

EAST CITY PRECINCT – DESIGNCODE

REDEVELOPMENT THROUGH FORM – BASED CODES

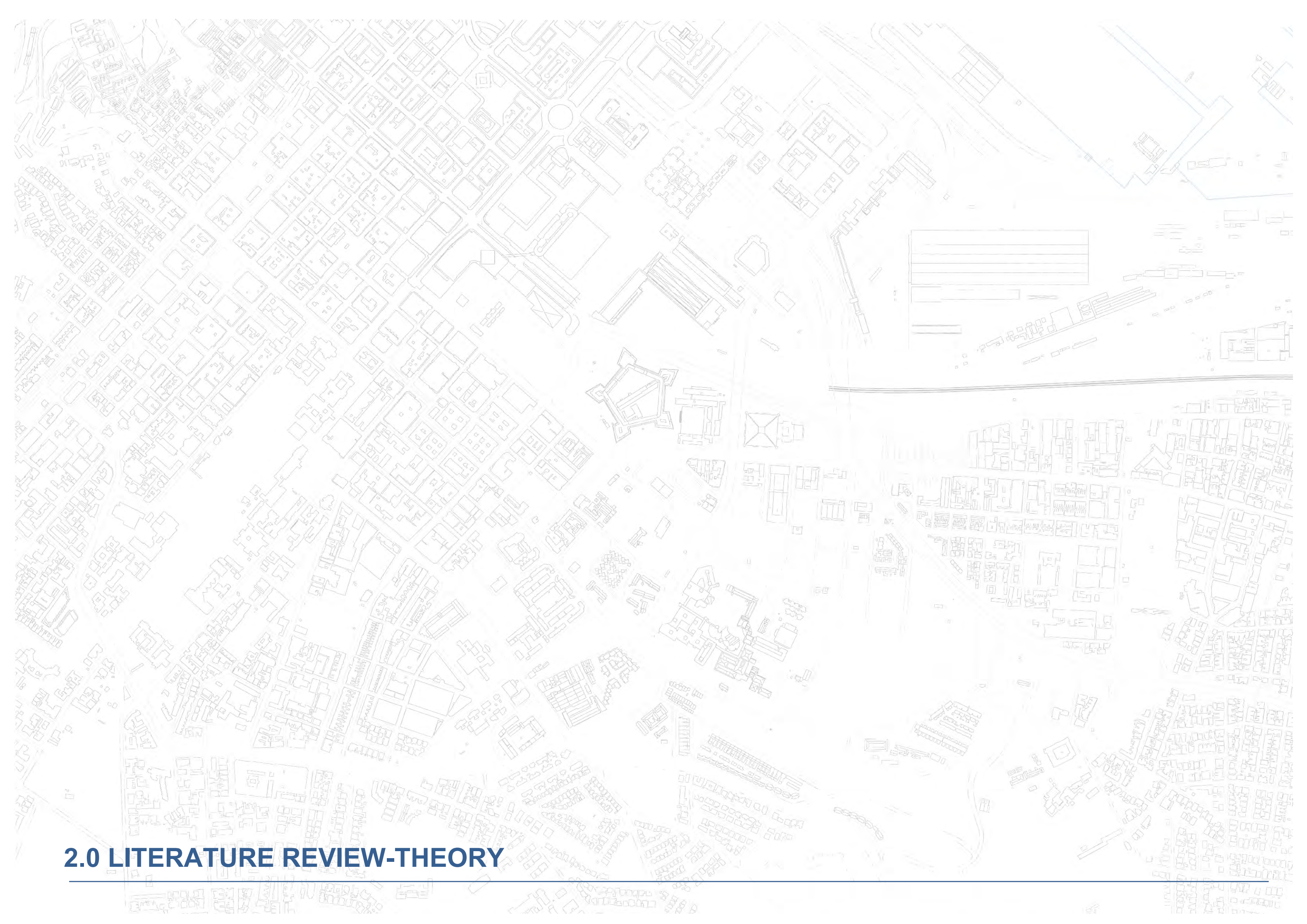
UNIVERSITY OF CAPE TOWN - MCPUD DISSERTATION

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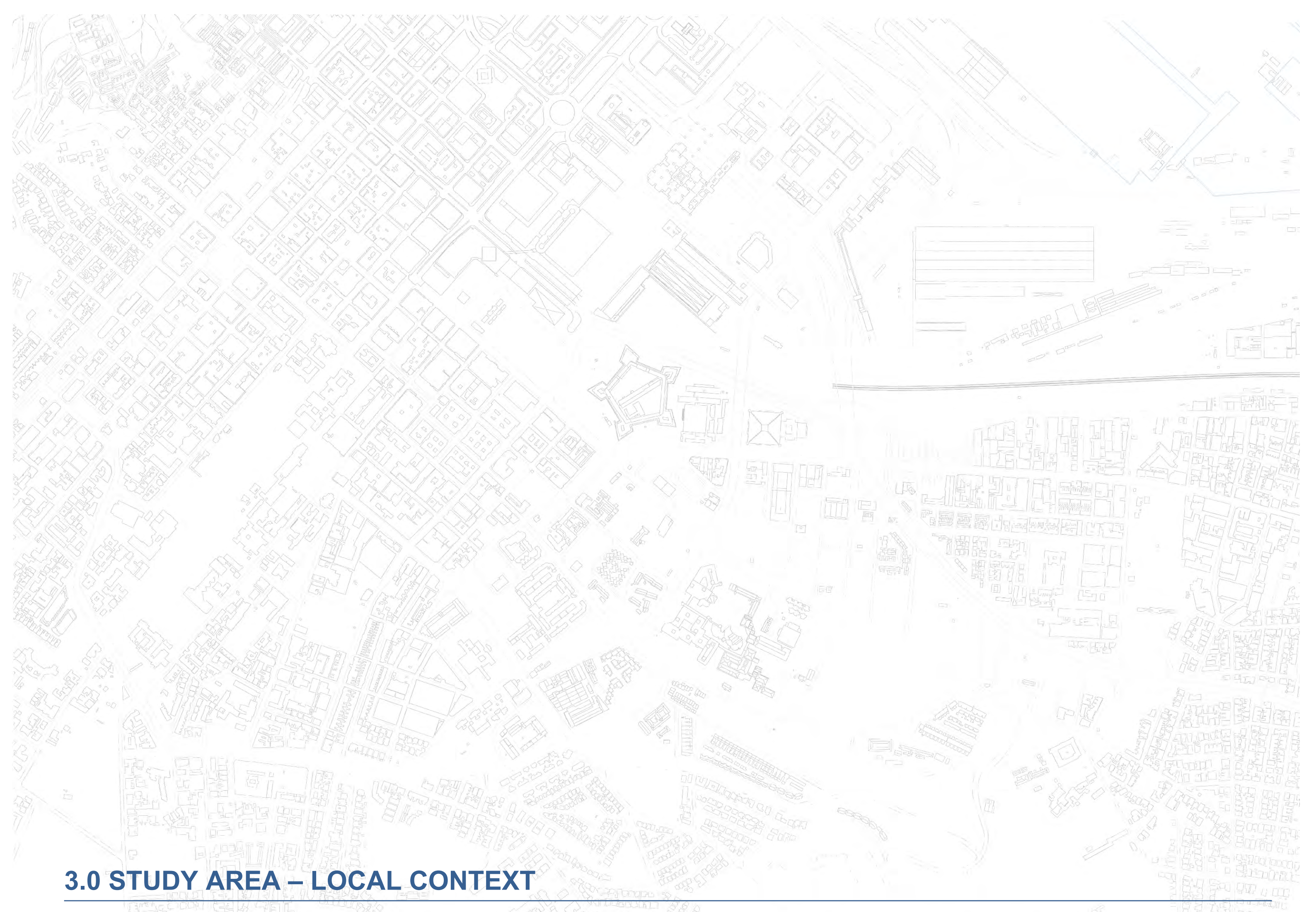
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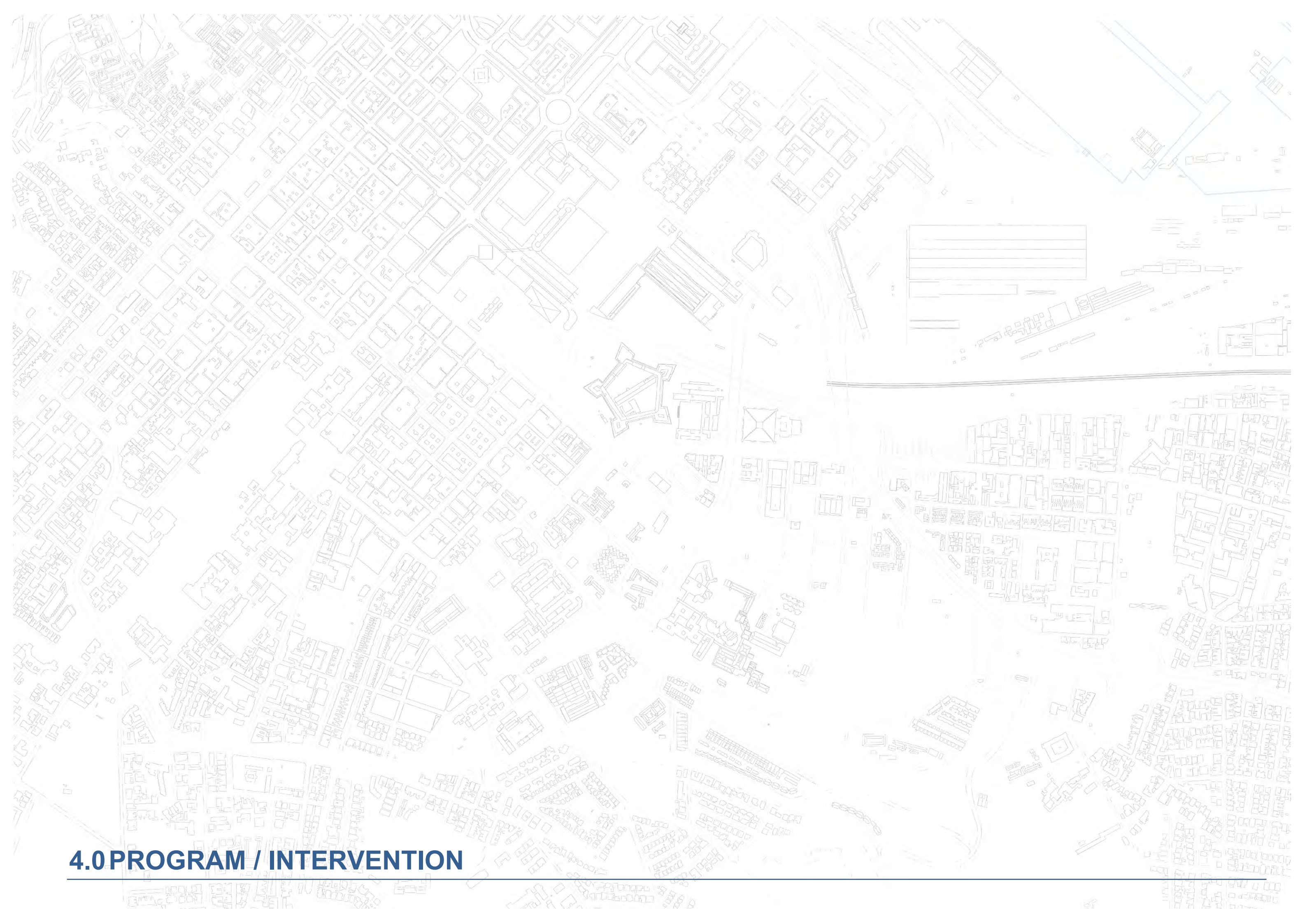
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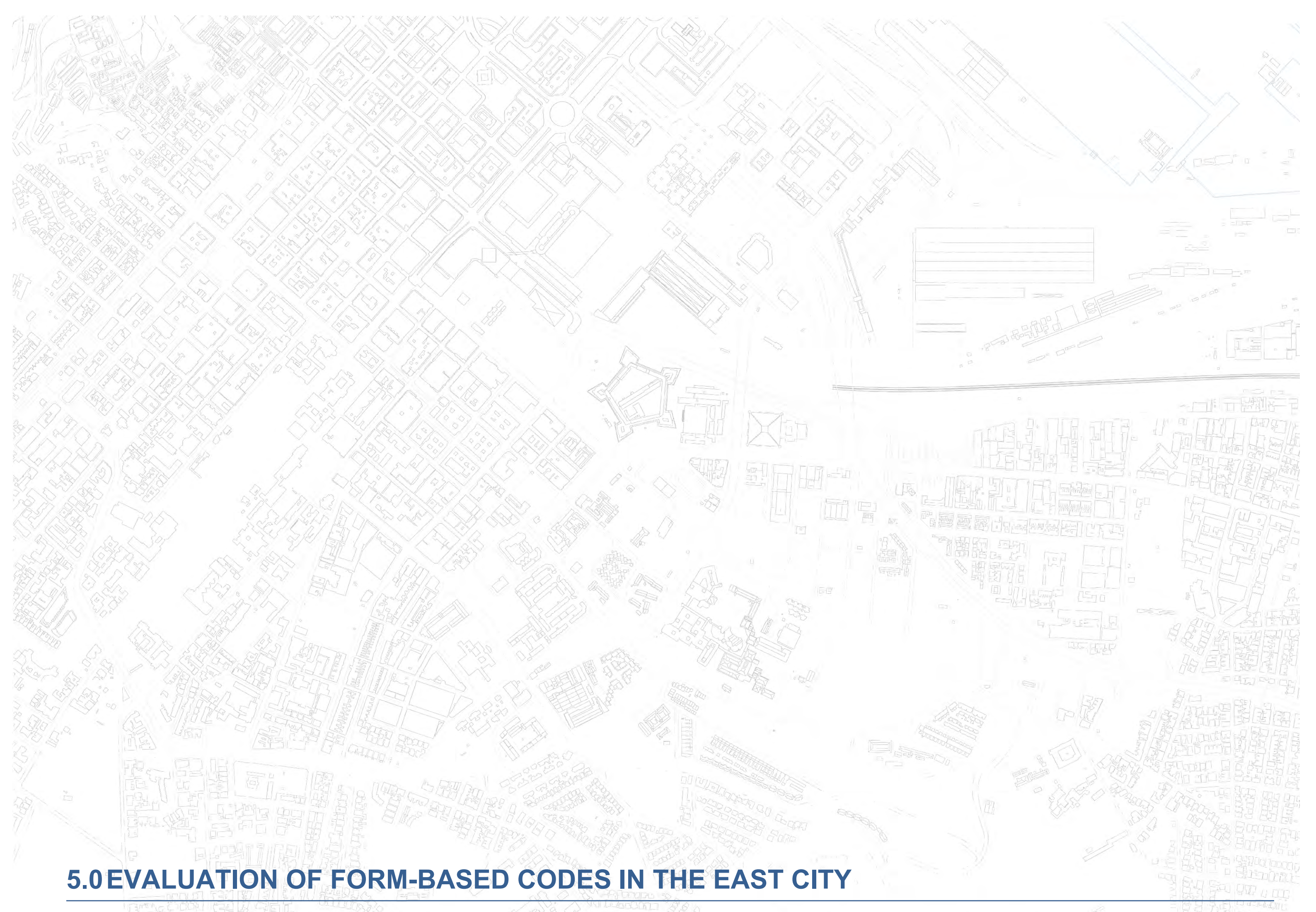
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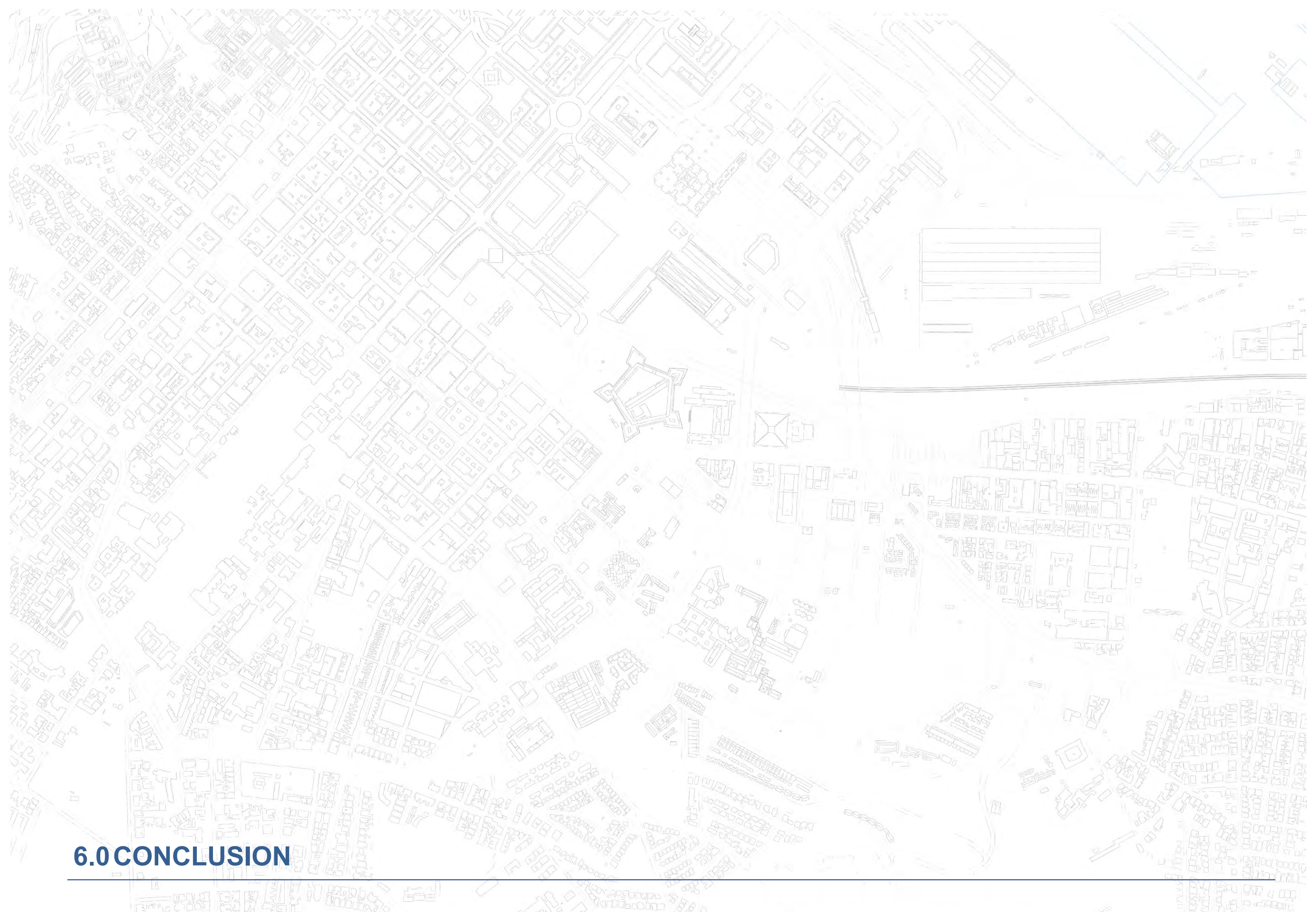
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Dissertation presented as part fulfilment of the degree of Masters of City and Regional Planning
In the School of Architecture, Planning and Geomatics
University of Cape Town
03 November 2014

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“A design code is a set of illustrated design rules and requirements which instruct and may advise on the physical development of a site or area. The graphic and written components of the code are detailed and precise, and build upon a design vision such as a masterplan or other design framework for a site or area”.

CARMONA, M. and DANN, J. (eds.) (2006), “Preparing Design Codes”, *Urban Design*,

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1.0 INTRODUCTION

The form-based code has been widely used as an innovative design reform since it was suggested in the early 1980s. As a prescriptive design tool for creating the predictable result of the built environment, the form-based code has shown advantages throughout urban design projects and the plan-making process. However, it is also the case that most descriptions of the advantages of form-based codes are only statements without actual proof. (Talen, E 2009)

Looking at our own reality, Cape Town is also losing some of its most valuable land because of expanding and growing as a city. We need to come back to the relationship between humans and social spaces so that we can intensify our cities, working or focussing around markets, great places of togetherness 'mundi towns' so that we can start to appreciate ourselves as human beings and our built environment as well as our natural resources.

PREMISE

Form Based codes is to address a diverse scale of urban concern in Cape Town. As described by Yeang (2000b), urban design policy is *"concerned with more than just the architectural quality of development. It helps to shape the place as a whole, and all its economic, social and environmental impacts."*

Our cities remain enslaved by the elements of the Modern Movement, despite intense pressure from planning practitioners for a restructuring ethos. Therefore, this dissertation aims to explore issues, considerations and ideas emerging from New Urbanism as an appropriate theoretical base to guide urban design. Furthermore it sets out to explore the relevance of applying physical design ideas and theory, in a rapidly changing and growing urban context through proposals for spatial intervention to bring about livability, with a balance between needs of nature and those of society. It concerns itself with 'design' and creating urban qualities resonating from the past, trying to restore memory and heritage through urban design. In this way, it hopes to test the appropriateness of promoting the physical and social components of urbanism in Cape Town through 'New Urbanism'. The site under scrutiny is a part of the inner city that is underdeveloped and which is strategically located between the city and the historic quarter of District Six.



Fig.1 Colour and art gives sense of place to a historic area, the East city, building along Canterbury Street.

1.1 BACKGROUND:

Form-based codes are “a method of regulating development to achieve a specific urban form. Form-Based Codes create a predictable public realm primarily by controlling physical form, with a lesser focus on land use, through city or county regulations. These codes focus on the relationship between buildings and the public realm, the relationships of buildings to one another, and the scale of and the types of streets. They also can address architectural style, materials, and other aesthetic elements. Form-based codes commonly include a regulating plan, public space standards, building form standards, an administration section, and definitions, but can also include other elements based on needs.

(Coroma, M, 2009)

Based on their utility to regulate the form and design of the built environment, it seems that form-based codes should go hand-in-hand with historic preservation. Yet, not a lot has been written that exclusively addresses whether or not form-based codes can successfully be used to maintain and preserve the character of historic areas. This thesis explores that possibility. With their focus on creating a specific urban form that looks to historic patterns of development as well as their ability to dictate architectural standards, form-based codes can work well to protect the character of historic areas. This thesis evaluates their effectiveness by focusing on the application of form-based codes in the East City Precinct.

Today, the East City is left unplanned and under developed (Fig 2.) The prominence of the Cape University of Technology has infiltrated this area, which opened this area to a younger and vibrant culture. The East City is emerging as a place of positive transition –between a renewed District 6 and the city. While strongly rooted in its past, the East city will embrace the 21st Century, bringing together innovation and creativity element of city living.

Therefore, under the present circumstances, the challenge of redevelopment involves the critical issue of how to rebuild and redevelop a piecemeal an urban wholeness.



F
Fig.2 : Remaining urban fabric of the East City Precinct. North East section of the area remained untouched yet detached from the city centre by the construction of the freeway, Eastern boulevard,\

1.2 CENTRAL CONCERN

Key question could be asked around how development of the East City Precinct could impact the inner city in a positive way and what its contributions would be to a more economic viable city.

What is the importance of the East City regarding its role towards a sustainable city; what character can be extracted from its former history to maintain a sense of quality within this area regarding the scale, form and structure of the area and lastly how appropriate is the theory of new urbanism and design coding in a context of rapid development and growing demand, and if it is, what is the nature of the plan required?

1.3 SCOPE

This thesis confines itself to a consideration of urban development opportunity in the East City Precinct through the understanding of its former historical character and memory which can be implemented through Form Based Codes. It locates the design process in the sub-regional context and puts forward notional spatial proposal for the physical area of the East City Precinct and its surrounds. The application of theory is tested at precinct level and emphasis remains firmly on the public elements ordering the spatial structure.

