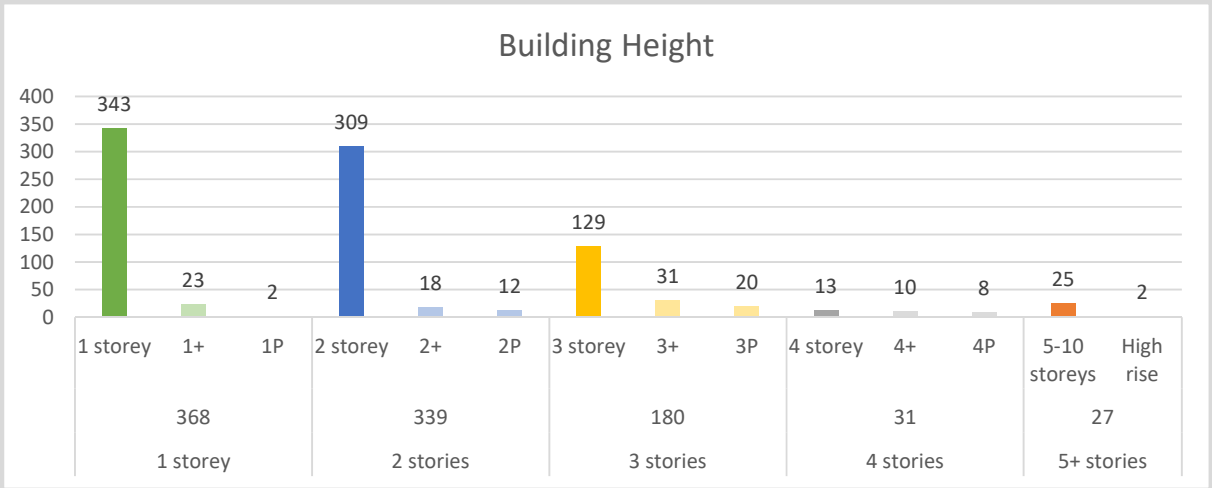
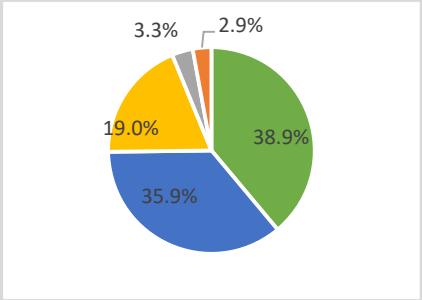


Figure 5-2 - A selected range of heights of residential buildings in the overall study area. From left to right: The 7 storey Benzelia (276 Helen Joseph Road), the 3 story Chelmore (527 Che Guevara Road), and one in a row of semi-detached houses (54 Ferguson Road).



Graph 5-1 – The survey data indicates that the area is overwhelmingly comprised of one to three storey buildings. It is not uncommon for a level of parking or a semi-basement arrangement to feature, particularly with the 3 storey buildings, where this occurs in 28% of the overall number of buildings. This enables innovative compliance with height and fire related restrictions while maximising amenities and development on site.

Figure 5-3 – Map depicting location and distribution of buildings by height. A slightly greater concentration of the higher three storey building is located around the edges of the study area, but there is a fairly even distribution of heights of buildings throughout.



Graph 5-2 - General composition of heights of buildings in the study area. Colours correspond to graph above. As is clearly evident, one to three storey structures comprise over 90% of the buildings in the study area.

Interaction with Topography

A major factor influencing the design resolution of the development and the subsequent relationship to the street is the development response to the topography. The study area is influenced significantly in places by a slope – the land is slightly sloped on the southern aspect of the study area closest to the harbour, but rises quite steeply towards the northern aspect as indicated in chapter two. In certain historic instances, building designs respond fairly ingeniously to the slope through design devices such as including parking beneath the building in a semi-basement configuration, implementing a bridge element to the access from the property boundary, or utilising garages as a retaining element. There is always a premium to building on a sloped site. This influenced the construction of the higher unit densities of the low-rise apartment buildings in the area in order to address the financial feasibility of construction on the slope of the Berea. The current methodology advocated by building contractors to deal with slope conditions is primarily for cut and fill platforms, motivated by the empirical argument of cost, with contractors maintaining that the associated costs of the earthworks are less than alternative design scenarios such as retaining walls or stepped structures.

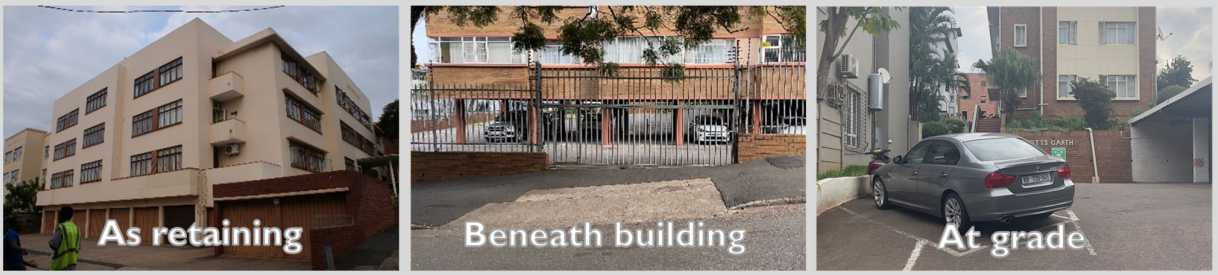
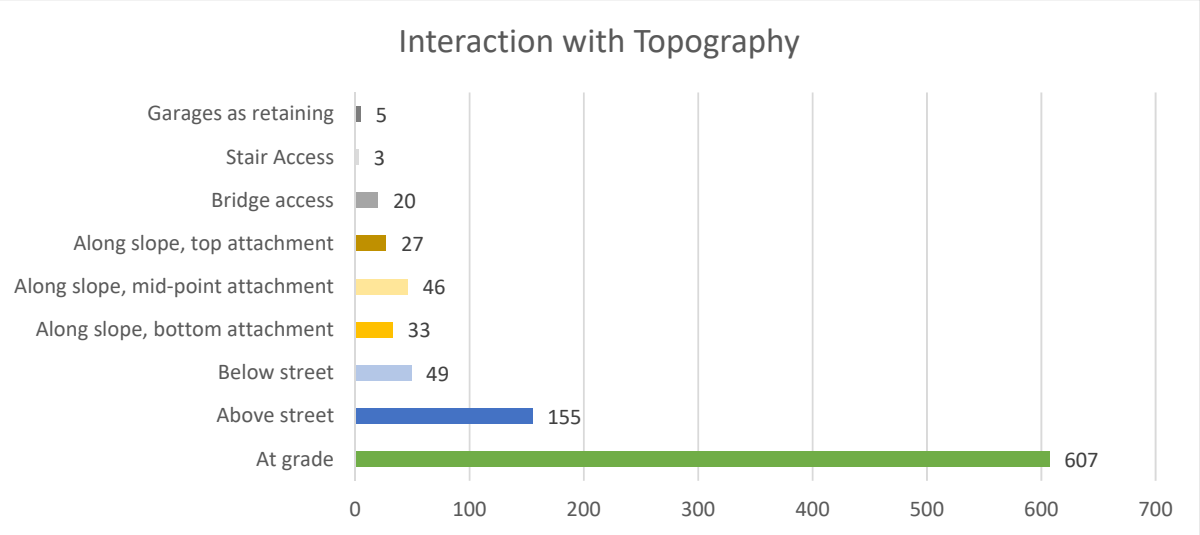
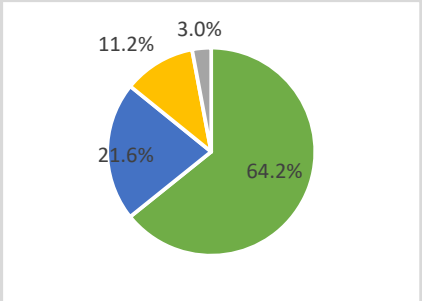


Figure 5-4 - A selected range of residential buildings in the overall study area's different interactions with topography, specifically in regards to parking provision. From left to right: The 3 storey Wyndham (408 Che Guevara Rd), the 6 storey Brierly (55 J.B. Marks Rd), and the 3 storey Abbot's Garth (26 Lena Ahrens Rd).



Graph 5-4 – Though the significant approach to the topography is to build at grade, there are however other circumstances that occur. Some of these are quite infrequently employed, but still can inform innovative approaches to future developments.

Figure 5-5 – Map showing distribution of design approaches to interaction with topography. The predominant 'at grade' (indicated by the green buildings) is overwhelmingly evident on the more gradual sloping eastern half of the study area. There are more occurrences of buildings interacting differently with the topography (mainly above or below grade, as defined in this section) in the more sloping western half of the study area. The significant slope there would however suggest that 'at grade' should be less prevalent there.



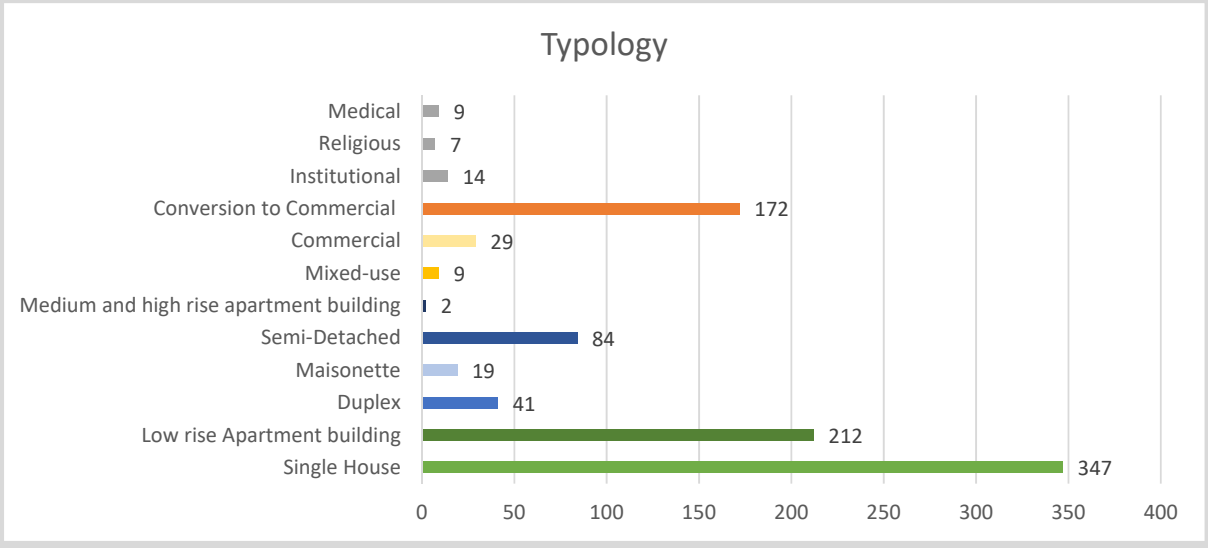
Graph 5-3 – Distribution of main grouping of interaction with topography as per above graph. The different shades are grouped into the main colours represented in this pie chart.

Typology

In order to ascertain a credible understanding of the mix and predominance of typologies in the study area, it is useful to determine the density and distribution thereof. The decision was taken to indicate all typologies, but sites constructed or subsequently converted for Mixed-use, Commercial, or containing single houses do not form any further significant role in the research besides to reference their impact on the quality of streetscape.

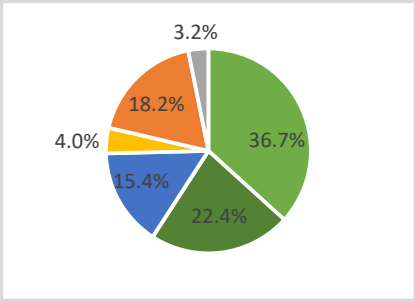
Circulation and access to apartment buildings is fairly important in relation to its character, but this will be dealt with in greater detail in the finer grain survey to follow. It would add unnecessary complexity to the walking survey as the level of detail required for the outcomes of the survey do not require this level of specificity.

Figure 5-6 -: A selected range of building typologies of residential buildings in the overall study area. From left to right: A Maisonette (Phumula, 64 Hunt Road), a single dwelling, now converted into office accommodation (71 Hunt Road), and a low-rise apartment building (Brierley, 55 J.B. Marks Road).



Graph 5-5 – The distribution of building typology in the study area. The single detached house still predominates, but low rise apartment buildings (up to 4 storeys in height) are also quite prevalent. The recent trend of properties being converted to commercial activities is also quite significant – very few commercial conversions tend to adequately keep the existing architectural character of the buildings, though a select number of good examples exist.

Figure 5-7 - As is evident in the distribution map of building typology, the distribution of different typologies is fairly widespread, though the area along the northern and eastern edges of the study area contains more commercial activities, The Northern edge would be historical commercial activities, but the remainder would overwhelmingly be the trend of change in land use mentioned in Chapter 2.4.



Graph 5-6 - The pie chart indicates that though residential building types are still dominant in the area, there is significant growth of other typologies that either replace or repurpose residential buildings.

Predominant Period

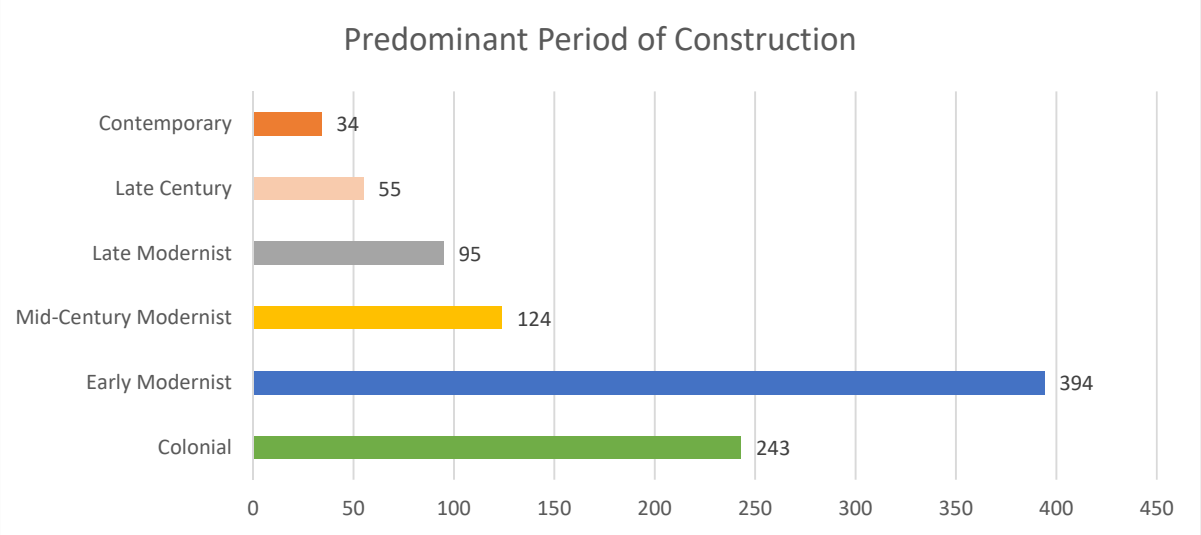
These are not to be seen as a definitive definition, but rather as a record of an initial impression of the building. It should be noted that numerous buildings do not demonstrate the typical and easily identified characteristics that neatly define a period, and may reflect, on face value, a transition from one period to the next. (Kearney, 1984) As with all areas, there are good examples and inferior examples, mainly as a result of the costs incurred for construction and for ongoing maintenance and the available resources to fund these.

The determination of classification will be conducted on site by consensus between the author and the researchers involved. Typically, the period of construction following on from Modernism is defined within the local architectural fraternity as 'Contemporary'[68]. This is deemed as limiting for the purposes of this study as a

Figure 5-8 - A selected range of residential buildings with differing periods of construction found in the overall study area. From left to right: The Mid-Century Modernist Magister Court (11 Muthaiga Place), the Post-Modernist Catembe (26 Prains Avenue), and the Contemporary Harbour Lights (103 Cato Road).

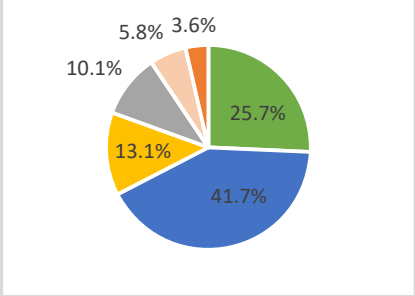
[68] The classification of architectural styles in common usage within the local fraternity is exemplified in the compilation of the *Durban City Architects guide,* published by the City Architects Department eThekwini Municipality in 2014. It comprises sections on Victorian & Edwardian, Art Deco, Modernism, Late Modernism and Contemporary in addition to special interest sections.

distinctive movement towards a particular type of duplex development occurred towards the end of the 20th Century. It is useful to define this as definitively separate from the development in the study area in the 21st Century.



Graph 5-7 – The above graph indicates the predominant period of construction of the 945 building surveyed. Though some of the structures may have had subsequent alterations, the determination is based on the dominant language that is evident from the street. As indicated, Early Modernist buildings are the most prevalent, though other texts on the area, such as (Iyer Urban Design Studio, 2012) tend to highlight only the Colonial character of the area. Contemporary construction mainly replaces existing building stock as the area is fully developed with no vacant lots.

Figure 5-9 – The distribution of buildings reflective of the particular period is fairly evenly distributed and indicates a gradual evolution within the area based on individual development where smaller scale opportunities exist. The north-west portion of the study area is the only fairly significantly homogenous area, but many of these individual houses have had alterations and additions affected.

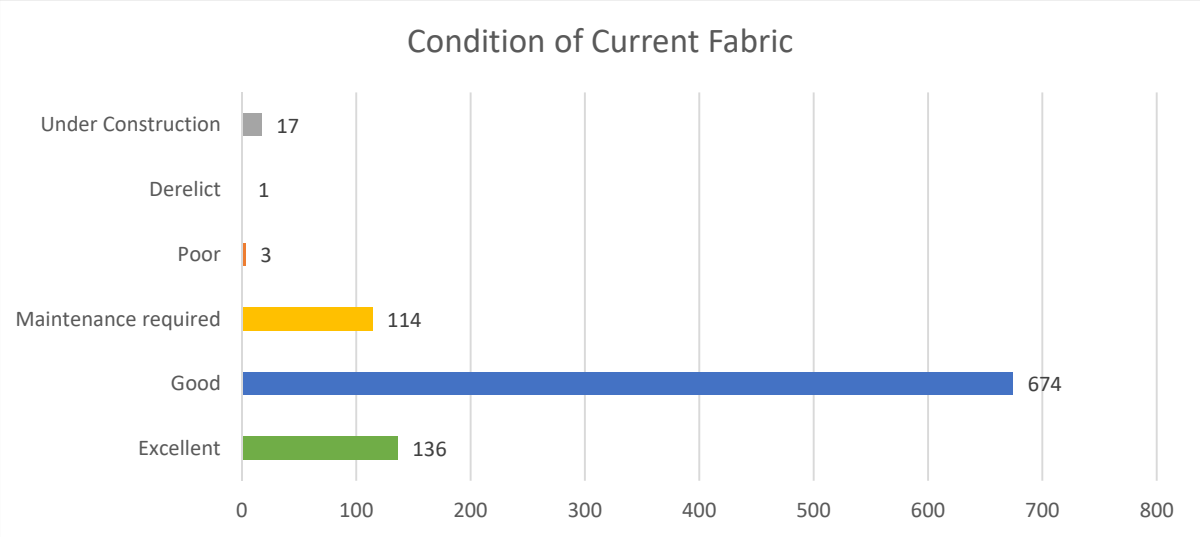


Graph 5-8 – Just over two thirds of the buildings (67.4%) are of Colonial or Early Modernist language, but equally important is the proportion of Early, Mid-Century and Late Modernist buildings at 64.9%.

Condition of Current Fabric

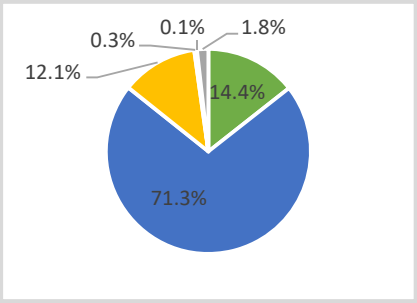
As this study relates to streetscape, it is worth noting again that the assessment of the current condition of the fabric only relates to the street-facing façade. This determination is an important factor as this is a key indicator of the integrity of the original streetscape as influenced by the building and any subsequent alterations thereto.

Figure 5-10 -: A selection of buildings of different conditions of their current fabric found in the overall study area. From left to right: 79 J.B. Marks Road (derelict), 76 & 78 Hunt Road (requires maintenance), and Witley Court (510 Che Guevara Road – Excellent).



Graph 5-9 – The data indicates that the vast majority of the buildings in the area are in 'good' condition. There is a significant portion of buildings requiring maintenance, and this is classified as beyond minor cosmetic attention. The portion of poor and derelict buildings is fairly insignificant, indicating a well-established area with high occupation rates of individuals with vested interests in maintaining the area and the means to do so. There are a number of properties with construction work underway. This study did not ascertain the approval status of these properties. Most of these properties relate to commercial or communal housing conversions – the great concern is that the housing conversions are mainly for unapproved and unregulated student housing.

Figure 5-11 – The map indicates that buildings of excellent and good condition of their fabric are fairly uniformly distributes across the study area. There is a greater concentration of buildings that require maintenance in the north-east portion of the study area, and this corresponds with the associated socio-economic situation of the inhabitants.



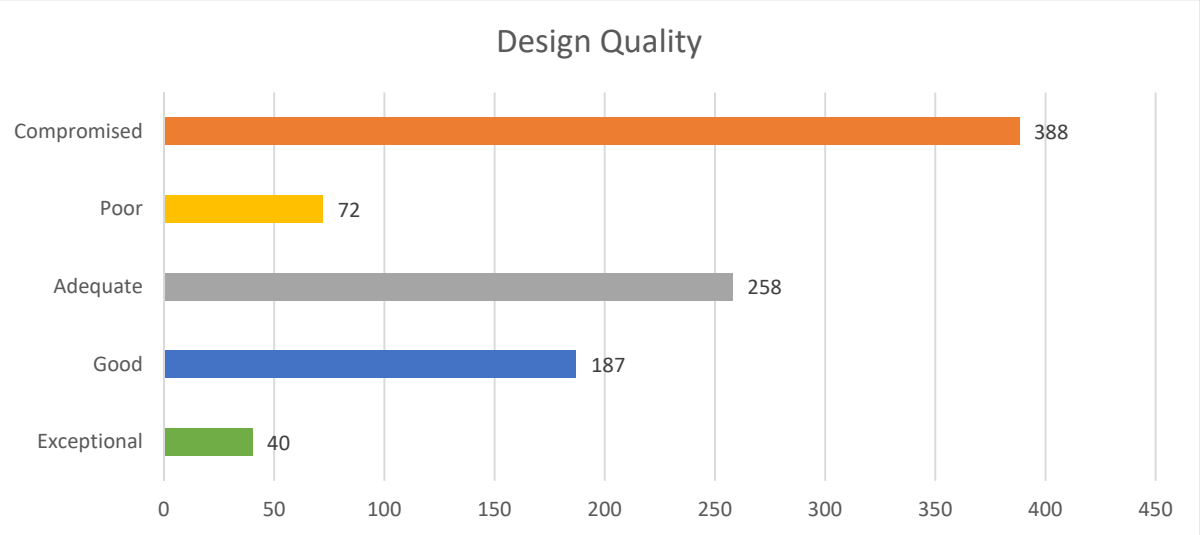
Graph 5-10 – The fabric of 85.7% of the buildings in the area are either of 'excellent' or 'good' condition. There is no specific data available to track previous conditions and rate of change.

Design Quality

Irrespective of their current conditions, developments would have achieved a certain level of design quality initially. Their individual development would be undertaken in a variety of contexts, principally influenced by the individual skill of the designer, the appreciation of good design by the client, and budget. General individual aspects that influence the consideration of design quality is massing, overall composition of elements, material choices, design details, incorporation into the site and relation to context and topography.

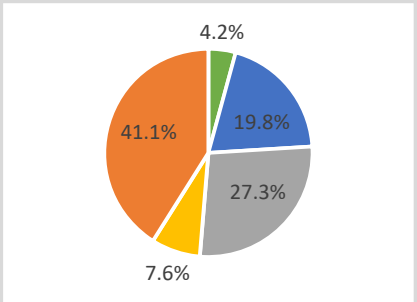
In instances where design quality could not be adequately ascertained due to the state of the existing fabric, an assessment based on the remaining visible elements was made and a reasonable extrapolation made.

Figure 5-12 -: A selection of buildings of different design quality found in the overall study area. From left to right: Phumula (64 Hunt Road - Excellent), Kilwinning (23 Hunt Road - compromised), and Che Guevara Boutique Hotel (340 Che Guevara Road - Poor). Not shown are examples for adequate and good condition.



Graph 5-12 – Table of the composition of design quality of buildings in the study area. The majority of the buildings are classified as 'compromised' – they have been altered in some fashion in a way that undermines the integrity of the original language of the building.

Figure 5-13 – There is an even distribution of the different types of design quality, though there is a slightly higher concentration of 'good' and 'excellent' buildings along the northern and western edge of the study area. These generally are apartment buildings, where alterations are far less likely to occur due to the nature of ownership of the property.