1.4 STRUCTURE:

With all these considerations, this dissertation presents a piece of history of District Six and the importance of memory in relation to the East City. This contested site of memory and heritage informs the area's contextual development amid the often-essentialising multicultural in particular to the 'new South Africa'. In turn, an understanding of District Six's urban quality which frames the intricacies of a restitution and redevelopment plan. It also illustrates the genuine uniqueness of its principles of urbanism, in contrast to market-oriented urban development which reproduces spaces of social fragmentation, exclusion and inequality. Indeed, the vision for the East City concerns long-term urban

The theory does not attempt to provide a social and cultural identity and history of the place, it sought, rather to understand and communicate what it was in the physical make-up of an The rebuilding of the East City precinct is a unique opportunity to reclaim those urban qualities, and to demonstrate the social, economic and cultural opportunities that human-scale, efficient and equitable inner city reconstruction can offer

sustainability, an investment in a city of fluid spaces, a city of difference and meaning.

This dissertation contends that there is a real role for urban and social sustainability in the redevelopment potential of the study area, with its historical, social, cultural and symbolic significance. Therefore its outline the key elements and principles for a development framework prepared for the study area and discuss the prospects for urban and social sustainability. This will inform where and how to apply form based codes with in the East City context.

The redevelopment of the East city is much concerned with reconstructing the urban fabric of a historic quarter. Heritage and memory are important but this does not mean returning the area to its original state. As part of a memory site, the East city needs to be redesigned in a way that stays true to the character of the original place. The challenge has been to find new ways to draw upon memory and contributing to rebuilding the city in post-apartheid terms. A number of core principles have guided the shape of the framework on questions of design for an appropriate built environment.

The framework draws recommendation about urban design principles from the analysis of the area. These principles avoid modernist planning precepts such as large supper blocks, wide streets and inappropriate massing of buildings. The framework recommends fine grain of physical development to acknowledge historical traces. The design precinct meant considering how big the perimeter blocks should be, and making positive internal urban blocks, how wide the streets should be, trying to sustain those urban qualities

Thereafter the theoretical position is moreover characterized by the interplay and conscious promotion of the co-existence of opposite models like freedom and constraint, certainty and uncertainty, permanence and change, and so on which find expression in terms such as enabling constraint, ordered freedom or realist unreality.

To create urban environments of the 21st century which are more sustainable and revitalized, form-based codes will be one good aspect of urban design theory because it can directly affect the physical structures and buildings of the study area. Form based-codes would inform how memory and historical character of the past can be implemented within the East City Precinct to portray a vision of what use to be and what could exist.

Subsequent form based codes, promoted in particular by the congress for the New Urbanism, focused on the creation of visual harmony in the public realm, often by requiring continuous urban frontage as a primary means for ensuring some level of uniformity. (Talen, E, 2011)

At the start of the 21st century, urban planning has rediscovered how to regulate the design of cities with rules about building form called form-based codes. The form-based codes institution (2008) provides the following definition: *....a method of regulating development to achieve a specific urban form. Form based codes create a predictable public realm primarily by controlling physical form, with a lesser focus on land use...Form based codes address the relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of street and blocks....Not to be confused with design guidelines or general statements of policy, form based codes are regulatory, not advisory.*

As Innis (2009) mentioned, form-based codes are implemented by a spontaneous, self-generated form of social organization based on economic concerns rather than social and political concerns. Therefore, the impact of form-based codes can be identified in terms of memory and economic development.

2.0 LITERATURE REVIEW - THEORY

This chapter is the theoretical framework which includes literature review to understand the fundamentals and key concepts of Form-based codes. The chapter provides definitions and characteristics, development history, components, as well as gathering information on different processes and perspectives of form-based codes.

FORM BASED CODES

Form-based codes have been part of an innovative design reform since they were suggested in early 1980s. Still in the development stage, Form-based codes had limited precedent examples to demonstrate its applicability in low density and unsustainable cities, and their advantages as prescriptive design tools for creating the predictable result of the built environment, in urban design projects and the plan-making process. (Parolek et al. 2008)

In the search of potential improvement to avoid bulky buildings, lack of streetscape, non-environmental friendly building massing, lack of directionality and relevance to the surroundings and historic character, this research has analysed whether and how Form-based code is effective and applicable to address the existing urban fabric and conditions within the East City Precinct.

Form-based code can by no means be isolated from social, economic and lands issues. With the principles associated with New Urbanism for the development of urban areas, Cape Town and many cities have different degrees of difficulty in introducing and balancing the factors. With Cape Town's vast open land, lost of traditional space and urban renewal criteria, Form-based code can be valid in small developments as an alternative to suburbia, but it is very difficult to apply in a low-rise low-density area. Therefore, detailed analysis and evaluation is needed on why form-based codes are necessary for the redevelopment of the study area

In Cape Town, a combination of urban development and building regulations tend to dominate considerations of form. The generated form has little to do in practice with sensible considerations of connectivity, transportation, workability and urban design. The research examines the whole issue of form based codes - essentially. This seeks to extract in what urban situations form-based codes succeed in meeting physical, social, economic and sustainable objectives. The research

also critically evaluates the historical of the former District Six and how its urban character contributed to urban qualities and produced good urban design.

These urban qualities include building form standard, frontage type standard, building type standard, and architectural standard and public spaces. The research concludes what form-based codes in the study area, the East City Precinct can technically achieve, and the factors need to be considered in the design process, the preventive constraints in achieving form-based objectives.

Despite the hypothetical advantages of form-based codes, the important point is that form-based codes cannot be simply a replacement for, but a supplement to urban qualities. Physical urban components in present framework should absorb form-based codes to make them compatible with current planning policies.

2.1 PHILOSOPHICAL APPROACH

2.1.1 Definition of urban form

The concepts of urban forms as well as the coding have passed along the history of urban design. Different forms of regulation of the built environment have occurred throughout recorded history, with types of coding used as far back as Roman times, or through reference to Vitruvius, whose *Ten Books on Architecture* covered such issues as the layout of cities, public and private buildings, and the use of building materials.

However, "urban codes imposed order and uniformity to protect public health and safety and property values, and at times to provide social control. Such uniformity was often superficial, masking great social and economic complexity, and sometimes disconnecting form from function." (Talen, 2009)

2.1.2 New Urbanism

New Urbanism is a planning movement arose in the 1980s. The theory of New Urbanism promotes the creation and restoration of diverse, walkable, compact, vibrant, mixed-use communities composed of the same components as conventional development, but assembled in a more integrated fashion, in the form of complete communities, as suggested by Haas, T. (2008).

These contain housing, offices, shops, entertainment, schools, parks, and civic facilities essential to the daily lives of the residents, all within easy walking distance of each other. New Urbanism promotes the increased use of trains and light rails, instead of more highways and roads. New Urbanism intends to create more mixed-use, compact, and pedestrian-friendly communities as a result to provide quality space. (Table.1). The integration of community and the spatial relationship of a place provide new thinking to urban design.

The most effective way to implement New Urbanism is to transfer it into development codes which direct formal development. There are many critiques about codified places that are socially homogenous, without diversity. In addition, most existing cities have different degrees of difficulty in actually introducing and balancing all factors. In this sense theory does not always match practical consideration.

Ten Principles of New Urbanism

1. Walkability
2. Connectivity
3. Mixed-use and diversity
4. Mixed housing
5. Quality architecture and urban design
6. Traditional neighbourhood structure
7. Increased density
8. Smart transportation
9. Sustainability
10. Quality of life

Table 1 Principles of New Urbanism, Haas, T. (2008)

2.1.3 Urban Form and Function

"Form follows function" is a principle associated with modern architecture and industrial design in the 20th century, where the shape of a building or object should be primarily based upon its intended function or purpose. After Louis Sullivan's phrase in 1930s, the concept draws to the attention to the discussion of urban form and the urban function, as direct antecedent.

Urban design to achieve a community vision based on time-tested forms of urbanism. "Much of the planning work today must deal with the correction of earlier mistakes, which are the result of a serious neglect of one of the vital problems."

(Saarinen, G.E., 1943) To connect form and function, a tool is needed towards the quality of development outcomes which is dependent on the quality and objectives of the developed plan.

Physical form planning is in respect to the understanding of the city as the control of urban spatial patterns. While the traditional role of the urban designer remains viable, the emergence of new physical planning roles within a variety of professions can be the way forward.

2.1.4 Form-based code as an alternative approach

The main purpose of form-based codes is to facilitate the change and rectification of the above urban problems. Form-based code spells out the principles and guidelines for sustainable urban development. Today's urban design has to balance use, form, location, safety and public process. (Gunder, M., 2011)

Therefore, coding provides a medium through which to shake off narrow sectorial perspectives, in the process, to force the creators of the built environment to recognise a collective and holistic ways. No matter using the conceptual goals to drive the urban form, or bearing urban form as the working platform to drive the goal could be different in the interpretation. In this dissertation, Form-based codes put more emphasis to places where urban forms are often under-focused. (Fig.3)

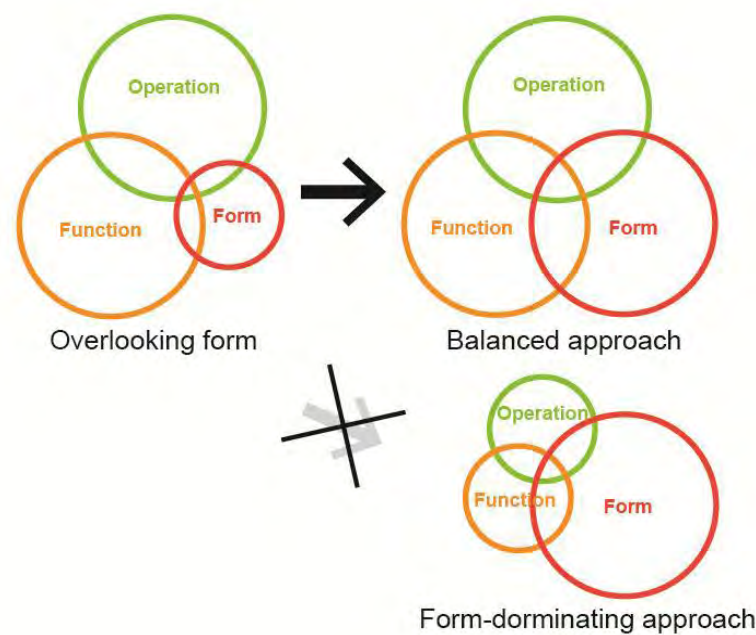


Fig. 3 Form-based codes maintain balance but not dominating function and operation.

Form based codes, which has the strong emphasis of urban design outcomes, is examined to look for possible alternatives and implications to the East City's development. Form-based codes can by no means be taken as being isolated from many other social, economic and lands issues in a very historic precinct like the East City. The research questions whether and how the Form-based code is effective and applicable to address the existing urban design issues in the study area.

2.2 LITERATURE REVIEW ON ISSUES AND CHALLENGES FORM-BASED CODES

Literature review is essential to the understanding of the fundamentals and key concepts of form-based codes. This chapter provides definitions and characteristics of form-based codes, components, as well as gathering information on different processes and perspectives of form-based codes.

2.2.1 Form-based codes and their characteristics

Form-based codes are means of regulating development to achieve specific urban form. According to Centre for Applied Transect Studies (2010), Form-based codes are a type of codes that can be applied to all scales of planning, from the region to the community to the block and building. They address the inter-relationship between building facades and the public realm, building form and massing, the human-scale and types of streets and blocks; with a lesser focus on land use, through city regulations.

“Form-based codes foster predictable built results and a high-quality public realm by using physical form (rather than separation of uses) as the organizing principle for the codes. Form-based codes address the relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks. They are keyed to a regulating plan that designates the appropriate form and scale (and therefore, character) of development, rather than only distinction in land-use types.” (Form-based Codes Institute,2011)

Form-based codes are tools for local governments to address urban deficiencies e.g. pedestrian safety in new development, and to achieve development objectives with greater certainty. They are presented in both diagrams and text, keyed to a regulating plan that designates the form and scale of development.

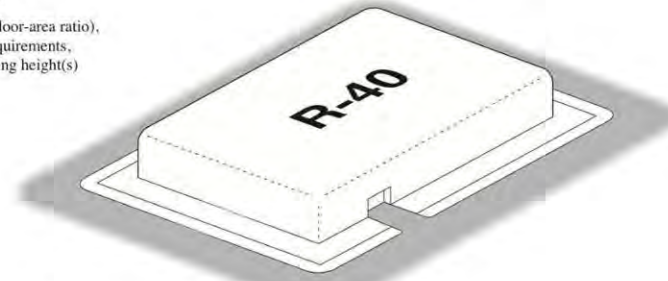
Form-based codes are not to be confused with design guidelines or general statements of policy. Urban design has different levels of control and management, and the systems various in different geographical locations. The American urban planning legal framework is different from South Africa's.

2.2.2 Design guidelines and design codes

According to Marshall (2011), “urban codes have a profound influence on urban form, affecting the design and placement of buildings, streets and public spaces. Historically, their use has helped create some of our best-loved urban environments, while recent advances in coding have been a growing focus of attention. However, the full potential for the role of codes has yet to be realized.” Fig.4. Difference in defining a parcel of zoning, design guidelines and Form-based codes.

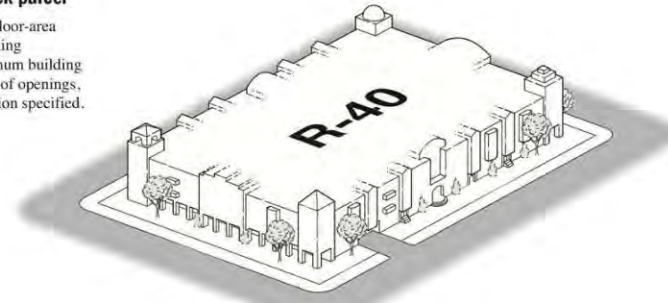
How zoning defines a one-block parcel

Density, use, FAR (floor-area ratio), setbacks, parking requirements, and maximum building height(s) specified.



How design guidelines define a one-block parcel

Density, use, FAR (floor-area ratio), setbacks, parking requirements, maximum building height(s), frequency of openings, and surface articulation specified.



How form-based codes define a one-block parcel

Street and building types (or mix of types), build-to lines, number of floors, and percentage of built site frontage specified.

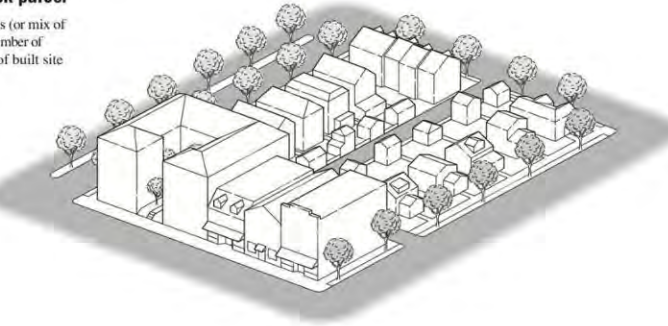


Fig. 4 Difference in defining a parcel of zoning, design guidelines and Form-based codes (Katz P. and Price S., 2006)

Zoning defines a block subject only to a traditional zoning code, with a development future defined largely by a maximum building envelope. The building block complies with typical zoning controls such as land use, plot ratio, and height.

Design guidelines define a block subject to a traditional code while the building façade could be more attractive than the block above. The underlying development future is no more certain. (Punter, J., 1999) Even though it may recommend articulation and openings to building's facade, design guidelines are explanatory and interpretive not required. Administered through appointed design review committee,

commission, or advisory board, guidelines are created to fit a wide range of situations. The barrier in creating distinctive places is lack of place-based standards.

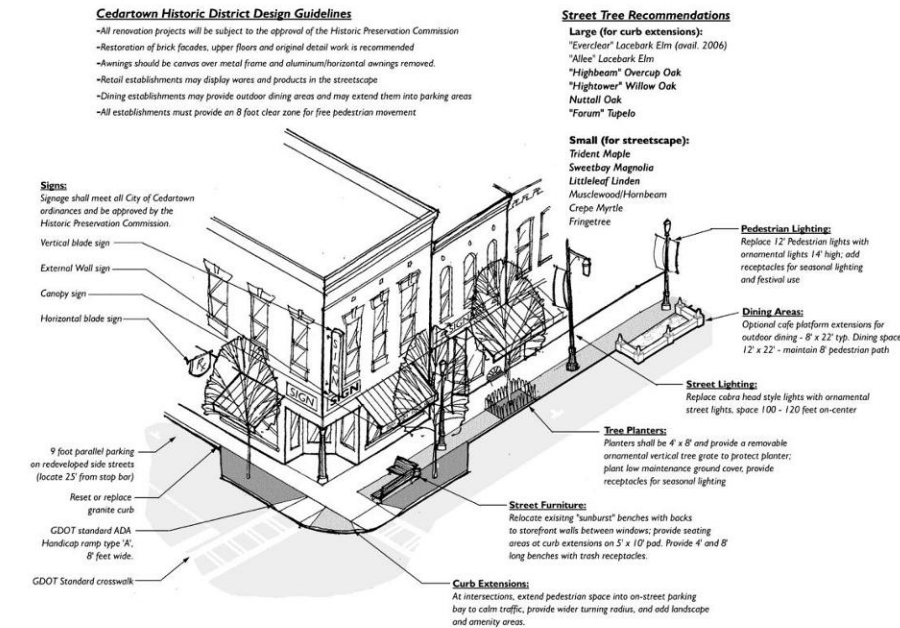


Fig.5 Design guidelines of Cedartown (City of Cedartown, 2003)

Design codes are sets of illustrated design rules and requirements for the physical development of an area. The graphic and written components of the code are detailed and precise. They build on a design vision such as a framework. The details of design codes may vary but the basic form of its future development is predictable, based on a specific design vision.

Form-based codes conceptualize a public realm by pulling together the individual elements: the diverse street types, variety of public and private open spaces, and contextual building types into a complete, cohesive, and memorable place. Well-written Form-based codes are more objective and easier to implement than design guidelines and they avoid most of the types of quarrels that erupt over architectural style. (Madden, M.E. and Spikowski, B., 2006)

However, there are different naming across legal systems around the world such as coding, design codes, pattern book, and urban codes, as mentioned by Carmona (2009). Carmona also pointed out on the roles and relationships between the different stakeholders in the coding process and compares the preconceptions about coding with actual experiences in use.

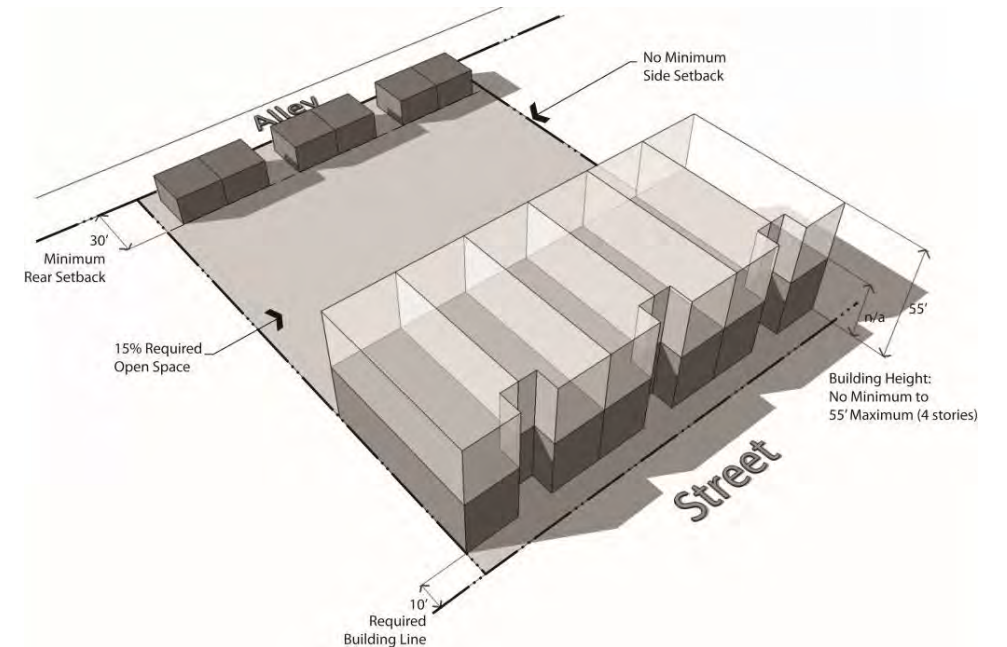


Fig. 6 Form-based codes massing example (Carlisle/Wortman Associates, 2008)

2.2.3 Characteristics of Form-based codes

According to "Form-based codes: a guide for planners, urban designers, municipalities, and developers" by Parolek, D.G., Parolek, K. and Crawford, P.C. (2008), Form-based codes have the following characteristics:

- Form-based codes are **vision centred** which drive towards the desirable outcome. They have high intention for the building form, and urban design in the human scale.
- Form-based codes are **purposeful** which emphasize on place for change and adjustment.
- Form-based codes are **place-based** which adapt to a variety of potential development and conservation intensities.
- Form-based codes are regional diverse which adapt to geographical and climatic context.
- Form-based codes are **consequential**, which are community-need driven.
- Form-based codes are precise which include dimensional range.

- Form-based codes are **integrated** which coordinate infrastructures, buildings, space and landscape.
- Form-based codes are **binding** which are obligatory to the community vision.
- Form-based codes are **comprehensible** which include a balance of text, diagrams and tables.
- Form-based codes are **adjustable** which are to be revisited regularly according to the changing community aspiration.

In summary, the major purpose of introducing form-based codes is not to control or regulate buildings, streets, and land uses, but to suggest unique ways of creating the public realm in each specific area. Form-based codes are a set of diagrammatic standards that control buildings, streets, and lands. Form-based codes set more intention on design and further influence management and use of the development.

2.2.4 Components of Form-based codes

Required components of form-based codes include a regulating plan, public space standards, building form standards and a glossary of definitions.

Regulating Plan refers to a plan of the regulated area designating the locations where the standards apply, based on clear intentions regarding the physical character of the area being coded.

Public Space Standards refer to specifications for the elements within the public realm such as sidewalks, travel lanes, on-street parking, street trees and street furniture.

Building Form Standards refer to regulations controlling the configuration, features, and functions of buildings that define and shape the public realm.

Glossary of definitions ensures the precise use of technical terms. Fig. 7

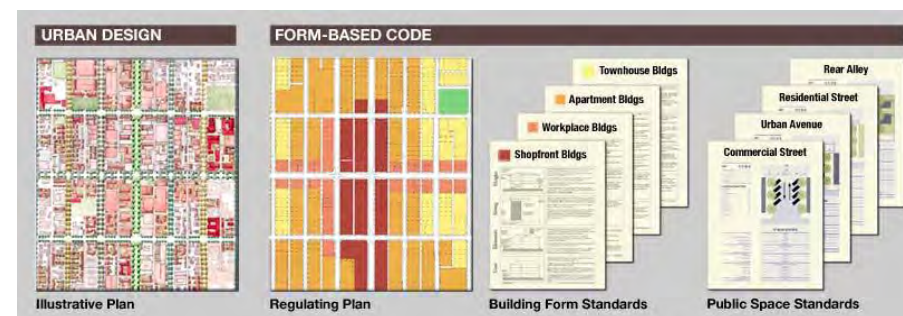


Fig.7 Typical Form-based components (Parolek, 2008)

Optional components may be included according to design-specific needs. Examples of optional components are as follows.

Block standards refer to regulations dividing large sites into walkable blocks.

Architectural standards refer to regulations controlling external architectural materials and quality.

Landscape standards refer to regulations controlling landscape design and plant materials on private property as they impact public spaces such as regulations about parking lot screening and shading, maintaining sight lines, insuring unobstructed pedestrian movements.

Signage standards refer to regulations controlling allowable signage sizes, materials, illumination, and placement.

The following Fig. 8 & 9 shows some examples of standards from various Form-based codes.

Fig.8 Building types illustration (Moule and Polyzoides, 2010)

Fig.9 Illustration of frontage type (Katz, 2006)

2.3 CHALLENGES OF FORM-BASED CODES

2.3.1 Applicable urban situations

Form-based codes were first used in redevelopment and revitalization scenarios. These include greyfield conversion of a dead mall or revitalization of an aging commercial corridor, a shared physical vision for the desired character. Form-based codes can also be used for finer-grained projects and place-making plans, such as infill redevelopment inner city or in bypassed city neighbourhoods or as a tool for regulating new construction in historic districts.

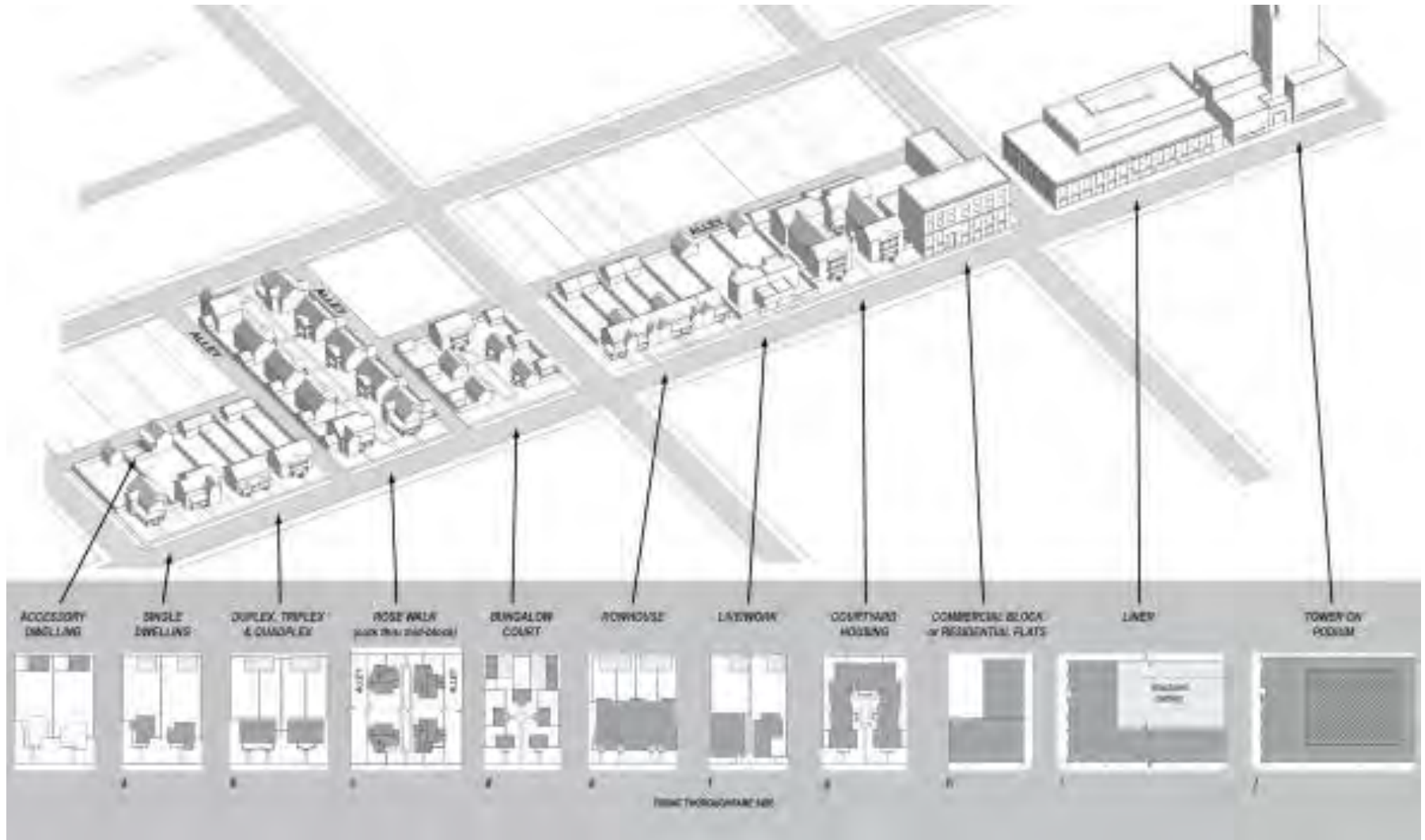


Fig.8 Building types illustration (Moule, Polyzoides, 2010)

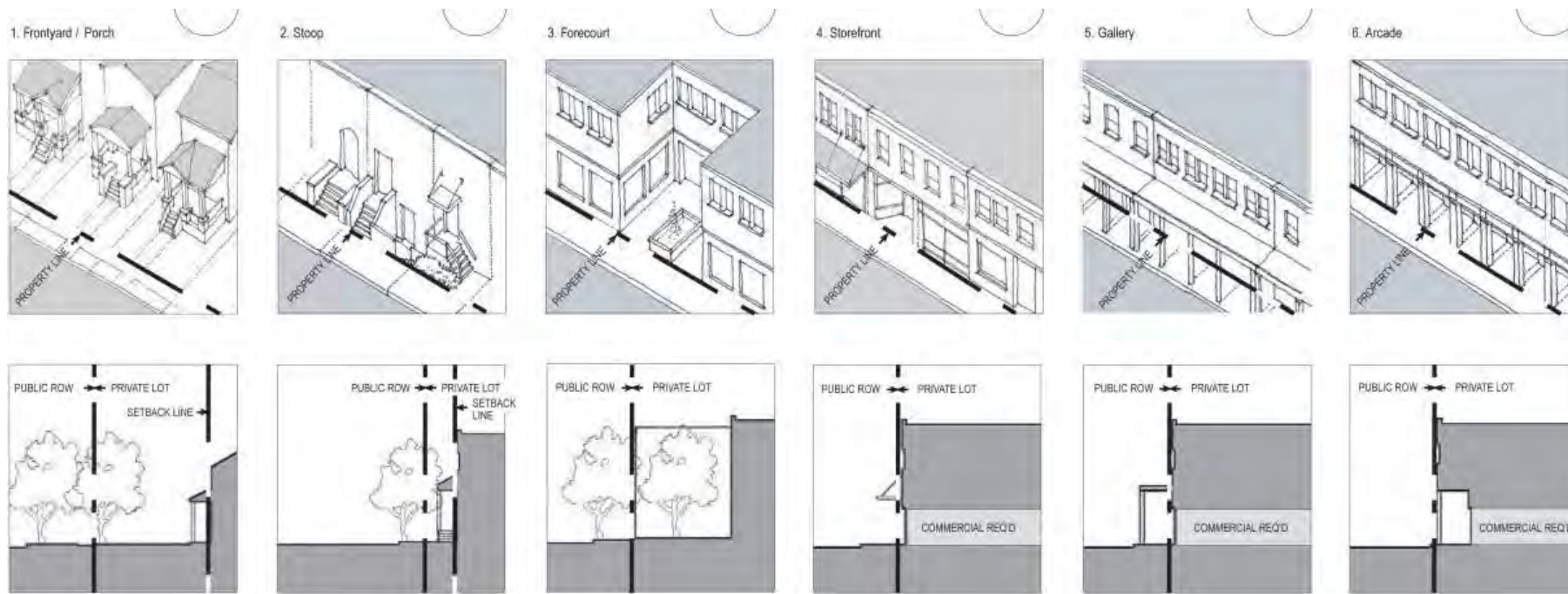


Fig.9 Illustration of frontage type (Katz, 2006)

These codes can be written to protect the existing urban fabric, or they can serve to transform it. The buildings, streets and public spaces are what give an area a certain sense of place. In shaping a high quality public realm, form-based codes are intended to promote greater civic interaction and a healthier lifestyle (Katz, 2004).

2.4 EXAMPLES OF FORM-BASED CODES

Example 2.4.1: Miami 21, Miami, Florida (Fig.10&11)

Miami 21 takes into account the integrate factor to create a unique, vibrant place to live, learn, work and play. The following photos illustrate what form-based code can achieve in Miami. It can transform blank wall, promote urban infill development, encourage street side development and build community development.

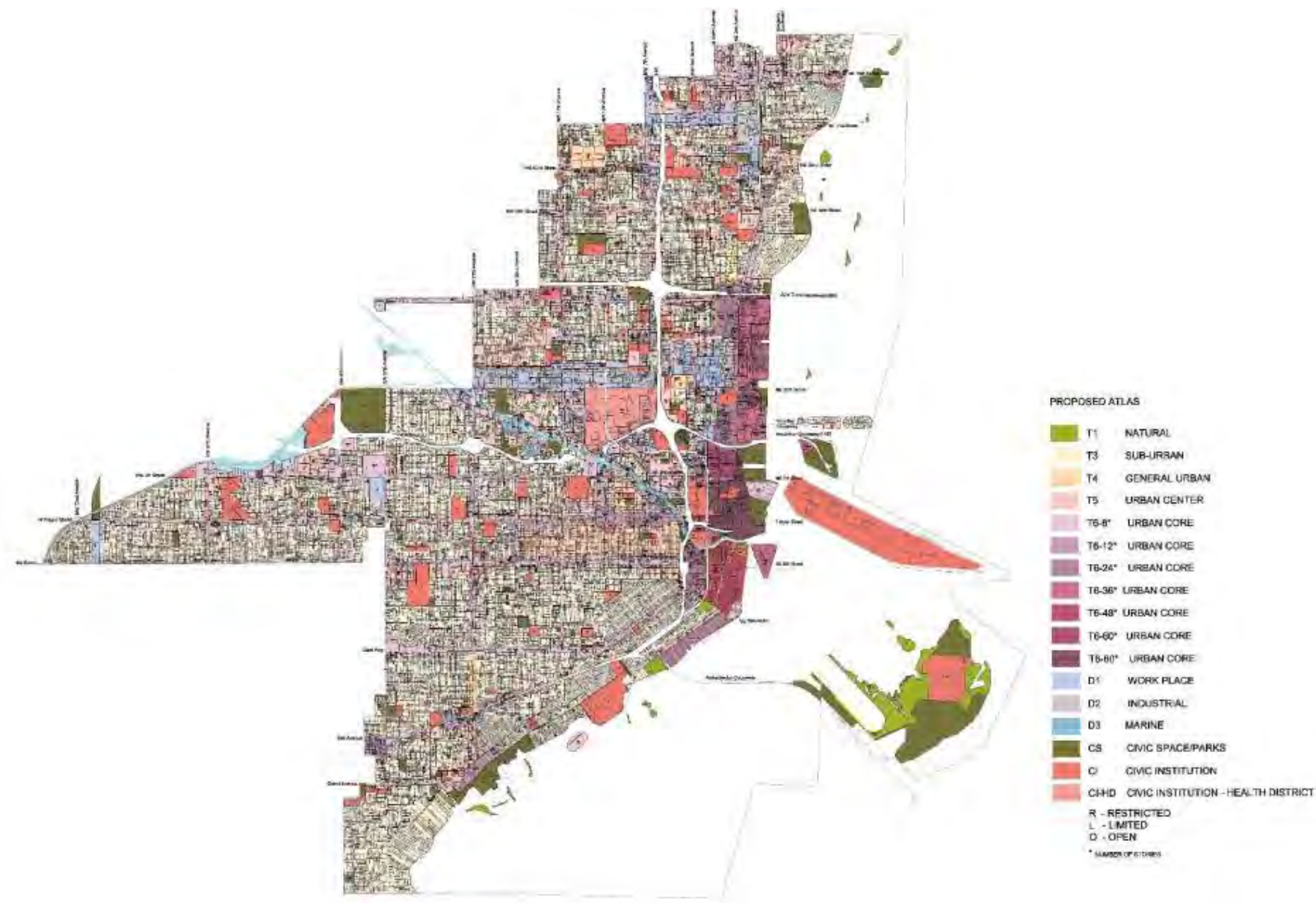


Fig.10 Regulatory plan of Miami 21
(City of Miami Planning Department, 2012)

Transforming Blank Walls



Before



After

Urban Infill Redevelopment



Before



After

Fig.11 Principles of Miami 21 Zoning Code (City of Miami Planning Department, 2012)

Example 2.4.2: Lauderhill, Florida (Fig.12)



Fig.12 Regulatory Plan of Lauderhill, Florida
(City of Lauderhill, 2007)

Lauderhill is a typical suburb of Florida. The site is defined by a vehicle-focused commercial corridor surrounded by residential housing. The application of form-based code was complicated by the subdivision patterns, underlying zoning and multiple ownership of the property. This example shows how Form-based code can integrate with transportation and ground level commercial considerations.

Example 2.4.3: East Village, Calgary, Alberta (Fig.13)



Fig.13 Street perspective drawing of East Village
(T-Six Urbanists Inc., 2004)

The Plan provides for a new mixed use, high density urban neighbourhood and ground level commercial retail in Calgary's downtown core. With an emphasis on human scale and walkability, the neighbourhood was organized around a multi-use central square which forms the commercial heart of the neighbourhood. Smaller public spaces are distributed through the Plan Area, including a small square in the southeast anchoring a network of pedestrian streets.

Example 2.4.4: Taos, New Mexico (Fig.14-16)

With diverse cultural traditions and over 400 years of built history, the Town of Taos, New Mexico, is home to some of the most distinctive architectural and planning patterns. This example demonstrates how Form-based code designs new streetscapes, bike paths and routes; market analysis, provide the necessary direction for retail development and ensure the preservation of historic character along the implementation timeline. (Fig. 13-15)



Fig. 14 Typical road before Form-based codes implementation (PlaceMakers, 2008)



Fig. 15 Form-based code reintroduces the local streetscape (PlaceMakers, 2008)



Fig. 16 Buildings get closer to the street, while mixed use and civic make for interesting destinations. (PlaceMakers, 2008)

2.5 SETTING UP THE DISSERTATION FRAMEWORK

2.5.1 Questions and issues in the dissertation

The purpose of this theory is to determine whether form-based codes in the East City Precinct has positive impacts on the creation of the future development in terms of urban design, urban form and to restore the urban qualities. The dissertation assesses the need for and the implications of form-based codes in as well as to identify implications and propose alternative strategies and plans needed for achieving Form-based coding for the study area.

2.5.2 Scope of study

The theory focuses on two scopes of form-based codes. Preliminary research on literature concerning urban development in the East City and has been conducted to identify background information to define the scope of the study area. Existing development control mechanism is reviewed to identify the existing Form-based components.

2.5.3 Hypothesis

Form-based code is an alternative angle and approach to review a design approach for the East City. Its components, which are applicable or inapplicable to the study area, can give direct implications to the existing urban quality, the physical structures and buildings. Hence, it can bring the East City towards the goal of more sustainable urban form and environment.

2.5.4 Presumptions

This theory builds upon the basic presumptions that, first; forms of physical place have to be considered before the conventional urban design standards about uses of space and buildings. Second, the ultimate goal of urban design is for the making of urban space. The urban space is best achieved in the perception of human scales.

2.5.5 Goal and objectives

The goal is to evaluate whether and how form-based code can help to address the existing urban qualities and issues within

the study area. It is to analyse if form-based codes can be a means to create a quality and sustainable built environment and cityscape.

The objectives are as following three aspects.

a) To develop a theoretical framework for Form-based codes by gaining thorough understanding of the principles and processes of form-based codes; by considering the characteristics and challenges of codes within its local context.

b) To analyse urban fabric in the East City Precinct by identifying the considerations of the urban form in the study area; by evaluating the existing Form-based codes which includes building form, frontage types, building type standard, architectural standard and public space.

c) To make recommendations and address implications to the existing urban design approach for achieving a sustainable urban form in the East City precinct.

2.5.6 Identification of Form-based components

According to Form-based Codes Institute (2011), a set of criteria can identify Form-based components in existing urban framework. The tools should focus primarily on regulating urban form and less on land use. The tools should be regulatory rather than advisory. They should emphasize standards and parameters for form with predictable physical outcomes or rely on numerical parameters. In order to shape public space, they require buildings to meet building form standards with specific requirements for building deposition.

They should promote and conserve an interconnected street network and pedestrian-scaled blocks. Furthermore, all standards would be keyed to specific locations on a regulating plan. The tools should be attached with diagrams clearly labelled, and accurate in their presentation of spatial configurations.

2.5.7 Evaluation criteria of technical capability of Form-based codes (if applied) in the East City Precinct

Four aspects are generalized from the relating to the codes, includes sustainability, connectivity, diversity, design optimization and compactness.

For sustainability, Form-based code in the East City will be evaluated with an emphasis on physical environmental quality. The impact on smart location and linkage, neighbourhood pattern and design, green infrastructure and buildings, innovation and design process are also be evaluated.

For connectivity, the impact of Form-based code in supporting all modes of transportation, pedestrian circulation and vertical access are evaluated. The evaluation should include adequate intersections in reducing time for moving from one intersection to another. For diversity, mix and balance of uses, housing development, types of building frontage or façades are in this evaluation aspect.

For design optimization and compactness, different aspects of creating building form and public realm with reference to urban design concerns in the study area are evaluated. This determines the appropriate development density for the site, which is an important issue for urban revitalization and growth.

In summary, the major purpose of introducing Form-based codes is not to control or regulate buildings, streets, and land uses, but to suggest unique ways of creating the public realm in each specific area. Form-based codes are a set of diagrammatic standards that control buildings, streets, and lands, which differs from conventional zoning. Form-based codes set more intention on design and further influence management and use of the development.

3.0 STUDY AREA – LOCAL CONTEXT

In understanding the location and orientation of the study area (Fig.17), I can go further and take a look at theory of urban design as a guideline to redevelop and unpack this area. The plan has to be driven by the desire to create the necessary preconditions for the making of liveable human settlements.

The part of the dissertation confines itself to a consideration of urban redevelopment opportunities within the East City looking through the lens of urban design theory and principles of Form-Based Codes. This identifies the design approach and process in the historical sub-regional context and puts forward notional identity proposals for the East City Precinct and its surrounds.

The potential for urban redevelopment should be one of the main focuses of this study area, creating an urban link to the city and to the former District Six/CPUT region and surrounding neighbourhoods and thereby achieving a much more compact urban form. Thresholds could be increased to levels where alternative, more efficient, access to opportunities and a sustainable vision can be achieved.

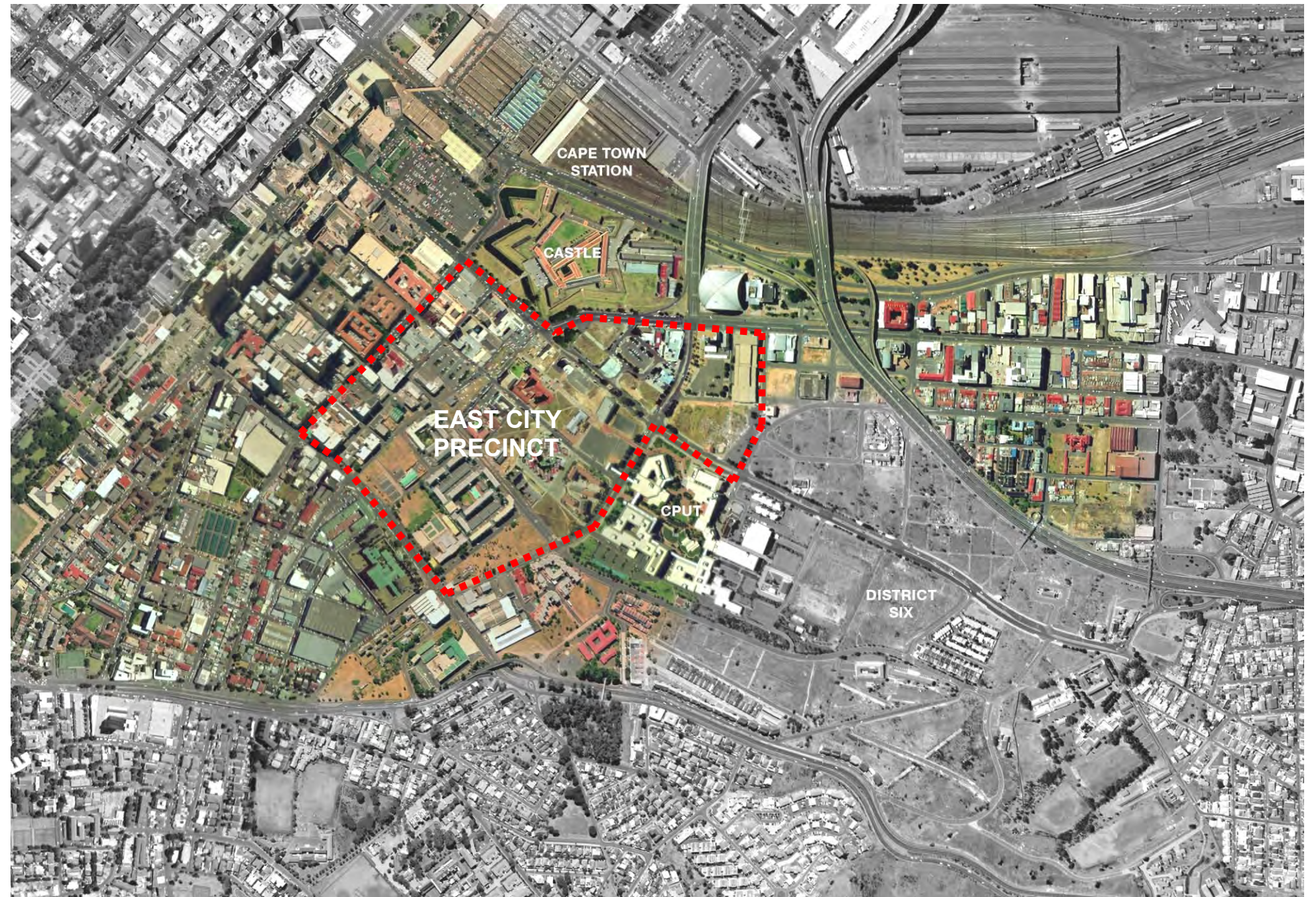


Fig.17 The sub-metropolitan location of the East City Precinct

■■■■■ STUDY AREA

3.1 HISTORICAL BACKGROUND

The history of the East city is in many respects also the history of the city centre of the city. The historical boundaries of the east city, as defined by the Cape Town Municipality in 1867 included the Castle and Canterbury Row in the north, the Military Lines and toll gate to the east. Devils 'Peak to the south and Constitution Street to the west. (Schoeman, 1993)

The structured grid of historic Cape Town, its streets, water courses, public open spaces, institutional buildings and residential areas was superimposed upon on an even earlier use pattern which extended to the pre-colonial past.

3.1.1 Historical Context and Urban Structure:

With the view to understand the underlying urban design principles and urban morphology on which the original plan the area (District Six) was based, the following outline of historical growth is included. It is done so with the explicit purpose of informing broad principles that may contribute to the preparation of an appropriate development framework.

The historical growth of district six & east city, as part of the urban development of Cape Town, is well documented (e.g. Brickford-Smith et al, 1998; Worden et al, 1988; Brozzoli, et al, 1996, 2002; Rennie, 1978; Strom, 2002) and does not require detailed repetition in this document.

While the following discussion refers to diagrams prepared at regular intervals showing the planned extension of the area, it is important to note that development in the area occurred sporadically, and that no singular controlled planning process took place with planning often being necessarily occur chronologically. In certain cases, urban block extensions planned in the 1820's were only occupied by housing after 1862. According to Strom, three basic forms of planning took place, namely:

- Infill of older east city blocks and planned between 1800-1830,
- the occurrence of an experimental phase where different block, row and court layouts were tested and,
- a period of deliberate planning, especially from the 1850's where general plans of small house layouts were proposed. (see Strom, 2002)

Despite such unevenness in the development and planning process, it was the facility and power of the typical grid-iron plan as applied the District Six and as distorted by the local topography that provided a greater order which could

accommodate piecemeal growth, different house layouts and experimentation.

1818

By 1818 the area was broadly defined by the sea to the north and Devils Peak to the south. The expansion of Cape Town city center occurred in an easterly direction. During the early period of its growth, the planning of District Six is defined by the morphology of the slopes of Devils Peak, the extension of roads in the east city area (e.g Darling Street, Caledon, Longmarket Streets), the boundary lines of the farms and smallholdings, roads serving this agricultural land and the lines of the old French Battery to the east (now Trafalgar Park). With the planning of the New Market, east of the Castle, a grid of streets developed on either side of Sir Lowry Road. The urban blocks in the New Market extension measured about 56 by 58 metres, somewhat smaller than the historical city block. (Fig.18)

1862

By 1862 a clearly defined grid of streets had emerged, including the extension of the street grid of the east-City area (see fig.6) While much of this growth was the result of speculative development, property developers were required from 1869 onwards, to submit plans and specifications of proposed buildings. In 1867, the major activity streets such as Sir Lowry Road, and Hanover Street became dominant and, with the establishment of Tennant Street, now provides a framework for smaller scale streets to be ordered.