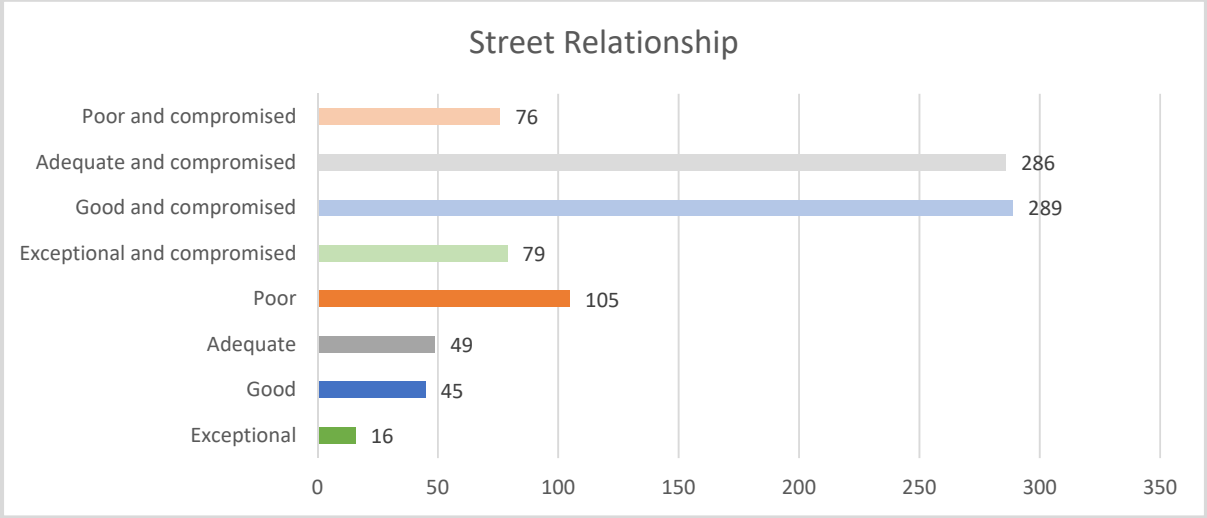


Graph 5-11 – Almost half of the buildings (48.7%) are either compromised or poor in design quality. In contrast only 4.2% are of excellent design quality.

Street Relationship

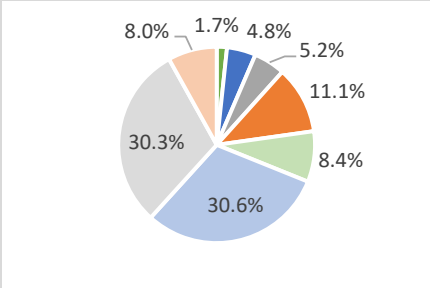
This primarily evaluates the relationship that exists with the street frontage to the property by virtue of the design elements that are evident in the building façade at an overall level and the treatment of the space between the building façade and the street edge. This is primarily influenced by the treatment within the property as the condition of the pavements show little variation, though this too was considered. Due to the imposition of required building lines from a very early period, the distance between the main building façade of the building and the street edge overwhelmingly is required to be at 7.5m, so the important determinate of the proximity of the building edge to the street boundary is of little comparative value.

Figure 5-14 -: A selection of buildings with different street relationships found in the overall study area. From left to right: Ellan Vannin (1 Woodburn Place - Excellent), 242 on Brand Road (242 Brand Road - poor), and Glenample (453 Che Guevara Road – good and compromised). This survey component recognises that the original streetscape interface may have been altered, mainly by the subsequent construction or erection of boundary walls or fences. There are other relationships represented within the study area.



Graph 5-13 – Table of the composition of street relationships of buildings in the study area. The majority of the buildings are classified as 'compromised' – they have been altered in some fashion in a way that undermines the integrity of the original relationship.

Figure 5-15 – The distribution of compromised street relationships is quire broad, and when taking the 'poor' relationships into account, the overall condition is not encouraging.



Graph 5-14 – Almost half of the buildings (48.7%) are either compromised or poor in design quality. In contrast only 4.2% are of excellent design quality.

5.2 Node Identification for Detailed Surveys

In order to have determined detailed characteristics of the streetscape, a more detailed survey needed to be undertaken to identify specific elements related to buildings and their interface with the street. As the application of the detailed survey to all buildings within the study area would have been considerably difficult due to the sheer number thereof, a process of identifying representative nodes was required. This process is detailed in the previous chapter.

Clustering of Walking Survey Data

The walking survey provided a macro level analysis of the study area related to the six assessment criteria. It was then necessary to collate this data in order to further determine instances of significant clustering. The data that was gathered and plotted was then processed into two types of data, namely quality aspects and situational aspects.

The quality aspect included the criteria of design quality and street relationship, and the resultant map from the clustering of this data is included here. Similarly, the situational aspect included the criteria of interaction with topography and predominant period of construction, and the resultant map from the clustering of this data and is also included here. The clustering of significant instances identified in the two maps were then isolated and overlaid on one another to determine areas of significant clustering where there is a correlation between the two criteria.

Figure 5-16 - Map indicating clustering of quality aspects of design quality and street relationship.

The overlaying exercise resulted in eight nodes being identified where the quality and situational data of significance occurs. A map of this information is included. These eight areas were then subjected to a high-level content analysis in which their generic positive and negative attributes were assessed.

Figure 5-17 - Map indicating clustering of situational aspects of interaction with topography and predominant period of construction.

Review of node identified for detailed survey

In determining the three most viable nodes for further study, specific weighting was given to areas that could ascertain broader indications and reduce possible replication at the expense of other viable qualitative findings. It also specifically looked at the concentration of the significant instances within the node as opposed to isolated instances. Table 5-1 summarises the attributes per node.

Figure 5-18 - Map indicating the identification of 8 nodes for potential use in the detailed street survey. The colours correspond to the node identification in the table below.

Street node	Positive aspects	Negative Aspects
J.B. Marks Rd	• High density of low-rise residential buildings • Significant range of construction periods represented • Significant trees included on pavement • Significant variety of street interfaces • High density of good design quality • High density of good condition	• Infiltration of some commercial activities • Only derelict property in the study • Instances of safety adaptations compromising street interface
Lena Ahrens Rd	• High density of low-rise residential buildings • Significant range of construction periods represented • Extensive street length • Significant trees included on pavement	• Significant instances of safety adaptations compromising street interface • Instances of poor street relationship
Helen Joseph Rd	• High density of good design quality • High density of good condition	• Built edge on only one side of street • Short street length
Newton Place	• High density of low-rise residential buildings • High density of good design quality • High density of good condition • High density of good street interface	• Limited range of construction periods • Short street length • Lack of pavement vegetation • Instances of poor street relationship
Park Lodge Gardens	• High density of low-rise residential buildings • High density of good design quality • High density of good condition • High density of good street interface	• Non-public street interface, on private land with access control • Limited range of construction periods • Short street length
Woodburn Place	• High density of low-rise residential buildings • High density of good design quality • High density of good condition • High density of good street interface	• Built frontage on only one side of street • Limited range of construction periods • Short street length • Lack of pavement vegetation
Cleveland Place	• High density of low-rise residential buildings • High density of good design quality	• Limited range of construction periods • High density of poor condition • Significant instances of safety adaptations compromising street interface • Lack of pavement vegetation

Street node	Positive aspects	Negative Aspects
Fergusson Rd	• Mixture of residential densities • High density of good design quality • High density of good condition • High density of good street interface • Significant range of construction periods represented • Significant trees included on pavement	• Instances of safety adaptations compromising street interface

Table 5-1- Summary of high-level analysis of the eight nodes identified as having concentrations of points of significance in relation to the walking survey. Refer to Figure 5-18 for the map that corresponds to these nodes.

Ultimately J.B. Marks Road node, Lena Ahrens node and Ferguson Road node were selected. These three nodes give a varied response in terms of density, scale and sighting. J.B. Marks Road is located close to the apex of Berea Ridge and the western border of the study area. It was found to have a higher concentration of buildings with the original street interface still intact. It also had one of the broadest ranges of construction periods represented. Lena Ahrens Road is one of the three significant arterial routes that run through the study area. The prominence of the pavement vegetation and the length of road where significant instances were located were major factors in its selection. It also has some of the taller instances of apartment buildings within the study area. Ferguson Road was of a different situation in that it is of a much finer scale, is located on a secondary road, and has a series of simplexes that are rather noteworthy within the study area. It also is located on the lower lying eastern edge of the study area, therefore giving a circumstance of nodes being examined towards the apex of the ridge, along the middle of the slope, and here at the foot of the slope.

5.3 Detailed Survey Findings

This section deals with the detailed survey of the three streets that have been identified through a synthesis of the relevant information gathered through the walking survey process. This entails 82 buildings being analysed utilising 12 components identified in the previous chapter. It follows a qualitative process that measures acceptable trends and situations. This is appropriate as it follows from the criteria and methodology used to select the three streets for this detailed study.

It should also be noted that there is a hierarchical approach to this sub-chapter, with main sections containing sub-sections of individual aspects that are identified and examined in detail. The main sections are as follows, with sub-sections included as required for individual data gathering and analysis purposes:

1. General description.
2. Site servicing.
3. Site relationships.
4. Public boundary edge treatment.
5. Private boundary edge treatment.
6. Security elements.
7. Overall built form.
8. Roof form and details.
9. Façade surface treatment.
10. Elements of elaboration.
11. Elements and details – entrances.
12. Elements and details – windows.

There is significant data that can be presented related to numerous scenarios and parameters. With the spreadsheet data capturing being able to sort by any of the over 140 items captured per building, there is significant 'data mining' that can take place. In this instance, the focus is on providing significant streetscape characteristics related to apartment buildings, therefore the data presented is focused on that aspect.

The author also notes that the study area finds itself in a rather fluid circumstance and that since data was collected, there have already been some noticeable changes, virtually exclusively regarding security modifications. This has not compromised overall findings but rather reaffirmed the continuation of trends noted during the data-gathering process.

General Description

In this section, the aspects relating to urban-level characteristics are examined. This is a result of the application of historic influences of a more formal orthodox planning approach that was implemented in South Africa from 1910 onwards, though only properly formalized with *The Berea Town Planning Scheme* coming into effect in 1954. The implementation of this formal orthodox approach corresponds with the urban grain that still dominates the study area currently. These high-level development controls on individual buildings are examined in this section, but also general data about the study area makeup. This covers general distribution, zoning, period of construction and density.

Distribution	Zoning	Period of Construction	Units/ha
J.B. Marks 31%	General Residential 1 27%	Colonial 0%	J.B. Marks 93,3
Lena Ahrens 57%	General Residential 2 24%	Early Modern 12%	Lena Ahrens 61.7
Fergusson 12%		Mid-century Modern 30%	Fergusson 85
		Late Modernism 7%	
		Late Century 1%	

Table 5-2 – Summary of data related to the general description aspects for apartment buildings.

General Distribution

This aspect deals with the general distribution of apartment buildings in the three specific streets. The Lena Ahrens node, by its overall longer length, has the most apartment buildings and buildings overall. It does not, however, contain the most rated building examples. Several examples were constructed in the late century period, which is far more utilitarian in practice and appearance to the point of being banal due to the progressive rationalizing of apartment construction that occurred.

The J.B. Marks node is located higher up on the ride of the Berea and is, therefore, a more desirable location for the more expensive developments as the view and cooling breeze can elicit a greater purchase price. It was therefore more prominent for the development of more refined detailed apartment buildings; therefore, it contains more rated examples thereof, and much of the development happened during the mid-century period when the detailing of the buildings was more considered.

The Fergusson node is of an overall earlier period of development, and the closer proximity to the harbour in conjunction with the low-lying sighting of the area led this to be the less affluent area of development catering to more blue-collar workers. It has retained much of its earlier grain of development, especially on the northern edge of the street, and contains a prominent series of row houses not typical of the general area.

Zoning

The formalization of zoning has only been in place since the 1952 publication of the first zoning map for Durban. Over the intervening half-century, there have been expanded zoning types and definitions included in successive revisions. Much of the study area's overall zoning remains consistent in general intent for residential and institutional function - there are only 3% of properties that do not have the *General Residential 1* or *General Residential 2* zoning in the three streets. There is no variation in terms of their intent to "provide, preserve, use land or buildings for; the provision of higher densities for all types of residential accommodation and; A wide range of ancillary uses which service the day to day needs of a residential community." (eThekwini Municipality, 2019). The only difference in land use is that General Residential 2 includes the allowance for developing holiday accommodation in the form of attached/detached chalets. (There is significant variation in terms of parking requirements, as discussed later in this chapter) The rest of the primary building uses are the same, being:

- Boarding House
- Dwelling House
- Flat[69]
- Hostel
- Multiple Unit Development
- Retirement Centre

There is concern that the permissible use of a 'boarding house' allows for the proliferation of student housing in recent times. The scheme contains the following provisions:

> *"The erf shall remain residential in nature and the Student Accommodation Establishment shall, in the opinion of the Municipality, not negatively impact the Neighbourhood" (eThekwini Municipal Land Use Scheme: Central Sub-scheme, 2020, p. 19)*
>
> *and*
>
> *"After affording the applicant the opportunity of being heard, the Municipality may at any time impose any further conditions it deems reasonably necessary in order to preserve the residential amenity of the area, or it may withdraw the Consent if, in its opinion, the amenities of the neighborhood are being adversely affected by the activities." (eThekwini Municipal Land Use Scheme: Central Sub-scheme, 2020, p. 20)*

The practical negative influence on the visuals of the streetscape and the considerable noise nuisance factor at times tends to indicate that these conditions are not being applied.

Period of Construction

On the whole, the period of construction relates to the overall appearance of the building. As the approach was to design according to the contemporary language of the period of construction, it is a fairly easily identifiable visual appearance relating to the contemporary language at the time of construction.

This information is in some manner verified by aerial photography, but due to the fairly inconsistent frequency of undertaking and the varying resolution of images in the first half of the 20th century, it is often difficult to discern individual buildings therein. As much of the area was developed by the 1960s, subsequent imagery merely confirms the vast majority of the existing fabric.

Existing literature related to the study area emphasises the colonial architectural heritage. This is a result primarily of the lack of undertaken and published architectural surveys other than Brian Kearney's book *A Revised Listing of the Important Places and Buildings in Durban* (1984), the scope of which included buildings being surveyed that were constructed up until the 1940s. There were no very limited numbers of low-rise apartment buildings in the study area up to this date.

A significant period of densification occurred from the 1920s to the 1960s, with early and mid-century modern buildings comprising the majority of buildings (at 64%) in the detailed survey area. Construction in the study area during the Early Modern period is predominated by single dwellings, but Mid-Century Modern is overwhelmingly represented by apartment buildings. The occurrence of late-century (7%) and late-modern buildings (3%) mirrors those of the larger walking survey area.

Density

The average density across the three nodes is 58 units per hectare. J.B. Marks achieves the highest overall and apartment building-specific densities at 64 and 93,3 units per hectare respectively. The 2013 *eThekwini City Density Strategy - Final Report* states an optimum net density range of between 35 and 112 dwelling units per hectare. (Royal HaskoningDHV, 2013, p. 12) This report suggests that the typical low-rise walk-up apartment

[69] 'Flat' is the colloquial term for an apartment. A 'block of flats' is therefore an apartment building.

buildings should be achieving between 40 and 60 units per hectare. The current situation in the three nodes demonstrates that they are currently within the range sought. This demonstrates that keeping to the existing character in terms of massing and form achieves the densification strategy of the city and need not affect the preservation and enhancement of the existing character to the detriment of the densification goals, particularly if the J.B.Marks node approach, that contains the highest density of rated apartment buildings, is more closely examined and emulated.

Site Servicing

This section of the chapter deals mainly with the bulk servicing that has a visual impact on the streetscape but also includes parking for the individual property. The bulk servicing aspects dealt with relate to electricity supply, potable water supply, firefighting reticulation in the public realm and telecommunications infrastructure (much of which is increasingly becoming obsolete). Parking is primarily a utilitarian servicing rather than a habitable space; therefore, it is also included in site servicing. In other global cities, facilities related to refuse removal may have some visual impact on the streetscape (such as screened-off refuse yards located on the boundary). This is not the case in Durban as refuse yards are located towards the back of the building and custodial workers that are almost universally employed by the body corporate for individual buildings will transfer all collected refuse to the kerb on collection day.

Parking	Electricity substation	Meters / hydrants / telephone
J.B. Marks 100%		J.B. Marks 2,4%
Lena Ahrens 42,8%	mini-sub visible 2,4%	Lena Ahrens 45,3%
Fergusson 0%		Fergusson 4,8%

Table 5-3 – Summary of data related to the site servicing aspects for apartment buildings.

Parking

The provision of parking has the potential to have the greatest impact on streetscape related to servicing due to the sheer volume it takes up in contrast to other services. Due to the lack of reliable and accessible public transport that is endemic to South Africa, public transport is used by those that cannot remotely afford to own a private car and car ownership is a particular aspiration for most. This means that the provision of parking is increasingly under pressure and the successive local authority parking requirement revisions increase the requirement for on-site parking.[70]

General Residential 1 zoning requires 2 undercover parking bays for each dwelling unit (eThekwini Municipal Land Use Scheme: Central Sub-scheme, 2020, p. 74), but this is further defined in a later table that takes the number of bedrooms into account. General Residential 2 does not stipulate specific on-site parking requirements, but is provided to the satisfaction of the Head: EThekwini Traffic Authority. (eThekwini Municipal Land Use Scheme: Central Sub-scheme, 2020, p. 76) This will allow for the reduction of parking requirements for case-by-case uses (such as student accommodation) where it is unrealistic to require two bays per unit, especially if the units are dormitory and not self-contained.

Having dealt with the current developmental requirements from the local authority, it is useful to examine the existing trends. Particular care has been taken in a significant number of developments (not only in the detailed study area but in the larger walking survey area) to accommodate parking in a way that is not visible from the

[70] 29,8% of South African households owned at least one vehicle in working order in 2021. Statistics South Africa, 2021. *Improving Lives Through Data Ecosystems - Census 2022*, Pretoria: Statistics South Africa. However, this needs to be considered in light of urban areas having 2,75 times more car ownership per capita than rural areas and, as economic means increases, so too does the per capita car ownership ranging from 6% in quantile one groups to 77,9% in quantile 5 groups. Urban areas therefore need to cater for more cars, and increasingly so based on overall economic situation of the inhabitants of an area.

main street façade. This has been achieved through the appropriate consideration of access points to parking and strategic use of the topography.

- The access of cars to the rear of the site via secondary service roads. There are however significant security concerns with this approach as these 'service lanes' often do not have any active human surveillance and there is a general lack of activity along the road. In certain circumstances, the entire rear boundary is lined with individual garages. These are often targeted for housebreaking.
- The driveway is located to one side of the building with parking to the rear. If this is treated in a manner that has the vehicle gate on the side of the building with the front boundary without a boundary fence, this is particularly effective in achieving a positive streetscape while securing the sides and rear of the property.
- The slope is also utilised well to minimise visual impact, though also to maximise the number of floors without requiring lifts. Access from the street is above parking in many instances with the parking utilising a downward slope.

a) Dwelling Unit of 1 bedroom	1,0 bay / unit + 0,5 bays / unit (visitors)
b) Dwelling Unit of 2 bedrooms	1,0 bay / unit + 0,5 bays / unit (visitors)
c) Dwelling Unit of 3 bedrooms	1,5 bay / unit + 0,5 bays / unit (visitors)
d) Dwelling Unit of 4 bedrooms or greater	2,0 bays / unit + 0.5 bays / unit (visitors)

Table 5-4 - eThekwini Central Scheme current parking requirements for apartment buildings.
Source: (eThekwini Municipal Land Use Scheme: Central Sub-scheme, 2020, p. 203)

Electricity Substation

With increased units per property requiring individual connections and also the overall load per property increasing, the requirement of switch gear, meter rooms and substations increases according to the number of units to supply. Historically, larger complexes would have a dedicated substation within the property with an attached meter room. Over time, this has been changed to the local authority electricity department requiring the substation to be on the property boundary and unobstructed for their access. This has led to what was previously a servicing requirement that was accommodated to be visually concealed from the street now being prominently visible. There is not an instance of this occurring in the detailed study areas as they were developed before this requirement came into force, but there are now instances of this occurring within the study area for recent developments. Another consequence to highlight is that property boundary walls are required to leave a clear space all around the 'mini-sub', and unintendedly the resultant rear space between the mini-sub and the wall is frequently used by vagrants to sleep in and store their belongings.

At some point, there was an installation of small electricity meter boxes on property boundaries, though significantly less visually intrusive, this is also an indication of services being installed in isolation of the broader contextual impact – the municipal department only seems to have considered their requirements in an ad-hoc way.

Meters/Hydrants/Telephone

This is another instance where an uncoordinated and unconsidered inclusion of servicing requirements has a visual impact but to a considerably less severe extent due to the smaller physical nature of the infrastructure. It is rather understandable that fire hydrants are critical and access should be unencumbered, but other services can be more easily coordinated and visually obscured. There should also be a consideration for the removal of infrastructure that is obsolete, such as old copper wire telephone infrastructure.

Site Relationships

This aspect deals with the higher-level urban form aspects that influence the overall building appearance and what streetscape overall aspects are formed by the interaction between building forms. This deals with the volumetrics of the building and how this relates to the site. Aspects such as addressing street-facing façades on corner plots, lengths, setbacks, heights, side boundaries and relation to street edge datum.

Corner plots that address both edges	Site street boundary length	Setback from front boundary	Setback from side boundary	Building sighting in relation to street
J.B. Marks 100% Lena Ahrens 42,8% Fergusson 0%	J.B. Marks 19,7m – 36,9m Ave. 26,2m Lena Ahrens 12,7m – 69,9m Ave. 31,8m Fergusson 20m – 40,2m Ave. 24,1m	J.B. Marks 0,8m – 18,9m Ave. 7,8m Lena Ahrens 0m – 27,9m Ave. 10,1m Fergusson 4,9m – 6,7m Ave. 5,8m	J.B. Marks 0,7m – 8,6m Ave. 3,8m Lena Ahrens 0,1m – 26,1m Ave. 5,9m Fergusson 1,1m – 6m Ave. 2,7m	Above street 28,7% Bottom attachment 11,9% At grade 21,4% Below 26,2% Bridge access 7,1%

Table 5-5 – Summary of data related to the site relationship aspects for apartment buildings.

Corner Plots that Address Both Edges

Part of the aspect of visual coherence is that street-facing façades are usually designed to be 'better'. The engagement of the design of a corner allows for the opportunity to enhance the street façade by emphasising two instead of just one façade and giving greater prominence to these sites. Street-facing façades usually employ more elaborate detailing and servicing components (such as sewer stacks, etc.) are not included on this façade. There are, however, significant occurrences in the study area where the secondary street elevation is treated as if it were a normal side elevation that did not face a street. In these instances, services such as plumbing are evident and usually uncoordinated in their placement on the less prominent street façade and the façade devoid of any meaningful detailing.

It is noted that in the J.B Marks node, all apartment buildings on a corner site use the opportunity to address both corners. Fergusson has no apartment buildings on a corner site, and Lena Ahrens only uses half of the available opportunities.

Site Street Boundary Length

This physical property of sites has a significant influence on the regularity of the patterns of the built form along the street. Though there is a broad range due to fairly isolated instances of semi-detached duplexes being treated as individual properties per unit (8,9m site length) and large apartment buildings on large sites (69,9m), the overall average of property lengths along the street edge is approximately 25m, with a 'box & whisker' analysis indicating a first and third quartile range of 17,3 meters and 31,8 meters. Unsurprisingly, the overwhelming approach is to have a shorter property edge facing the street edge – a fairly universal approach to improve municipal servicing costs.

There are some instances of historic pre-1900s sites being consolidated into larger sites (8,5% of examples), but overwhelmingly apartment buildings retain the property footprint of original pre-1900s single dwelling

sites. The overall dominant streetscape characteristic is that of a fairly compact street frontage with regular and fairly compact discrete buildings lining the streets. A consolidation of sites will affect this characteristic.

Setback from Front Boundary
The original pre-1900 pattern did include setbacks of the single dwelling units, an influence related to English country houses with their front gardens being drawn upon. The fairly consistent application thereof is a result of the informal orthodox town planning approach that existed for much of the early period of the development of the city, though building lines were only properly formalized with *The Berea Town Planning Scheme* coming into effect in 1954.

There is a considerable range of setbacks, but again the 'box & whisker' analysis indicates a first and third quartile range of 5,5 meters and 12,8 meters. The current scheme requirements for the zoning is for a 7.5-meter front building line, though only 56% of the buildings comply with this subsequent requirement, which again highlights the issue of uniform standards being imposed without consideration of the circumstances on the ground.

What does tend to influence the appearance of the setback is that of subsequent garage construction that for a period was allowed along the street frontage. In certain instances, this is integrated into buildings in a semi-basement approach, but on other sites, particularly with pre-existing buildings, garages were constructed 'after the fact' and are attached directly to the boundary as standalone structures.

Setback from Side Boundary
The current scheme requirements are for a minimum 3m side and rear space to the property, but only 52% of the buildings in the node comply with this requirement when in terms of an average side space being calculated. It is also not uncommon for the average to be achieved by one side space compensating for the other that is well below the minimum requirement. Again, this is an indication of a general application being considered without filtering for an existing condition. The scheme caters to a 'one size fits all approach' considering the maximum bulk per the zone definition. The particular streetscape for the area, specifically the fine-grained area such as Fergusson Road does not comply in general.

Building Sighting in Relation to Street
This is particularly useful as it indicates an overall approach of utilising a site slope to the benefit of the overall streetscape and the innovative approach to compliance that enhances rather than detracts from the quality of the design. Parking from the mid-century apartment buildings particularly utilises the slope for benefit. The main attachment of the building is either above the street level (for upward-sloping sites) or below the street level (for downward-sloping sites). This is admittedly influenced by the majority of the buildings and street boundaries in the detail surveyed running parallel to the contour levels. Of particular note are the instances of the use of bridge access to buildings on downward-facing slopes – it allows for the maximum 4-storey rise from the main entrance without requiring a lift to be retained while adding additional levels of accommodation, usually parking beneath the structure.