1900

By 1900 District Six had been substantially developed and precincts between Sir Lowry Road and Hanover Street, as well as those near the east City area were consolidated. A tightly structured network of streets characterized the precincts. Development associated with the New Market resulted in the eastward expansion of Sir Lowry and Lower Main Roads, which contributed to the growth of the linear connections between the city and the southern suburbs and northern suburbs respectively. (see Strom, 2002)

1944

The local street grids, as structured by Sir Lowry road, Hanover Street and Constitution street, are now complete. By 1944 District Six is a fully developed area with parts of it having been upgraded through local authority slum clearing and social housing interventions. As part of this strategy, the Cape Town City Council had built tenement housing such as the Bloemhof Flats. To the north, the Foreshore landfill and road construction scheme is implemented and together with

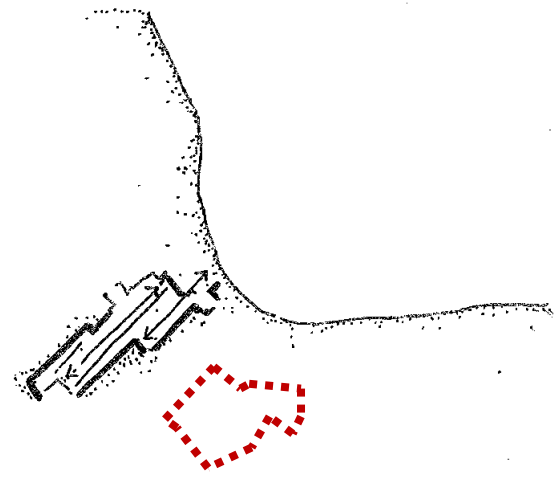
the existing railway line, this intervention now finally servers the link between the study area and the sea. To the south De Waal Drive, sited on the lower reaches of Table Mountain and Devils Peak, was now formalized and consolidated, forming an edge and barrier between the mountain and District Six. (Fig.18)

1968

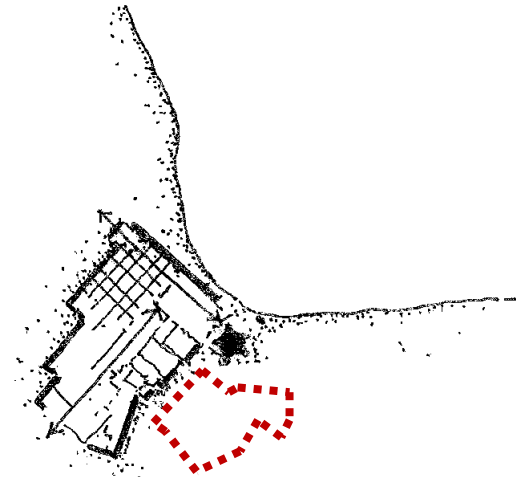
The construction of the Eastern Boulevard freeway in 1964 caused the first forced removals in the area, cutting a whole through the housing fabric and occupying the southern edge of Trafalgar Park. In 1966 District Six was declared a 'white group area' and all new development was frozen. At about the same time De Wall drive was widened to improve access to the city centre. In the process of such large-scale road engineering works, the old fine grained fabric of the area that once stretched from Sir Lowry Road to the slopes of Devils Peak, was now marred by the dominance of freeways (see Fig.18) (see Strom, 2002)

1992

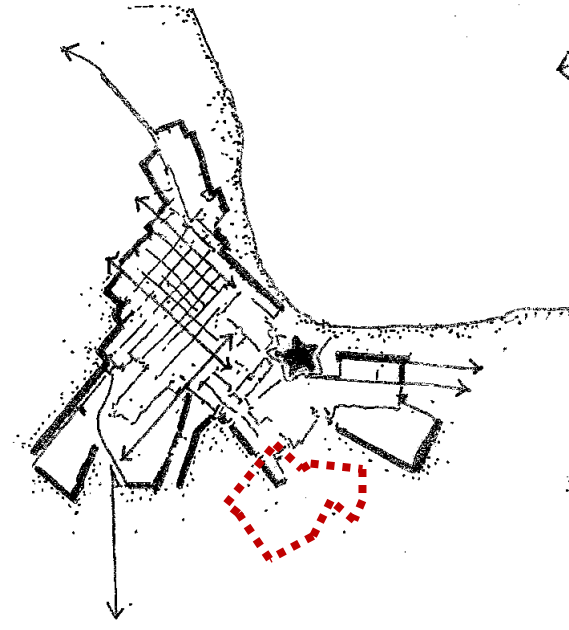
By 1992 most of the historical housing fabric had been demolished, with a few community buildings (churches, mosques and schools) and selected terrace-housing remaining. With the demolition and re-routing of most of the old roads, as well as the provision of new service infrastructure, the last remaining traces of the area have been wiped out. Old Hanover Street was no replaced by "Keizergracht" and the relocated campus of the Cape Technikon that occupies 22% of the land (Bezzoli, et al, 1996). In the late 1980's defiant developers built middle class housing for "whites" in isolated areas. (Constitution and De Villiers Street).



1656



By 1780 there was still no urban development outside the eastern city limit as defined by Buitenkant Street.



1808



1842

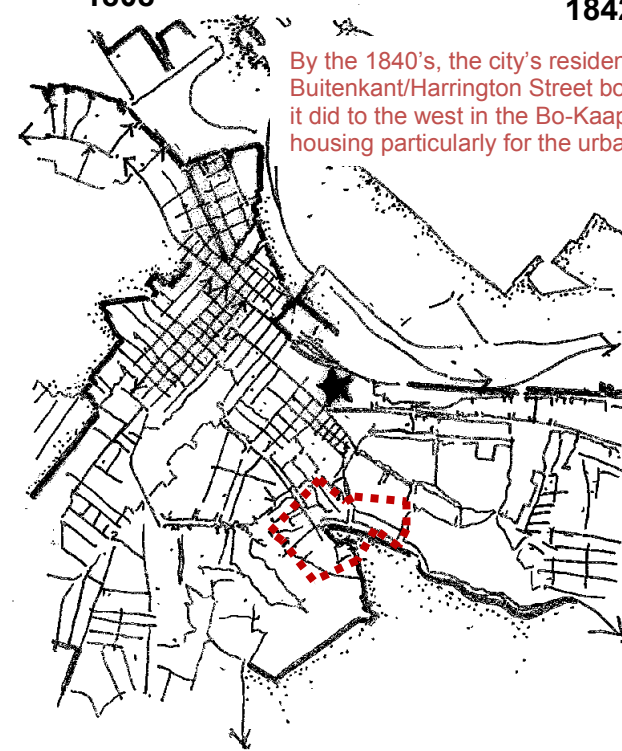
By the 1840's, the city's residential expansion jumped the Buitenkant/Harrington Street boundary to the east of the city, as it did to the west in the Bo-Kaap, in response to demand for housing particularly for the urban poor



1878

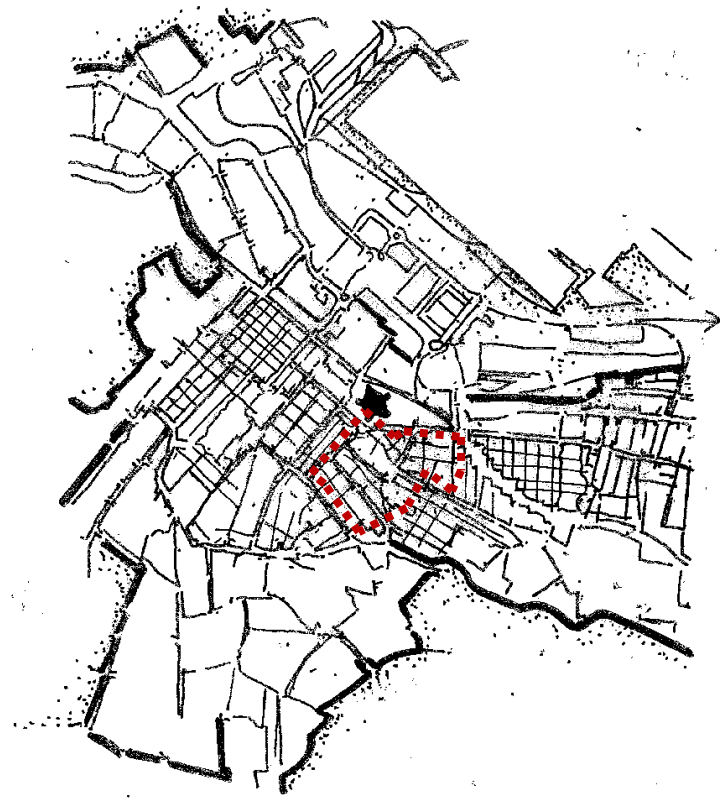


1897



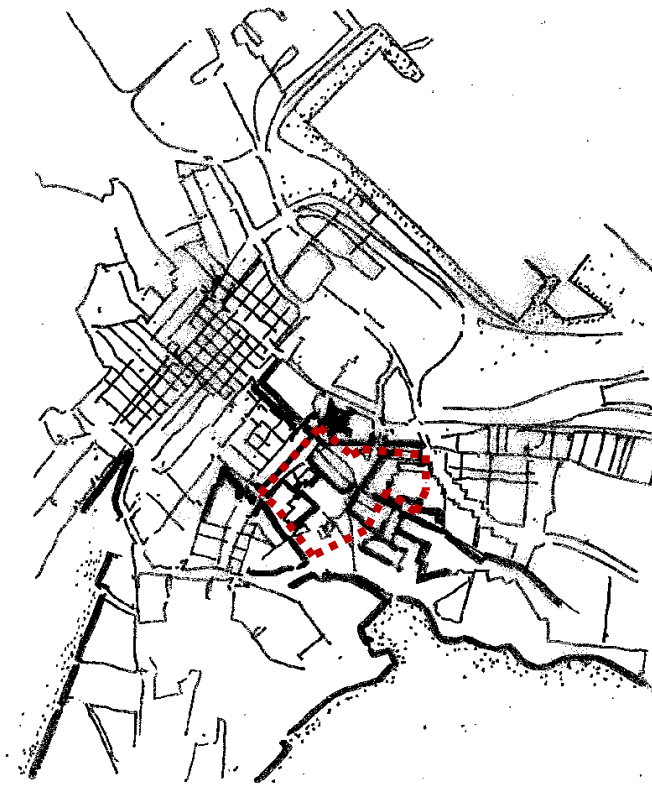
The presence of the Barracks and a link to the commercial activities of Cape Town as a port city in the eighteenth and nineteenth centuries had a profound impact of the development of the eastern part of the City

Fig.18 Urban Morphology of District Six from 1656 – 1992
(Department of Land Surveys and Mapping)



In 1966 District Six was declared a White Group Area and by 1968 forced removals of residents had begun. The community was dispersed to the Cape Flats, the houses demolished, the area renamed and new roads constructed over the old historic grid system.

1968



1976



1992

Fig.18 Urban Morphology of District Six from 1656 – 1992
(Department of Land Surveys and Mapping)

3.2 UNDERSTANDING AND IDENTIFYING URBAN PRINCIPLES – HISTORIC IDENTITY

In what exist of District Six, there remain certain macro-scale elements that have helped to define the place when it was originally developed. These major defining elements include the site and its topography, the edges of Devil's Peak mountain, the close proximity of the Cape Town city centre, the view of the sea and the Trafalgar Park 'green belt' to the east. At a macro-scale these elements also determine the urban morphology of the place. (Marks, R & Bezzoli, M Kruger, M.2002) (Fig.19)

These urban elements have historically helped to give the area a sense of place and yet allow it to be integrated into its urban and natural context. They are elements that should be considered in the redevelopment of the East City Precinct area

3.2.1 Land Form

This scale of the District Six site has allowed for views and linkages with its surroundings continuous to inform the cultural significance of the site because of its contextual value. The area's 'sense of place' at this scale is defined by Devil's Peak and Table Mountain to the south and Table Bay to the north. The north and west facing slopes of the terrain, as it forms part of the city bowl area is a powerful place-making characteristic of the East City Precinct.

3.2.2 Street Grid

Associated with these two major structuring elements has been the pedestrian-scaled rectangular grid of roads that defined the various urban blocks that made up the area. The small size of these urban blocks (generally between 40-60 metres) allowed for a fine-grained urban fabric that was permeable and easily accessible for pedestrians. As this grid was deformed by the old property divisions of smallholdings and by the slope of the site itself, a range of conditions and choice of opportunities were afforded (the form of corner sites varied, plot areas differed and urban blocks sizes were distorted). (Marks, R & Bezzoli, M Kruger, M.2002). (Fig.19)

The illustration below overlays the District Six 1948 street structure on the existing urban condition. This enables a clear comparison to be made between the two –and indicates how substantially the street pattern has been erased to the east of Tennant Street, not least by the building of the CPUT campus. While this urban design framework recognises that District Six as it once existed will not return, it is an aspiration in the framework that some part of the spirit of District Six as a place is captured in the future development of the East City Precinct. (Fig.22)

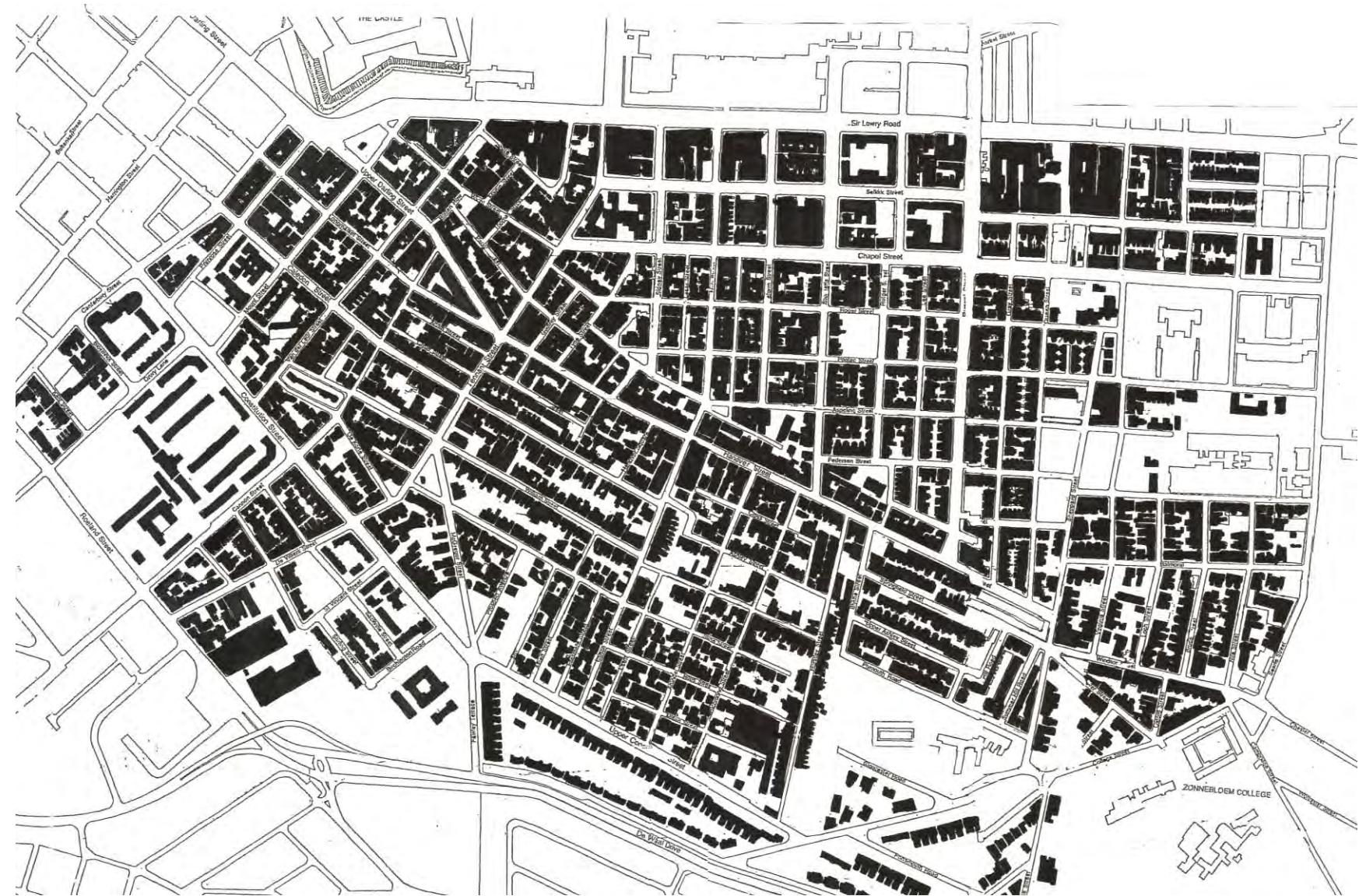


Fig 19 Diagram illustrating District Six, 1966. Street grid and urban block (Marks, R & Bezzoli, M Kruger, M.2002)

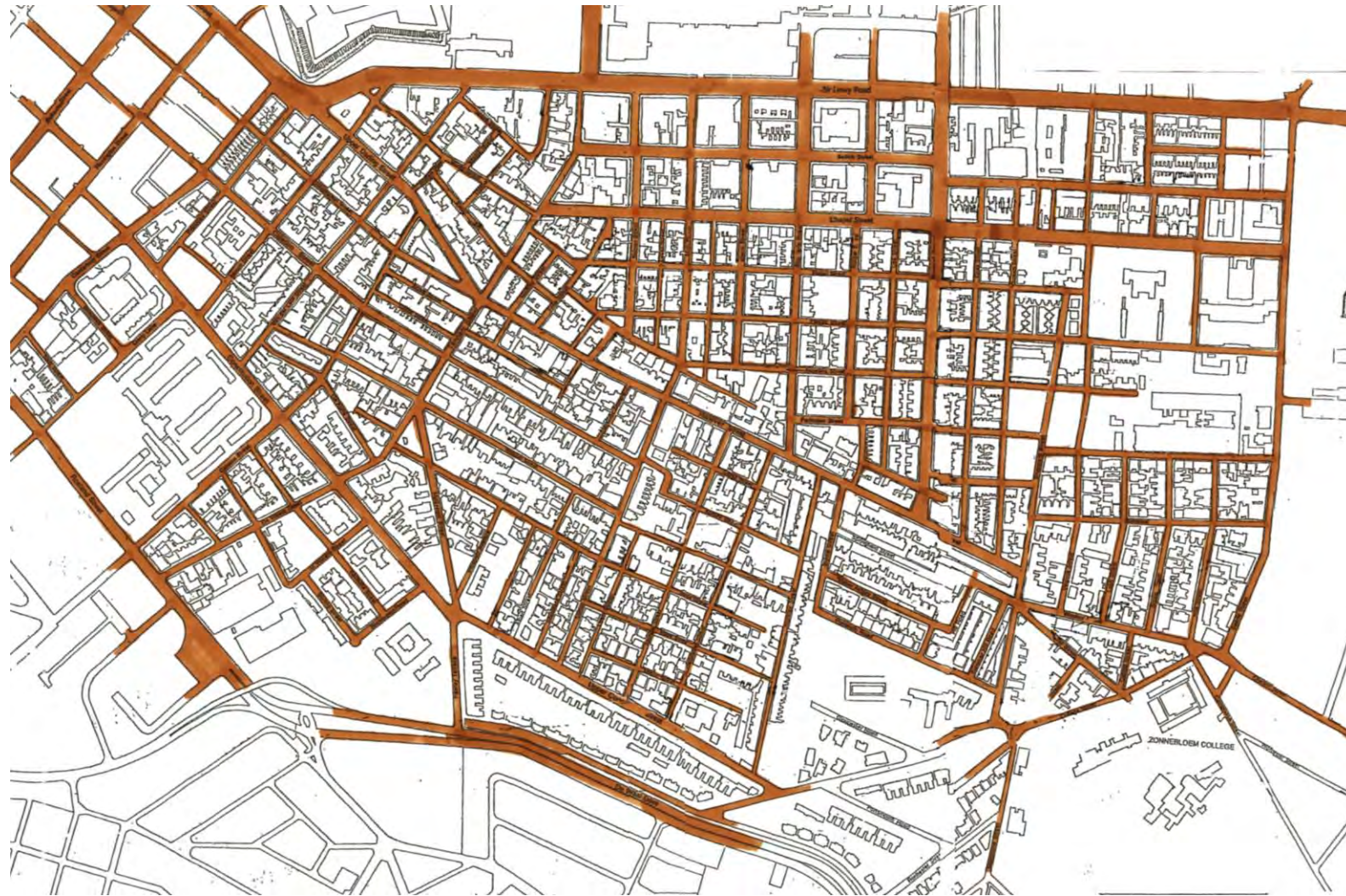


Fig 20 Diagram of street grid pattern of the former district six shows the fine grain of the area.