<u>Public Boundary Edge Treatment</u>
For this study, the public boundary edge refers to the pavement (the pedestrian zone between the road proper and the property boundary line) and the boundary treatment. It is somewhat of a grey zone in regards to responsibility as the pavement is owned and under the control and responsibility of the local authority while the boundary-defining elements along the pavement are private. Property owners have no legal right to utilise the pavement space, and though not known in this local authority, fines can be issued to individuals in some instances[71]. Many people do, however, assume landscaping responsibility for their verge, especially if not paved in response to a lack of capacity by the local authority to maintain non-paved verges. This section deals with information related to vegetation and trees planted on the pavement (local authority responsibility) and constructed planters and boundary wall treatment (property owner responsibility). Details related to general vegetation, trees, constructed planters and boundary wall treatment are handled in this sub-section.

[71] McCain, N., 2021. Tshwane man fined R1 500 for growing cabbage patch in front of his home. *News 24*, 15 September.

Vegetation on Pavement

The link between soft landscaping and the overall streetscape is prominent. More than three-quarters of properties in the nodes have some form of vegetation on the pavement. This is usually in the form of trees planted at the kerb edge, though 29% of properties have a combination of trees and flower beds. The Lena Ahrens node is particularly known for its dense tree-lined street up until Bulwer Park (along about a third of the total length of the street).

vegetation on pavement	Trees along pavement	Constructed planters	Boundary wall treatment
J.B. Marks 53,8%	J.B. Marks Ave. 0,2	J.B. Marks 4,7%	Face brick used in original wall 64,3%
Lena Ahrens 87,5%	Lena Ahrens Ave. 1,8	Lena Ahrens 16,7%	Face brick with palisade addition 35,7%
Fergusson 80%	Fergusson Ave. 1,6	Fergusson 0%	High Plaster walls 4,8%

Table 5-6 – Summary of data related to the public boundary edge treatment aspects for apartment buildings.

Though there is this significant inclusion of trees along the pavement, there are decreasing instances of new planting as the local authority parks department has ever-decreasing resources to attend to regular maintenance, so trimming trees and replacement of dead trees happening less frequently. (Walford, 2018)

Less frequent is the occurrence of flower beds. These are most prominent along Lena Ahrens Road, but currently, maintenance of them is poor and those that seem tended to some extent are done by the property owner adjacent to the pavement bed and are usually owners of single dwelling properties, apartment buildings do not seem to be active in public pavement edge maintenance. This indicates that multiple-unit dwellings are less likely to engage in maintenance beyond their boundary as vegetation maintenance is usually handled by the general caretaker employed by the body corporate.

Trees Along Pavement

The planting of trees along the pavement edge (usually at the edge of the kerb) is the most significant aspect of public landscaping. Arboriculture (the discipline of growing trees) does require local authority specialist maintenance, specifically in regards to trimming, inspecting for insect activity, and replacement of instances of dead trees. Though there are many instances of 'guerrilla gardening'[72], the specialised nature, high cost and significant risk of damage when undertaking maintenance associated with arboriculture means that private individuals do not engage in maintaining trees on the verge.

As previously noted in Chapter Two, Bjorvig (1994, p. 121) suggests that there was a deliberate inclusion of trees along pavements to emulate the historical reference of terraced housing for the colonists that built the original houses in the study area. The regular occurrence of trees replaced the visual regularity of terraced housing.

It is noteworthy that J.B. Marks has significantly fewer instances of trees along property boundaries (ave. 0.4 trees per property) versus an overall average of 1,17 trees per property, though it has the highest number and density of rated apartment building examples. One could argue that the node could be further enhanced with more trees being planted to enhance that aspect of streetscape character that is prevalent elsewhere in the study area.

Constructed Planters

Though not significant at only 12,2% of properties having them, there are instances of the inclusion of constructed planters along property boundaries. This usually occurs when there is some retaining that needs

[72] 'Guerrilla gardening' is gardening where one does not have the legal right to do so.

to occur along the boundary, therefore there are no instances in Fergusson Road due to the flat topography found there.

The inclusion of a constructed planter is a useful precedent to use when the opportunity presents itself, and the existing examples either use face brick or stone. This continues with the characteristic of elements having a 'natural' textured appearance. There are no instances of plaster walls or dry stack blocks used in the area that form planted. Though, where high solid garden walls finished in painted plaster occur, there may be a situation of retaining to some height.

There are instances of a strip of planting in addition to a low wall as the definition of the property boundary. This design device subtly reinforces the definition of boundary, especially where there is no high boundary barrier or in conjunction with a permeable barrier.

Boundary Wall Treatment

The boundary wall treatment is the most significant change to the overall streetscape in the area. Due to the need to respond to the ever-increasing instances of housebreaking in the area, the most common approach is to erect a boundary barrier or to enhance the physical barrier through additions of any number of toppings to the wall. This boundary wall modification is seen as the most cost-effective means of increasing security to properties, though this is increasingly being challenged in the local context where there is increasing debate around the *City without Walls* concept.[73]

This major form of modification to the streetscape is highlighted by the fact that only 15,9% of properties at the time of collecting data had boundary definitions that remained original, but this has already reduced in the intervening period between survey data collection and write-up. Also, to note is that 43,9% of current boundary walls configuration do not allow for the determination of the original configuration. The historic approach of merely defining the boundary using a low wall of approximately 400mm allowed for the visual continuity between the public realm and the semi-private realm up to the building façade synonymous with the apartment building trend up until the late century period. This was a contextual application of the modernist idea of a vertical building contained within the parkland, the biggest difference is that the general property sizes do not permit this. The front garden of apartment buildings was historically treated as 'semi-public' visually, though the established convention was to not enter this space as a member of the public. In more recent times, this convention has been significantly eroded, mainly by vagrants.

The mentality of 'Retreating behind the walls' for safety reinforces the 'fortification' approach by erecting a solid wall, which speaks of the medieval castle approach. This is more prevalent in single dwelling units, apartment buildings do tend to utilise more visually permeable barriers such as palisade fencing. Research indicates that the solid wall approach is problematic as surveillance is compromised and a high risk to police and private security responders.[74] The more prevalent approach in apartment buildings is to erect palisade walling directly behind or on top of the original low boundary wall. This does allow for greater visual permeability, but other options, such as 'ClearVu' fencing would be better at achieving the desired outcome if a physical barrier is preferred but does not deal with the risks of first responders accessing the property in emergencies.

<u>Private Boundary Edge Treatment</u>

Following on from the public boundary edge treatment is that of the private edge treatment. As previously noted, there is a contextual application of the modernist idea of the vertical building contained within the parkland with the limited space of the front garden historically being treated, at least visually, as 'semi-public', though the convention was to not enter this space. This has significantly changed with the overwhelming notion of retreating behind barriers, resulting in the loss of the visual amenity of the front garden zone to the

[73] Charles, L., 2014. 'City without Walls' debate. *Berea Mail*, 30 October.

[74] Marks, M and Overall, C., 2015. *Breaking Down Walls: New Solutions for More Effective Urban Crime Prevention in South African Cities*. Stability: International Journal of Security & Development, 4(1): 3, pp. 1-19,

streetscape. This historical planted zone experience is now replaced by wall defined edge, though some walls are more visually permeable than others.

One of the benefits of this zone is that it is maintained by private property owners, and this is particularly noticeable in apartment buildings where body corporates ensure that some form of maintenance occurs. Overwhelmingly, especially due to residents now principally accessing apartment building properties by vehicle and not on foot, the front garden is almost universally unused, unless specifically assigned to the ground floor unit that is adjacent to it with a dedicated entrance per unit to the space, and in that instance, will most likely have a solid wall for privacy reasons.

Soft landscaping in property	Planting details	Constructed planters	Garden Path
Some soft landscaping 90,2%	Contains trees 45,2% 0.83 Average	At entrance 16,7%	Brick Paving 19,1%
Grass and planter beds 56,1%	Shaped shrubs 28,6%	Along building edge 4,8%	Concrete in-situ 19,1%
Hard landscaping with planter beds 19,5%	Level of maintenance 7,1% Extensive 54,8% average		Slasto 19,1%

Table 5-7 – Summary of data related to the private boundary edge treatment aspects for apartment buildings.

Soft Landscaping on the Property

As with the inclusion of soft landscaping on the public edge, there is an overwhelming inclusion of soft landscaping in the front garden of properties. 15% of properties have solid walls that compromise visual permeability to such an extent that the treatment of the zone in front of the building is hidden from the street and there is no vegetation that extends above the wall. Of the remaining properties, 90% include soft landscaping of some form. It is also worth noting that all rated apartment buildings contain soft landscaping.

The latest town planning requirements include that "[a]n area in extent not less than 20% of the Erf area and free of all buildings, parking spaces and driveways, shall be set aside for garden and recreation purposes". (eThekwini Municipal Land Use Scheme: Central Sub-scheme, 2020, pp. 71, 76) A significant problem is that this is generally not enforced by the local authority and the aspect of 'garden and recreational' is not sufficiently defined. The closest determination is the definition of *common property*, which is defined as such:

> *"Common Property: means that portion of the common land which is not covered by vehicular road reserves and parking areas, but may include walkways, whether grassed or hardened, and structures or buildings intended for recreational use of the occupants of the Erf to the satisfaction of the Municipality." (eThekwini Municipal Land Use Scheme: Central Sub-scheme, 2020, p. 28)*

The definition of 'structures or buildings intended for recreational use' does however allow for manipulation to circumvent the inclusion of garden areas with 'recreational' structures (at least on plan) being included as part of the 20% requirement.

It is also worth noting that the local authority regulations regarding stormwater runoff state "…the eThekwini Municipal policy requires that privately owned sites may be required to manage and make provision for their stormwater runoff." (eThekwini Municipality - Engineering Unit, 2008, p. 5). The overwhelming practical application of this has the local authority requiring property owners to provide attenuation of 1 cubic meter storage capacity for every 100 square meters of hardened surface area as a referral for submission plans. In

response to this, the most expedient solution usually taken is the inclusion of underground attenuation tanks being incorporated from the inception of the design.

Planting Details
There are relatively consistent levels of inclusion of planting types and levels of maintenance across the three categories of analysis. The overall approach to planting in the nodes is one of a fairly basic approach with flower beds and lawns being overwhelmingly common. 57% of properties include trees and 22% of properties include basically shaped shrubs. These basically shaped shrubs are useful to note as part of the character of apartment buildings specifically.

There are significant levels of maintenance evident across the study area, particularly for apartment buildings. Many apartment buildings have a dedicated custodian employed to clean and maintain the common property (which includes gardening) or contract landscaping companies to do weekly basic maintenance. This results in regularly maintained, though not particularly imaginatively landscaped, front gardens.

Though there are increasing instances of hard landscaping evident in the study area, this should be discouraged due to the 20% requirement of gardens by the Town Planning scheme and the attenuation requirements linked to hard landscaping, not to mention the environmental impact of reduced biodiversity through 'paving paradise'[75].

Constructed Planters
Formally constructed planters, as opposed to free-standing planting containers, are mainly found in early and mid-century modernist apartment buildings. They are usually located at the entrance and are used as a design device to enhance the notion of entry, but there are also instances of them being incorporated along the façade edge of the building. Their inclusion in relation to entry is often coupled with the construction of stairs to the main entrance. As there is already some form of elaboration in detailing required in the form of stairs, the designer has taken the opportunity to include planters. It is a way in which the notion of entry is further enhanced, and this elaboration further adds visual interest to the streetscape.

Garden Path
The vast majority of apartment buildings have separate garden paths to driveways, especially since many have vehicle access from an alternative property boundary to the primary street facing one.

The surface material again is an illustration of the use of materials in their natural state, with clay brick pavers, slasto[76] and untreated in-situ concrete being the prominent materials used in garden paths. There are some instances in the study area of in-situ concrete paths subsequently being resurfaced with ceramic tiles. This is not advisable as the tiles are not particularly durable, are susceptible to lifting, chipping and are more prone to people slipping on the smoother surface. Also, the cheaper ceramic tiles only have a glazing layer applied, so chips will reveal the white substrate.

This trend is increasingly diminishing with the increasing prominence of parking and the decreasing prominence of pedestrian access to the building directly from the street. This is further being eroded with the recent development trend of a parking forecourt being included between two wings of the building and direct access to the parking forecourt from ground floor units. This particular development device of late reduces development costs as 'undercover' parking is now catered for with carports and not garages.

<u>Security Elements</u>
Unfortunately, as discussed in Chapter Two, continually increasing crime, especially housebreaking has led to properties increasing security measures. This has resulted in a range of approaches, each with its varying impact on the overall original streetscape character. These changes are primarily through physical barriers

[75] This is a reference to the lyrics contained in Joni Mitchell's 1970 song *Big Yellow Taxi* – "Don't it always seem to go that you don't know what you got 'til it's gone? They paved paradise and put up a parking lot."
[76] *Slasto* refers to the use of slate-like shale, often in irregularly-shaped pieces, for flooring and tiling.

along the boundary being constructed for 87% of buildings, though other less visually intrusive methods do exist in the study area.

The approach of *target hardening* through increased physical security measures can lead to ever-increasing securitisation to ensure that there is a 'softer' target available in the vicinity, but this is a reality. The perceived easier target will be targeted first by the opportunistic thief.

There is also the reality that insurance companies in South Africa require physical boundaries to all accessible openings (such as doors and windows accessible at ground level and along walkways), and that car insurance premiums are significantly affected by security measures available (such as perimeter fencing, electric fencing, surveillance by a guard, parking in a lockable garage). It is therefore understandable how these aspects fuel the continual increase of erecting additional security elements.

Additional property wall constructed	Security enhancements to perimeter wall	Security enhancements to the facade	Access
Along entire boundary 64,3%	Standard palisade spikes 42,9%	Additional gate to entrance 48%	Pedestrian gate remaining original 8,1%
Portion of front boundary 7,1%	Electric fencing 33,3%	Visible burglar bars to windows 100%	Electric vehicle gate 26,2%
Building edge to side boundary 2,4%	Razor wire 23,8%	Electric fencing to façade 4,8%	No Vehicle entrance on boundary 47,6%
	Stingray Spikes 11,9%		

Table 5-8 – Summary of data related to security element for apartment buildings.

Additional Property Wall Constructed

As previously noted, the addition of a high boundary wall is the most prolific security enhancement in the study area, and more than three-quarters of the properties have added a wall along the entire front boundary, which undermines the original character of a subtle separation of the public realm of the pavement with the visually semi-public realm of the front garden.

There are instances of a compromise from a visual perspective with only a portion of the front boundary having a boundary wall erected. In this circumstance, the ideal is to have the visually permeable fence placed from the edge of the building to the property boundary, thus leaving the entire front garden open. Other compromise positions are to utilise visually permeable solutions, such as palisade fencing or the more permeable 'ClearVu' fencing. The concern with only partial fencing off the front of the property is that it places residents with street-facing windows in a more precarious position. It is not uncommon for intruders to access units through windows, and ground-floor windows are particularly vulnerable. A full additional layer of security that the complete boundary wall offers gives a measure of greater security, even if primarily just psychologically.

Security Enhancements to the Perimeter Wall

The standard perimeter wall is limited in deterring intrusion, as it is fairly easy to scale, and once in, the intruder is less visible to the street. This has led to additional toppings to perimeter walls for the vast majority of properties to increase the level of target hardening. This influences the overall sense of character, not only from a visual point of view but also reinforces a disquiet about the general safety of the pedestrian (which may well be warranted given the crime statistics).

In regards to fence toppings, standard palisade spikes and electric fencing predominate, and are often used in combination. Electric fencing is also seen as the most effective barrier, as it can also be linked to an alarm system, but is also the most expensive option. Palisade uprights are usually shaped at the top with a simple cut

'V' for a spike and are somewhat of a deterrent. Razor wire is seen as the effective cheaper solution as it is likely to inflict more harm on people trying to scale the wall, but it is visually unappealing (being far more reminiscent of penitentiaries) and also tends to rust easily and then leave streaks of rust marks on walls in addition to the razor wire itself discolouring.

Security Enhancements to the Façade

There have been considerable instances of additional security measures being applied to the building façade (98% of buildings), usually as another layer to the perimeter treatment. By far the most prominent is the inclusion of visible burglar bars to windows, followed by the addition of gates to entrance doors to apartment buildings. In limited instances, the use of see-through PVC slats as burglar bars is evident, thus greatly reducing the visual impact of burglar bars, but these are less effective as barriers. It is increasingly rare to find apartment buildings that have not added additional measures to their main entrance, which includes electronic access control mainly, either on the existing doors or on an additional gate added to the entrance. There are two instances where electric fencing has been added to the actual façade of the building, but both these buildings now have palisade fencing along the entire front boundary, suggesting that the electric fencing was of limited use. In the instance of Brierly, access incorporates a 'bridge and moat' situation, which one would have hoped would enhance security, but post survey, this strategy in conjunction with electrical fencing to the façade has now been supplemented with palisade fencing, indicating that a hybrid approach may not be so effective.

Access

Due to the predominance of the early planning approach and layout of the area to include service lanes (primarily to accommodate the bucket latrine system in use in the borough before the implementation of a waterborne system circa the 1890s), many properties do not have vehicle entrances on the primary street façade, but rather through the service lane. In addition, private car ownership and use were not prominent until the 1920s and in the 1930s became an accepted essential of normal living. (Duffey, 2021, p. 18) Therefore, the need for accommodation thereof on site was limited and often added on to properties built before this date.

The proliferation of vehicle use from the 1930s onwards and the more recent electric access control and security enhancements have meant that only 10,2% of original pedestrian gates remain intact.

Overall Built Form

The overall built form is a generator of overall character at a macro scale and is often utilised in the 'form-based' urban planning approach to development control. As a macro generator, it is also limited in its ability to shape the streetscape experience beyond the basic but is still an important component as to how height, proportion and inter-relationship of components shape the overall experience.

Visual Density

One of the aspects that is used in this study is that of visual density. This is derived from the principle of visual weight in the visual arts discipline. (Bradley, 2014) This is in an extension of the argument put forward by De Botton (2007) that humans naturally seek order through pattern and elaboration, but not to the extent that the repetition of the pattern becomes monotonous. This is reinforced by Sussman & Hollander (2018) when they state the following: "We're pattern-seeking creatures hardwired to take in nature and other people. More of our brain is devoted to visual processing than the processing of any other sense, which sets us up to appreciate detail and decoration in building elevations and avoid façades without them." (emphasis author). It is therefore important that buildings demonstrate some balance between not being too 'busy' with detail, but also not being too 'monotonous' through a lack of appropriate detailing. The fairly high-level determination of visual density deals with an overall judgement call influenced primarily by the articulation of individual forms within the whole, the use of varying materials, the elaboration of details (such as expressing lintols, etc.) and the addition of decorative details. Mid-century apartment buildings generally get classified as mildly to moderately visually dense due to their restrained use of interplay of planes in the façade and restrained palate of materials, though used in inventive ways to enhance the creativity thereof.

The overall finding is therefore that buildings in the area are overwhelmingly not too elaborate, nor are they too plain. The recent trend towards plainly articulated buildings is not in keeping with the established character.

Building Dimensions

This component of examination once again fits into the high-level 'form-based' aspect of character influence. Though there is a range of building height above pavement level from 4m to 25m, the average is within a narrow band of 10,8m to 13,3m, with 3 floors of accommodation being built above pavement level. This takes all buildings of the detailed street survey into account. When isolating this to apartment buildings, the average increases nominally to an average of 4 floors visible from the pavement level. Therefore, allowing for the new development of an apartment building of 4 floors would be in keeping with the overall established character. The depth aspect refers to the building footprint in relation to the street boundary, and though 53,5m depth seems excessive for the top of the range, it would be a building perpendicular to the street edge and therefore have a narrow width. Depth is an aspect to consider as many buildings with considerable side spaces between buildings will allow for the side façades to be visible and also contribute to the overall streetscape.

Visual Density	Building dimensions	Delineation of massing	overall built form rhythms
Major density 2.4%	Height Ave-12,9m 4 – 25m	clipped on projections 42,9%	Prominent projections 40,5%
Moderate density 42.9%	Depth Ave-21,3m 7.7 – 53.5m	incorporate plinth 31%	Uniform planes 28,6%
Mild density 50%	Floors Ave-3,8 1 – 8 floors visible (incl. parking)	simple solid block 11,9%	Clipped on elements 4,8%
Minimal density 4.8%		on stilts 9,5%	Minimal projections 21,4%
		with caving out 21,4%	
Plan form	**Symmetry in front elevation**	**Balconies**	
Rectangular 23,8%	symmetrical 23,8%	semi – recessed 28,6%	
Rectangular with clip-on protrusions 28,6%	Asymmetrical within single primary volume 14,3%	Incorporation within overall massing 23,8%	
L-Shape 19%	Asymmetrical - one plane projects beyond other 16,7%	Juliet balconies 4,8%	
U-Shape 16,7%	Form overall symmetrical, some element in balance 9,5%	Corner balconies to compose overall 'singular' element 2,4%	
		projecting entirely beyond overall massing 2,4%	

Table 5-9 – Summary of data related to the overall built form aspects for apartment buildings.

Delineation of Massing

This deals with the overall composition of the building volumes and excludes houses as these are fundamentally different in delineation from apartment buildings. It is interesting to note that the overwhelming delineation is that of the primary form of the building being considered 'a solid block' in appearance at 85,7%. There are variations within this definition, such as being expressed on a plinth or stilts. Of significance to the study area is the definitive visual reading of elements being clipped onto the solid block. This is achieved in several ways, including a slightly projecting plane of contrasting material to the primary plane. There are some

limited instances of primary forms intersecting (such as a cylinder intersecting a rectangular box), but this is uncommon.

Overall Built Form Rhythms
Following on from the visual density macro determination, part of the influence here is elements that create an overall rhythm in the building. This speaks towards the treatment of massing in a manner that can be considered rhythmic. Again, houses are excluded from this analysis. The most prominent occurrence is forms that create prominent projections (over 500mm) from the primary plane. Quite often, verandas are treated in a manner that forms these prominent projections. There are also some instances of multiple circumstances of varying projections used per building to create a rhythm. This includes the use of prominent and minimal projections and the use of clipped-on elements.

Plan Form
The predominant property shape across the study area is that of a rectangle, with the average property size being 0.131 hectares and the average street boundary length being 25.5m. Taking into consideration the required side spaces as per the town planning scheme, this leaves an average street-facing façade length of approximately 19m. The predominant plan form is therefore either rectangular or rectangular with clipped-on elements.

The two other plan forms that feature in the study area are an 'L' shape and a 'U' shape plan. These shapes increase the number of units that can have three exterior-facing facets instead of the two facets that a linear arrangement offers. The 'L' shape plan also assists in the built form addressing both street frontages in a corner situation. The 'U' shape plan caters for higher unit yield per floor on restricted size properties and reduces the overall circulation required.

Symmetry in Front Elevation
In terms of ordering a façade, this is a significant universal design strategy that was assumed to be quite prominent in the detailed study area. It was however subsequently found through the actual data being reviewed that symmetry was not as prevalent as assumed. Pure symmetry is only found in 15% of buildings. However, when considering overall compositional elements that may have an overall asymmetrical arrangement but contain some form of symmetry within the individual element, the inclusion of overall symmetry increases to about 40%. There is also the noteworthy circumstance of rhythm being used as a design element as opposed to symmetry, which adds to the overall notion of balance being achieved.

Balconies
Durban's humid subtropical climate with an average of 320 days of sunshine a year lends itself to incorporating outdoor living. This is principally accommodated through balconies in apartment buildings. There are however two aspects that influence the inclusion of balconies. Firstly, at higher elevations, often there are strong onshore winds that make balconies less comfortable to use at times and secondly, there is an overwhelming tendency to enclose balconies to provide for additional bedrooms, even from the onset of construction.[77]

Overall, 72% of all buildings have balconies of some form, with the main types being semi-recessed or fully incorporated into the overall massing in appearance. This allows for the interplay of volumes through clip-ons, projections or hollows, or a combination thereof. It is somewhat concerning that only 16,7% of apartment buildings still have all their verandas fully intact, but the overall visual definition of a verandah form remains as the enclosure is via framed windows and not bricking up.

<u>Roof Form and Details</u>
The modernist ideal is for a crisp flat line that defines the edge between building and sky, but the realities of the lack of proper flat roof technology and construction skill available locally for the early part of the 20th century combined with the realities of construction costs meant that many apartment buildings, particularly of the mid-century period, utilise either a double-pitched roof behind a parapet or express the double pitched

[77] An example of this is *Woodville*, located at 433 Che Guevara Road where the 1949 original submission plans already showed the 'prches' (verandahs) with windows enclosing them.

roof clearly. This treatment is a fundamental and rather dominant visual expression of character, therefore treatment (such as pitch, form, material, edging, etc.) is an important consideration to the overall character.

Parapet	Roof edge treatment	Roof construction	Roof materials	Gutter treatment	Rainwater downpipe treatment
Parapet on some sides 23,8%	Gutter and facia to sheeted roof 28,6%	Visible double pitched with hipped ends 31%	Fibre cement sheeting 47,6%	Exposed along edges 19%	None on front façade but visible on side 46,3%
Parapet all round 11,9%	Gutter and facia to tiled roof 14,3%	Visible double pitched with gable ends 7,1%	Clay tiles 14,3%	None on front façade 47,6%	None evident at all 34,1%
Projecting eyebrow 11,9%	Simple projection 11,9%	Flat roof 26,2%	Metal sheeting 11,9%	Evident on sides 28,6%	Balanced placement of façade 17,1%
	Simple termination 11,9%	Mono-pitch behind parapet 21,4%	Flat roof 26,2%		

Table 5-10 – Summary of data related to roof form and details for apartment buildings.

Parapet

The visual definition of a straight or stepped edge between the building and the sky synonymous with the modernist movement is primarily achieved in the study area through the use of parapets as opposed to the edge of a flat slab. This is primarily a design device used in apartment buildings as opposed to other types in the study area, with 47,6% of apartment buildings utilising some form of defined straight edge to the sky. The predominant approach is to have the front and side edges of the roof enclosed by a parapet, with the rear gutter edge exposed for ease of rainwater disposal. There are a few examples of a flat roof with a projecting eyebrow to define the edge of the sky.

Roof Edge Treatment

Given the extensive use of pitched roofing in the study area, the majority of buildings (61,7%) utilise a gutter attached to a fascia as an edge treatment when not engaged to a parapet wall or if it is a simple pitched roof. There are instances of simple projections or simple terminations, but these not common. In circumstances where there is a parapet, the parapet very rarely extends to the sides of the building and gutters and facia are often visible on the non-street-facing façades.

Roof Construction

The majority of roofs in the study area comprise visible double-pitched roofs, mainly with hipped ends (24,4%) and then with gable ends (14,6%). This trend continues to be demonstrated in apartment buildings, though flat roofs feature far more prominently in apartment buildings than overall, as do mono-pitched roofs behind parapets. This demonstrates that the use of pitched roofs, particularly during the Mid-Century period, breaks away from the international norm for buildings of that period. While some buildings attempted to emulate the straight horizontal edge between the building and the sky through the use of parapets, significant numbers openly integrated the use of the cheaper and more reliable pitched roof.

Roof Materials

The main roof covering material in the study area is deemed as 'fibre cement sheeting' by the author, followed by clay tiles. The author deliberately uses the term 'fibre cement' as a cover-all term to describe sheeting that uses either asbestos fibre or cellulose fibre. Almost half of the apartment buildings utilise fibre cement sheeting, and it is suspected that the vast majority, if not all examples, are asbestos sheeting as the period of construction of these buildings follows on from the boon in the asbestos mining activities in South Africa in the 1930s.[78] The profile of asbestos and cellulose fibre cement sheeting is identical by design, with cellulose being the environmentally friendlier replacement after the mining thereof became illegal in 2002 and its use, processing or manufacturing illegal from 2008.[79] Fibre cement sheeting had the advantage over its counterpart of metal roof sheeting in that it was not nearly as susceptible to the corrosive effects of the coastal air conditions in Durban, therefore its popularity (before the significant health risks associated with the handling thereof) was understandable. The overarching recommendation is that both sheeting and tiled roof materials are consistent with the overall character of the area.

Gutter Treatment

The treatment of gutters is an important visual consideration to the 'eyebrow edging' of a building. Though there are noteworthy instances of gutters being visible on the front façade overall, this is considerably reduced to about half of the apartment buildings not having gutters on the street façade. This demonstrates that in those instances, particular care was taken in the detailing of street-facing façades so as not to be 'defaced' by stormwater servicing components. This does have to be paired with the consideration of the roof treatment approach - parapet and gable roof treatment would not have gutter exposed along the street façade and was fairly common in application.

Rainwater Downpipe Treatment

The approach to the inclusion of rainwater downpipes is linked to the approach taken with the inclusion of gutters. There is, however, a significant trend of not locating them on the front façade, even if there is a gutter along that edge. Just over 80% of apartment buildings do not have rainwater downpipes included on their front façades. Where there are instances of pipes on the front façade, there are significant instances of them being placed in such a way as to appear balanced. There are often instances where the pipe has been painted the same colour as the wall behind to try and reduce the visual impact thereof, though this is problematic if the pipe is attached to the face brick as the colour and texture of the brick are not able to be matched and often creates a visual dissonance.

Older buildings tend to have 'fibre cement' gutters and downpipes, but unlike the 'fibre cement' roof sheeting profiles, these profiles have not been replaced post-2008 by the mainstream South African construction industry manufacturers of pipe systems. Un-plasticised polyvinyl chloride (uPVC) is the replacement material used by these manufacturers.[80] Fibre cement rainwater goods are absorbent of moisture on raw surfaces, so tend to encourage the growth of mould, therefore are not favourable for use as rainwater goods. An alternative material for the manufacturing of rainwater goods is aluminium. The benefit is that extrusions can be made to suit the required lengths on site.

Façade Surface Treatment

The treatment of the surface of the façade contributes intrinsically to the aspect of visual variation. The third aspect of De Botton's creation of complexity in façades is through the considered material finishes being applied. This includes a variation of texture of the materials of the buildings themselves, and to the notion of variation. De Botton (2007, p. 245) There are three main surface treatments in the study area – use of face brick, varied treatment of plaster, and other applied surface treatment.

[78] Hart, H., 1988. Asbestos in South Africa. *Journal of the South African Institute of Mining and Metallurgy*, 88(6), pp. 185-198.

[79] van der Merwe, C., 2008. South Africa Bans Use of Asbestos. *Creamer Media's Engineering News*, 27 March.

[80] Manufacturers, such as Marley Pipe Systems, one of the leading suppliers of domestic built environment drainage systems, only supply uPVC rainwater goods

Use of Face Brick

This is where a pragmatic application of the architectural tectonics idea of 'truth to materials' is most prominently displayed. Face brick is widely used in the buildings in the study area, partly due to it being locally manufactured and therefore it is more economically sourced. Though it has a higher initial cost in comparison to plaster and paint, the life cycle costs are reduced as, unlike painted surfaces, there is no requirement for a 7-year maintenance cycle. There is also a fairly easy application of variations in colour, texture, detailing and application due to the range of face bricks produced.

Face brick elements included		Panels in façade
Primary material is plaster and paint 16,7%	All walls are face brick 11,9%	Smooth Plaster 16,7%
Primary material is face brick 31%	Utilises 'multi-coloured' face bricks 40,5%	Face brick 9,5%
Alternating face brick and paint 19%	Utilises narrow face bricks 4,8%	Ruled Plaster 4,8%
		Ceramic Tile 2,4%
		Mosaic Tile 2,4%

Table 5-11 – Summary of data related to façade surface treatment for apartment buildings.

Varied treatment of plaster

As plaster is an applied surface treatment to walls, different textures and patterning can be easily achieved at the time of application through the tooling used, as is demonstrated in numerous buildings in the study area. This versatility can be leveraged to achieve variety. Even though the material itself is not changed, the surface can be applied and treated in numerous ways to create a contrast to the surroundings. A variation in paint colour could also be effectively used to incorporate variation.

Applied Surface Treatment

Other forms of surface variation are achieved in the study area through the subsequent application of alternative surface treatments. These are less common but are mainly restricted to the application of ceramic or mosaic tiles to a panel contained on the façade. Generally, this is the most expensive of options as it requires the substrate to be prepared anyway and the material cost of the tiles itself is usually fairly expensive, based on the selection of the particular tiles.

Materials

The majority of the buildings in the study area have some form of face brick use (56%). In apartment buildings, the use of face brick as the primary façade material occurs in greater numbers than plaster and paint, though this characteristic is being significantly eroded with recent developments. The most recent trend is to use concrete blockwork in construction within the study area.

From 1850 onwards, Durban continually produced bricks. The establishment of the Coronation Works in 1902 has had the most significant impact, as in 1936 this company had evolved into the largest brick manufacturing company in the southern hemisphere.[81] This company has continued to evolve and is currently known as Corobrik and is still a major global producer of bricks. This author postulates that having this significant manufacturing entity in such proximity led to face brick being fairly economical to use in relation to plaster and painted brick walls and therefore more predominantly used. The benefit of its inclusion is that

[81] Anderson, J., ca. 1988. *Early Natal Brickyards c 1850 - 1935,* Durban: Faculty of Architecture, University of Natal (student report).

there is a fairly easy-to-achieve potential colour, texture and detail variation through its use and the life cycle costs are significantly reduced.

In the study area, the use of standard face bricks dominates[82], overwhelmingly of the satin finish variety, but there are instances of special bricks being used, such as solid bricks and narrow bricks. Standard stretcher bond dominates, but there are instances of header courses (mainly used in window surrounds and lintols) and roller courses (mainly used for boundary wall capping). There are no instances of header course or stack bond (perhaps due to their structurally inferior properties in relation to other bonds), and this again demonstrates the interplay between practicality and aesthetics being considered.

Panel Inclusion

The inclusion of panels within the façade is a significant way of incorporating variation into the façade treatment. This aspect specifically deals with the inclusion of a section, usually rectangular, of a contrasting material or surface treatment to the predominant surface of its surround. This could be in the form of a panel of ruled plaster included within a surround of smooth plaster, or a panel of face brick being included between windows where the predominant material of the façade is plaster, etc.

The predominant form of panels is that of smooth plaster, quite often included within façades of primarily face brick. Noted as used in some instances, but far less frequently is the use of ruled plaster panels. This is an avenue that could easily be exploited in further developments as it is a fairly inexpensive way of incorporating aspects of variety into the building façades. Rather restrained in use are panels using tiles – this steers away from the tenant of 'truth to materials' and practically is rather expensive compared to other options.

[82] The standard dimension of a face brick unit is 222 x 106 x 73mm, leading to an overall gauge of 230 x 220 x 85mm for a *one brick wall*.

Elements of Elaboration

This applies to aspects that can be considered as 'additives' to the overall skin of the façade that is applied rather than intrinsic to the integrity of the construction. The two major components identified specifically related to apartment buildings are building signage and aspects that can be considered 'decorative elements'. The use of these aspects does contribute to the overall streetscape character, particularly if there is a very significant application thereof, which in this case is building signage.

Building Signage	Decorative elements
Projecting lettering on wall 50%	Small plaster squares projecting from wall 9,5%
Pre-fabricated 'hardware store' numbers 4,8%	Intricate wall relief designs 2,4%
Painted lettering onto painted plaster wall 11,9%	Circular concrete pipe projections 2,4%
Name on building 78,6%	Contrasting face brick surround to windows 2,4%
	Decorative haunches to balcony slab 2,4%
	Elaborate plaster band as 'coping' 2,4%

Table 5-12 – Summary of data related to elements of elaboration for apartment buildings.

Building Signage

A dominant feature (at 78,6%) of apartment buildings is that of the building name appearing on the building. Significantly, 50% of this comprises projecting individual lettering attached to walls, followed distantly by painted lettering on the wall. Again, the recent trend is to omit including the name on the building and certainly not to utilise the established dominant characteristic of projecting lettering.

Decorative Elements

This aspect is not particularly prevalent in the study area, but some aspects could be considered for further development as it is an indication of the *restrained* use and type of decorative elements that feature in the area. The most significant decorative element is the small plaster squares projecting from walls and again is prominent in the mid-century modernist apartment buildings. Another example of a fairly restrained and inexpensive decorative element used is the use of slightly projecting concrete pipes in a pattern from the façade.

Elements and Details – entrances

As an intrinsic component of the overall building circulation, entrances are either a product or a generator of form, and this is evident in the study area. They are usually prominently visible from the street façade, though many previously visible entrances are now being obscured by boundary walls. This also presents an opportunity for some elaboration as one of the 'significant insignificant'[83]. The 'entrance' in this instance implies the space and form that is designated for the process of entering and includes both doors used to enter and the space, volume and form that is used in the function of entering. Doors are therefore one of the elements that comprise entrances, but entrance also includes steps, recesses, circulation and formal articulation thereof.

[83] The author first encountered this term used by the local architect and lecturer Derick van Heerden when interviewing him on the design of the CAPRISA building on the King Edward VIII medical school campus, refer to du Plessis, L., 2008. *The design of a new Cancer Research Institute and Laboratories for Durban,* Durban: University of KwaZulu-Natal (Master's Thesis).

The use of a main entrance door to an apartment building speaks to an era where pedestrian access was considered of primary importance, and perhaps of the era where socialising happened mainly in people's homes and not in public venues.

Nature of Entrances

The nature of entrances either is informed or informs the overall building form, and generally, it would seem that the circulation approach is a primary generator of the building form, therefore entrance informs more than is informed by the building layout. Smaller early modernist blocks of two units per floor generally have a vertical circulation approach with units accessed left and right off of a common stair landing. Later mid-century buildings contain more units per floor and therefore a corridor approach is implemented, quite often with the principal entrance volume articulated separately at the beginning of the walkway, especially if circulation is in a linear form.

The entrance is a very prominent aspect in that the pedestrian entrance is clearly articulated in the street elevation for apartment buildings (86,2%). There is, however, a concern that the current approach of the drive-up parking access considerably ignored this characteristic with the prominent feature being a circular vehicle ramp that is reminiscent of a large commercial development, not a residential development. There is also the more recent design strategy of having ground floor unit entrances directly off of the parking 'cavern' between two wings of a development.

Entrance Relation to Façade

The placement of the entrance in relation to the overall façade can add to the aspect of variety based on what is a simple design

Nature of entrances	Entrance relation to façade	Door placement	Entrance door composition
Clearly articulated in street elevation 86,2%	Significantly recessed (1m and more) 39,3%	Off-centre in non-central element 25%	Single door 28%
Indicative in treatment, but not directly visible 6,9%	Slight recess (less than 1m) 21,4%	Centre to overall composition 32,1%	Double door 56%
Included in gap between primary defined building forms 6,9%	Articulated as independent massing 25%	Off-centre in central element 17,9%	No door - opening only 16%
	Door flush with overall plane 1,3%	Articulated as independent massing 17,9%	
Entrance door glazing	**Entrance steps**	**Entrance Parapet Elaboration**	**Entrance Roofing**
Fanlights 24%	There are more than 5 simple steps 31%	No elaboration along parapet / roof line 84%	Projection of slab beyond wall plane 26,9%
Sidelights 36%	Minimal threshold step 37,9%	Extension of wall plane only 12%	Recessed from main façade plain 23,1%
Timber with Glazing 80%	There are less than 5 simple steps 6,9%	Parapet elaboration over entrance 4%	Slab projecting from wall 19,2%
Glazing 84%	Ramp from street 24,1%		Lean-to canopy 7,7%
			Projecting balcony 7,7%

Table 5-13 – Summary of data related to entrance elements and details related to apartment buildings.

decision. This can relate to the placement of the entrance volume in the overall façade and also to the composition of elements therein. The practicality of the entrance being sheltered from the elements in the moderate climate of Durban means this is more about protecting the door itself from degradation due to the harsh sun or water ingress from an incorrectly treated door.

In some instances, the aspect of the entrance (and also vertical circulation) is used to define circulation through independent and projecting massing, which assists in creating prominent variations in the overall façade.

Though there are some examples of flush doors for apartment buildings, the predominant characteristic is for some recess to the façade plane. This not only provides shelter to the door and someone standing in front of the door, but also aids with the notion of privacy gradient transition people experience when entering.

Door Placement
This is an important aspect regarding the overall composition of the entrance, as the treatment thereof also contributes to the characteristics of buildings. This gives insight into how again variation has been included in the existing study area and can be considered for application in new developments. The considered placement of a standard door within an entrance element can itself add variety to the façade with a minimal cost implication. Though in many instances, the door placement is composed to be central to the entrance composition, there are also significant instances of being placed off-centre in non-central composition elements, off-centre in central composition elements or articulated as independent massing.

Entrance Door Configuration
Where entrance doors have been visible from the street, data has been captured concerning their configuration. Unsurprisingly, the use of double doors (that facilitate the movement of larger items and volumes) is significantly more prominent than single-door use or the lack of any door. The instances of no doors (originally) again speak to the development of the apartments in an era where the transition from public to private was designed to be unencumbered and did not need to respond to the ever-increasing security concerns and the need for individuals to take additional steps to safeguard themselves.

Entrance Door Glazing
In the study area, not only is the configuration of entrance doors an important component of the overall character but also the materials used therein. One of the most prominent of these aspects is the incorporation of glazing, not only into the door leaves themselves but also surrounding panels that form part of the overall frame. Glazing is included in 84% of the entrances to apartment buildings in some form, with 80% being timber framed doors with glazing insets. There is also considerable use of fanlights and sidelights or a combination thereof for the overall frame. In some instances, portal windows have been used, again to reinforce the nautical theme of the city.

Entrance Steps
This is not only a simple device associated with a change in level but also relates to the concept of a *psychological transition*. Often there is an associated treatment along with the entrance steps such as constructed planters or material surface treatment that adds to the experience of the individual when viewing or, more importantly, when walking to the entrance. The most prominent treatment is a standard threshold step, but this is followed shortly by a circumstance of more than 5 steps. Of interest, almost a quarter of all apartment buildings have ramp access to the front entrance. This is usually included to allow for some form of 'semi-basement' and still comply with the 4-storey height restriction before requiring a lift (elevator).

Entrance Parapet Elaboration
One of the devices that could be used in further defining *entrance* is the elaboration of the parapet above the entrance. In the study area, this device is however not used in any significant numbers. Only 12% of apartment buildings use an extension of the façade wall plane to elaborate the entrance, with a further reduced number of instances where the parapet itself has greater detail than merely a simple wall extension.

Entrance Roofing
A significant proportion of entrances have their own defined roofs. This primarily is in the form of a slab above the entrance that projects beyond the wall. Another significant situation is the inclusion of an entrance that is recessed from the main façade plain where the floor slab above acts as a roof. There are some instances of simple lean-to canopies and projecting balconies above entrances, but these are not common.

Elements and Details – windows
Windows affect the overall appearance, especially when the established standard items are replaced with entirely different frames due to lack of maintenance, and worse still this is done only for some windows, leaving a lack of uniformity to the window treatment of a façade. It is therefore somewhat encouraging that, in a significant number of circumstances, all windows in the façade of buildings remain original. This, however, is not a situation that is stable as the number of buildings where windows need significant maintenance will continue, and the economic reality is that replacement utilising aluminium frames as opposed to the original steel or timber frames is cheaper. This also speaks of a situation in apartment buildings where there is little strategic control over changes to the fabric, in many cases, individual apartment owners are allowed to replace frames without any oversight and approval. This is also exacerbated by a lack of knowledge by trustees and owners and is therefore open to the persuasions of individual window manufacturers and installers with vested interests in a particular replacement being implemented. Many owners will just make decisions without regard for buildings that fall under the heritage protection legislation, and there is virtually no capacity or advocacy from the relevant authorities to limit this activity.

Condition of Windows
This information details the significant change in the occurrences of original windows. More than half of apartment buildings no longer have their original windows but have been replaced with frames of alternative materials. This material change does affect the overall appearance as sections are of different sizes and often the overall casement sizes and pane sizes are not always kept. It is also an issue when there are different frames without a discernible pattern being evident.

Types of Windows (excl. Casement)
This section gives an indication of any particular types and configurations that form part of the overall character of the area beyond the inclusion of standard casement windows. Standard casement windows form part of all building façades in the study area.

Types of windows to note are corner windows, which are predominant in early and mid-century apartment buildings. Historically this period also included louvre windows with glass blades of approximately 150mm in width and variable length. The use of glass-bladed louvres has fallen out of favour, not least for the security vulnerability of louvre windows. Currently, aluminium louvres with an entirely different visual appearance are the alternative available.

There are also instances of the inclusion of portal windows in selected examples that arguably add to the theme of a coastal city. All these different types of windows can be utilised as a pallet of available options of configurations in new developments.

Window Frame Materials
The determination of window material does inform the overall composition of the appearance of the greater façade. Frame material properties result in specific visual appearance, for example, timber and aluminium windows have thicker sections than steel. Steel and timber windows are usually painted (or sometimes varnished in the case of timber) while aluminium windows have either a natural anodised finish (silver) or a powder-coated finish of any number of colours.

Practically, steel window frames have continued to decline in use as evidenced by the largest producer of steel window frames in the southern hemisphere, based in South Africa, filing for liquidation in 2014.[84] There are

[84] Allix, M., 2014. Window and door maker Duro Pressings liquidated. *Business Day*, 14 March.

still several smaller manufacturing concerns going on, but the demand is constrained. In the study area, all current developments and retrofitting examples utilise aluminium frames. The properties of timber and steel, particularly when proper maintenance is not forthcoming, make steel windows susceptible to rust and timber windows susceptible to insect activity and wood rot. This leads to the preference of installing aluminium windows, but this allows for great variation due to the wide range of sections (and their quality) available – often cheaper prices drive the process, leading to smaller sections being used that cannot accommodate the original frame sizes.

Condition of windows	Types of windows (excl. casement)	Window frame materials	Special Windows	Special materials
All are original 45%	Corner windows 11,9%	Timber 4,8%	Horizontal sliding windows 4,8%	Stained Glass 4,8%
Some are original 27,5%	Sash windows 2,4%	Steel 38,1%	Vertical shutter to balcony 2,4%	Glass Bricks 2,4%
All have been replaced 17,5%	Louvre windows 7,1%	Aluminium 19,0%	Sliding verandah door 4,8%	
Almost all are original 10%	Portal windows 4,8%	Steel & Aluminium 31%		
		Timber & Alum. 7,1%		

Cill details	Cill composition	Lintol elaboration	Lintol Composition
Quarry tile along length of window only 53,7%	Multiple cill arrangements per building 26,8%	Multiple types of lintols 47,6%	Plain in wall, not expressed 61,9%
Plain rake with projection 22%	Along multiple windows 19,5%	Lintol treatment extends around multiple windows 11,9%	Projecting band - 28,6%
Brick on edge cill 9,8%	Forms part of surround 19,5%	Lintol treatment extends around corners 11,9%	Face brick - 21,4%
Plain rake with no projection 7,3%	Around corners 4,9%		Window abuts underside slab 16,7%
			Plaster beam within face brick wall 9,5%
			Plaster band extending beyond window 9,5%
			Projecting eyebrow - 2,4%

Table 5-14 – Summary of data related to window elements and details related to apartment buildings.

Special Windows and Doors

This particular section deals with windows and doors which are not considered standard to determine their prevalence in the study area. The vast majority of the occurrences of these instances are alterations to the

original fabric. Horizontal sliding windows and vertical shutters are found in the post-occupancy enclosure of balconies. Doors to balconies are overwhelmingly hinged as opposed to sliding. Often there are single doors followed by french doors. The use of sliding doors should be discouraged as this is very much not in keeping with the established character.

Special Materials

There is some very limited use of what can be called 'special materials'. Though very limited in occurrence, the use of stained glass and glass bricks is found in the study area. Stained glass is usually associated with buildings before the mid-century period and was quite prominent in the Colonial and Union periods. Due to its minimal use and incorporation mainly at entrances, there is not as much of a visual predominance in the area. Glass bricks are considerably isolated in use and their application is rather restrained. Should this be considered in future developments, only a restrained use should be contemplated.

Cill Details

Another important component of the overall detailed composition regarding window inclusion is the treatment of the window cills. This has an important appearance, not only from a finish perspective but also from an overall dimension. The main cill detail is that of a modular quarry tile being used along the length of the window. Again, this is an item that is no longer available to match the original dimensions, specifically the thickness and material used. The next most prominent composition of cills is the use of a plain projecting rake out of plaster. What should be particularly noted is that a cill definition without any form of projection is significantly limited in its use.

Cill Composition

In addition to the individual window cill treatment, there is a circumstance where a significant amount of buildings, especially apartment buildings, utilise multiple design techniques that extend beyond a cill confined to a single window. It is not uncommon to have more than one detail to cills per façade. There are also circumstances where the cill is extended along multiple windows with a panel of a wall in between or where the cill is considered as part of an overall surround to one or more windows.

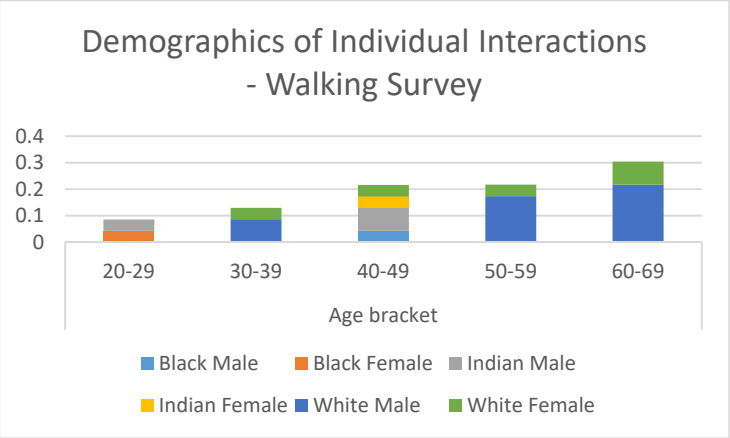
Lintol Composition

In addition to the bottom edge treatment of a window, the top edge treatment is also a significant element of the study area as almost 40% of apartment buildings do not have plain lintols that are incorporated into the wall but are rather expressed in other ways. The most prominent lintol expression is that of a projecting band, followed by a face brick lintol configuration. In other, particularly late-modern, buildings the window frame abuts the floor slab above with no lintol or brickwork between. Another treatment that should be noted is the use of a plaster band that extends beyond the window.

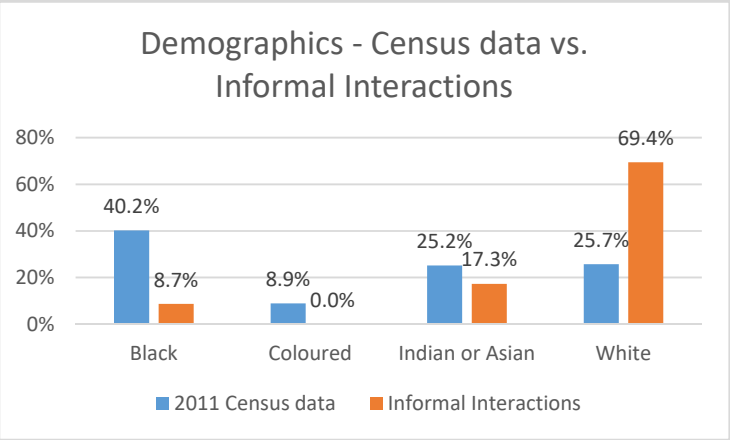
Lintol Elaboration

This particular aspect deals with the elaboration of lintols through their variation in types applied to a single façade and the extended treatment beyond the individual window. There is considerable use of multiple types of lintols on one façade. There are also equal instances, though less frequent, where the treatment of the lintol extends around multiple windows or around corners.