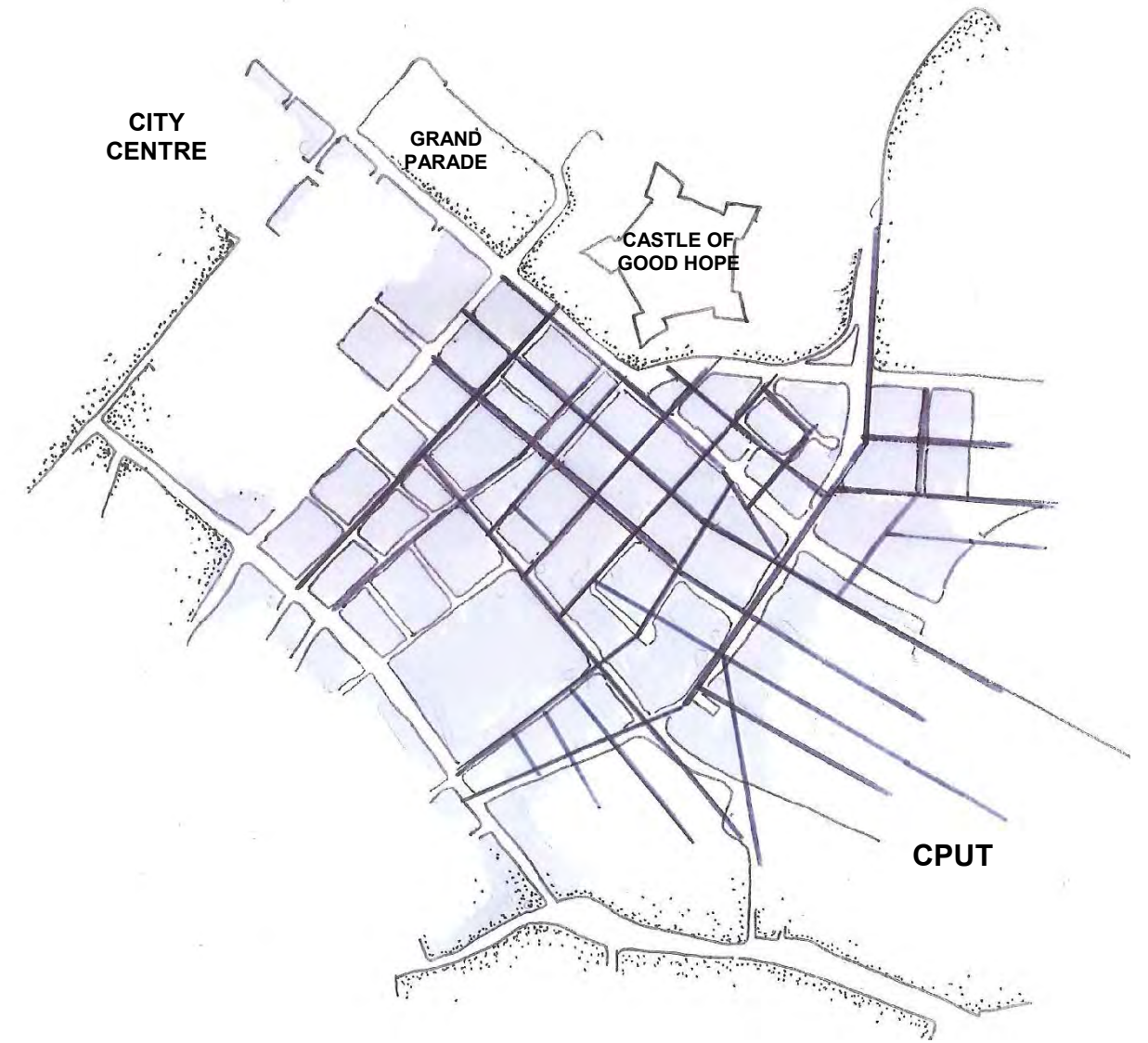
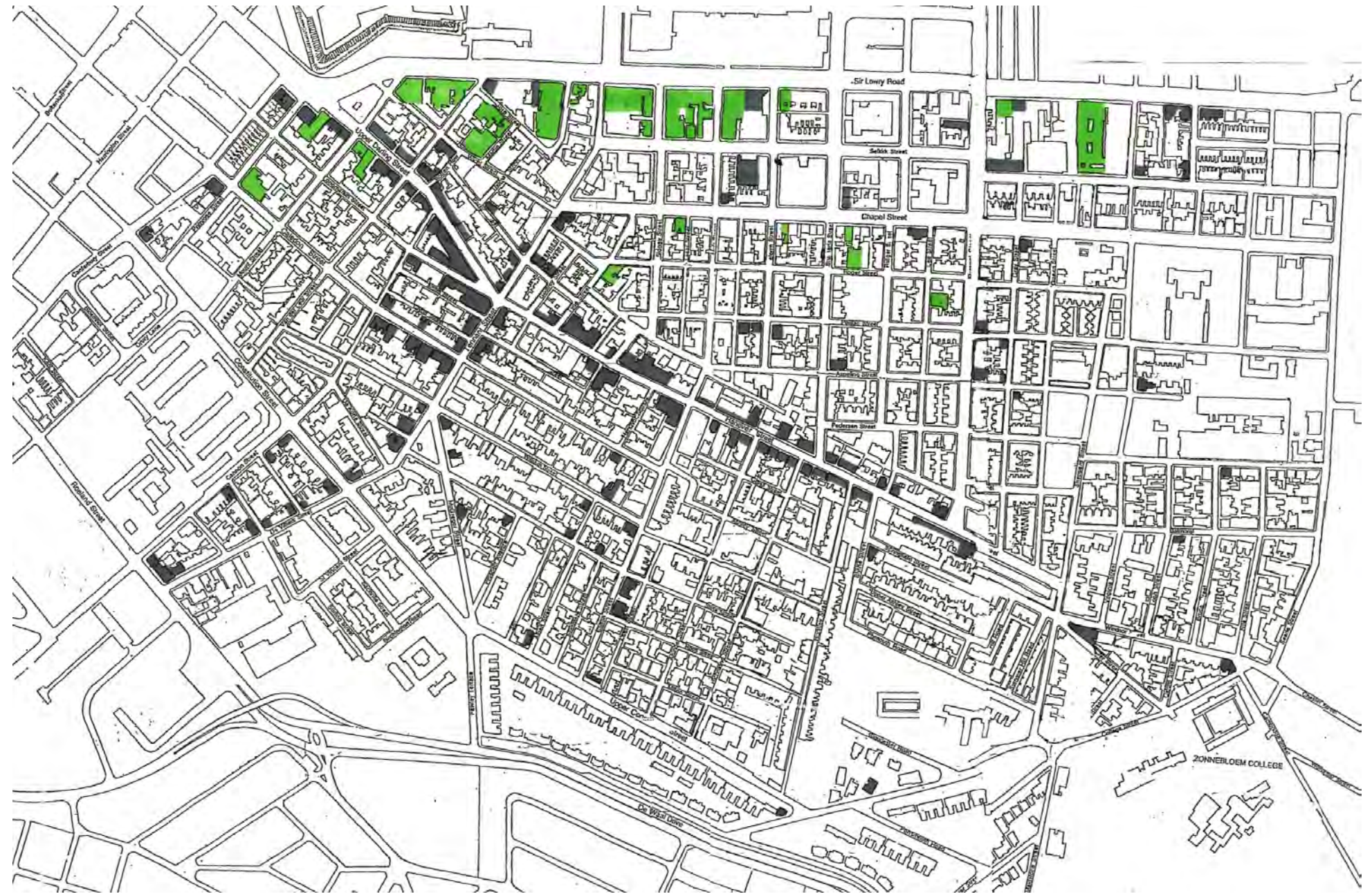


Fig 21 Diagram illustrating the 1948 District Six street structure superimposed on the existing street structure

3.2.3 Mixed Land-Use and Density

The fine-grained mix of land-uses (of shops, bakeries, markets, eating places and housing) permitted the use of the area and a diversity of daily life experience for those who lived in the area. Together with this, the medium to high density of the population and buildings guaranteed that the area could support a range of economic service and activity. (Marks, R. 2002) Fig. 23



COMMERCIAL – OFFICES, BANKS, WHOLESALERS



SHOPS

Fig.23 Diagram illustrating the mix use land-uses along main activity routes. (Marks, R & Bezzoli, M Kruger, M.2002)

In addition to the macro-scale place making elements, were other lower order urban design elements or principles that informed the character and quality of the urbanity of District Six. They are principles that in retrospect, helped to accommodate a particular social and economic interaction as well as a sense of place. At a micro-scale of urban design, these elements made up the urban morphology of the area. In their various interpretations and applications they assisted in giving character to sub-areas within District Six. These design elements and principles on which the historical area was founded and which gave it its particular character are as follows: (Marks, R & Bezzoli, M 2002)

3.2.4 The Definition of Street / Public Spaces

The streets of District Six were special public spaces because of their scale and intensity of use. Typically they were bound and defined by the “walls” of the surrounding urban blocks. Their character was enhanced by the treatment of the floor and the differing edges of steps, stoeps, colonnades and balconies. (Fig. 24)



Fig.24 Street as Public Space: (1964) Ian Bruce Huntley

3.2.5 Public Buildings and Landmarks

Given the density of housing and local population, District six contained many community facilities, places of recreation and religious institutions. Landmark buildings such as churches, Mosques and Schools often formed part of streets and were made special by their scale and architectural elaboration. Buildings like these formed visual focal points at the end of streets or at special intersections. These buildings normally gave the locals a point of reference, sense of identity and orientation. (Fig.25)



Fig.25 Landmarks: (1964) Ian Bruce Huntley

3.2.6 Background Buildings

Much of the urban fabric of District six was made up of simple ordinary buildings, which through devices such as common building lines, uniform heights, massing and human scale, served as backdrops to the streets. It was in the context of such ‘background buildings that special

community buildings and street corners assumed their celebrated status. (Fig.26 (le Grange, L & Mannon, M, 2012)

3.2.7 Elaboration of Corners

The crossroads of streets and their associated corners were important public places, affording accessibility and visibility. Invariably the corners of urban blocks received special treatment, not only in terms of use (eg. corner shop, special houses) but also in terms of architectural elaboration. Where they formed the end of rows of a specific housing typology, the corners received special treatment in terms of fenestration, pediments/ parapet walls and canopies. (Fig.27)

3.2.8 Roofscapes

The shape and form of roofs to buildings gave a unity and coherence to the densely grouped houses. Two roof types dominated namely flat roofs with parapet walls facing the street and double-pitched roofs. (le Grange, L & Mannon, M, 2012)

Typically, roofs stepped with house forms where they were built on sloping land and where buildings ran along the contours, they were continuous. Roofs were generally of the same material, with corrugated-iron sheets being most popular. (Fig.28)

3.2.9 Building Edge and Transitional Spaces

Steps, stoeps, balconies, verandahs, low walls and/or gates typically defined the transition between the public street and the private interiors of the buildings. This in-between space helped to define the street, gave shelter against weather and was also place of social interaction. (Fig.29)

3.2.10 Entrances

Entrances to community buildings and shared courtyards received special treatment. Through the use of steps, arches and canopies, the transition from the outside to the inside, and from the public realm to more private world was handled. Such intermediate spaces were also places of social interaction. (Fig.30) (le Grange, L & Mannon, M, 2012)

3.2.11 Steps

The critical site characteristic of District Six was, and still remains, the fact that it is located on a slope. In this context, buildings were terraced into the landscape and stoeps as well as balconies down streets. In order to negotiate this sloping terrain steps were employed in a variety of ways – steps into buildings, lanes and courtyards as well as steps at the end of streets. Often such steps became places of social interaction, places for pausing, for meeting and greeting. (Fig.31)

3.3 UNDERSTANDING THE PAST – DISTRICT SIX AS PRECEDENT

The overwhelming visual impression of District six today is one that is characterise by over-scaled road ways and isolated buildings. It remains a scar in the overall landscape of the city bowl and a stark reminder of forced removals and the implementation of the Group Areas Act (1965). (Marks, R & Bezzoli, M Kruger, M.2002)

The existing area of District Six has a strong association with a particular community of Cape Town for social and cultural reasons. It is also symbolic of the various other incidents of the forced removal of many urban communities within Cape Town and in the rest of South Africa. This social, cultural and symbolic value of District Six has been acquired by it being

- a site within the heart of Cape Town from which 60 000 people were removed, and which still continuous to contribute to this community's sense of place' within the city,
- a site of cultural activity of Cape Town's working people, which continuous to remain a reference point in the minds and memory of many of Cape Town's inhabitants

District Six is of cultural significance because of its historical, social, cultural, religious, symbolic and urban values that are associated with it. The significance of District Six is derived from its historical use as an important urban quarter within Cape Town.



Fig. 26 Background Buildings (1968) sahistory.org.za



Fig. 28 Roofscapes (1966) Ian Pierce Huntley



Fig. 27 Elaborate Corners Hanover Street (1960) sahistory.org.za



Fig. 29 Building Edge, Steep with low wall (1967) G.Seretta

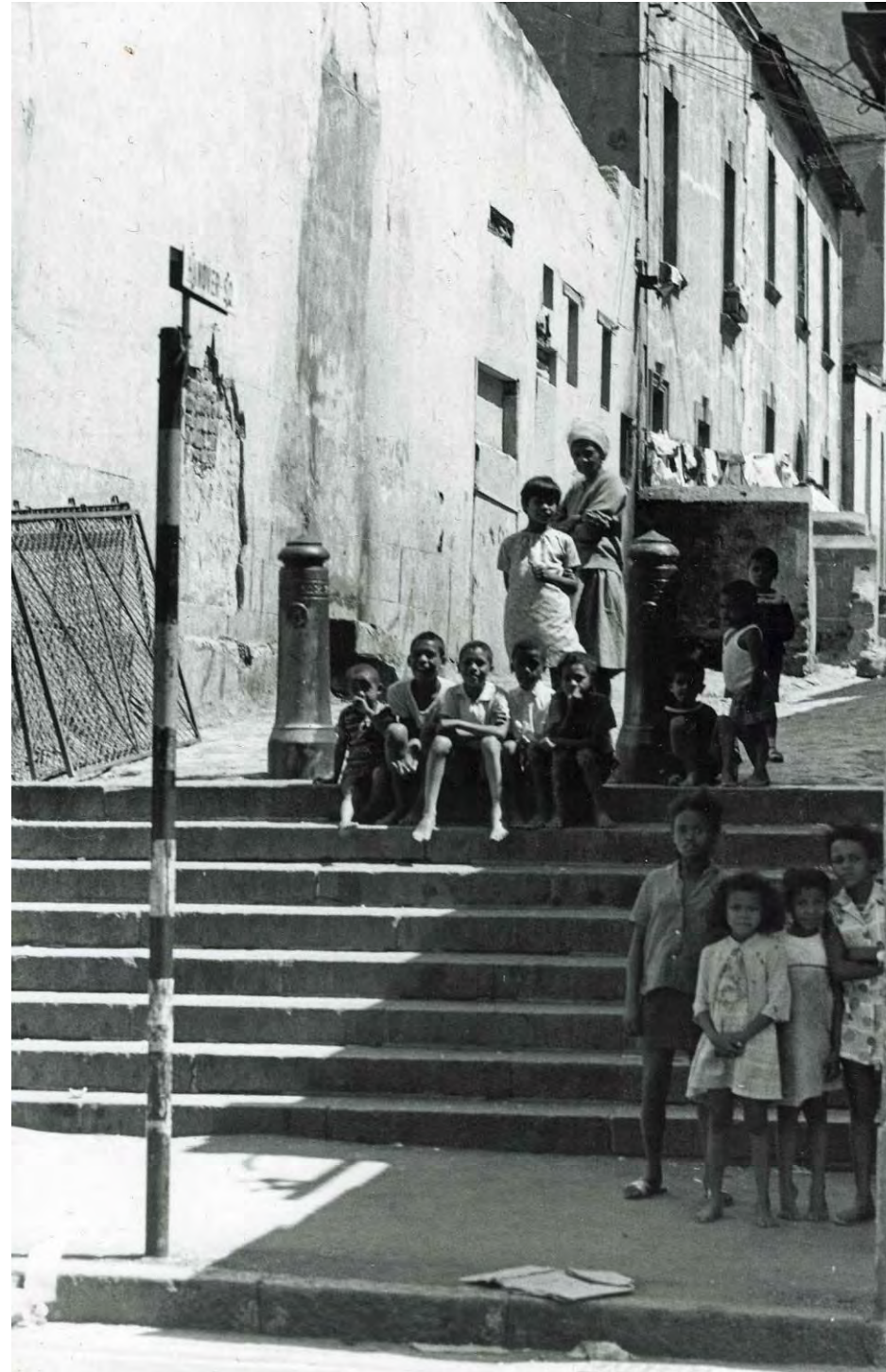


Fig.31 Steps (1966) Ian Pierce Huntley



Fig. 30 Entrances (1967) G.Seretta

3.4 COMMON GOALS AND PRINCIPLES OF FORM-BASED CODE – THE EAST CITY PRECINCT

Local identity within the East City is very important regarding different principles and structuring elements. Most form-based codes are designed to achieve the following goals;

3.4.1 PRINCIPLES:

- **Based on a Vision** - Form-Based Code is often used as a specific method of regulating development to achieve a vision and urban form. Codes typically follow the preparation of a spatial framework that provides for future land use and development objectives in a given area.

- **An Implementation Tool** – Form-based codes are designed to achieve a vision based on local preferences for forms of development. The quality of future development and redevelopment is dependent on the quality and objectives of the proposed plan. The codes translate the plan and are calibrated to fit the local context and vision for what could exist.

- **Compact Development** – Form-based codes typically focus on creating a walkable urban environment and conserving land and energy through reduced automobile usage.

- **Focus on Physical Form vs. Land Use** - Form-based codes create a predictable environment by controlling physical form primarily, with a lesser focus on land and building use.

- **Diversity and Mixed Uses** – Form-Based Codes are geared to prevent homogeneity through a variety of building types, street types, open spaces, and land uses providing for people of all ages and every form of mobility. Codes typically define the horizontal and vertical mix of uses rather than separating them like many conventional regulations. Potential conflicts between uses are typically addressed through building frontages and performance standards rather than separation.

- **Public-Private Relationship** – Form-Based Codes address the relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets, blocks, and civic spaces.

- **Complete Streets** –Coding is typically geared to creating densely interconnect street network, dispersing traffic and providing convenient routes for pedestrian and bicyclists.

- **Creating an Outdoor Room** – Form-Based Codes standards for frontages, building setbacks and heights are typically geared to create a combination of development and streetscape design that shapes the public realm and provides street enclosure.

- **Vibrant Civic Spaces** – Form-Based Codes include standards to create high quality public and civic spaces with relationships to buildings and streets such as squares, and urban parks.

3.4.2 TYPICAL COMPONENTS OF A FORM-BASED CODE

Common components of a Form-Based Code include the following:

- **Regulating Plan** – A framework that designates the appropriate form, scale and placement of development, streets, blocks, and public spaces. Form Based Codes are keyed to a regulating plan which addresses the character of the public realm.

- **Building and Plot Types** – Form-Based Codes defines the configuration, design features, and functions of building types that frame the public realm. Buildings are typically placed close to the sidewalk with frontage variations based on types of use (civic, commercial, mixed use).

- **Frontage Types** – These standards define how different types of buildings (i.e. public, residential, commercial, or mixed use) address the public realm along their frontages. Some examples may include storefronts, arcades, galleries, stoeps, and forecourts & splay corners (Fig.32)



Fig.32 – Building Frontage – Splay corner which emphasize the activity relating to street corner. Building on Corner of Caledon & Canterbury Street

• **Allowable Uses and Functional Standards** – Form-Based Codes defines the horizontal and vertical mix of uses rather than separating them like many conventional regulations. Potential conflicts between uses are typically addressed by performance standards and frontage zones which will define the types of uses permitted at ground level to accomplish certain planning objectives such as creating a cluster mix uses.

• **Dimensional and Placement Standards for Plots and Buildings** - The Regulating Plan will indicate a “build-to-line” or minimum/maximum building setbacks. Buildings are typically required to be placed close to the sidewalk to improve vitality and walkability with variations based on types of use (public, residential, commercial, or mixed use).
(Fig. 33)

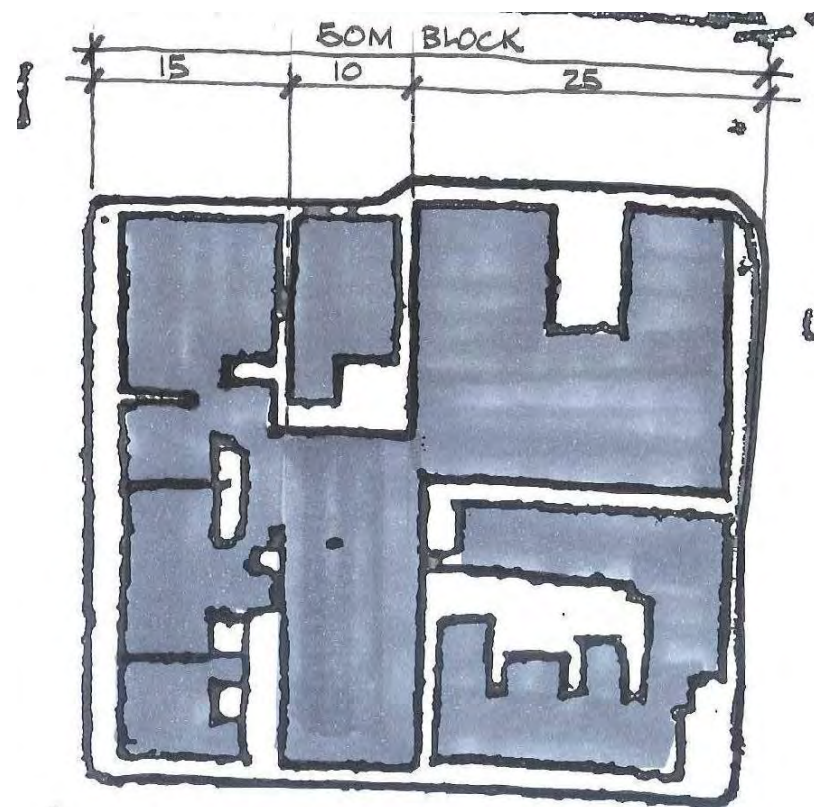


Fig.33 – District Six block (Bezolii, M 2002) – Typical block size of the former District Six – 50x50, allow for walkability

• **Development and Design Standards** – Design standards in Form-based codes will usually address how building facades present themselves to the street and other public spaces including the front entrance. Front facades, fenestrations, entrances, articulation, material courses, height step backs, outdoor activities, and lighting are typical design elements that are addressed to create an attractive street wall and an interesting pedestrian environment. (Fig. 34)

Historical buildings within the area still remains and maintains their original character;

- Color and signage on buildings gives new identity to street scape
- Proportion of windows gives order to frontage

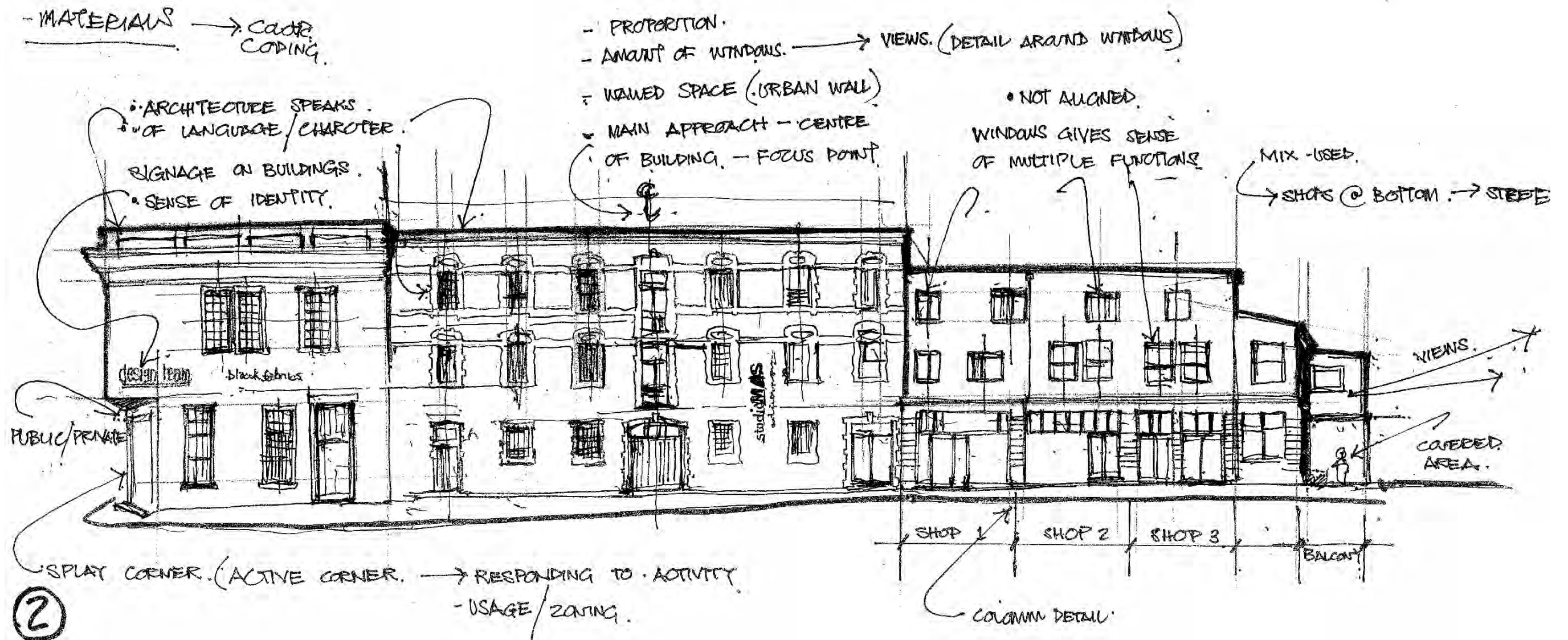


Fig. 34 – Elevation of Constitution Street – Building facade presents itself to street – Facades, fenestrations, entrances.

- **Thoroughfares Design Hierarchy** – Form-based codes provide functional specifications for thoroughfares which are often arraigned in a design hierarchy and can range from large walkways to alleys to pathways. Design standards are usually geared to creating pedestrian friendly “complete streets” through the assemblage of key functional characteristics (e.g., sidewalks, pedestrian lanes, street trees, street furniture, transit facilities, bike facilities, lightings, etc.). (Fig. 35)

- **Public and Private Open Spaces** – The integration of vibrant civic and public spaces into neighbourhoods and town centres is an essential component of the urban landscape. FBCs provide a palette of possible civic spaces such as neighbourhood parks, public squares, playgrounds, and community gardens.

- **Flexible Parking Standards** – Form-based codes prescribes the location and design of parking areas and allow shared parking and utilization of public parking when determining the number of spaces needed.



- Height of buildings within the study area ranges, giving a sense of closure between buildings. The space between buildings become pockets of urban activity

- 2 & 3 STOREY FRONTAGE.
- SOUTH FACING FACADE (SHADED)
- HEIGHT OF BUILDINGS GIVES SENSE OF PLACE.
- COMPACT URBAN FORM/BUILDINGS CLOSE TO EACH OTHER.