5.4 Informal Interactions to Collaborate Findings



Graph 5-16 – Demographics of individuals that informally interacted with the author while conducting the walking survey. As this was not a formal or planned interview, the author used his own best judgement at determining the categorisation of the individual.

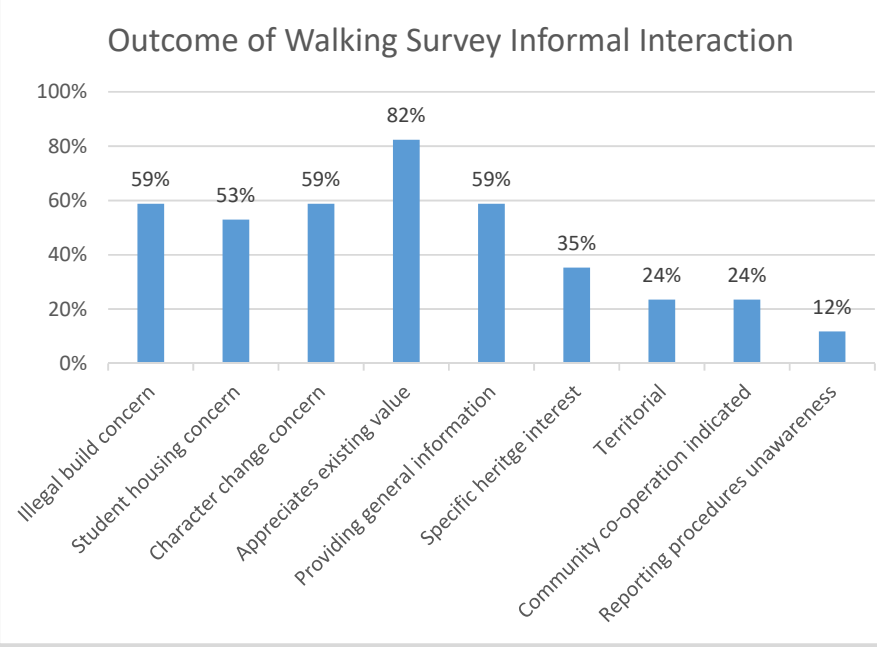


Graph 5-15 – Demographic comparison between the 2011 census data of the area in relation to that of the informal interactions that occurred during the walking surveys. It should be noted that the 'Black' and 'Coloured' population groups are significantly under-represented while the 'White' population group is significantly over-represented. Source: Author. Census data 2011 drawn from (Hansmann, et al., 2018)

The research plan initially did not include any interactions with the inhabitants of the study area. The author soon realised after commencing the walking survey that there would be individuals that would approach out of curiosity and would engage the author on the research being undertaken, most of which were positive in their reception. These discussions provided qualitative insights into potential issues that are inherent in the area, but as the sample size is not sufficiently large or significantly representative of the area, it should not be taken as a sound statistical basis for findings. The comparison of the demographic statistics of the informal respondents as opposed to the official census data of the broader Berea for 2011 indicates significant discrepancies, with a noted underrepresentation of the most significant population and age group and an overrepresentation of a less significant population and age group. It is particularly worth noting the underrepresentation of the 20 – 29-year-old population group, especially in light of their potential alternative views related to the issue of Student Housing, discussed below.

There was a significant unprompted indication of an appreciation for the existing character of the area, with 82% of individuals expressing the appreciation for the existing value inherent in the area, which reinforces previous findings by Iyer (Iyer Urban Design Studio, 2012) as to the significant character of the area. The main issue of concern identified in these informal interactions was the aspect of development that was in contravention of the Town Planning Scheme and undertaken without approval. This aspect is an ongoing one that has been discussed previously in Chapter Two and specifically identified previously by Hansmann, et al. (2018). Linked to this was the apparent lack of tangible action on the part of the relevant authorities to curb these illegal developments from being undertaken and also to impose sufficient sanctions on those that have completed their illegal developments. This then led to a concern about

the change in the current character of the area, and the significant knock-on to the erosion of the capital value of their properties and their ability to sell.



Graph 5-17 - Significant contextual information was forthcoming in the informal interactions. There was significant and fairly consistent concern expressed about illegal building in general, the construction or conversion of structures to student housing, and the general concern of the change of the study area character.

5.5 Determined Primary and Secondary Characteristics

The following twelve tables list the predominant and secondary characteristics as related to the category that the table relates to. It also includes relevant notes for that item. One of the aims of this approach is to offer designers and local authority decision-makers specific guidance for future development in the study area. to make more informed decisions that have tangible effects on the existing streetscape and character of the area. These predominant and secondary characteristics can be used to maintain or enhance the existing environment while not subscribing to historical mimicry and traditional preservation approaches.

Figure 5-19 - Aerial overview of the study area. The yellow outline of the study area boundary, the grey outline is the Ferguson Road detailed survey node, the blue outline is the Lena Ahrens detailed survey node, and the green outline is the J.B. Marks detailed survey node. Source: (Google Earth, 2015(a))

General Description

The majority of the area comprises the *General Residential 1* and *General Residential 2* zoning, and aside from parking requirements, there is no substantive difference between the two. The study area demonstrates that the use of the architectural language 'of the day' is common, including during the period of significant densification, therefore Mid-Century Modern proliferates. This is not to argue for the same 'of the day' approach in current and future development but to note the positive design attributes that were prevalent and appreciated at the time. The highest units per hectare and the highest concentration of buildings of noteworthy quality occurs in the J.B. Marks node.

	Category	Predominant Characteristics	Secondary Characteristics
General Description	General Description	n/a	n/a
	Zoning	n/a	n/a
	Period of construction	Mid-Century Modern proliferation	Early Modern
	Density	n/a	n/a

Table 5-15 - - Predominant and secondary characteristics of the study area highlighted concerning General Description.

Figure 5-22 - Google earth view of the J.B. Marks Road detailed study node. This contains the highest units per hectare and the highest concentration of rated low-rise residential units.
Source: Drawn from (Google Earth, 2017)

Figure 5-21 - Google Earth view of Lena Ahrens Road detailed study node. The dense tree lined street frontage is a prominent characteristic and well known to the city inhabitants.
Source: Drawn from (AfriGIS (Pty) Ltd, n.d.)

Figure 5-20 - Google Earth view of Ferguson Road detailed study node. The southern side of the road is dominated by three storey apartment buidings of relatively small footprint while the northern side is known for its series of semi-detached houses.
Source: (AfriGIS (Pty) Ltd, n.d. (a))

Site Servicing

The historical trend was to locate servicing components away from the public view as much as possible. Parking is predominantly not visible from the street and frequently obscured beneath the level of the street when the site is sloping. This characteristic is now significantly at odds with the contemporary trend of the 'ride up' developments where parking elements are dominant over the entire street-facing façade. Electrical substations in older developments were located within the site, usually in a dedicated service room out of the site. This is no longer the case with this infrastructure needing to be located on the property boundary by local authority requirements. There is an ad-hoc approach currently that undermines the historical integrity of the streetscape.

	Category	Predominant Characteristics	Secondary Characteristics
Site Servicing	Parking	Not visible from the street	Utilising slope
	Electricity substation	Not visible	Limited in size
	Meters/hydrants/ telephone	Limited in certain nodes	n/a

Table 5-16 - Predominant and secondary characteristics of the study area highlighted concerning Site Servicing.

Figure 5-26 - The intersection of Lena Ahrens and Clark Rds. There is a traffic light control box between the traffic lights, a switch box for telecommunications to the right of the traffic lights and an electrical junction box to the right of the switch box. The pavement up the road bears the scars of repeated excavations for services.

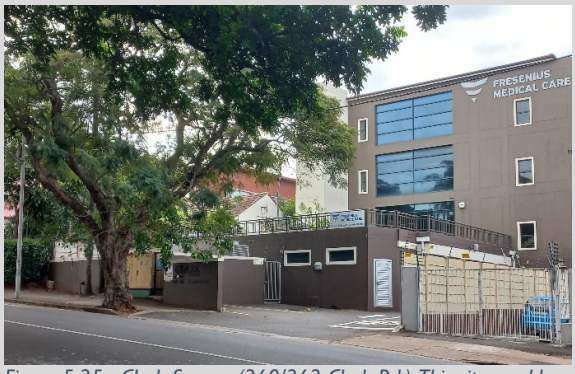


Figure 5-25 - Clark Square (260/262 Clark Rd.) This site would have originally been a single dwelling house that has been demolished and has been replaced by this medical centre. This has a municipal substation on the boundary (seen behind the tree trunk) in addition to a electrical switch room (located behind the solid metal door to the right thereof). The entire focus of the street frontage at road level is on servicing, though the building behind it is not particularly complementary to the streetscape either.

Figure 5-24 – Brierly (55 J.B. Marks Rd.) demonstrates the advantageous use of the slope. Entrance is around the corner from the top of the slope by means of a bridge, therefore an entire floor of accommodation and parking can be incorporated without exceeding the four storey height constraint.

Figure 5-23- Roseric (67 Lena Ahrens Rd.) The rather uncoordinated and unconsidered addition of servicing elements. To the left is a water meter in a 'tamper proof' housing that has evidently been tampered with. To the right is a stub column for telephonic infrastructure. As can be seen by the pavement repairs, these are treated in an ad-hoc manner.

Site Relationship

There is a general uniformity towards urban form circumstances in terms of site boundary lengths and setbacks. Less uniform is the addressing of both street edges on corner plots, where the J.B. Marks node demonstrates the best practice. In the other two nodes, the generic approach to floor plan design rather than to address site-specific conditions is taken in many of the corner plots, the buildings are designed as if only one façade is facing a street edge. In terms of topography, the sighting of the majority of buildings responds directly to the slope and there are more innovative design strategies, such as bridge access from the street edge to allow for creative parking solutions and additional bulk incorporation.

	Category	Predominant Characteristics	Secondary Characteristics
Site relationships	Corner plots that address both edges	The majority of corner plots address both edges	n/a
	Site street boundary length	Average site length 25,6m (range of 20 – 31,8m)	n/a
	Setback from Front Boundary	Average site setback 9,6m (range of 5 – 12,5m)	n/a
	Setback from Side Boundary	Average site setback 4m (range of 2,6 – 5,9m)	n/a
	Building Sighting in relation to street	Sighting responds to slope directly	Innovative approaches utilised, e.g. bridge access

Table 5-17 - Predominant and secondary characteristics of the study area highlighted concerning Site Relationships.

Figure 5-28 – Trade Winds (35 Lena Ahrens Rd.). This is one of a number of examples in the study area where a bridge is used to connect the street to the 'primary entrance floor'. It enabled the floors below to be excluded from the overall height calculation and for parking to be concealed from the street.

Figure 5-27 - Mount Verna (104 J.B. Marks Rd.) This is one of the examples of all of the corner plot buildings in the J.B. Marks node addressing both street edges.

Figure 5-29 - Elizabeth Court (31 J.B. Marks Rd.) This property of 12 units with parking beneath utilising the slope typifies the average street frontage length for the study area.

Public Boundary Edge Treatment

The incorporation of vegetation along the pavement is significant. Trees are a significant aspect of the streetscape across the study area, with an average of just over one tree per site frontage. Lena Ahrens node is particularly distinguishable by the extensive tree-lined pavements and flower beds. There are also instances of constructed planters being incorporated into boundary treatment where there is a need for small retaining walls. The most concerning aspect is the ongoing serious security concerns that result in new significant boundary walls being constructed. The original low face brick wall as an element of property boundary definition is an overwhelming characteristic of apartment buildings. There is a likewise overwhelming trend towards target hardening in the form of physical barriers. Apartment buildings tend towards more visually permeable types of boundary fencing than individual dwellings.

	Category	Predominant Characteristics	Secondary Characteristics
Public boundary edge treatment	Vegetation on pavement	Predominant instances of vegetation included	Notable instances of flower beds in Lena Ahrens node
	Trees along pavement	Average of 1,2 trees per property (range of 0,2 – 1,8)	n/a
	Constructed planters	n/a	Occurrence on 12,2% of properties
	Boundary wall treatment	Original walls utilise face brick. (overwhelming)	Retention of original low face brick wall with palisade addition (significant)

Table 5-18 - Predominant and secondary characteristics of the study area highlighted concerning Public boundary edge treatment.

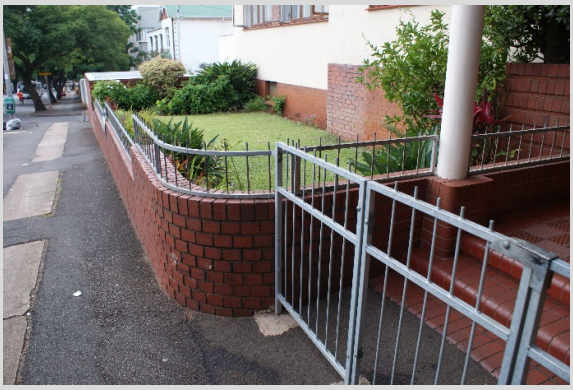


Figure 5-31 - Wyndham (408 Che Guevara Rd.) The low face brick wall defining the property boundary had subsequent addition of low steel panels and fence, more to stop the use of them as seats. Unfortunately, since the taking of this photograph, a higher fence has been erected.

Figure 5-30 - Lincoln Hall (92 Lena Ahrens Rd.) This forms part of the Lena Ahrens Rd section that has noted landscaping along the pavement. The pavement is raised in relation to the road and the embankment between is planted. Though the maintenance of this is for the local authority, many property owners take responsibility due to the lack of capacity demonstrated by the local authority.

Figure 5-33 – View down Lena Ahrens Rd. outside Lincoln Hall and Sheamar. The prominent avenue of trees is intrinsic to the streetscape of this section of the study area. The inclusion of planting beds on the pavement is rare, and though trees feature prominently along most streets in the study area, they are not as dense as these.

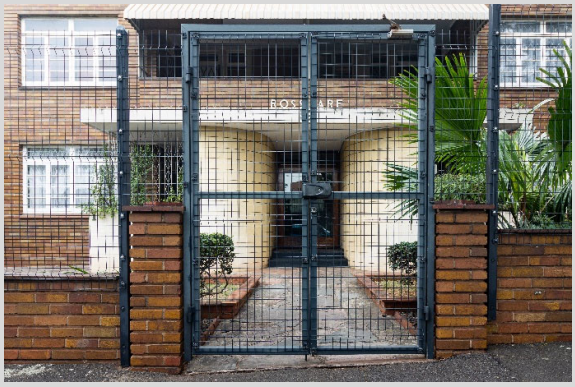


Figure 5-32 - Rosslare (59 Ferguson Rd.) Until very recently, this property had only the original low boundary wall. It featured raked horizontal and flush vertical pointing to the face brick and a quarry tile coping. The original wall has been retained with the addition of this 'ClearVu' fencing. Aside from the rather conspicuous gate frame, the overall visual disruption along the boundary is fairly minimal with this type of fencing.

Private Boundary Edge Treatment

There are very few examples of buildings being located close to the property boundary, therefore the inclusion of soft landscaping between the property boundary and the building façade is an overwhelming characteristic of the area. Apartment buildings contain slightly fewer trees, but more shaped shrubs and higher levels of maintenance. Constructed planters within the property are not an extensively used element, but the do adds to streetscape quality. Garden paths feature prominently and the materials used echo the trend towards the appearance of 'natural' materials through the common use of clay pavers and slasto. Older properties separated pedestrian and vehicle entry, but the trend towards increased securitisation has resulted in consolidating the pedestrian entrance function into the vehicle entrance to have one point of access.

	Category	Predominant Characteristics	Secondary Characteristics
Private boundary edge treatment	Soft landscaping on the property	includes soft landscaping (overwhelming)	Grass and planter beds (significant)
	Planting details	Contain trees (significant)	Shaped shrubs (notable)
	Constructed planters	At entrances (notable)	Along building edges (minor)
	Garden Path	separate path from the boundary (overwhelming)	Material tending towards 'natural' appearance, i.e. clay pavers, slasto

Table 5-19 - Predominant and secondary characteristics of the study area highlighted concerning private boundary edge treatment.

Figure 5-35 - Wilfton (75 Ferguson Rd.) The slasto garden path with clay brick border echoes the use of 'natural materials' along with the face brick plinth and timber framed entrance doors.

Figure 5-34 - Clayton (89 Lena Ahrens Rd.) A planter has been used along the entrance path as a balustrade, but also to add an element of variety to the streetscape and entrance experience. Until very recently, this was open with security taking place at the lobby, but now an additional gate has been added at the boundary.

Figure 5-36 - Charlton Court (88 J.B. Marks Rd.) The variety of well maintained and often shaped shrubs in a stepped terraced arrangement utilising face brick and stone retaining walls provides a positive streetscape experience where the contemporary treatment would tend to be rather stark and utilitarian in comparison. The fairly sober façade is enhanced by this considered landscaping treatment.

Security Elements

This is one of the most significant aspects resulting in changes to the existing streetscape character. The recent 'need' for target hardening has resulted primarily in the overwhelming instances of an additional wall or fence being constructed along the entire street boundary. This current trend significantly undermines the original character of the street. There are instances of less 'invasive' approaches, such as more visually permeable barriers, limiting fencing to between the building edge and the side property boundary and using electric fencing topping rather than other treatments, such as razor wire which has the greatest negative visual impact. Overall, there seems to be an unconsidered, ad-hoc approach to these adaptations, with all manner of burglar bar styles visible and incremental additions made to existing barriers.

	Category	Predominant Characteristics	Secondary Characteristics
Security elements	Additional property wall constructed	additional wall constructed along the entire boundary (overwhelming)	additional wall constructed to a portion of the front boundary (minor)
	Security enhancements to the perimeter wall	use of standard palisade spikes and electric fencing topping (significant)	use of razor wire and stingray spikes (notable)
	Security enhancements to façade	burglar bars to windows (overwhelming)	additional gate to the entrance (predominant)
	Access	No vehicle entrance on the primary boundary (predominant)	Electric Vehicle gate (significant)

Table 5-20 - Predominant and secondary characteristics of the study area highlighted concerning public boundary edge treatment.

Figure 5-39 - Manning Hall (123 Lena Ahrens Rd.) Many examples exist across the study area where an additional security gate has been added to the original main building entrance door.

Figure 5-38 - Magister Court (11 Muthaiga Place). Though just beyond the study area, this is an example of security adaptations that try to retain the original streetscape character. Fencing is at the side of the building in line with the front façade and the additional entrance security gate is within the entrance lobby. Barely visable in this image, it also uses electric fencing in the façade, running just beneath the ground floor window cills and over the top of the entrance roof slab.

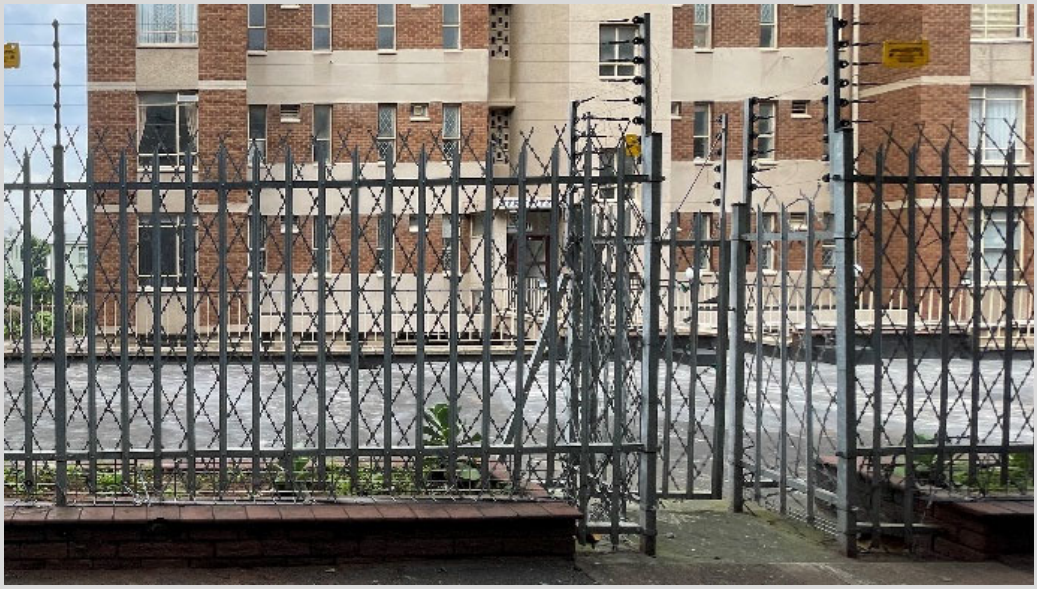


Figure 5-37 - Strelitzia (81 Lena Ahrens Rd.) The original low planter boxes along the boundary now have this rather intimidating boundary fencing setup – Palisade fencing with razor mech panels and electric fencing on top. This reinforces the notion of an unsafe street.

Overall Built Form

The overall grain of the area includes apartment buildings with an average height of four stories from the street edge. Apartment building planning is fairly uniform and based on a corridor approach. The common narrow site encourages rectangular plans. In terms of visual density, the application of measured variation predominates, such as varying planes, materials, edge treatment and massing definition. The primary form is overwhelmingly of the 'solid block' type with variations – there are minor instances of intersecting forms. There are overwhelming instances of discrete balconies being included in the front façade, but significant instances exist of these subsequently being enclosed with glazing. The current trend with the 'drive-up' developments is for excessively large and deep balconies across the entire façade. There are overwhelming instances of some form of definable built-form rhythm to the street-facing façade. Though pure symmetry is notable, the tendency is towards the treatment of aspects as pure forms interacting with each other in some manner.

	Category	Predominant Characteristics	Secondary Characteristics
Overall Built form	Visual Density	Mild Density (significant)	Moderate density (notable)
	Height	Four floors (13m) average	n/a
	Depth	21m depth average	n/a
	Delineation of massing	Clipped on projections to 'solid block' (significant)	Incorporation of a defined plinth. (notable)
	Overall built form rhythms	Prominent projections (significant)	Uniform planes (notable)
	Plan form	Rectangular form (significant)	Rectangular form with 'clip-on' protrusions (significant)
	Symmetry in front elevation	Symmetry (notable)	The asymmetrical arrangement of one plane projecting beyond other (notable)
	Balconies	Semi-recessed treatment (notable)	lincorporation within overall massing (notable)

Table 5-21 - Predominant and secondary characteristics of the study area highlighted concerning Overall Built Form.

Figure 5-41 - Kenleigh (366 Che Guevara Rd.) Delineation of overall building massing is primarily achieved through the expression of 'clipped on' elements, such as the plaster finished balcony elements in this building.

Figure 5-45 - Brierly (55 J.B. Marks Rd.) The image shows only one balcony in its original unenclosed form. A significant number of balconies across the study area have been enclosed subsequent to original construction. As seen here, the lack of uniformity of the glazing further detracts from the quality of the streetscape.

Figure 5-44 - Algwen (72 J.B. Marks Rd.) The elevation demonstrates what this study terms 'major visual density', though this is relative to the study area context. The combination of vertical and horizontal lines, intersecting semi-circular volumes with a rectangular one and panels in varying relief to one another are well considered and composed here. The overall façade treatment is complex without being uncontrolled.

Figure 5-43 – Sheamar (91 Lena Ahrens Rd.) The elevation demonstrates what this study terms 'mild visual density'. The overall form is singular in expression, there is limited variety in fenestration and materials. The execution is simplistic. The historic elements of the garden path and lamppost add some visual relief to be experienced from the street.

Figure 5-42 – Camberly Hall (134 Lena Ahrens Rd.) The balconies are expressed as a series of prominently projecting 'clipped on' masses, adding dynamism to what would otherwise be a rather bland elevation.

Roof Form and Details

Construction economics predominantly influences the significant instances of pitched roofs. In keeping with the modernist trend towards flat roof lines, though, the local response was to utilise pitched roofs behind a parapet. The other prevalent characteristic is for apartment buildings to utilise a double-pitched 'domestic' roof. 'Fibre cement' (asbestos) sheeting was prominently used, particularly since asbestos mining became prominent in South Africa in the 1930s. Mining thereof was outlawed in 2002 and manufacturing therefrom in 2008. It has been replaced by cellulose fibre cement alternatives. Gutter treatment is linked to roof form and construction. The 'L' and 'U' shaped buildings allow for RWDP to be easily located out of sight. There are also notable instances where care has been taken to locate RWDP to the side, though there are gutters along the front.

	Category	Predominant Characteristics	Secondary Characteristics
Roof form and details	Parapet	Parapet treatment on some sides (notable)	Parapet treatment on all sides or use of projecting eyebrow (minor)
	Roof edge treatment	Inclusion of gutter and facia (significant)	Simple projection or simple termination (minor)
	Roof construction	Visible double-pitched with hipped ends (notable)	Flat roofs (notable)
	Roof materials	Sheeting (significant)	Clay tiles (notable)
	Gutter treatment	Gutters exposed along the edges (notable)	No visible gutters on the front façade (notable)
	Rainwater downpipe treatment	RWDPs only visible on the side façade (significant)	RWDPs not being evident at all (notable)

Table 5-22 - Predominant and secondary characteristics of the study area highlighted concerning roof form and details

Figure 5-47 - Chelmore (527 Che Guevara Rd.) An example of the use of a flat roof in the overall study area. Limited local access to required materials made the construction of flat roofs less viable, particularly due to the increased leaking due to the lack of local expertise of installation.

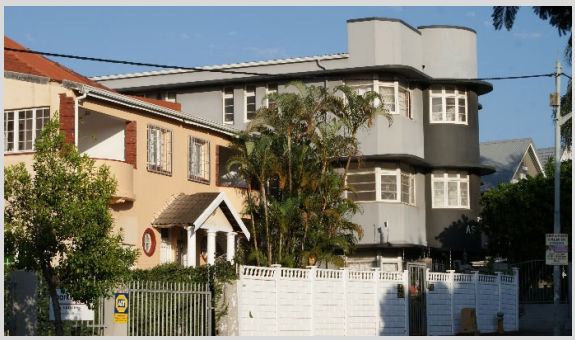


Figure 5-46 – Ashburn (358 Che Guevara Rd.) A common detail with modernist apartment buildings is to have a parapet wall facing the street and a pitched roof behind the parapet. This presents the horizontal line between building and sky synonymous with international modernist ideals while incorporating the practicality of a sheeted inclined roof in the local construction context.

Façade Surface Treatment

There is noticeable use of face brick across the study area where the primary material of façade construction is face brick or where face brick and plaster & paint alternate. The utilization of face bricks was once quite prominent but is now progressively rare. Similarly, the utilization of 'special' face bricks[85], once acceptable for effect, is now virtually non-existent. There is the notable use of a contrasting panel of varying treatments and materials in façades, whether through materials (face brick to plaster) or through finish (smooth plaster to ruled plaster).

	Category	Predominant Characteristics	Secondary Characteristics
Façade surface treatment	Materials	primary material face brick (notable)	face brick and plaster & paint alternate (notable)
	Special material conditions	'multi-coloured' face bricks used (significant)	the utilisation of narrow-face bricks (minor)
	Panel inclusion	smooth plaster panels contrast with the surrounding wall (significant)	face brick panels contrast with the surrounding wall (notable)

Table 5-23 - Predominant and secondary characteristics of the study area highlighted concerning façade surface treatment.

Figure 5-49 - Dronfield (553 Che Guevara Rd.) The use of face bricks of varying hues adds complexity in a subtle way to a façade. The common contemporary approach is to use a face brick of uniform colour and hue, particularly since the face brick manufacturing industry is shrinking and manufacturing processes are increasingly rationalised to produce standard batches.

Figure 5-48 - Markhall (45 Lena Ahrens Rd.) The use of varying panels of face brick and plaster adds variety to the façade articulation. This can be used to superficially create panels in a uniform volume (such as the plaster strip to the left) or to define volumes (such as the balcony elements, finished in plaster, on the right).

[85] This refers to bricks such as solid, solid bullnose, narrow, and cant.

Figure 5-52 – Montreal (100 J.B. Marks Rd.) Deep ruled plaster panels are used to contrast with the plain plaster walls. This example uses fairly pronounced rakes, but other examples in the study area are less pronounced.

Figure 5-51 - Denhugh (65 Lena Ahrens Rd.) This is an example of one of the 10% of buildings in the detail survey where all facades are of face brick.

Figure 5-50 – Glenarvon (324 Che Guevara Rd.) The use of 'narrow bricks' (i.e. bricks of reduced height) is found in selected buildings in the overall study area. Here the vertical pointing is raked, but in other examples (such as Rosslare) vertical pointing is flush, reminiscent of Frank Lloyd Wright's Robie House.

Elements of Articulation

There are overwhelming instances of the name of the building appearing on the building, usually above the entrance. This is predominantly in the form of projecting lettering attached to a wall. Increasingly, this is being omitted in newer builds or utilizing laser-cut aluminium sheets on the boundary wall. Additional decorative elements such as slightly projecting plaster squares and plaster bands are used, but in a restrained way and not often.

	Category	Predominant Characteristics	Secondary Characteristics
Elements of articulation	Building Signage	projecting lettering on the wall (predominant)	painted lettering onto a painted plaster wall (notable)
	Decorative elements	plaster squares projecting from the wall (minor)	circular projections, contrasting face brick surrounds, plaster bands as 'copings' and decorative haunches to balcony slabs (minor)

Table 5-24 - Predominant and secondary characteristics of the study area highlighted concerning public boundary edge treatment.

Figure 5-53 - Sheamar (91 Lena Ahrens Rd.) Here shaped metal flat bar has been used to form the building signage. The building number is an 'off the shelf' standard hardware store item undoubtedly added some time later.

Figure 5-56 - Rosslare (59 Ferguson Rd.) The use of pre-formed lettering affixed to a wall or on top of a slab projection above the entrance is a very common element in mid-century modern apartment buildings. The lettering type (font) is also fairly consistent, with a very limited number of exceptions. The building number is an 'off the shelf' standard hardware store item undoubtedly added some time later.

Figure 5-54 - Trade Winds (35 Lena Ahrens Rd.) This is one of the most elaborate and considered building signage in the study area. Cut out letters are affixed to a plane contained in a custom steel frame. This unfortunately is now fairly removed from the public sphere are additional due to the erecting of a boundary fence and gate.

Figure 5-55 - Minley Court (138 Lena Ahrens Rd.) The use of pre-formed lettering affixed to a wall or on top of a slab projection above the entrance is a very common element in mid-century modern apartment buildings. The lettering type (font) is also fairly consistent, with a very limited number of exceptions.

Elements and Details – entrances

The established characteristic of clear legibility of circulation and entrance of a building from the street finds expression within the façade. It is often handled in a subtle, yet clear manner. A fairly simple vertical approach to the entrance predominates. Entrance definition in massing is achieved mainly through its position in overall relation to the primary façade plain (i.e. recessed / central, etc.). The roofing to the entrance is more subtle with the articulation of a plain line or mere simple recess. There is an overwhelming trend of transparency in the entrance lobby achieved through a combination of timber-framed glazed doors, sidelights and fanlights.

This established characteristic is now being compromised by an approach of having a diffuse entrance treatment. Developments now have people proceed directly to their individual entrance and not though a lobby or in the case of the 'drive up' trend, they park directly outside their door.

Figure 5-57 - Careen (85 Ferguson Rd.). The overall massing and symmetrical arrangement of the building clearly defines the entrance and also eludes to the vertical circulation within the building.

	Category	Predominant Characteristics	Secondary Characteristics
Elements and Details - entrances	Nature of entrances	Clearly articulated in street elevation (overwhelming)	Indicative in treatment, but not directly visible (minor)
	Entrance relation to façade	1m and more recesses into the elevation (significant)	Articulated as independent massing (minor)
	Door placement	Centre to the overall composition (significant)	Off-centre in non-central composition element (notable)
	Entrance door composition	Double door (predominant)	Single door (notable)
	Entrance door glazing	Inclusion of glazing, incl. sidelights and fanlights (overwhelming)	Glazed doors with timber frames (overwhelming)
	Entrance steps	Minimal threshold step (Significant)	More than 5 simple steps (notable)
	Entrance Parapet Elaboration	No elaboration along parapet / roof line (overwhelming)	Extension of wall plane only (minor)
	Entrance Roofing	Projection of slab beyond wall plane (notable)	Recessed from the main façade plain (notable)

Table 5-25 - Predominant and secondary characteristics of the study area highlighted concerning elements and details of entrances.

Figure 5-58 – Montreal (100 J.B. Marks Rd.) The entrance here is placed off centre in a centrally defined volume, though entry is made unmistakeable by the prominent stairs leading from the pavement in the only gap between garages that line the entire property boundary.

Figure 5-59 - Lynton (28 Lena Ahrens Rd.) Though somewhat obscured by the boundary treatment (which may be subsequent to the original construction), the entrance definition is enhanced by the use of an extension to the parapet wall above it in addition to the overall volume containing it sitting slightly proud to its surrounds.

Figure 5-60 - Algwen (72 J.B. Marks Rd.). The entrance remains virtually as original and is quite elegant in its use of timber framed glazing as infill to the overall space. The use of timber framed glazed doors is extensive across the study area.

Figure 5-61 - Markhall (45 Lena Ahrens Rd.). The primary entrance is clearly articulated in the façade through a roof projection over it and the use of a clearly contrasting void. The security gate does somewhat reduce the effect of the void, but this is one of the few remaining properties that have not erected a physical barrier along the property boundary. The compromise is more acceptable in light of the alternative.

Elements and Details – windows

Casement windows are overwhelmingly prominent and corner windows are notable in many mid-century modernist buildings. The original windows remaining intact are prominent, though there is a disconcerting and overwhelming trend to replace damaged frames with alternative types. Poor maintenance leads to the replacement of original timber, and to a lesser degree, original steel frames with aluminium. Horizontal sliding windows and sliding balcony doors are utilised when enclosing balconies and are not part of the original fabric. There is minimal and restrained use of 'alternative' materials such as stained glass and glass bricks. The overwhelming cill treatment is that of a 25mm thick tile of uniform colour. This tile is no longer commercially available, but the language of the approach should be emulated. The cill is often incorporated into more elaborate detailing where the composition of the window plane and the edge definition is extended. Often there is a mix of different lintol situations in a façade, especially if there are panels of different materials. The expressed lintol is often incorporated into surrounds, and extended along façades, including around corners.

	Category	Predominant Characteristics	Secondary Characteristics
Elements and Details - windows	Condition of windows	All windows original (notable)	Some windows original (notable)
	Types of windows (excl. Casement)	Corner windows (notable)	Louvre windows (minor)
	Window frame materials	Steel (significant)	Aluminium (notable)
	Special Windows	Horizontal sliding windows (minor)	Sliding balcony door (minor)
	Special materials	Stained glass (minor)	Glass bricks (minor)
	Cill details	Quarry tile on edge (predominant)	Plain rake with projection (notable)
	Cill composition	Multiple cill arrangements (notable)	Cill forming part of the overall surround / along multiple windows (notable)
	Lintol Composition	Incorporation into the wall with no expression (predominant)	Lintol being expressed as a projecting plaster band/use of face brick (notable)
	Lintol elaboration	Multiple lintol arrangements (predominant)	Lintol extending along multiple windows / around corners (notable)

Table 5-26 - Predominant and secondary characteristics of the study area highlighted concerning elements and details of windows.

Figure 5-62 - Glenalvon (135 Lena Ahrens Road). Though rather prominent in the image is the rusting barbed wire, the image also highlights the restrained use of glass bricks in a face brick defined volume. It is practical in that it lets light into the stairwell where windows would otherwise be difficult to access and clean. The varied, yet restrained use of materials with natural appearance includes the slasto covering to the path and the sandstone cladding to the right of the entrance door.

Figure 5-63 - Brierly (55 J.B. Marks Rd.). In this image only one of the balconies remain as original and unenclosed. The use of sliding windows is almost universally only found in these subsequent balcony enclosures. There is no uniformity of detailing in the enclosing, which negatively affects the perception of the visual quality

Figure 5-64 - Mount Verna (104 J.B. Marks Rd). The window treatment here contains multiple elements. The cill forms part of an overall surround to the windows and on the corner windows the lintol is expressed as an eyebrow. There are also surrounds that group windows together in defined planes, with raked plaster detailing inbetween, to add another element of variety. The original window frames have been replaced with aluminium ones.

Figure 5-65 - Retford Hall (151 Lena Ahrens Road). A composition in varying face brick panels . The individual original windows with steel frames show a variety of burglar bars, which detracts from the consistency of the visuals. The windows are in a slightly recessed panel with a continuous quarry tile cill that runs along the entire panel, including the brickwork portion between windows. The applied decorations standing proud of the façade is fairly rare in the study area.

Figure 5-66 - Penmare (43 J.B. Marks Rd.) The original timber window frame (in poor condition) with coloured fanlight glazing is still contained on the 1st floor, while the corresponding ground floor and 2nd floor windows have been replaced. Unfortunately the 2nd floor windows have not attempted to retain the frame colour or the casement proportions, a significant problem when replacing frames that affects the overall character.

5.6 Chapter Conclusions

In creating an overall synopsis of the character of the area, the individual areas of discussion have been consolidated into broader themes. This approach assists in reinforcing that many of these aspects are interlinked into an overall approach in which the utilisation of one element adds to an overall situation that is 'greater than the sum of its parts'. This aligns with the overall sections of the elements of the study area, namely: General and site-specific relationships, servicing, additional servicing elements, landscaping, built forms and composition, surface treatment, and elements and detailing. This will then be followed by a discussion of the three major aspects that are compromising the established streetscape character.

General and Site-Specific Relationships

At the macro level, the area is dominated by a fine grain of buildings. Apartment buildings are overwhelmingly of a limited footprint and height, responding to the original subdivisions of the single dwelling houses that covered most of the area by the turn of the 20th century. These are often dispersed in-between single-dwelling houses or other smaller-scale residential types of buildings. Where there are taller buildings (such as Trade Winds, and Inverness), these are on larger properties with much wider side spaces. The western portion of the study area contains the slope from the former marshlands up to the ridge, so many of the buildings in the overall study area have to contend with a slope on their site. Quite often the slope on a site is used innovatively to incorporate parking beneath the building in the form of a semi-basement approach and to then maximise the allowance of habitable floors by attaching the 'ground floor' to the highest point of the site, allowing for four floors of units to be built before a lift is required to be included. There is also historically a limited use of retaining walls, and when used, these are usually of restrained height and sometimes used in a stepped configuration. This is in contrast to current practice in modern developments of excessive retaining walls being used in conjunction with large 'cut' platforms so that building footprints are located on one uniform level.

Servicing

The approach to site servicing from a civil infrastructure point of view is rather ad-hoc from the local authority's side. Prior service installations have had a limited visual impact, with much of the servicing infrastructure and metering for electricity and water provision being allowed to be located within a property. This has subsequently changed with ease of access now the predominant consideration by the local authority. Recent developments now have visually intrusive mini substations (or in the case of the new major medical facility an unsightly full-sized substation) located on the property boundary. The manner of refuse collection is universally treated – there is a collection space located within the property, usually towards the rear, where refuse is kept in black refuse bags, black refuse bins or green wheely bins. Once a week all stored refuse is brought to the pavement and left for collection by the local authority. Aside from some time on the morning of collection day, anything related to refuse collection or storing is not seen at all. This does not take into account the increasingly problematic issue of general littering on the pavement, with some hotspots in the study area being quite problematic.

Additional Security Elements

Beyond boundary treatment, additional security elements feature prominently. Some form of an additional layer of security is prominent in the entry to buildings and many windows. Buildings will often now have electronic access incorporated at their main entrances (vehicle and pedestrian). If there were original entrance doors, electronic access is often added to the door itself, though additional gates to entrances may be added. It is a requirement by almost all insurance companies that all ground-floor and passage-facing windows have physical bars attached for theft cover to be in place. There are some limited examples of less visually intrusive applications being used (such as transparent PVA strips), but these are very limited.

Landscaping

Clearly demonstrated is the historic importance placed on the consideration of space between boundary and building façade. This space is almost universally treated with mainly soft landscaping and a pedestrian path leading from the boundary to the main entrance of the apartment building. The original articulation was to

define the boundary in a mainly gestural way rather than to create a physical barrier. This allowed for the unencumbered visual incorporation of the semi-public space into the public realm of the pavement, thus enhancing the experience of the pedestrian. This, unfortunately, has become one of the most compromised elements in the contemporary streetscape and is referred to shortly.

Built Forms and Composition

The buildings in the study area demonstrate the significant use of primary forms with elaboration on the form, usually by utilising other primary forms. This is done in a combination of the plan (such as rectangle, L-shape, U- shape etc. form with clip-on elements), elevation (such as articulation of clip-on element, variation of planes in elevation, etc.), or detailing (such as treatment of windows to be included in a rectangular form). There is a significant number of apartment buildings that incorporate attributes primarily associated with single dwelling units (e.g. the double-pitched roof with enclosed prominent eaves projection that predominates). The incorporation of a single pedestrian entrance to a building predominates in the study area and is overwhelmingly clearly articulated in the form of the building. There are, however, also innovative practices that are evident in balancing the local practicalities of a pitched roof with the preferred language of a horizontal line that separates the building from the sky with the use of parapets in numerous configurations.

Surface Treatment

There is a significant characteristic in the study area of the use of materials that are in their raw state or exploit their natural properties. The use of face bricks, whether as a primary building element or as a secondary or detaining element, is considerable. It is the most prominent example of 'natural finish' surfaces. Other examples are the use of sandstone (in some retaining walls, historic kerbs and as cladding), quarry tiles (window cills, garden paths, flooring to entrances), textured or ruled plaster (panels in façade), slate (garden paths), clay roof tiles, and raw mill finished 'fibre cement' sheeting. There is extremely limited use of other materials in a more 'processed' finish, such as glazed or polished tiles, and when used, these are in small panels on the façade.

Elements of Details

The use of variations in surface planes is prominent, whether through projections of planes of varying depth in relation to another, or through the effect of the use of a variation of materials. These variations are embedded into the overall process and not as 'additions', therefore their inclusion is not necessarily costly to implement.

The composition of the entrance in buildings is prominent, this takes place in numerous ways, such as the overall form clearly articulating the entrance massing, the entrance having a prominent roof form or contained within a uniquely used recess in a façade, or just prominently visible doors in the façade. The doors themselves are also important. The prominent doors that feature are timber double doors with glazing inserts that often form part of a larger frame that contains a combination of sidelights and/or fanlights. Separate clear pedestrian pathways from the boundary up to the entrance are also prominent.

The composure of window placement is something that historically has been considered in the overall façade. This includes not only the window frame itself, but the treatment of the plane of the window within the overall façade and the possible elaboration of the lintol and the cill to contribute to the elements of composure. Windows have been details to appear in groups, to be part of projecting or defined openings, or an element in the overall vertical or horizontal pattern detailed in the façade. It has also been used to demonstrate the structural approach to buildings, such as 'dissolving the corner' with corner windows or implementing a frame and infill approach with windows clearly articulating a structural grid with aspects such as windows spanning between exposed concrete columns or abutting the underside of floor slabs.

Compromises

There are three main areas of concern identified in the study that compromise the established character of the streetscape. These are the visual impact of the securitisation of individual sites, the lack of consideration for variation of form, composition and finish of new developments and redevelopments and the trend towards massification of overall development approaches.

The most widespread compromise of the streetscape is the erection of solid boundary walls. This immediately created a physical and visual barrier that truncates the semi-public realm of the garden between the building and the pavement. This is in response to a very real security concern, but there are other instances of more visually permeable barriers being erected (such as palisade or 'ClearVu' fencing), or of alternative strategies (such as erecting the less visually intrusive electric fencing onto buildings directly). The response of a solid barrier is somewhat counter-productive as once an intruder has scaled the barrier, surveillance from the street is compromised.

The next serious compromise is that of a lack of consideration for variation of form, composition and finish of new developments and redevelopments. The majority of new developments that involve the demolishment of existing structures and the entire redevelopment of sites are related to the provision of student housing or other forms of accommodation. These are the most utilitarian of structures that demonstrate little to no consideration for some of the most basic design tenets and are designed to be the most cost-effective way to meet building standards and maximise profits.

In regards to commercial developments, the majority are in the form of change in use from single residential houses, therefore there are varying levels of alterations to existing structures. In some instances, this has resulted in the restoration of a previously neglected façade to its former glory, in other instances this has resulted in compromising the overall integrity of the original building with purely utilitarian alterations.

The third aspect of compromise is the significant redevelopment of sites to accommodate apartment buildings with large drive-up parking structures targeting the more affluent. These very often are articulated as the multi-level parking structure and ramp facing the street edge, and by the very nature of a parkade, have a purely utilitarian relationship with the street edge. The remainder of the building does not demonstrate much more overall finesse, side façades are treated in a similarly utilitarian manner and the façade facing the prominent view is usually defined by full-length deep balconies to allow for 'outdoor living' of the occupants that sometimes include fairly crude form variations, such as the edge of each unit's balcony being a curve. The 'elaboration' is often found in the balustrade materials, usually of glass to maximise the inhabitant's unobstructed view. The overall approach leads to the general massification of the urban skyline – vehicle circulation that could easily be catered for at ground or potentially even semi- or full basement level (some of these innovative approaches have been implemented in the study area) is now added as a significant volume to the side of an already generously sized building. This is a clear indication of the modern trend of the designers of other types of buildings considering the individual inhabitants, their comfort and their level of amenity with the interface with the public realm being largely disregarded. Of course, the argument is that this is what their clients want, and so the local authority, as the supposed custodians of 'the greater good' should not be permitted such developments.

Summary

The character of the streetscape of the areas can be defined as a street that is framed by buildings that are not excessive in their visual density. Their composition incorporates the aspect of variety through restrained finesse and a tendency towards the incorporation of plain and natural finishes. This is practically achieved through the variation in a surface plane relative to another and elements within the façade having alternative finishes of these natural finishes, such as face brick or ruled plaster panels. The buildings and the landscaping that separates them from the road are also important components of the established character. Though generally restrained for apartment buildings, well-maintained lawns with beds of some flowers and shrubs typify the semi-private edge, while pavements themselves often have trees at regular intervals lining this public edge. All these components combine to create what is a unique and definable character for the streetscape.[86]

[86] Additional images related to the study area can be viewed on the Authors blog. https://louisstephenduplessis.wordpress.com

CHAPTER 6 - CONCLUSIONS AND RECOMMENDATIONS

This chapter concludes the research with three specific aspects of reflection. These are as follows:

1. An overview of the study. This looks at Durban in the broader and specific context, the importance of streetscape, the issue of character versus style, determining character and streetscape, and the notion of objectivity in placemaking.
2. A specific review of findings. This generally summarises the findings and makes comments related to them. This is primarily in response to the outcomes of the primary data collection utilising walking and detailed street surveys.
3. The suggestion further studies. There are three main areas of consideration. The first is the built environment response to crime, particularly concerning a more appropriate response to target hardening. The second is that of heritage-related influences on the fluid notion of authentic experiences. A particular new tool to assist is that of Neuro-physiological mapping techniques. The third is the aspect of determining and advocating for engaged and meaningful public participation in the shaping of the urban realm as the current approach is woefully inadequate.

The chapter (and indeed the thesis) then draws to a close with concluding remarks.

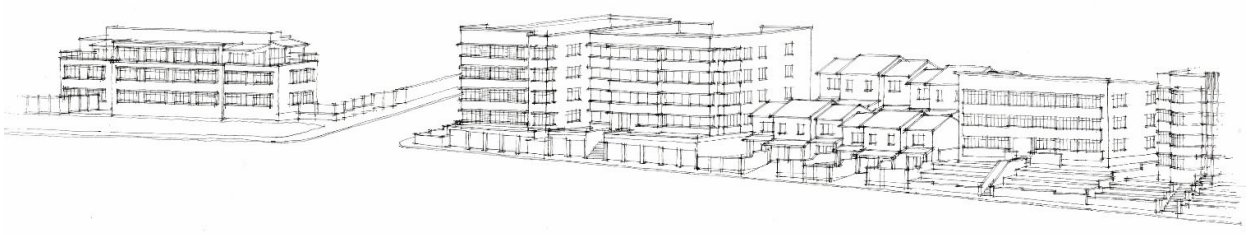


Figure 6-1 - Streetscape image capturing the architectural elements for a portion of J.B. Marks Road.

6.1 Overall Review of the Study

This section has five specific areas of discussion that incorporate the major aspects of the preceding five chapters. It is not conceived of a summary of each chapter per section, but rather as an overarching discussion of the entire document that is organised by theme, and these themes do encompass content from more than one chapter. The themes used are related to specific contextual issues and broad discussions of streetscape and character as they relate to theory and practical application.

Durban in Context

Durban, like virtually all other emerging market cities, is experiencing a net population growth (currently projected at 1.13% per annum - (eThekwini Municipality, 2017)). In light of the available options to accommodate the increasing approximately 50 000 new inhabitants, the three main approaches as defined in the *Compact City* movement is the *Centralised*, *Decentralised* or *Compromise* approach. The practicality is that the legacy of the apartheid spatial planning approach in the city has led to large dormitory areas far flung from the urban core which are mainly reliant on the privately owned and operated public transport system, and investment in more efficient state-owned public transport is inadequate and has led to minimal practical improvements. Over the last quarter of a century, upwardly mobile citizens have disinvested from the core urban areas and have gone to new greenfield developments, particularly north of the city core (such as uMhlanga) and further outside of the metropolitan area (such as KwaDukuza). The main workable strategy for the city to achieve a more sustainable development of the city is therefore looking at an implementation of a *centralised* approach, which is fundamentally premised on a densification strategy being implemented. The city has therefore released the *eThekwini City Density Strategy - Final Report* in 2013 (Royal HaskoningDHV). This has been liked with the stated desire by the local authority of becoming Africa's most liveable city by 2030. This liveability goal has not practically filtered down into guidelines in the development approval processes in the city, nor have there been adequate indications of how this is measured or if they rely on any specific metric, such as the Mercer *Quality of living city ranking*, as the benchmark.

It is in this context of densification that the study sets out to determine the unique existing urban character expressed in the existing streetscape to identify specific and distinct periods of development, their elements of character relating to the existing streetscape and then determining the typology of the streetscape through an overall synthesis of the historical and contemporary influences on the streetscape. This is mainly motivated by the fact that poor design decisions and controls made by those often removed from the situation impose costs on those that have to live with those decisions (as noted by Dr Richard Simmons, town planner and chief executive of the Commission for Architecture and the Built Environment, (Desyllas, et al., 2006)). By undertaking this work, the desired outcome is for a rigorously prepared practical resource that influences all stakeholders involved in the development of the historical residential areas of the city of Durban. It is also desired to provide a more comprehensive approach to streetscape analysis than is currently available in the practice and academic sphere, where current practices often rely to an overwhelming extent on assumed knowledge of those specifically trained in the specific discipline – this reinforces the idea of a lack of rationalism that is increasingly sought by authorities and is seen in the post-modern worldview as 'merely one opinion out of several valid options' and a lack of plausible response against market forces.