Fig. 35 – View down Albertus Street. Building frontage, sidewalks, narrow streets

3.5 URBAN IDENTITY – EAST CITY PRECINCT

The language of the study area also distinguishes it from other parts of the CBD, with a diversity of buildings from different architectural eras. The Modern Movement¹ in architecture is particularly well represented, as Fig.36 and the images on the following pages illustrate. With their functional approach to design, lack of traditional ornamentation, and emphasis on horizontal and vertical lines, these buildings create a distinctive architectural character for this part of Cape Town that is quite unique across the city. Moreover, this is a character that resonates with the character of the area, informed by its former history of District Six and should strongly inform proposals for a design code within the East City precinct.

The functional appearance of many of these buildings is not simply an aesthetic concern. In most cases, it is reflective of an internal spatial layout with well lit, relatively high volume, and open plan; internal space that is highly adaptable. It is this characteristic that lends itself to the occupation of these buildings by businesses in this area.

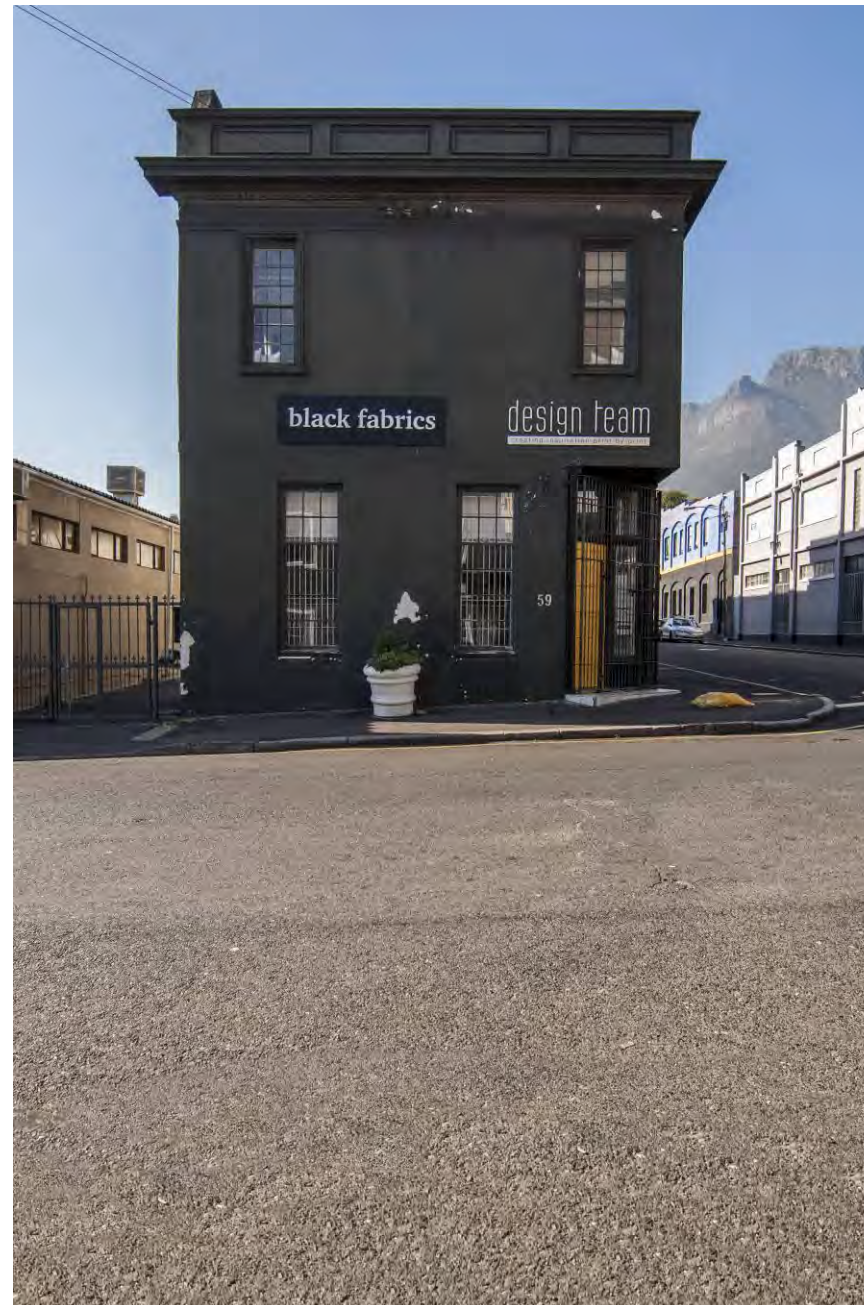


Fig.36 Corner of Harrington & Constitution Street, architectural language, splay corner – Colour and signage on building promoted usage of building

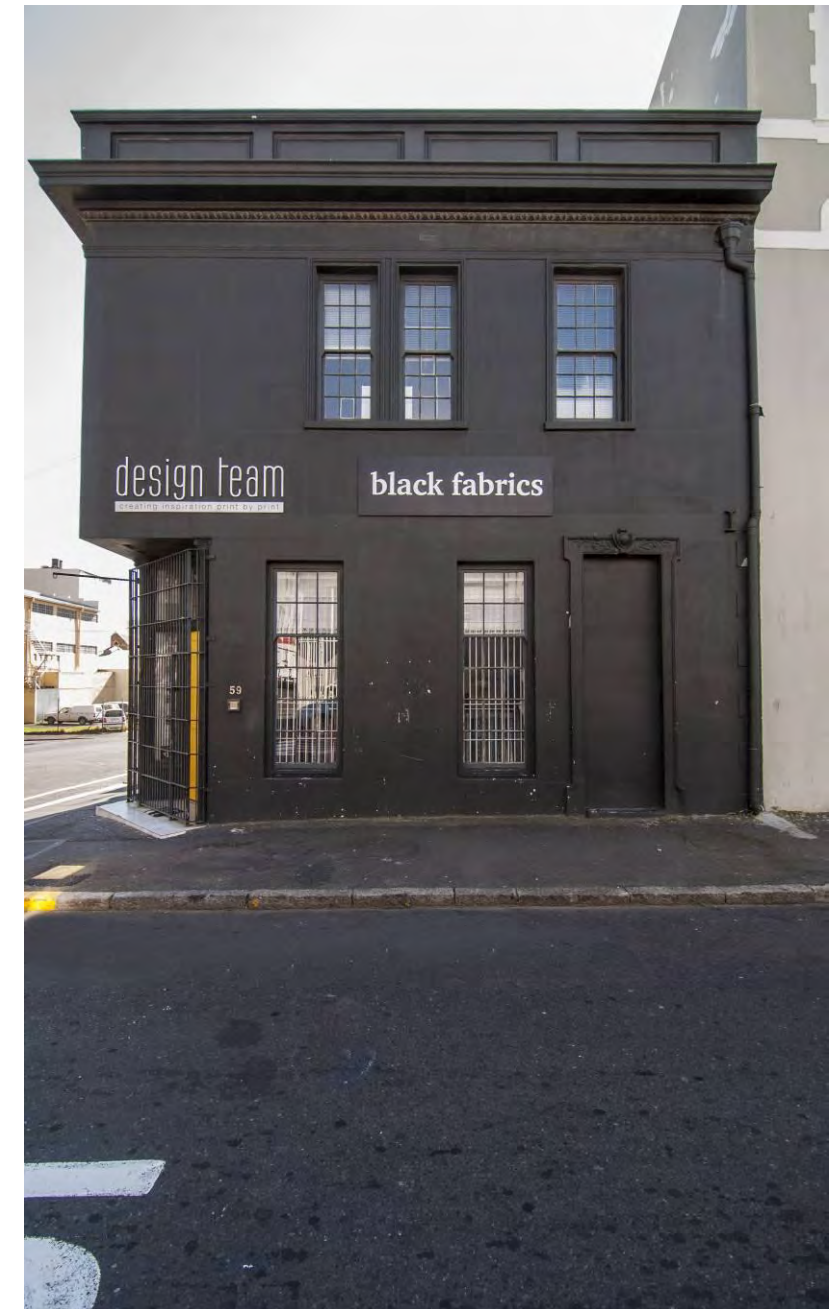


Fig. 37 View from Constitution Street – Maintaining historical character but introduces new elements to complement 21st century.

A study of these buildings assisted with identifying the most important and defining characteristics that should inform the language and the design codes of future redevelopment in the East City, as well as the extent to which of these buildings could be altered or added to. Victorian Architecture is also well represented in study area, with a wide range of buildings from this era including City Hall, the Charly's Bakery building on Harrington Square (Fig. 38)

These buildings represent a wide range of building types, scales and functions, and do not form a coherent code. While several of these buildings make important individual contributions to the area's character, they do not necessarily do so as a whole. An exception to this general observation would be the Victorian warehouse buildings, such as the Sacks Futera complex on Buitenkant and Caledon Streets (recently converted to house the Fugard Theatre (Fig.40) and programmes of the District 6 Museum. (Fig. 39)

Both of these two buildings play important, though quite different, roles in the character of East City. The Castle contributes to the cultural and historic identity of the area, as well as creating a clear spatial boundary and gateway condition on the northern side of East City. Most of the buildings scale, relationship to the street, and distinctive facade contributes to the aesthetic quality of the environment, as well as marking very clearly the historic 'urbanity' of this area - with the urban grid itself dating from the Dutch settlement.



(Fig.38 Charly's Bakery – Harrington Sqaure)



(Fig.39) District Six Museum

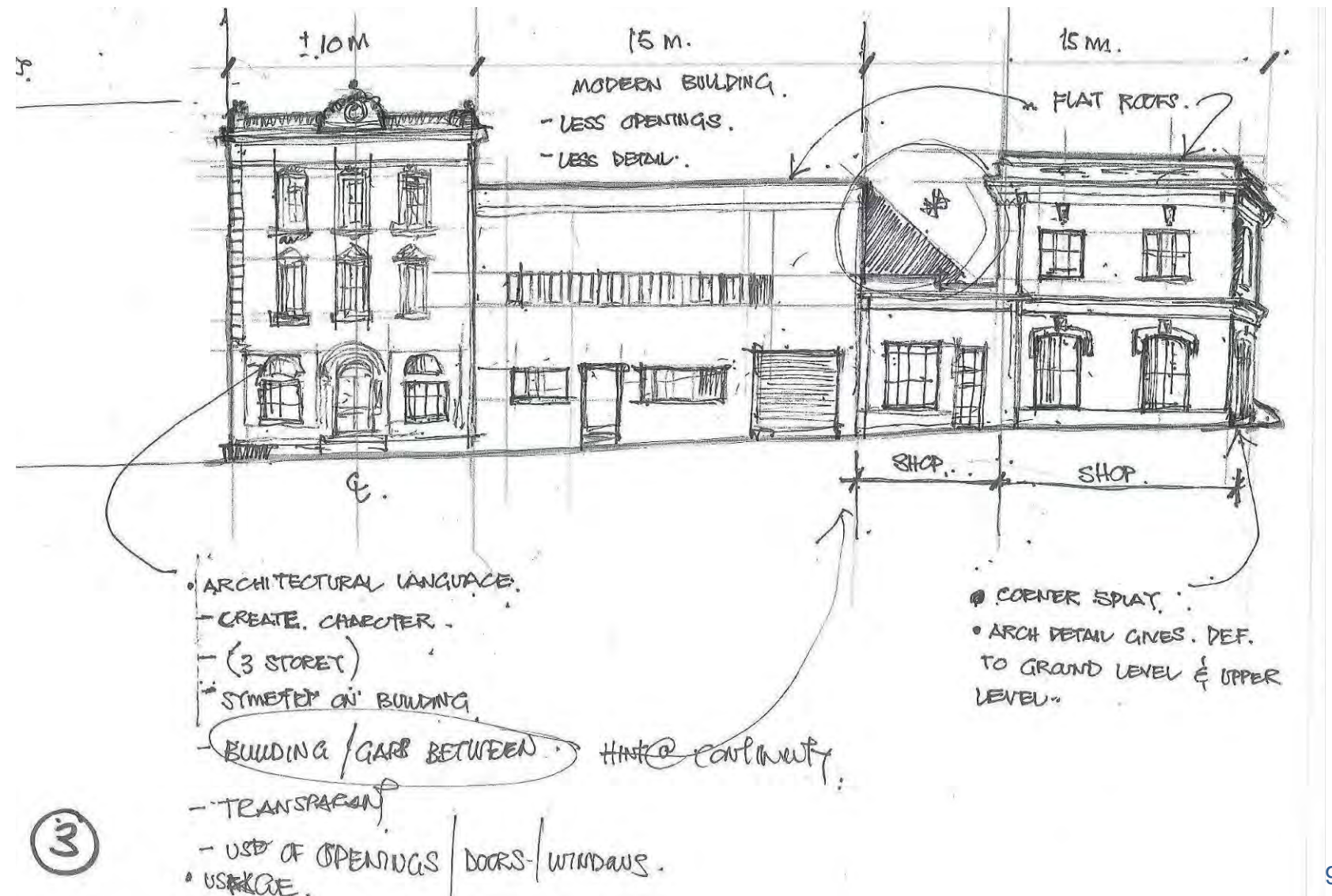


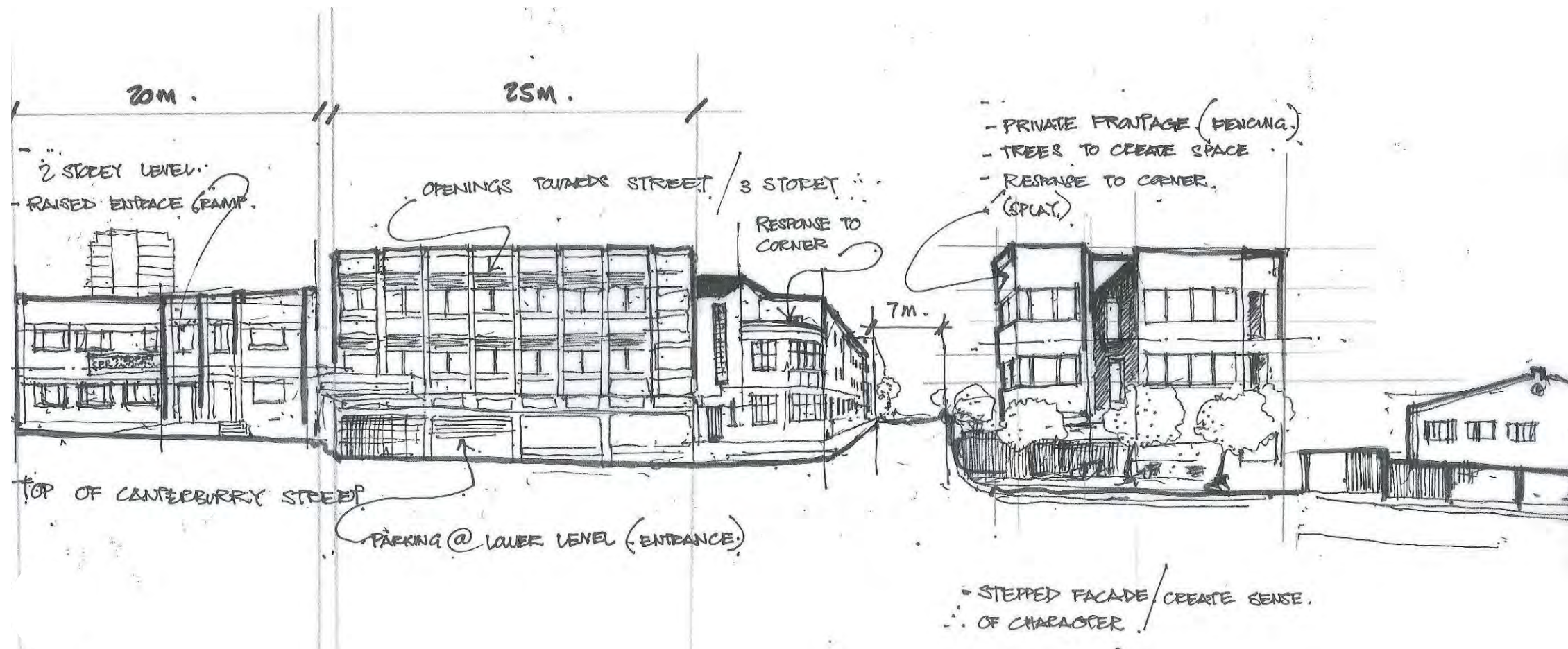
(Fig.40) Fugard Theatre



(Fig.41) View along Caledon Street

A finer grain analysis at street level indicates that the majority of active frontage and street facing uses in the area are hospitality uses - restaurants, cafe's, entertainment (such as bars and nightclubs), as well as supermarkets and bottle/liquor stores, etc. (Fig.41-43)





(Fig.43) View along Canterbury Street – Modern buildings display different characteristics. Low level of interface between street and buildings

3.6 WHAT ARE THE POTENTIAL BENEFITS OF FORM-BASED CODES?

The study area is a repository of historic architecture, which contributes to the unique character of the core area. The scale, massing and articulation of the existing buildings could inform the design guidance for the redevelopment to respond to. The key question is then what potential benefits of adopting form-based codes towards the redevelopment of the East City Precinct.

- **Can be adopted to existing conditions** – Form-based codes work well in established areas like the East City precinct because it will effectively define and codify the areas existing "DNA." Vernacular building types can be easily replicated; promoting infill that is compatible with its surrounding structures.
- **Predictable Physical Outcomes of Development** – Because Form-based codes are prescriptive (what you want), rather than proscriptive (what you don't want), they can achieve a more predictable physical result. The elements controlled by form based codes are those that are most important to the shaping of a high quality urban area. (Carmona, M .2009).

- **Encourages Diversity** - Because they can regulate development at the scale of an individual building or plots, Form-based codes encourage independent development by multiple role players which create a sense of diversity.

- **Higher Quality Development** - The built results of Form-based codes often reflect a diversity of architecture, materials, uses, and ownership that can only come from the actions of many independent players operating within a communally agreed-upon vision and legal framework. (Barnnett, J .1974)

- **Effectively Replaces Design Guidelines** – Form-based codes eliminates the need for design guidelines, which are difficult to apply consistently, offer too much room for subjective interpretation, and can be difficult to enforce. They also require less oversight by discretionary review bodies, fostering a less politicized planning process that could save time and reduce the risk of legal challenges.

3.7 ENVISIONING EAST CITY PRECINCT – IDEA / VISION

As discussed in the previous chapter, the present context and urban structure of the East City is, despite its depleted state, still of considerable cultural, social and historical significance. In addition to being a site of symbolic importance it has also retained its value as a special place for redevelopment. The area, in terms of its physical qualities, still comprises of good quality urban fabric that is unique with special qualities.

URBAN DESIGN GUIDLINES AND INFORMANTS:

Part of the history of the study area has been well preserved. This area stretches between 5 city blocks, and can be seen as the threshold between the city centre and the then District Six and now the University of Technology.

The importance of Harrington Street/ Keizergracht to this area can be seen as some of the historical remnants of District Six and will set the economic activator for the study area.

The following is a suggested set of urban design guidelines that informs the framework of the area as it guides the redevelopment of the East City Precinct at various levels of intervention. These design guidelines and informants, which address development, planning and design issues at various scales are as follows.

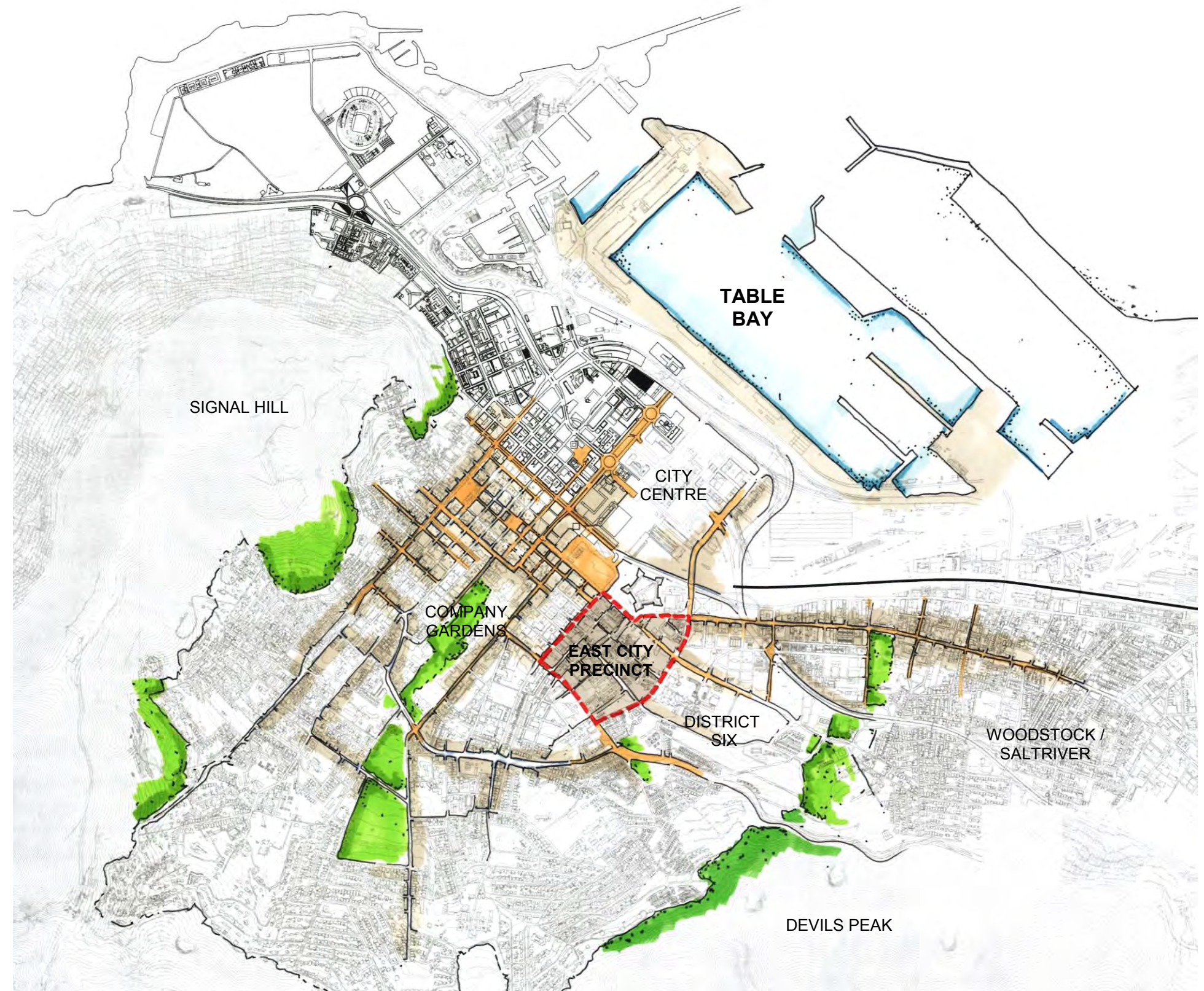


Fig. 44 – East City at Macro-scale – Threshold between City and then District Six / University of Technology

3.8.1 UNDERSTANDING – LOCAL CONTEXT

Urbanity is the generic term used here for those positive qualities, which exist in urban areas. It is the quality of urbanity which distinguishes rich urban environments from urban agglomerations; the quality of 'cities' from suburbia. The essence of the quality lies in the potentials realized when people are brought into close contact with each other. Urbanity is a complex phenomenon. The qualities of urbanity are complexly interrelated and interdependent, and positively reinforce each other at every scale. Dewar et al (1978)

The plan has to be driven by the desire to create the necessary preconditions for the making of a liveable human settlement through the theory of New Urbanism and form-based codes. To achieve the objective, it is imperative that those involved strive to promote the qualities of urbanity. In this regard, it becomes a duty and a compelling obligation:

- To respect the natural heritage and the multiple roles of the green system;
- To create human scaled urban fabric that is continuous, fine grained with narrow streets, small plots and modest buildings,
- That everyone can access all parts of the city with public transport that is efficient safe and convenient;
- That public places – streets, squares, and parks are dignified and pleasant reference points of an easily readable structure that accommodate all the known and unexpected demands of a multi cultural society;
- To focus on performance qualities;
- To emphasis pedestrian and non-motorised movement not private motor cars;
- Provide opportunity and choice especially for commercial and economic opportunities.