The study area itself is contained within the original borough boundaries of 1864 and the 2012 Urban Core Extension Survey and is further delimited by the 1892 ward boundaries created to administer the rapidly developed *Berea* that was entirely overgrown bush 40 years prior. This has led to a 1,47 square kilometre study area in which 945 buildings have been identified as having an impact on the streetscape. The zoning of the area based on the 2003 Council-approved Land Use intentions allows for considerably higher-density residential redevelopment across the study area. The study area has undergone similar practical periods of densification after the turn of the 20th century total development of the Berea with mainly small single dwelling houses. The predominant periods of this occurred between the early 1930s and the late 1960s. This corresponds with a period of rapid population growth in the city overall and the popularisation of apartment living emanating out of the United States.

Beyond the Town Planning Sub-Scheme that covers the central area of Durban that deals with basic form issues (eThekwini Municipal Land Use Scheme: Central Sub-scheme, 2020), there are no practical architectural guidelines from the local authority to deal with the quality of architectural design. The National Building Regulations and Building Standards Act No. 103 of 1977 (as amended) (South Africa, 1996) provides the most basic of regulations available related to architectural character, appearance and placemaking and Section 7 (1)(b)(ii) transfers this responsibility to local authorities by giving them the power to withhold permission for construction. The issue at stake is that local authorities are relying on plans examiners to make a judgement call based on minimum qualifications below that of an architect and have no internal guidelines to assess the merit of architectural character, appearance and placemaking in individual applications. Where proposals are made affecting a site 60 years and older, this requires provincial heritage council approval. These applications are only assesses on the heritage value of the original building and not on what replaces it unless as part of a heritage significant streetscape, and the threshold for preservation is relatively high.

The lack of capacity in the local authority goes even further with Building Inspectors unable to stem the tide of illegal construction and conversion of land-use. Quite often, individual land owners' only recourse is to sue their neighbours privately for contraventions due to a lack of appropriate consequence management by the local authority.[87] The legal remedies available to the local authority are cumbersome and though the Problem Buildings By-law of 2015 (eThekwini Municipality, 2015) allows for a maximum fine of R500 000 (approx. € 25 000) and/or imprisonment not exceeding three years, there is no indication of anything close to these penalties being imposed. There are even instances where the local authority seems complicit in not following their own policies and procedures and permitting construction that is contrary to what is permitted.

Importance of Streetscape

In the current developmental context, the notion of sustainability is particularly prominent. Concerning the built environment, the United Nations' 17 goals of sustainable development have sustainable cities and communities as goal number 11. Since the 1969 U'Thant Report (followed by the far more influential and prominently known 1987 Brundtland Report) there has been an ever-increasing investigation into the complex nature of the broad field of sustainable cities and built environments. The initial 'triple bottom line' of environment, economy, and society has expanded dramatically to recognise that 'distinctive character' and 'local identity' plays a significant part in creating sustainability in housing. (Dixon & Woodcraft, 2013). The aspect of *Quality of Life* and *Subjective wellbeing* is also important, as who we are is shaped by where we live (De Botton, 2007) (Iovene, et al., 2019) and how well homes are designed influences the daily lives of people, their health, security, and wellbeing. (Golubchikov & Badyina, 2012)

Before the industrial and agricultural revolution, commonality of design for residential purposes was achieved in a context due to the limitations of climate, technology and availability of materials. This in turn resulted in strong local architectural identities. (De Botton, 2007). This, however, changes with the need for large amounts of labour to fuel the more urban industrial processes that developed. The impact on the urban environment was overwhelming, with the 'rational' requirements of 'racking and stacking' labourers in accommodation outstripping all other considerations. This rural/urban migration and dominance of the industrial machine and associated considerations of capital (not to be confused with the more specific *capitalism)* continues. It is in this context that there were successive reform movements that looked into the quality of life in urban environments as opposed to the 'bottom line' of capital (money). The major reform movements include the *City Beautiful movement* and the *Garden City movement* of the 1890s and 1900s, the *New Towns movement* immediately proceeding WWII, and the 'neoliberal planning' approach of Seaside, Florida in the 1980s which led to the *New Urbanism* movement.

[87] Guy, D., 2023. Glenwood protest for city to do its job. *Independent online*, 14 January. Available at: https://www.iol.co.za/ios/news/glenwood-protest-for-city-to-do-its-job-34d5c6b6-8654-4b2e-8e70-a03984f650e7.

Character Versus Style

The architectural approach in the development through the intervening years since the establishment of the study area has been one of following the contemporary architectural language of the time of design. This means that there is no unifying style to the study area *per se*, but rather an organic process of arriving at the current character. The complexity that currently exists with this character is twofold, firstly that the majority of the population does not have any cultural connection with the architectural language used and secondly that the significant and increasing instances of housebreakings in the last two decades have led to significant changes in the existing streetscape with the addition of physical barriers, mainly boundary walls with additional toppings such as electric fencing.

Community activist groups that try to retain the existing urban character (such as *Save our Berea*[88]) are often seen as 'elitists' that are not 'reflective' of the broader society, but the fundamental here is that contraventions to approved by-laws are frequently happening and there seems to be little will to enforce consequence management. This is however seen as people being 'nostalgic' towards an architectural language that for many is indelibly linked with the architecture of the Apartheid era, therefore adding to the tensions that exist between different cultural groups in the broader South African context. This results in a circumstance where a dynamic streetscape experience is more appropriate rather than an approach that seems to, or practically does, reinforce a static preservation. The *principles* that contribute to the study area's unique character should therefore be identified and leveraged in new development rather that the *duplication of historical details and approaches.* This is a viable approach that has been followed in numerous global cities, such as Toronto (City of Toronto, 2018) and Auckland (Auckland Council, 2020).

Determining Character and Streetscape

The vast majority of literature focusses on streetscape as the physical environment contained within the road reserve – the road, pavement, kerb, vegetation, street furniture and the like in the public domain. There is substantially less recognition that the edifice that lines the street is an important component thereof. This may have to do with the practical realities of ownership – the road reserve and its infrastructure is owned by the local authority; the building façade is usually privately owned. However, when focussing on one type of ownership alone, this complexity of relationship is removed. There are also quite definable elements that contribute towards the civil infrastructure and are therefore more rationally determinable (e.g. trees needing to be provided at a knowable interval for a particular class of street). This is far more complex in the domain of architectural detailing where the predominance of the analysis was found to be premised on the assumed intrinsic knowledge of those well-versed in the discipline. This has been highlighted as an aspect by De Botton (2007) in which architects continue to lose influence in important urban development decisions as the approach seems to be to 'close ranks' on our professional reasoning, which further leads to 'academic mystification'. The additional contextual complication is that there is still a majority of a very diverse population (South Africa has 11 official languages demonstrating this diversity) that is still seeking an appropriate contemporary language to identify with. The study, therefore, determined that an approach of qualitative analysis that is supported by veracity testing through metrics would be followed. This allows for greater credibility to be added to the findings by those outside the discipline, especially those in key decision-making areas usually dominated by engineers or the 'rationalist' mindset.

It is with this background that a multi-disciplinary research approach from a local and global perspective was undertaken. A broad spectrum of sources that included Town Planning regulations, Urban Infrastructure guidelines, technical guides, case studies and academic papers were reviewed to determine distinctive categories that should include a comprehensive analysis of character and streetscape. These fell into four distinctive categories, namely *Context Related Components, Heritage Related Components, Specific Building Components,* and *Best Practice Recommendations.* This then informed the components to be used in the conducting of the walking survey and the detailed survey was undertaken that is the underpinning of the primary data of the study.

[88] https://www.facebook.com/saveourberea/

The walking survey was conducted over a study area of 1,4km^2. 945 individual buildings were analysed over 6 specifically derived categories. The processing of this data allowed for clustering analysis of noteworthy examples that identified eight potential nodes for detailed study, which were then subjected to a high-level content analysis in which their generic positive and negative attributes were assessed. Three nodes, comprising 82 buildings, were identified for further study. The elements for identification were further derived from further analysis of the four categories as listed in the above paragraph, resulting in over 11 000 data points being captured for the 82 buildings surveyed in the three nodes. This has enabled the determination of primary and secondary characteristics across the study area for 60 criteria across 12 categories. These Primary and Secondary characteristics will be included later in this chapter.

In the current development context, it is noted that planning must be a positive force for achieving a balance between innovative, imaginative change and the positive qualities of the existing environment shaped by historical forces. (Kropf, 2001, p. iii). It is not merely appropriate to value historical traditions purely because they are old and established, nor do contemporary design approaches have value purely because they are new and fashionable. All design decisions, whether premised on old or new approaches, should have a purpose that "…fit(s) into the web of people's current activities and interests." (Kropf, 2001, p. 5)

Prominent literature, such as Kevin Lynch's book *The Image of the City* (1960) usually focusses on high-level 'legibility' that focusses on *structure* and *legibility* within the urban realm of the city and stops short of addressing the contribution of the individual building lining the street. It also tends to focus on a homogeneous circumstance, whether through period or population makeup, which is considerably different in the study area of this research. The various individual meanings that can be attributed by varied groups of individuals make it difficult to gain consistency in aspects of streetscape and character if individual perceptions related to meaning are sought. Jivén & Larkham (2003, p. 70).

There is also a prominent architectural theory related to the *sense of place*, and this has been an ever-evolving aspect, most prominently post-WWII. From the 18th Century until the turn of the 20th century, the notion of *genius loci* was primarily applied to an exclusively rural and garden landscape discussion. This has changed, particularly post-WWII, and has become applied to any landscape and any place. Significant 20th Century changes incorporate the work of Cullen, Conzen, Jackle, Walter Jackson, and Tucker. The two main areas of discussion have been distilled to be views on perception (with an emphasis on either collective or individual perceptions) and temporal-related experiences (with an emphasis on the immediate experience versus long-term familiarity and those that would include or exclude the historical paradigm).

One of the most prominent has been Christian Norberg-Schulz, whose work between the 1960s and 1980s moved from a *structuralist* to a *phenomenological* approach. He principally set out to investigate the role of perception and the importance of history as a source of meaning. The outcome of the review of his work was that the following aspects should be considered for the determination of aspects contributing to streetscape:

- Morphology, including aspects of scale
- Context and environment, including aspects of topography, views and vegetation
- Typology, including aspects of ornamentation
- Technical structure, including aspects of material and colour and climatic response

The literature reviewed does recognise that the attempt to define quality and character is problematic and often intellectually unsatisfactory (cf. Kropf, 1996, p. 247). However, the complexity is that these 'pragmatic' approaches are what influence the administrative process that leads to the inevitable development of areas. (Jivén & Larkham, 2003, p. 74) The most prominent current case around improper development in the city is the 388 Currie Road saga, and the legal arguments being ventilated in the High Court are not around design quality or streetscape character, but around proper approval processes being followed in the change of the zoning of the building that allowed for greater bulk and height to be constructed.

Aside from the *place* aspect of theoretical discussions, a major theme is that of *authenticity* as it relates to historical landscapes. In the initial informal discussions with interested parties, there was an overwhelming association between determining streetscape character and historical preservation. It is in this context that

Ahmed Ouf's work *Authenticity and the Sense of Place in Urban Design* is of particular relevance. It identifies that urban conservation has changed dramatically since the formation of the 1931 Athens Charter and that more recently an authentic urban identity that is enjoyable has been sought as opposed to a historical urban identity. (Ouf, 2001, pp. 73-74). His work includes the following seven recommendations:

- The focus should be on the creation of enjoyable authentic urban experiences rather than on historic preservation.
- The creation of urban experiences involves physical structures, social practices and community beliefs.
- The physical historical identity of an urban area might stem from its streets, its urban mass and its overall urban character.
- Though authenticity is vital to an honest urban conservation project, false accuracy or unnecessary sensitivity is not desired.
- Authentic urban experiences should be achieved through the adoption of a conservation concept rather than applying a conservation methodology.[89]
- Numerous alternatives can be considered to preserve the historical identity, depending on local conditions, but the honesty of these alternatives should be observed.
- Designers should work on augmenting the essence of the local urban heritage through complementary well-designed physical features without losing the authentic place features, as long as they do not conflict with any of the place's authentic physical features.

Objectivity in Placemaking

Leading on from Ouf's argument about creating 'enjoyable authentic urban experiences', is the discussion about objectivity in placemaking – if it is so related to the unique experience of an individual or group, can there be some form of objectivity? There is a range of sources that speak of the predilection of individuals towards recognisable visual order in their environment. Sussman & Hollander (2018) identify that individuals are pattern-seeking creatures that appreciate detail and decoration in building elevations and avoid façades without them. De Botton (2007, pp. 175-194) identifies the aspects of repetitive patterns and rhythms adding to the qualities of beauty in the urban realm. Gunce, Erturk, Z and Erturk, S likewise speak of *Ordering Principles* related to "Shape Grammar" in their work on visual interpretation related to architectural form. Horáček & Salingaros (2020) speak of the prominence of morphology and syntax in creating the interdependent aspects of beauty and harmony. Bradley (2014) also contends that humans naturally seek order through pattern and elaboration.

The aspect of pattern recognition and integrating into a consistent pattern along the street is also practically highlighted in design checklists such as the *Auckland Design Manual - Apartment building Design* (Auckland Council, 2020). Practical case studies, such as *Of Streets and Squares* (Iovene, et al., 2019) also highlight that people seek places that have 'active façades' that 'live' and have variety in a discernible pattern.

As stated by Andrés Duany in (Salden, n.d.), the authentic pattern 'making' needs to be noted as something that is somewhat organic in its process and is contextually related. The a-contextual reproduction of patterns is contrary to an authentic experience, hence the need for contextualisation to occur that is site-specific. There are numerous attempts to create places from scratch with specific design language intentions, such as Brasília in Brazil and Poundbury in the UK. Brasília is criticized for its strict compartmentalisation of life through the perpetuation of the original rigid zoning and lack of human-scaled response that in turn leads to barren streets. Poundbury is seen as a qualified success in capturing the spirit of country life in the eighteenth century, but the disconnect from the psychological and practical demands of its contemporary society lead to a sense of a place of contradiction. De Botton uses the somewhat more pointed example of Huis Ten Bosch, Nagasaki, Japan. This Dutch-themed amusement park seeks to duplicate the environment of a traditional

[89] "A methodology is the practical process followed for conservation, while a concept in urban conservation is the bonding idea behind the choice of the conserved geographical location, the best conservation methodology, the rehabilitated activities and the management style for the conserved site." (Ouf, 2001, p. 74)

Dutch urban area down to the smallest of details. Though the details are technically accurate, the context is not the same and so the human mind is in a state of disquiet which Ouf speaks of as an 'illusion'. (2001, p. 74)

The current reality is that every work of architecture in the urban environment, every project of civil engineering and urban planning, influences the overall environment. The unfortunate reality is that in the capitalist-driven development framework of contemporary society, much of the day-to-day changes bring harm rather than good. The assumption is that good design doesn't add enough value to justify any additional costs it might bring with it. (Desyllas, et al., 2006, p. 10) The consequences of poor design are not borne by the people that created them, they are transferred to the users and inhabitants that often have no say whatsoever in the initial decision. (Desyllas, et al., 2006, pp. 17-18) This is partly due to the lack of demand for beautiful architecture among the broader public (Horáček & Salingaros, 2020) but also a dominance of the discussion and agency by those with overtly capitalist intentions. (Newsweek, 1995)

6.2 Specific Review of Findings

The overall study site is 1,47km^2 within the original borough boundaries of Durban city and forms part of one of the oldest residential neighbourhoods in the city. The study site contained 945 individual buildings that were surveyed at a high level and 82 individual buildings that were further surveyed in detail in three identified nodes. The general condition of the vast majority of these buildings is that they are in good condition physically but under considerable threat in terms of maintaining and enhancing the existing character.

There was an identifiable trend of low-rise densification that occurred between the 1930s and the1960s where numerous three- and four-storey walk-up developments were interspersed throughout the study area. The overall scale of these buildings is fairly constrained in regards to the street frontage and so they fit into the overall grain of the area. It is also noted that the buildings demonstrating a higher quality of streetscape predominantly occur in these early and mid-century developments. This is due to several factors that are sadly not being carried through to future developments.

These early and mid-century developments demonstrate a variety of elements, though they are fairly predictable in execution. This variety is obtained from the considered use of forms, materials and detailing. Forms demonstrate aspects such as being expressed as stepped in relation to one another, overall massing being expressed as a primary volume with clip-on elements and balconies used as either protruding or voids for relief in the overall façade. There is a refined and limited pallet of materials used in most cases, with face brick featuring prominently. Façade composition is generally exclusively of face brick, face brick used in combination with plaster, or plaster walls with elements of face brick included. Predominant detailing is restrained overall, but still considered. The use of plaster bands and surrounds to individual or group elements together is common. Panels of different materials or different surface treatments of the common façade material are also prevalent. These all speak towards an integrated and considered approach rather than that of a subsequently applied technique to enhance variety. Entrances and circulation are clearly articulated from the street and are well incorporated into the overall façade design. They are often also treated as features, but again by subtle means.

The predominant original definition of the public/private boundary was gestural in the form of low garden walls. This defined the property edge but still allowed for a visually unobstructed view of the front garden and front façade of the individual building. There was also a concerted effort to place servicing infrastructure so as not to be visible from the street. Sub-stations and switchgear for electrical supply to apartments would be incorporated within the site. This, unfortunately, is no longer the case, with the immediate and very temporary 'needs' of a servicing department now compelling the location of these services on the property boundary and accessible directly from the public domain.

The findings also demonstrated that overall landscaping is a key component in the streetscape. This is with private and public components of landscaping working in tandem to create the overall 'green' appearance of the city as a whole. Apartment buildings have fairly plain approaches to landscaping as this is almost uniformly a responsibility left to the building custodian. The space is not often used by residents themselves and therefore they have little sense of individual ownership of this space. Though there is little vested interest in this space, because it forms part of the regular employment duties of the custodian, the front garden spaces generally demonstrate better maintenance of private landscaping for apartment buildings than individual residences. In the public realm, landscaping is experiencing ever-decreasing levels of maintenance. The resources made available by the local authority are insufficient and dwindling. The characteristic of trees along pavements is declining as those that need to be felled due to age or disease are generally not replaced, with the stumps just left in place.

The general perception of the limited number of community members and discipline practitioners in the local context defaulted to the perception that the maintaining and enhancing of character is dependent on a conservation approach. This is at odds with the reality on the ground that speaks of an area that constantly responded to the architectural language of the time while simultaneously not responding to the broader South

African society by being exclusively reserved for one population group during Apartheid. The essence of the character of the streetscape is therefore responding in the language of the time to consistent principles that define the area. The added complexity is that in the now more broadly representative cultural makeup of the area, whose culture and identity are to be conserved?

Two systemic issues emerged from the research that lead to the compromise of the historic streetscape character. The first is the insufficient design-related consideration of contemporary development and the second is the response to the contemporary issue of crime. The design-related controls of the local authority focus overwhelmingly on form-based compliance through a town planning scheme. There is little to no capacity available or required to make qualitative assessments on quality-related aspects. In addition, their building inspectorate division seems unable to adequately deal with illegal builds or contraventions to the scheme which generally leads to informal condonation of these illegal activities. There is also an emerging trend of poor design being implemented across the study area to the detriment of the overall community. This is generally related to the provision of student housing based on speculative conversions to existing properties through often ill-conceived and unapproved alterations or wholescale redevelopment of individual residential properties. This is a particularly worrying trend for the broader established community.

The second issue that leads to significant compromise of the historic streetscape character is that of the recent trend towards target hardening in response to high housebreaking statistics. Housebreaking is a real and common occurrence, and residents quite understandably wish to safeguard themselves from it. This practically has led to the proliferation of fencing or solid walls with additional topping. There are numerous types of responses ranging from visually permeable and reasonably elegant to impermeable and unsightly. The tendency is to erect a physical barrier along the entire front boundary and this undermines the previous visually permeable quality of the streetscape.

6.3 Further Studies

In the study, two significant contextual issues were raised that are of considerable interest for further studies, namely issues related to the response to crime and heritage. These both have significant influences on the aspect of quality of life concerning the quality of space. Issues of the response to crime have the most prominent and fundamental impact on the erection of additional barriers to the architectural edifice that lines the street, thus compromising the streetscape quality. This is having an impact both now, with additions to existing properties, and in the future with design considerations in response to crime. The issue of heritage has a longer-term impact in that decision-makers, developers and a large portion of the general population do not see value in the predominant architectural language of the past, which is not without some merit. There are understandable associations between the political ideology of Apartheid and the architectural language associated with the perpetrators of that oppressive regime.

In regards to response to crime, further studies suggest looking at investigations into apartment building resident approaches to security concerns and practical aspects of interventions. This would include the following:

1. Research into real versus perceived aspects of crime deterrents and measures of safety. What is being implemented in the context may not be the most effective or viable alternative, and residents may be reacting inappropriately out of fear rather than practicality.
2. Investigations into the contextual application of crime prevention strategies, particularly with the recent advances in security technology, such as AI image processing of live CCTV footage and remote crime monitoring and using 'smart' sensors. This could also be measured against residents' real-world experiences.

Relating to the second area of issues of Heritage, recent advancements in research methodologies and approaches in the global realm could be applied to the local context to empirically approach the related issues in this field. The established approaches are limited as they rely on subjective methodologies of the past and are largely shaped by practitioners with assumed prior knowledge. Public participants also often have the additional complexity of associated cultural, socio-economic and political factors influencing their decisions. The overwhelming portion of the general population has very limited exposure to good design and other cultural aspects. Many have a skewed perception of what they want that is clouded by similarly constrained social media influences, skewed narratives predominating their exposure to the discourse on development and a lack of agency and exposure in an environment where the development narrative is often controlled.

There are also no examples uncovered of the comprehensive type of study utilised by authors such as Iovene, et al. (2019) related to the local or South African context for that matter. To address these serious shortcomings, further research could include:

1. Application of Neuro-physiological mapping techniques to the study of individual preferences. This is a fairly new field and more advanced globally. This research related to the human neuro-physiological engagement with the man-made world has previously been advocated for by Masden & Salingaros in their 2014 paper *Intellectual [dis]honesty in architecture.* There is one instance in South Africa where this sort of research facility is available[90] but is related to market and consumer research. The practicality of the implementation of this technology is potentially a hindrance, but there is enormous potential to have outcomes that assist the deeply fragmented society regarding urban development.
2. Studies into the applicability of alternative, less technologically driven pedagogies of eliciting more empirical data from the public in regards to streetscape elements and application thereof. This could include established urban 'visual preference surveys' being conducted, but could also examine the

[90] The University of South Africa (UNISA) has recently incorporated these facilities into a consumer focussed research unit. This is aimed at better understanding brand marketing.

integration of visual studies in the graphic media realm (such as web page design) for additional insights.

A third area for further study is the aspect of public participation in the shaping of the urban realm. The current public participation process required by law in practice is the need for public officials to have some form of public engagement for certain high-level decisions (usually around promulgating new policies, laws or macro budgets) where they can hear the views of interested and affected members of the public. The process only requires the public to have an opportunity to be heard by the relevant decision-makers, there is no requirement or obligation for those decision-makers to take any public comment into account in finalising decisions. Further studies in this regard could pertain to the following aspects:

1. What is required to have meaningful public interaction around aspects of the streetscape in the local context?
2. What are the contextual and global examples of successful public engagement in urban development decisions?
3. How have legislative changes been affected elsewhere that have benefitted the local urban environment regarding public participation and streetscape quality?

All three avenues of further studies have the potential to positively affect future development if decision-makers take the findings seriously. This has specific applications related to furthering the tools and data available in pursuing a well-designed urban realm from a specific architectural perspective.

6.4 Concluding Remarks

The character of the urban streetscape has a fundamental impact on the quality of life of the people that use it – the better designed it is, the greater the quality of life for the users of the space. This has been the focus of successive urban movements and realisation in urban development circles ever since the advent of the agricultural and industrial revolutions. It is increasingly under pressure, however, due to the global trend of capitalist-underpinned 'growth-economy' strategy-driven densification programmes across urban areas in an attempt to deal with the real and pressing need for sustainable development. In response to this, there is also a pervasive global homogenisation of solutions and a convenient disengagement with the negative externalities that come from this approach.

The discipline of streetscape design has increasingly recognised that it is not only the civil infrastructure within the road reserve or street that contributes to it, a fundamental component is the architectural edifice that encloses it. There is tension between the local authority and the private land owner as the streetscape is the responsibility of both parties, but the architectural edifice is usually the purview of the private individual or entity that owns the property and their motivations may not align with the 'greater good' of the larger environment and its users. Local Authorities, therefore, have an important role to play in managing and controlling this development, and not merely from a 'rational compliance' point of view. Assessors need to be properly equipped to make value judgements on aspects of quality and aesthetics. It is therefore important to guide how current and future development can maintain or enhance this important resource of the streetscape, particularly since their current minimum qualification requirement does not equip them adequately for this responsibility. Part of the required tools is to determine the existing streetscape to provide tangible guidance, which is what this research seeks to achieve.

The determination process itself is complex and this study recognises the particular complexities of socio-economic situations unique to the local context but also encapsulates the global discussions related to historical streetscape elements. It engages with the significant aspect of subjectivity related to individuals and practitioners, and advocates for a more empirical response, particularly in light of that approach potentially being more difficult to dismiss as mere 'individual opinion'. It also notes the evolving approach to issues of historical engagement with the existing fabric, moving from a historical preservation approach to that of maintaining or enhancing an authentic and responsive experience and also engages in the notion of timeless design principles that can be universally applied that do not reinforce the nature of mimicking historical details.

The outcome of the study is primarily twofold. The first is to establish a credible approach of empirically determining a streetscape in greater detail, as previous approaches are rather skewed towards broad categories and rely on the professional expertise of selected individuals to make value judgements.

The second is to use the approach to ascertain the streetscape of low-rise apartment buildings in the selected study area. By having specific predominant and secondary characteristics determined and validated by data established through a multi-layered survey approach across a combined 18 categories, the streetscape character has been ascertained for the study area. The architectural character for Durban residential streetscapes of the study area and narrowed to low-rise residential buildings is therefore defined as follows.

The portion of the Berea studied is an area that is dominated by a fine grain of buildings that are responding to the original subdivisions. Many sites have to contend with a slope, and this has led to many innovative ways to obscure onsite parking and maximise the height-related opportunities of four-storey construction being used.

Landscaping, both in the public realm along the pavement and in the front portion of the property is almost universally treated with soft landscaping, with planting beds, shrubs, lawns and trees as common features. Though not elaborate, it is welcome and generally well-maintained, especially for apartment buildings.

The buildings themselves are predominantly shaped using primary forms, with elaboration to this form utilising other primary forms (i.e. a cylinder intersecting a rectangle) or clip-on elements. This is done in a combination of plan, elevation and detailing. The incorporation of a single pedestrian entrance to a building predominates

and is overwhelmingly clearly articulated in the form of the building. Though more 'domestic' roof construction methods are used, there are, however, also innovative practices used that balance the local practicalities of a pitched roof with the preferred language of a horizontal line that separates the building from the sky with the use of parapets in numerous configurations. There is significant use of materials that exploit their natural properties, most significantly the use of face brick. Variations in surface planes are prominent, whether through material articulation or projection and are integrated into the overall process and composition. Apartment buildings overwhelmingly have timber doors with glazing (that may form part of a larger glazing panel approach to the entrance lobby). The composure of window placement is also overwhelmingly well considered, not only the window frame itself, but the treatment of the plane of the window within the overall façade (often also turning corners) and the possible elaboration of the lintol and the cill to contribute to the elements of composure.

On the negative side, site servicing has evolved into an ad-hoc approach, which in turn increasingly harms the overall streetscape. Banal infrastructure continues to be required to be constructed on street frontages by the civil infrastructure units in the local authority.

Subsequent security elements are also being added by property owners. These have a predominantly negative impact on the overall streetscape. The previous visually permeable zone between the property boundary and façade is being compromised by hard barriers now being constructed. Additional layers of security applied to entrances (such as gates, in some instances multiple gates)

New developments and redevelopments in the area generally demonstrate a lack of consideration of the variation of form, composition and finish demonstrated as existing characteristics. There is also the development of drive-up residential apartments that often have an entire façade articulated as a parking lot with no consideration for the streetscape for that façade that is gaining prominence.

The built environment has a considerable influence on people's daily lives. We are healthier and happier individuals if we live and move through urban environments that are well considered and are of quality design. In a world of increasing pressure for the creation and continuation of a sustainable urban environment, we must not lose site of the benefit that the buildings that line our streets contribute towards our overall quality of life and wellbeing through their character. It is hoped that this research will positively influence the ever-changing urban environment, especially that of the Berea of Durban.

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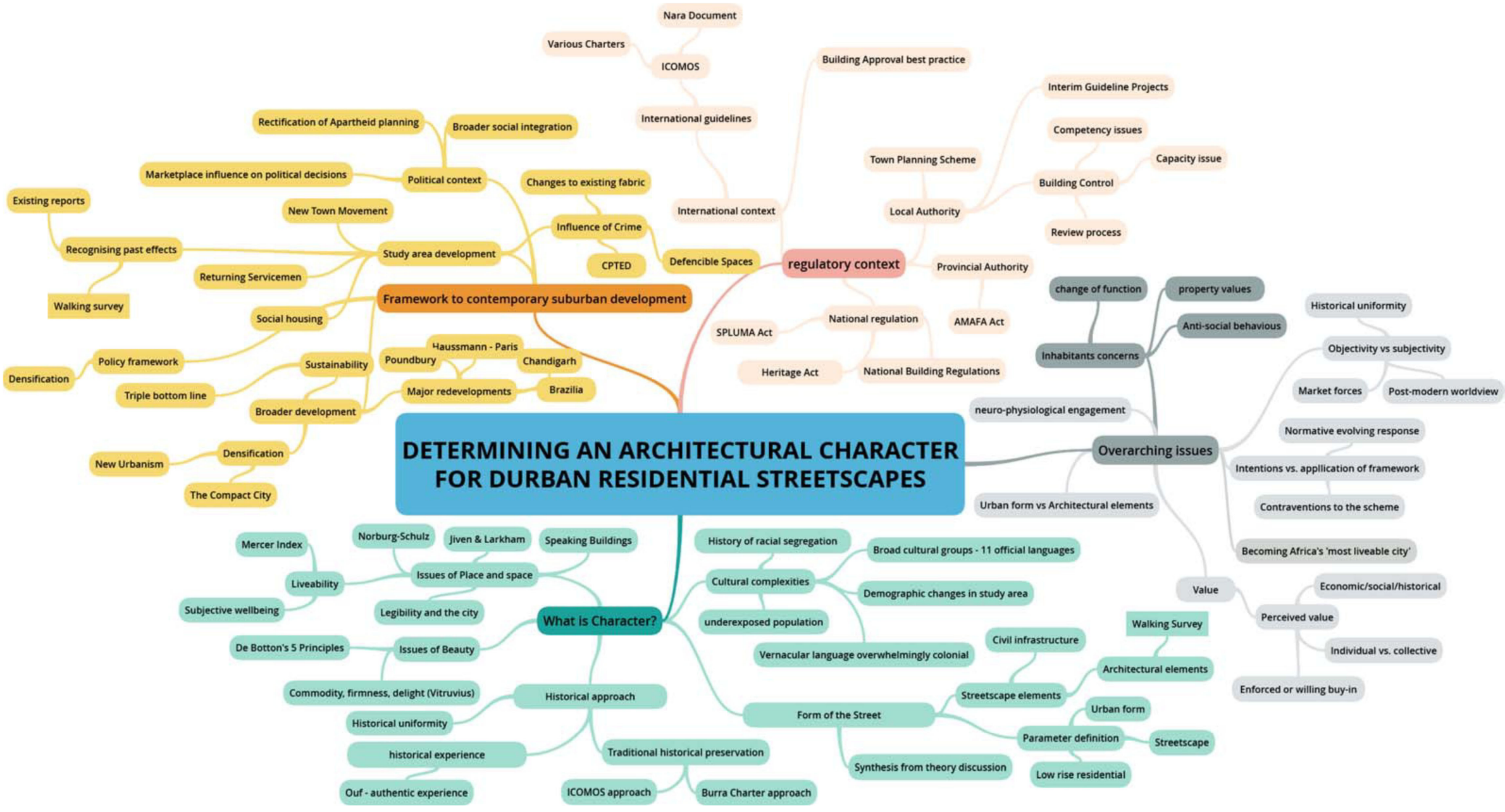
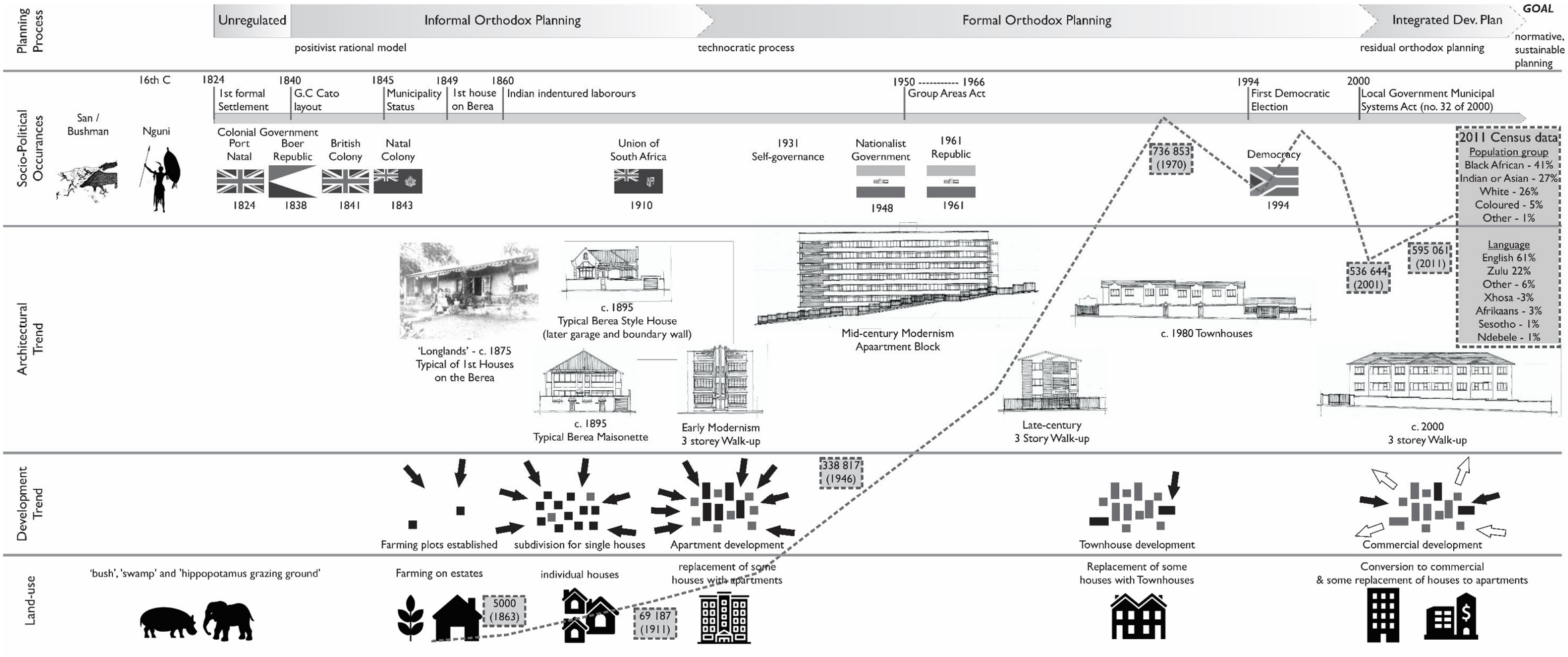
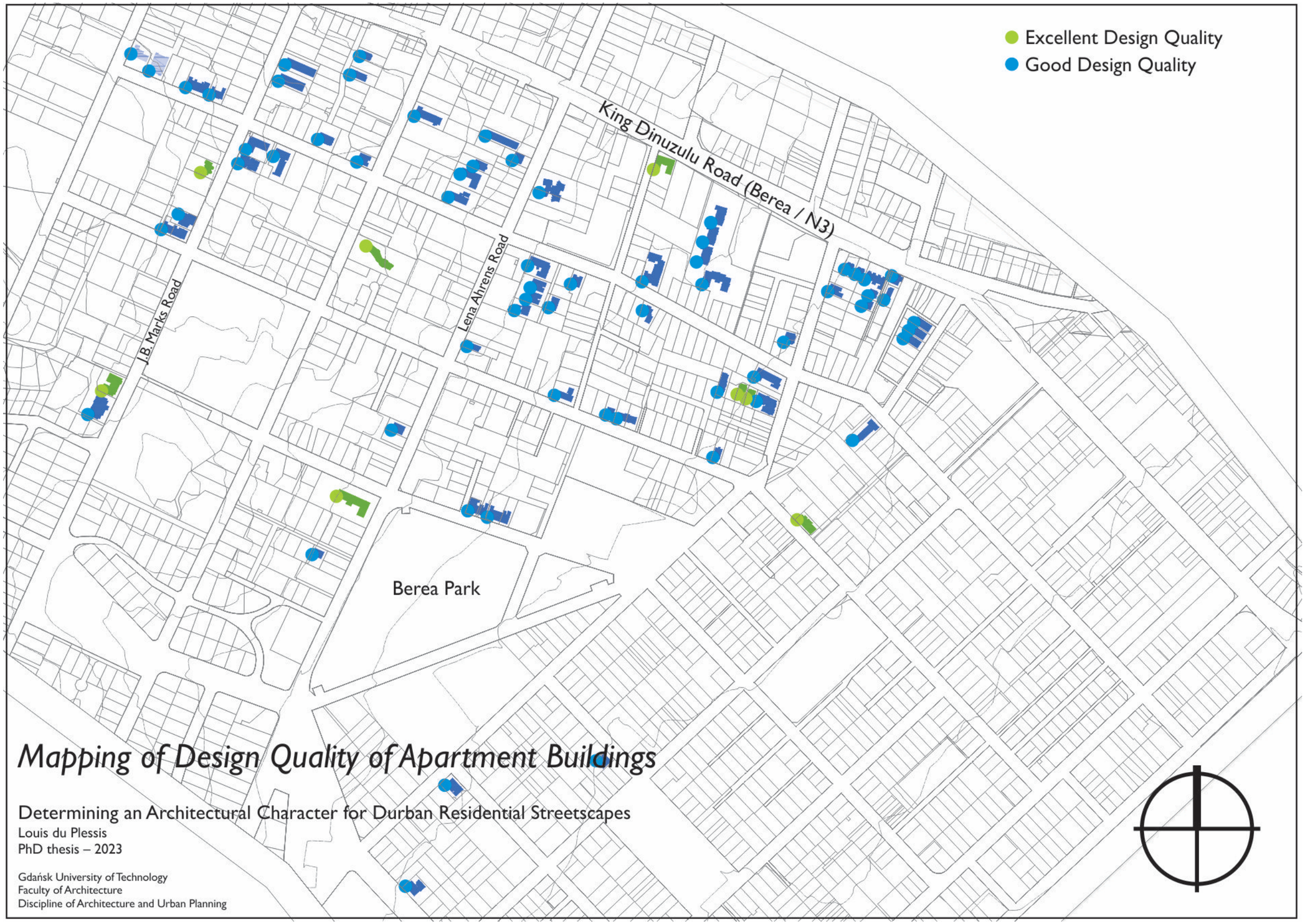


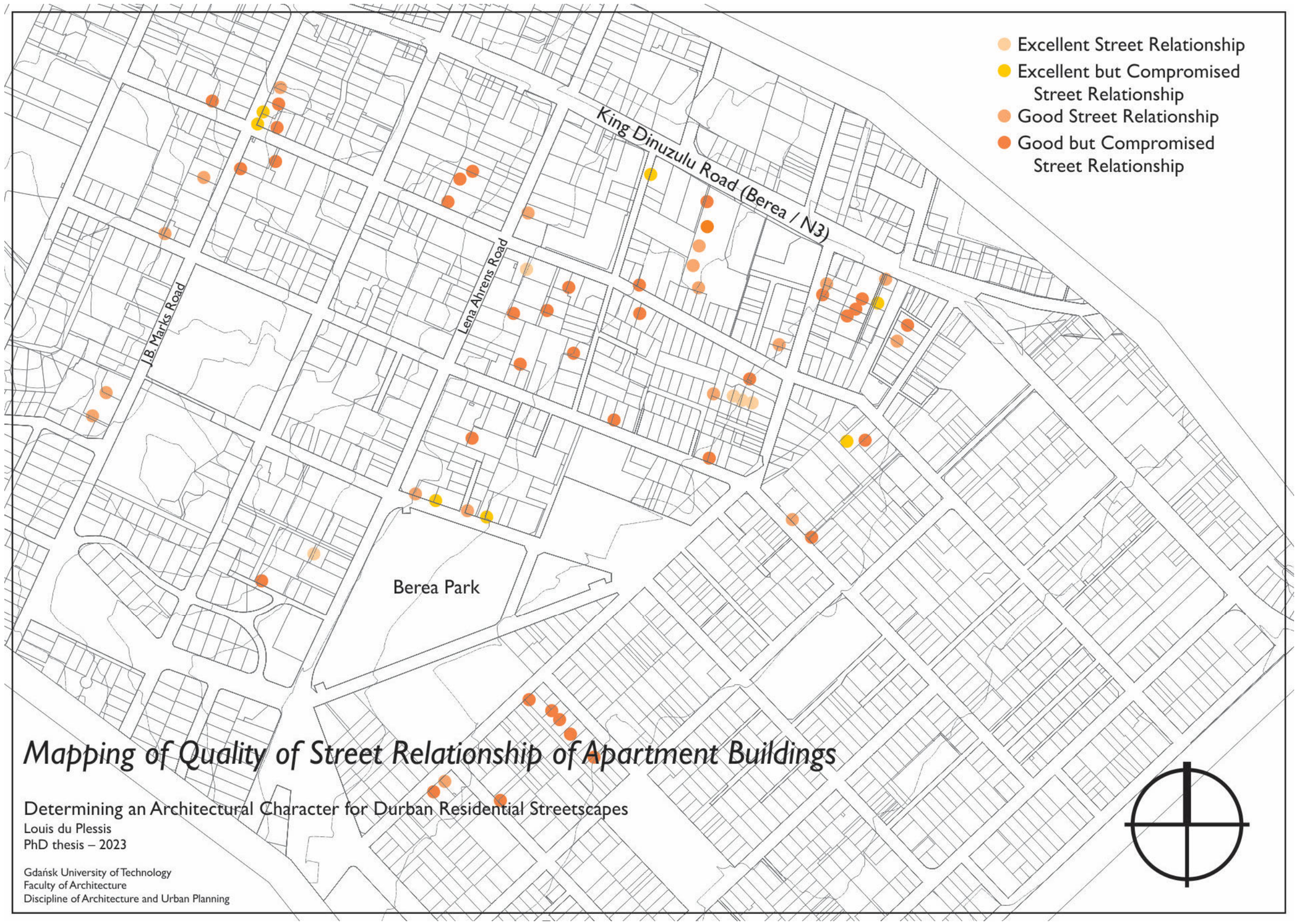
Appendix B – Graph Demonstrating Major Development Issues for Durban



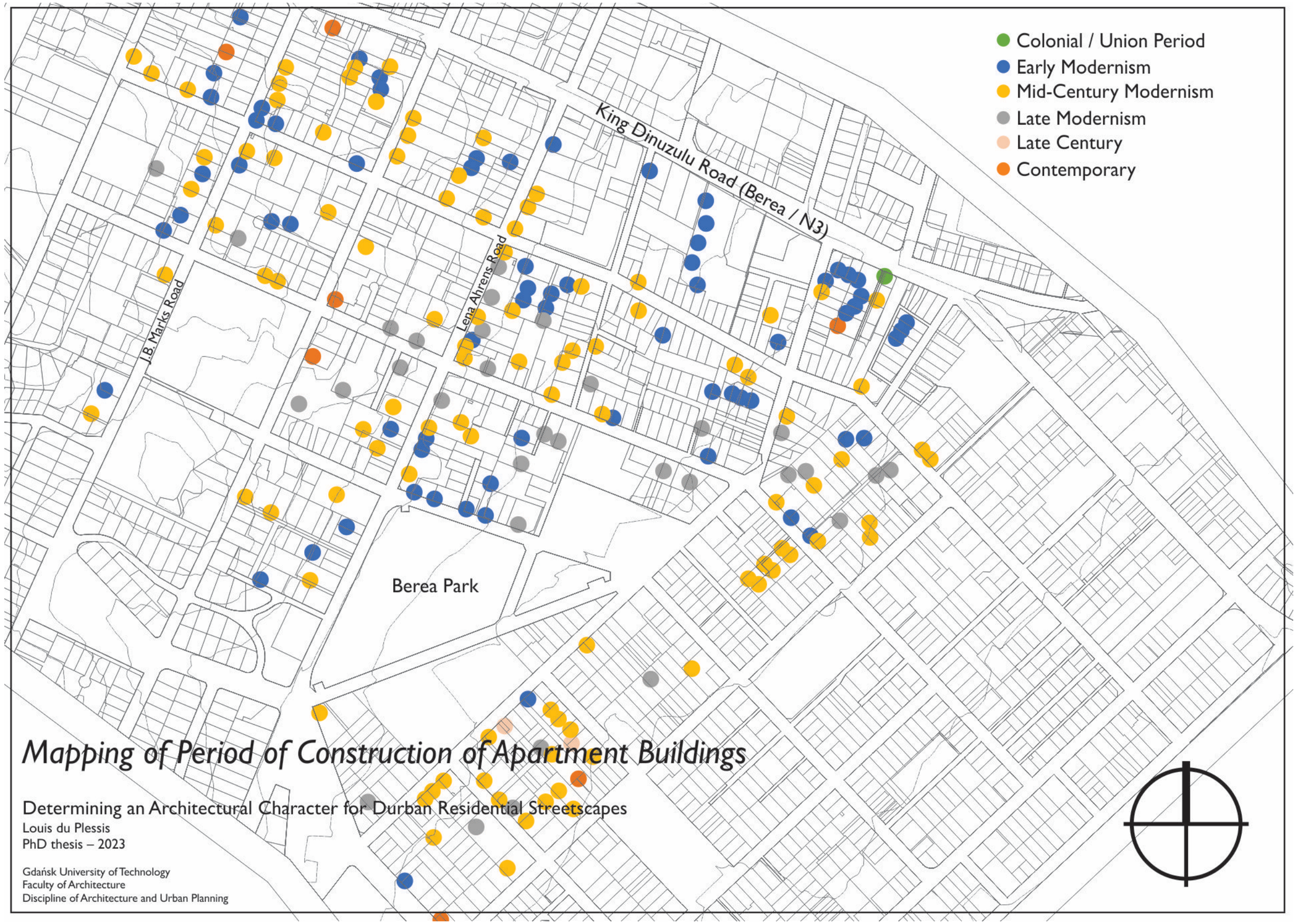
Appendix C – Mapping of Design Quality in Apartment Buildings



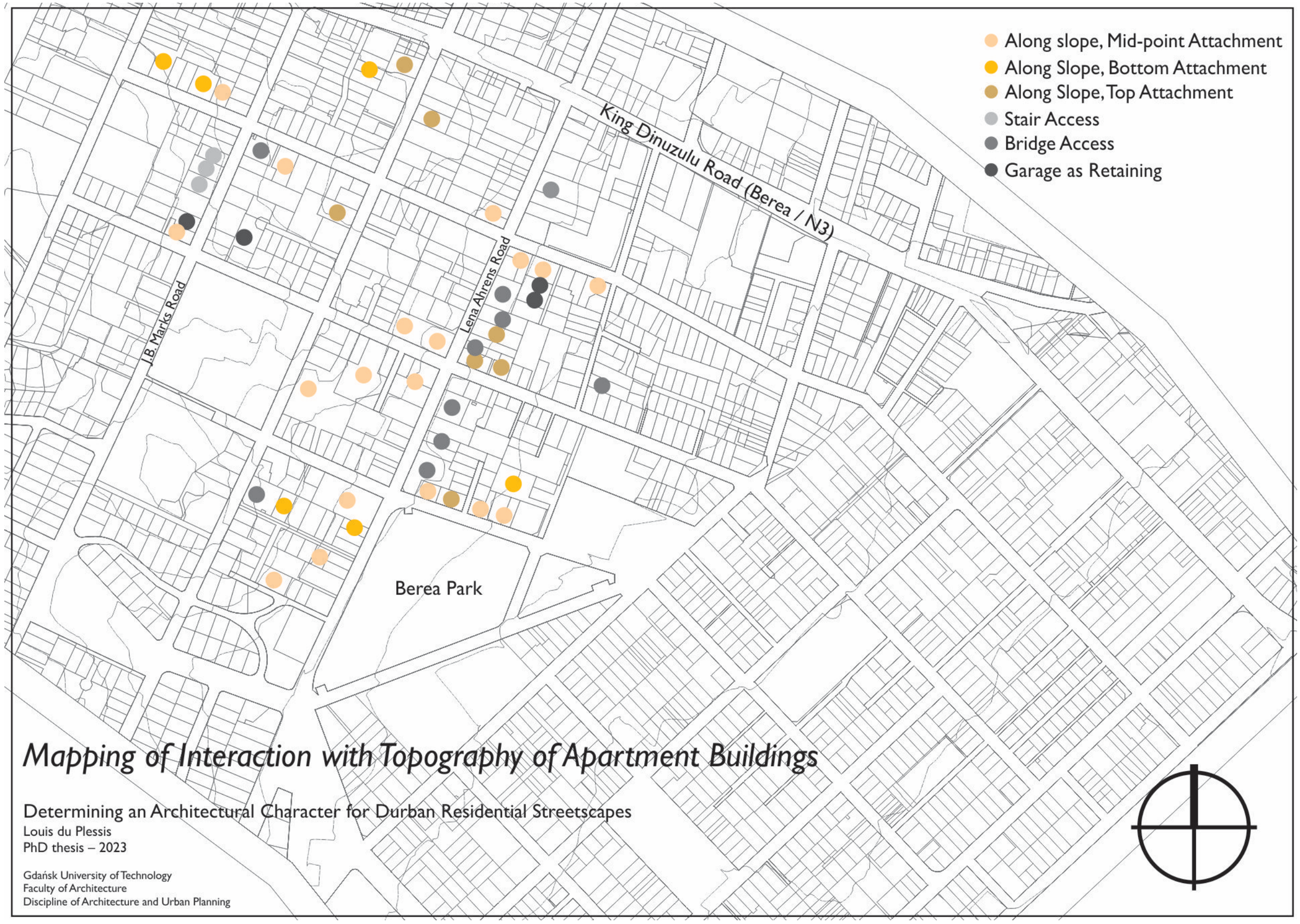
Appendix D – Mapping of Quality of Street Relationship of Apartment Buildings



Appendix E – Mapping of Period of Construction of Apartment Buildings



Appendix F – Mapping of Interaction with Topography of Apartment Buildings



Appendix G – Node Identification from Synthesis of Clustering Data