The intervention confines itself to a consideration of urban development opportunities within the East City looking through the lens of New Urbanism approach. This identifies the design process in the sub-regional context and puts forward notional spatial proposals for the East City precinct.

The site could be developed with the understanding of design and a spatial plan with the support of form based codes and reference made to the former historic character of District Six.

Fig.44 Local Area – East City

3.8.2 EAST CITY

In terms of the logic to the first approach to integration and the creation of interlocking system of the inner city areas, the site is situated between the CBD of Cape Town and the once bustling community of District Six. It forms part of a system of potential infill sites within the inner city area surrounding the Cape Town CBD. The potential for urban infill and restructuring should be one of the main focuses of this study area, creating a urban link between the city centre and the former District Six region and surrounding and thereby achieving a much more compact urban form. Thresholds could be increased to levels where alternative, more efficient, access to opportunities, and towards a sustainable vision.

Fig.44 the sub-metropolitan location of the East City site and emphasize a number of points, including that:

- it is an extremely strategic site in terms of development of the East Side and surrounding areas;
- it is highly accessible in terms of east-west movement, but very fragmented and loss of urban identity;
- it incorporates the historic District Six site which is a true reminder of the Apartheid Planning and also seek to use the urban qualities for the development and urban restructuring to contribute to compact urban form;
- it is in location to the CBD, which is a primary generator of local regional movement to a metro level which is being supported by a major central hub.
- it is close to a whole range of urban green infrastructure which opens up a lot of possibilities and the help with the restructuring of the area and to be potentially part of the inner city infill area of Cape Town;
- its centrality makes it a potentially significant local movement interchange point which is being supported by the Cape Town station;
- it is well located in terms of eastern regional and local and national movement via the N2 & De Waal drive
- it is well located in terms of rail travel to the east, west and south;
- it offers superb views of Table Mountain and Table Bay

On balance, therefore, it is concluded that this site is potentially highly strategic, particularly in terms of urban redevelopment, but is currently being badly and negatively fragmented. Public authorities, however, are urged to take action to ensure that the potential of this site as an instrument of future restructuring is not eroded through piecemeal action which leads to

fragmentation. (Strategic Economic Development Plan CCT, 2007)

3.9 CONSTRAINTS AND OPPORTUNITIES

3.9.1 Constraints

The location of the East City is in itself a major constraint for redevelopment and change. This part of the city is spatially disconnected from the rest of the CBD on its north and west sides. To the north are Cape Town Station and the railway lines, which create a physical barrier between this part of the city and the city's foreshore and port. This is exacerbated by the Castle and Grand Parade, which reinforce that barrier through disrupting the urban activity of the regular street grid.

Similarly on the west side, the Parliamentary Precinct and Company Gardens disconnect the eastern area of the city from the central CBD around Greenmarket Square, and from the upper CBD south of Wale Street. There has been substantial development activity in many of the other parts of the CBD in the last two decades, and the disconnection of the eastern area of the city from these areas is partly why this activity has failed to spill over into this area.

The problems and constraints associated with the contextual environment relate mostly to the barriers presented by the construction of road infrastructure both within the study area and along its edges. (Fig 45) The system of freeways offering access from the southern suburbs and the N2, prevent the newly developed area from being easily re-integrated with its historic surrounds. The connection between the study area north of Eastern Boulevard and the lower end of Zonnebloem associated with Sir Lowry Road is compromised by the presence of a high mobility route which over a large section is raised above the ground creating a dark un-hospitable zone.

These two sets of freeways pose a problem in creating a continuous green institutional link between Devils Peak and Trafalgar Park. While these freeways present serious limitations to pedestrian connectivity and access on the ground, they are also a source of noise and pollution that needs to be addressed (i.e. through setbacks, appropriate landscaping, etc.) when considering re-development close to its edge.

Recent road and service infrastructure improvements on the site are not consistent with the scale and character of the historic fabric. This condition makes it difficult to design sensitively in

response to past urban block patterns. Kaizergracht is particularly problematic in terms of its scale as well as alignment, and present a challenge to designers wanting to create an urban, as opposed to suburban environment. The scale of the Cape Peninsula University of Technology (CPUT) also presents a challenge as the interfaces in their present form do not allow Tennant,

Constitution or Kaizergracht Street to perform optimally at a human scale. The nature of the current street interfaces of the study area with Sir Lowry Road and the Buitenkant Street is very poor. A number of vacant parcels of land and derelict buildings create a barrier between the inner city and urban lifelines in the surrounding areas. This will need to be addressed as future development inhabitants need to feel secure in accessing public transport and opportunities in the surrounding area via these routes.

1. Eastern Boulevard (N2) is a physical / spatial barrier (1a) and visual barrier (1b)
2. De Waal Drive (M3) is a physical / spatial barrier.
3. Kaizersgracht as an overscaled road with problematic links to the CBD
4. Buitenkant road widening
5. Heavy Traffic flows in present safety hazard for crossing pedestrians.
6. Poor environment for pedestrians moving between Railway Station and East City
7. Weak links into the CBD from Study Area.
8. Longmarket Street link - concern for continuity of the historic route linking CBD with East City
9. Company Garden – poor link from East City
10. Problem crossing of freeway for pedestrians.
11. East City Area - large parcels of vacant land and unresolved Canterbury link.
12. Canterbury connection with Roeland Street
13. Over scaled buildings with inactive street frontages
14. East City Area - large parcels of vacant land
15. The Cape Technikon - pressure to expand
16. Concern for continuity of active interface.
17. Existing pedestrian bridges offer unsafe access for those needing to cross the Eastern Boulevard.
18. Historic link to the sea lost over time.



Fig. 45 – Constraints

3.9.2 Opportunities

Fig. 46 focuses the attention on the points and lines which allow the study area, through redevelopment, to be re-integrated with its surrounds in a manner which is respectful of the past and which can enable a new vibrant development. In particular it focuses on the potential of the following key linkages; nodes and interface zones:

Linkages

Linkages of different scales and orders need to be considered and consolidated in the preparation of the development framework. These include:

- Keizergracht as a 24 hour mixed use high density environment offering commercial opportunities for those wishing to live / work from the same location. This route will function as a key pedestrian link between the heart of the CBD with the East City precinct and CPUT;
- A link down Canterbury Street to Upper Darling / Keizergracht to connect the new mixed use heart of the East City with the link towards the inner city, and,
- Longmarket as a key pedestrian linkage

Nodes

Opportunities for nodal development and public space making need to be considered to complement the creation of a legible urban structure, and should include:

- a small economic 'threshold'/entry space at the intersection of Keizergracht and Canterbury Road
- an Institutional node at Keizergracht & Tenant Road around existing facilities and a future transport stop and drop-off zone.
- Harrington Square as a public space; allow for public events, markets, performing arts, etc

Interface zones

In addition to considering the overarching principle of mixed-use development, interface zones between predominantly residential and commercial areas need to be considered.

These include:

- the interface zone with existing CBD to include forecourt and a public space on the intersection of Darling Street and Sir Lowry Road and to improved environments for pedestrians moving between the CBD the CPUT univeristy;



Fig. 46 – Opportunities

3.9.3 IMPLICATION FOR PLANNING

The basic urban elements are in place and offers opportunity for intervention.

The major routes that border the areas consist entirely of a high order car-dominated road system. It must be rationalized to implement a hierarchy that accommodates a pedestrian friendly environment and a meaningful relationship with the public transport network.

There is a need to remedy the effects of barriers on the quality of life for study area, to promote integration at all levels, and to link activities into a system.

3.10 PROBLEM STATEMENT

Some of the problems that emerge from the detail analysis include:

UNIFORMITY AND STERILITY

Most of the living environments that make up the city have a long similar feel and there is very little choice of life-style, along a continuum ranging from very public to more private living. A number of factors contribute to this.

-LACK OF SPECIAL PLACES

There is a lack of special gathering places that are convenient and pleasant places in which to socialize.

-COURSE GRAIN OF FABRIC

Some elements of urban fabric which contains public buildings, also some housing densities which are scattered across the study area and the car-scaled nature of the development resulted in a very coarse grain of urban fabric.

-VACANT AND UNDERUTILIZED LAND

Too much vacant land is a financial burden to the municipality, causes dumping and landscape degradation, poses a safety risk and poses the risk of land invasion given the perception that it is 'no man's land'. On the other hand, vacant and underused land is an opportunity for development and restructuring.

3.10.1 PLANNING VISION

The development framework is rooted in a planning vision for East City as a vibrant urban area where the greater public lives a dignified life, in a secure and safe environment with access to a range of opportunities of urban living.

3.10.2 KEY ISSUES: NATURE OF THE PROBLEM

The challenges facing the East City precinct is re-enforcing the environment as an efficient and qualitative living environment through the application of Form-based codes.

The reasons for this twofold is that the East City study area, along with the strategically located vacant state land would be under constant threat of privatization and gentrification, where limited opportunities present themselves and it is claimed that there are no resources, visionary political leadership or will to facilitate improved the quality of this area. Form-based codes will help to reinstate this area to its former urban state of activities.

4.0 PROGRAM / INTERVENTION

Proposals will include the redevelopment for the precinct, however, the dissertation will focus on specific areas / character areas to promote the design code.

4.1 DESIGN CONCEPT FOR THE PRECINCT : EAST CITY AND SURROUNDS

The design concept for the East City was informed by the local contextual conditions and the premise of the street grid and the urban block which will extent to the existing urban fabric and open spaces that will integrate the new precinct with the existing urban landscape of the city and its surrounds.

Buitenkant Street has already developed into an urban corridor with small scaled activity aligning the street as public space. Busses & taxis serves as public transport and provides access to and from the Cape Town Station area. This notion of the main network linkages as activity streets should be applied in principle to the new development and should be envisage that the existing roads with in the study area (Keizergracht, Canterbury and Constitutional Street), flaking to the east and south (towards the CPUT and District Six) should allow for similar urban development: mixed used, integrating residential with small scaled facilities and retail. The proposal calls for these roads serving as public connectors.

4.1.1 METHOD: SPATIAL DEVELOPMENT FRAMEWORK

- The dissertation starts off by unpacking the importance of the study area within the sub-metro context. In the first phase, I will began to develop a spatial framework for the East City precinct
- The second phase will move towards much bigger scale and focus on part of the urban fabric of the East City which will focus on two character areas
- The final phase would be in much more detail to project the quality of the urban fabric. It is around this point that we can construct the design code for the study area that

guides the development of economic activity and urban interaction.

4.1.2 SPATIAL STRUCTURE: EAST CITY PRECINCT

The proposal of a design code will consists of a legible geometry that will structure the open landscape to create logic of access and a spatial order that unlocks a rhythm of opportunities for choice of lifestyle and type of human activity.

As previously discussed, the starting point for thinking about the connection hinges on the pattern of interconnection between the different urban areas (CDB and East City), which dictates the spatial configuration of accessibility and create social and economic opportunities. The movement component of this design intervention will focus on creating opportunities for social and economic activities especially those that are essential for a basic human existence

4.2 APPROACH TO THE FRAMEWORK

4.2.1 THE STRATEGIC APPROACH

The framework cannot attempt to do everything – it needs to be strategic. In keeping with this approach, the spatial framework for the East City provides a guide for the implementation for the design code.

4.2.2 Indicative Framework Plan

The adjacent Framework Plan (Fig. 48) illustrates how the public spatial structure manifests in the East City Precinct by illustrating building footprints on the sites which will be developed in the future. It is important that the framework plan is not thought of as a masterplan. It is rather an illustration and a flexible framework that imagines how the East City could be and forms the basis for the physical model.

Its purpose is to illustrate how the principles of the development framework could manifest spatially in plan, and by so doing serves to give an indication of the grain, texture and character of the streets and spaces. It is critical to note that the final layout will only be resolved at more detailed stages. It is only at this stage that detailed information will be developed and design codes will help to illustrate the design process, that finality about

the layout of urban blocks, buildings and open space can be reached.

The framework establishes the spatial parameters for future development and reuse of existing buildings in the area. It sets out the future structure of spaces, places and the connections between them. The complete framework plan is illustrated at Fig.51. The East City framework plan and is made up of layers, each focusing on a specific aspect of the future structure and its spatial implications.

The framework plan illustrates the urban design framework layers, described and illustrated on the following pages, is:

1. *structure and legibility*
2. *movement systems*
3. *open space system*

4.2.3 Structure and legibility

The proposed public structure (Fig.48) ensures that the area can be spatially integrated with the surroundings and with the CBD that offers access to extensive social and cultural opportunities. It also ensures that future facilities can be located so as to reinforce existing public nodes and routes.

A network of interlinked open spaces supports existing public institutions within the study area. This network will allow future development to create meaningful urban spaces. This urban structure is to form part of a continuity of urban space across the City Bowl area. The structuring link between Keizergracht and Darling Street is the key ordering element and the key to integration of the new development with the existing CBD and surrounds.

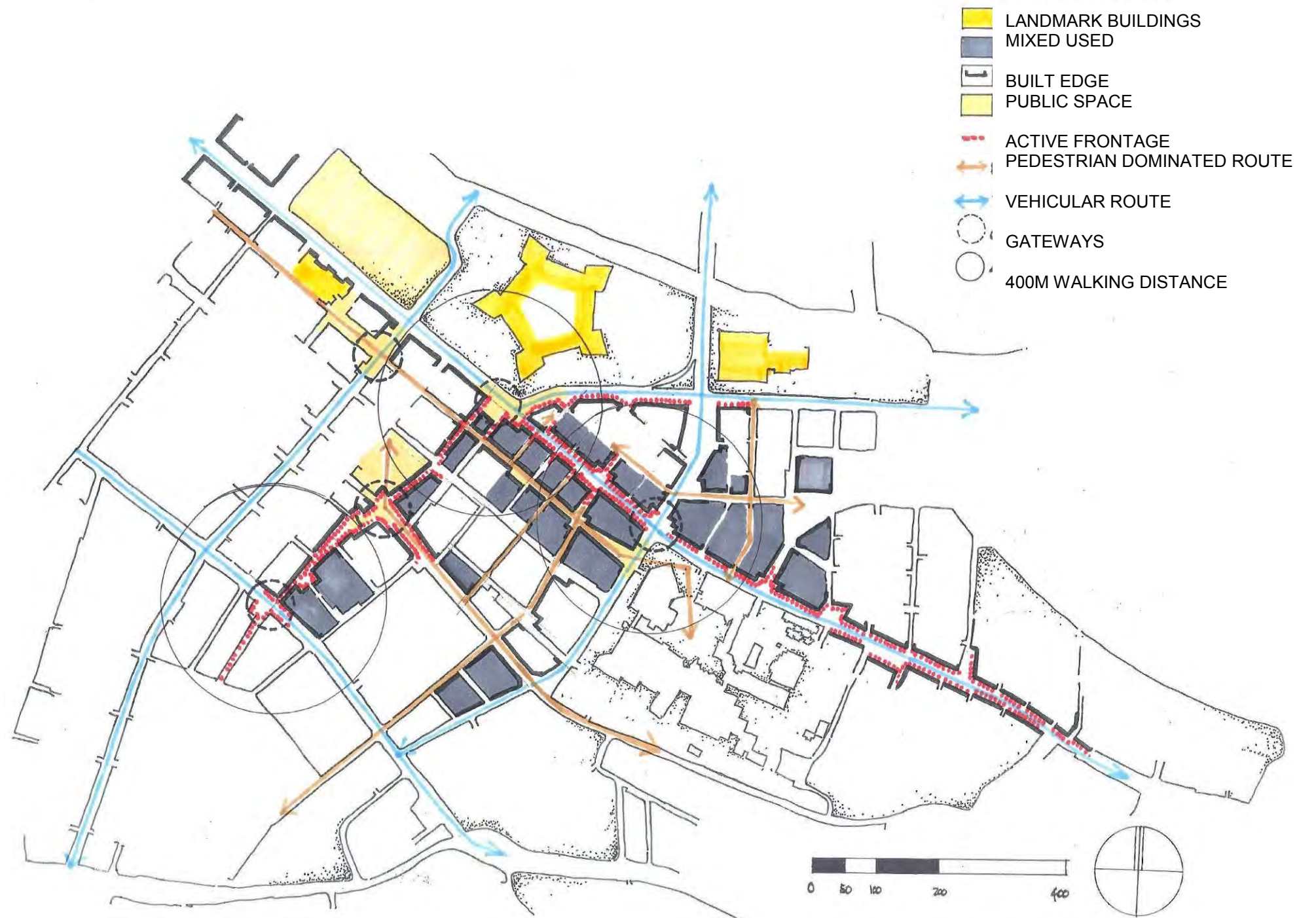


Fig. 48 – Structure and Legibility

4.2.4 Pedestrian movement

Pedestrian movement is critical to any area's vitality, contributing to liveliness, the safety of its streets, and the success of local development. Development in the area will need to seek to increase rather than reduce pedestrian movement, through creating an environment that promotes walking. There are four main factors that should be addressed:

- reasons to walk: destinations in and outside of the area, and reducing options for vehicles
- walking comfort: pavement surface, and protection from rain and sun
- walking interest: buildings with active frontage (such as shops, workshops, studios) and vegetation such as mature trees
- walking safety: building frontage, clearly defining the public realm and creating passive surveillance.

Currently the main reasons for pedestrian movement through the area are either commuters walking between parking and the city, or CPUT students walking from the rail, bus and taxi stations. Much of this foot traffic is through areas that are uncomfortable, unattractive and potentially unsafe.

The framework will try to increase pedestrian movement by retaining substantial (commuter) parking, bringing new uses and activities, and significantly improving the pedestrian environment. Pedestrian improvements will include streetscape improvements and built frontage to create solar and rain protection, generate interest at ground level, and promote safety. The principal proposed pedestrian movement routes are illustrated in Fig.49

1. Keizergracht – City CPUT link
2. Buitenkant Street – Station link
3. Harrington street
4. Constitution Road

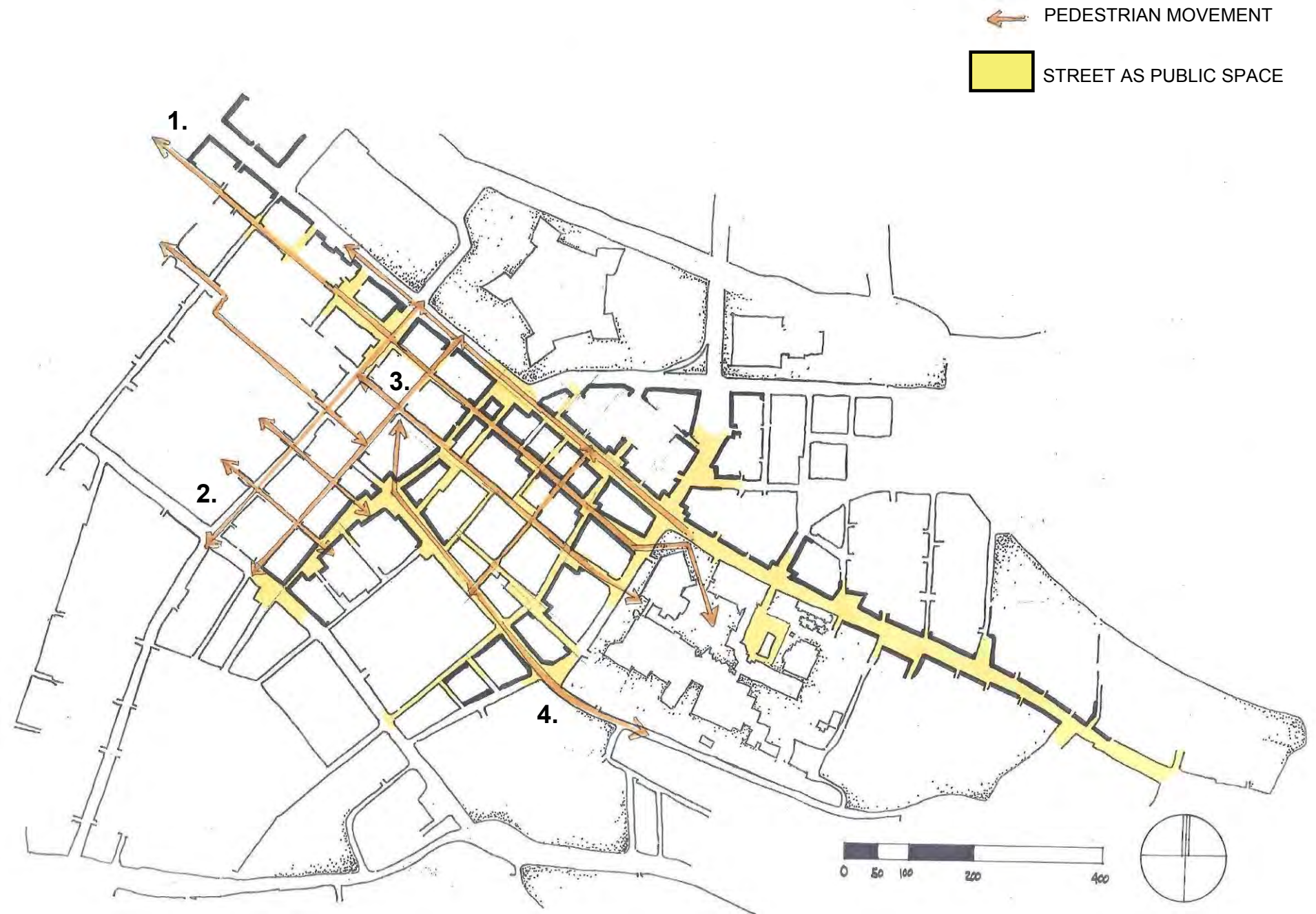


Fig. 49 – Pedestrian Movement

4.2.5 Open Space System

The East City currently includes vast open space, most of which is simply unbuilt land, or vacant sites. The framework seeks to structure the public realm, through defining what is public and what isn't, and through creating a hierarchical approach to the open spaces that make up the public realm. The public realm includes the street spaces, public spaces, and public parks.

4.2.5.1 Street space

The spaces of the street system have been discussed in some detail under character, structure and legibility, and movement. It is worth re-emphasising here the importance of the street space being clearly defined by the buildings that enclose it on either side, and activated by the activities that take place inside those buildings. Equally, the streets in the study area play a key role in defining the area's character, and each has its own integral character.

4.2.5.2 Public Spaces

The public spaces proposed for the East City will form part of the city's existing network of public spaces, linked to this network by the pedestrian movement system. (Fig.50)

The removal of the existing car parking at Harrington Square will create a public square as the heart of the East City. The square should be enclosed by new development on the southern and eastern sides, while the space and paving of the square should extend over Harrington Street and Caledon Street. Canterbury street should be pedestrianised between Albertus and Caledon Streets, while Caledon Street should remain open for vehicular traffic, but across a shared surface where the pedestrian clearly has priority. Canterbury Street will be the principal venue for temporary uses and events, such as those reviewed in the precedent study above.

1. Parade/Station Precinct
2. Library / Longmarket Street link
3. Canterbury Street & Harrington Square
4. Keizergracht & Sir Lowry Road node
5. Caledon street link to CPUT
6. Keizergracht / CPUT node



-  STREET AS PUBLIC SPACE
-  GREEN PUBLIC SPACES



Fig. 50 – Public Spaces – indicated hierarchy of spaces which gives structure and form to the framework

4.3 THE FRAMEWORK PLAN




The East City precinct Urban Design Framework Plan is illustrated in Fig 51 opposite. This framework plan brings together the layers described above to indicate:

- an urban structure of streets; with axes, gateways and nodes;
- development blocks and buildable sites;
- definition of built frontage, including active frontage (described in more detail);
- the distribution of public space;
- integrated movement network

The Framework of the East City Precinct illustrates where new development will take place (building roofs in red) on vacant sites, or as additional on existing buildings in the core area. It also indicates the pattern of public space, with new trees and vegetation Fig 51.



Fig.51 The East City Precinct | Urban Design Framework: Illustrative Plan

-  STREET AS PUBLIC SPACE
-  NEW DEVELOPMENT
-  GREEN STRUCTURE

4.3.1 STRUCTURE OF DESIGN CODES : UNDER STANDING THE URBAN HIERARCHY

The East City Precinct is divided into two character areas. Each area has a different role to play within in the study area and relates to the overall urban hierarchy within the wider Cape Town city bowl. The listed order below reflects the areas position within the overall hierarchy.

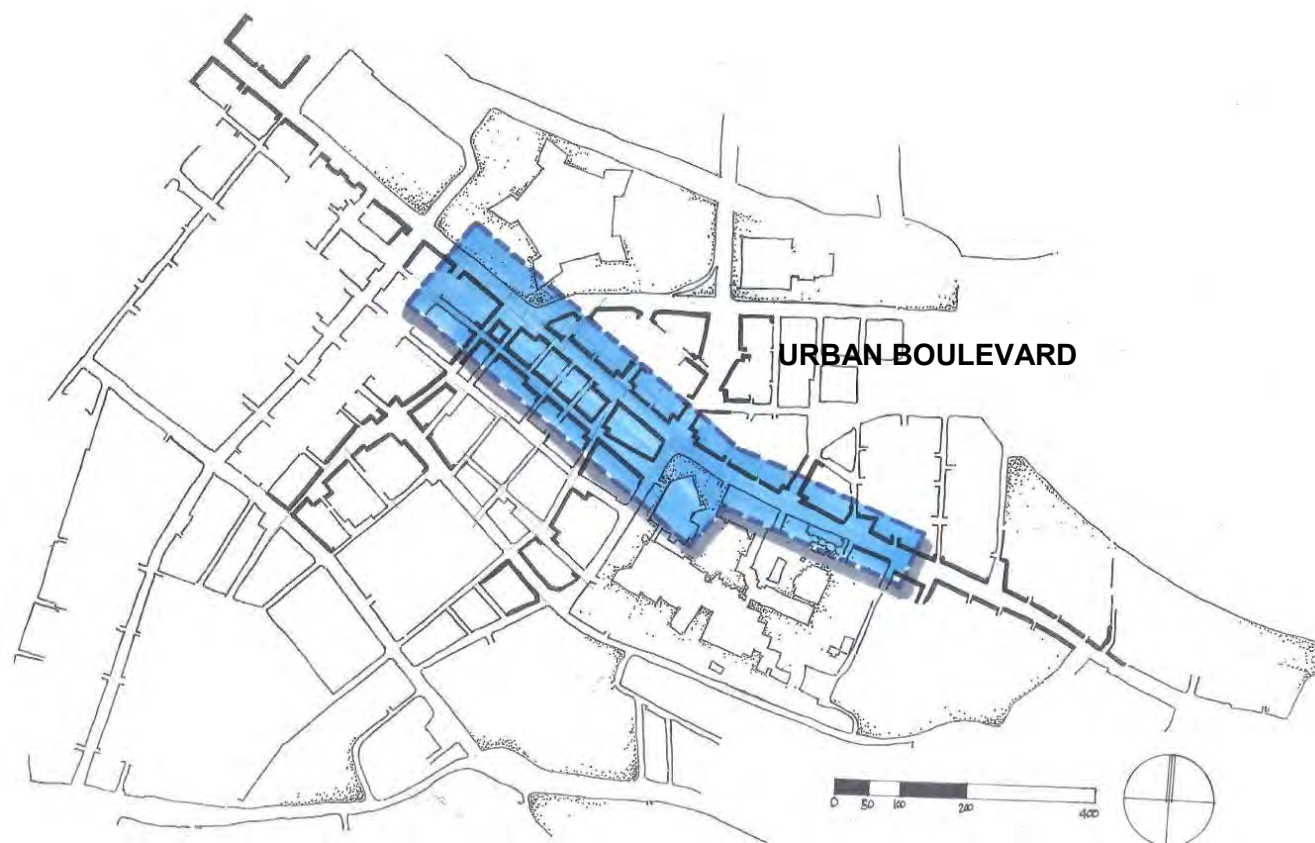


Fig.52 Character Area 1 – Urban Boulevard : Keizergracht

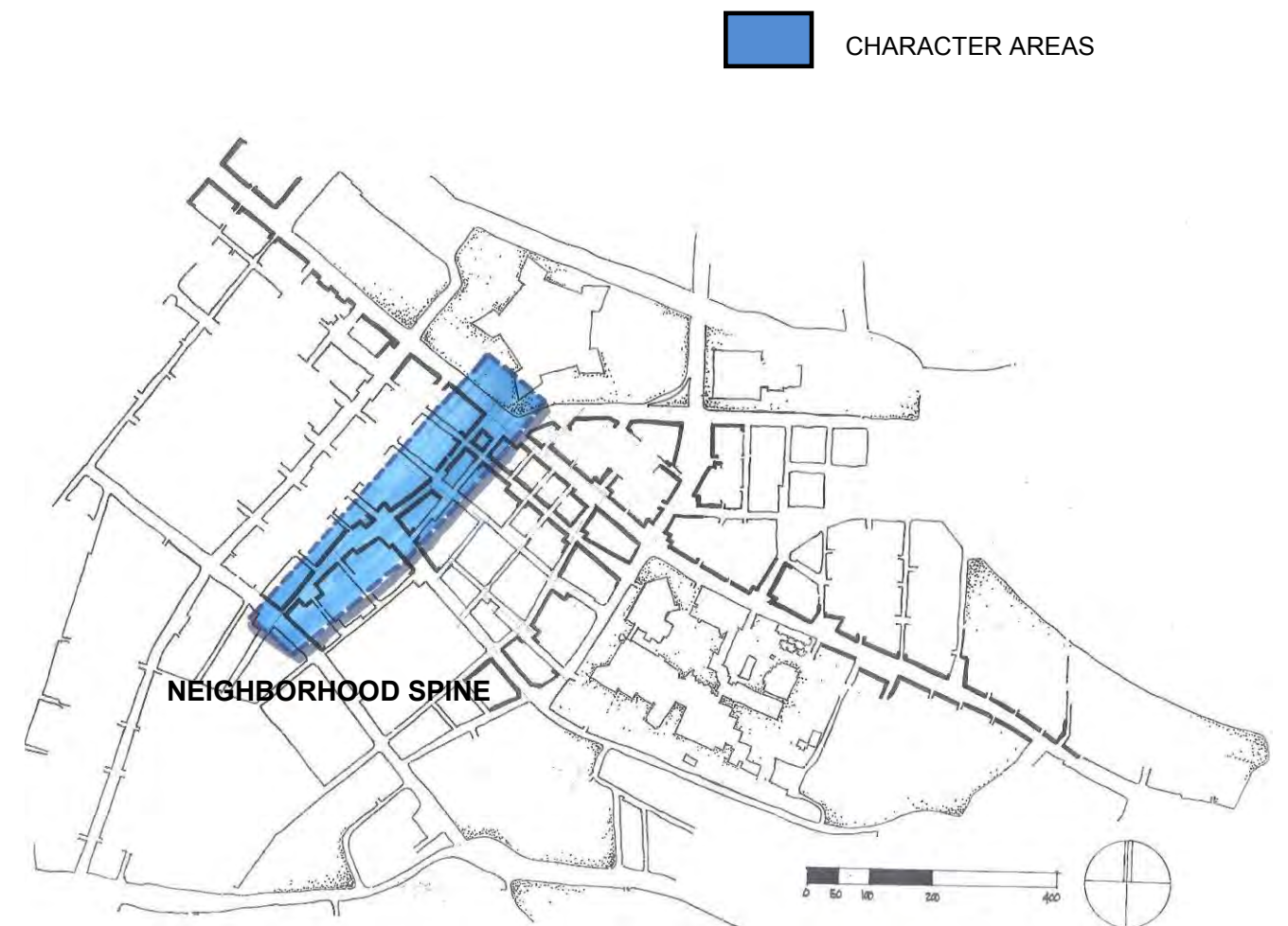


Fig.53 Character Area 2 – Neighborhood Spine : Canterbury Street

4.3.2 URBAN BOULEVARD - CHARACTER AREA 1:

Focused on Keizergracht, this is the most urban part of the study area. This Urban Boulevard area will contain offices, shops, community uses and live-work spaces supported by a high quality public realm and public transport route. Within the wider context of the inner city, the Urban Boulevard will form the central focus for the East City. (Fig. 54)

Keizersgracht is to be reinforced as the central spine and activity corridor of the study area. Its character and function will impact on other areas within the East City precinct whose edges are bounded by it. Resembling in part, the historic Hanover Street, it will be fronted on either side by mixed use buildings which vary in height from 3-5 storeys.

The ground floor of the buildings will have active frontages onto the street, with narrow shop frontages creating rhythm and vibrancy to the streetscape. Focal points along the length of the street that could accommodate special retail activities will coincide with major pedestrian cross routes. Accentuation in building height at the street corners is encouraged, particularly at the nodes and where more active uses such as shops, cafes and restaurants could be located. (Fig.62)

The building frontage of the street is to vary along its length to create a series of closed views. The existing trees that currently line the route needs to be relocated to frame the new public spaces identified within the open space system. The street character of Keizergracht has to be improved at all times, creating a dominant link.

Car parking is accommodated in basements that are accessed from side streets. Limited, short stay, on-street car parking is provided along the length of the street for shoppers and visitors.

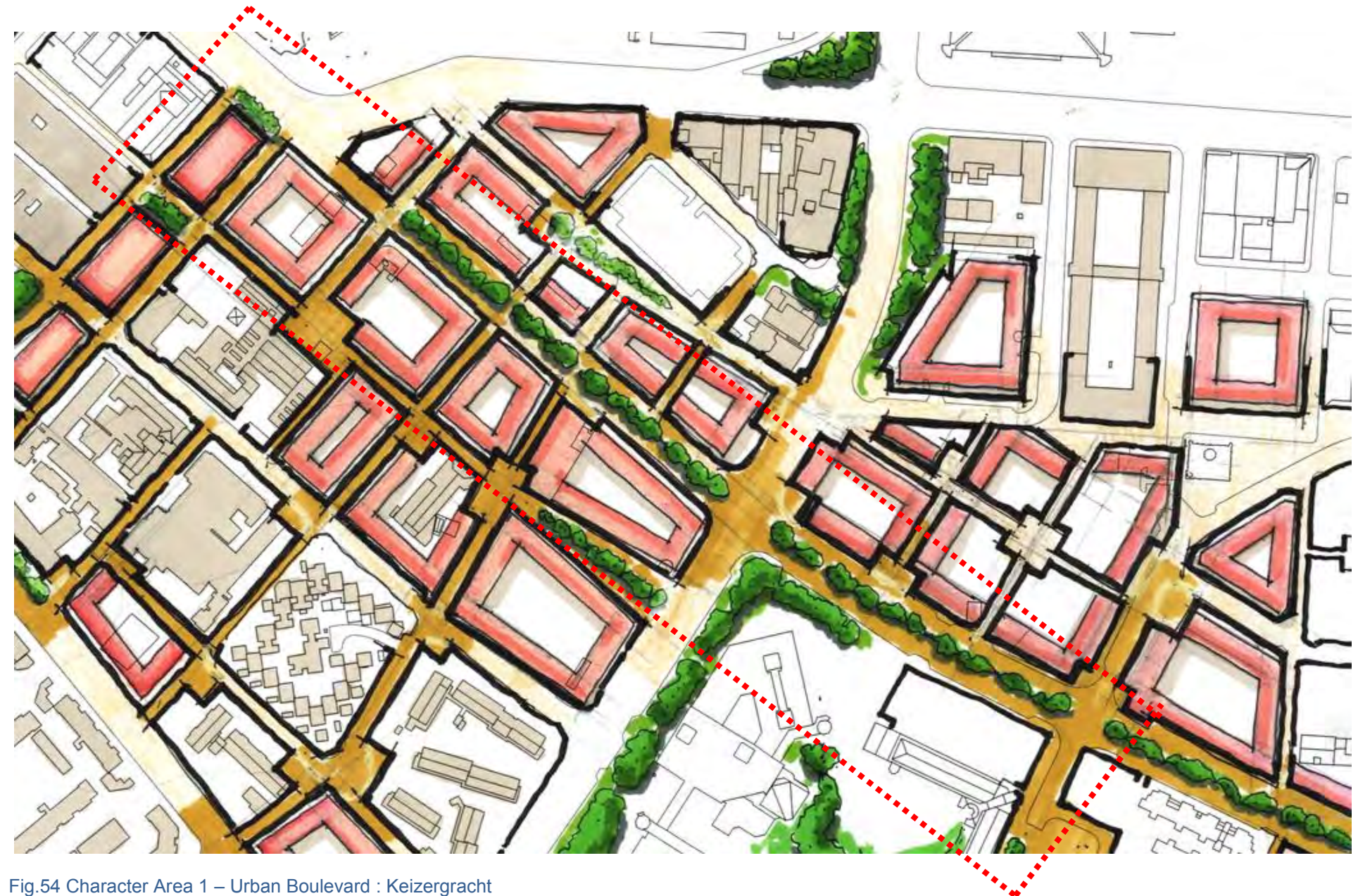


Fig.54 Character Area 1 – Urban Boulevard : Keizergracht




-  STREET AS PUBLIC SPACE
-  NEW DEVELOPMENT
-  CHARACHTER AREA



Fig.55 Detailed Area – Urban Boulevard : Keizergracht

4.3.3 Design code for Urban Boulevard:

Keizergracht runs along the north of the study area and is a major historical route connecting the inner city and CPUT (District Six)

1. Through fundamental redesign, Keizergracht will form the beginning of an 'urban boulevard' into the city and create a new distinct focus for the study area, complementing existing facilities.
2. CPUT, Castle of Good Hope and the Parade to the west provides and create a viable activity focus.
3. Keizergracht amenities will include:
 - commercial activity and other local shopping;
 - restaurants/cafés/public house;
 - offices and small business units;
 - live-work spaces and apartments; and
4. Keizergracht will serve as a key public transport corridor.
5. The Urban Boulevard will comprise of a high quality public realm, including a strong structure of trees, robust and attractive paving materials and well designed street furniture. (Fig. 55 & 56)
6. Buildings will generally be 3 to 4 storeys high with active frontages at ground floor level, with apartments and offices above. (Fig.55)
7. Underground parking will be provided by exploiting the significant change in levels. (Fig. 56)
8. At the upper storey's, living units will maximise views across the East City towards Table Mountain and Table Bay, including views towards the Castle of Good Hope to the north.(Fig. 56)

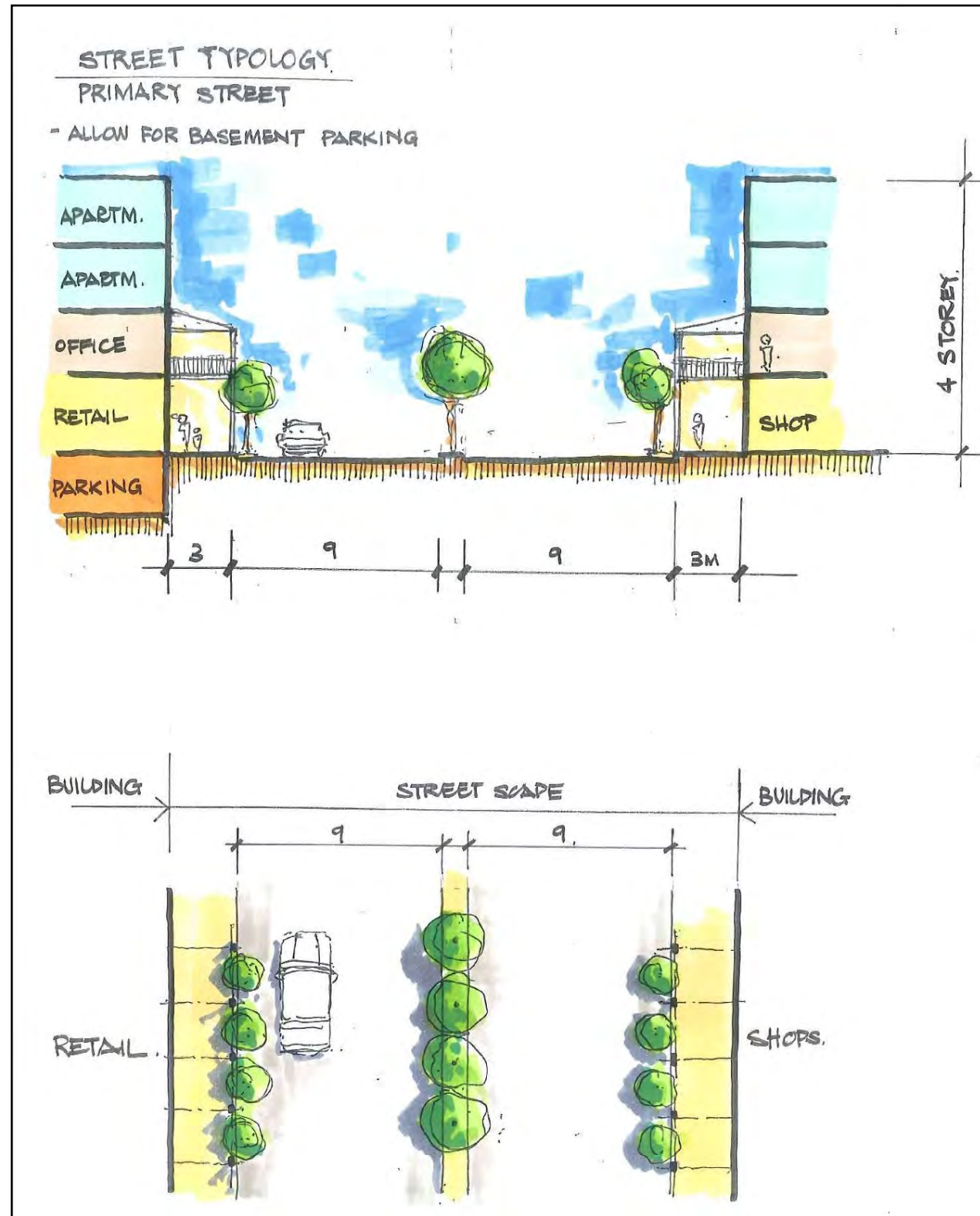


Fig.56 Keizergracht Building frontage & streetscape Layout

4.4 NEIGHBOURHOOD SPINE - CHARACTER AREA 2:

Extending south from the Urban Boulevard, the Neighbourhood Spine, Canterbury Street, will bring urban activities into the East City precinct, allowing the street to evolve into a high density, mixed used core in the longer term. Canterbury Street will be the secondary route through the study area connecting Roeland Street with Keizergracht. (Fig. 57)

Canterbury Street - becomes the symbolic stitch reintegrating the area with Darling Street and the Castle precinct. The street's current role serves as a short cut for vehicles between Roeland and Darling Street which will be reduced in favour of an emphasis on the streetscape and building frontage. The existing road space will be reduced.

The Buitenkant / Harrington Street area has historically been a mixed use area and served as a 'threshold' into the East City. Many remnants of the historic fabric remain and generally consist of low rise 2-4 storey commercial buildings which collectively create a tight knit urban fabric and human scaled environment. Development along Canterbury Street within this area will be mixed use with commercial office floor space above. It should respond sensitively to the existing fabric with building heights ranging from 3- 5 storeys (or higher).

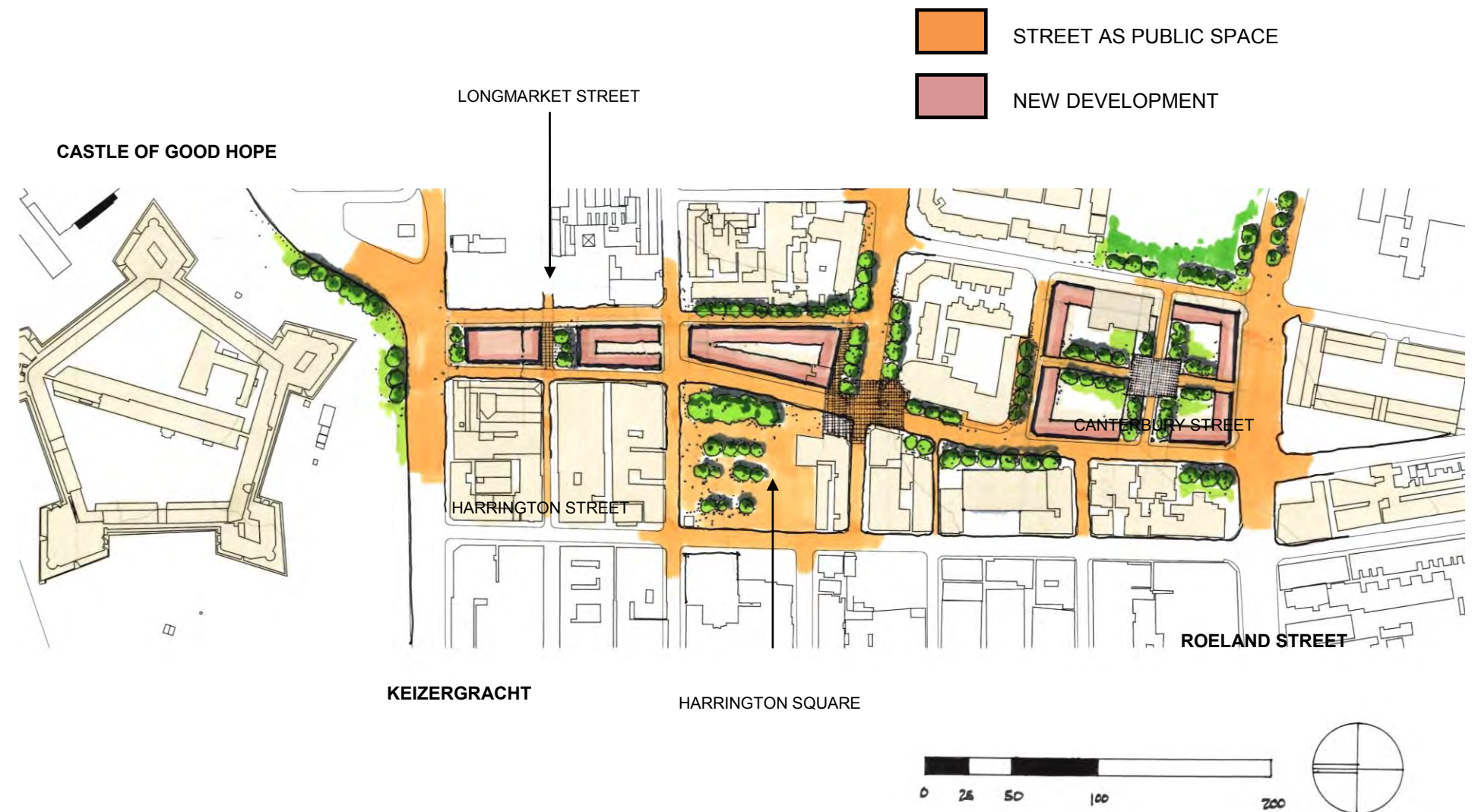


Fig.57 Character Area 2 – Neighborhood Spine : Canterbury Street

4.4.1 Design code for Neighbourhood Spine

- The Neighbourhood Spine runs along Harrington Street, the principal thoroughfare within the East City precinct connecting Keizergracht to the north and Roeland Street to the south. (Fig.57)

- It will form the key linear public realm corridor within the study area
- Canterbury Street is fronted by buildings, generally retail and small industrial activity of three or more storey's.
- 'Flexible frontages' provided at the ground floor level to allow conversion from residential to retail, office, workspace or community uses to meet future needs and respond to market opportunities.
- At the heart of the study area is Harrington Square, a public space which provides a focal point for informal public use, gatherings or parking, as well as forming the setting for a well improved public square. (Fig. 57)
- Fronting the square, existing buildings with heights of 2-3 storey's lines up along Caledon Street, (Fig.57) Again 'flexible frontages' will be provided at ground level to allow for an active frontage.
- Embracing the sustainability priorities for the East city precinct, public institutions will be designed as a key civic buildings and provide a number of environmental features.

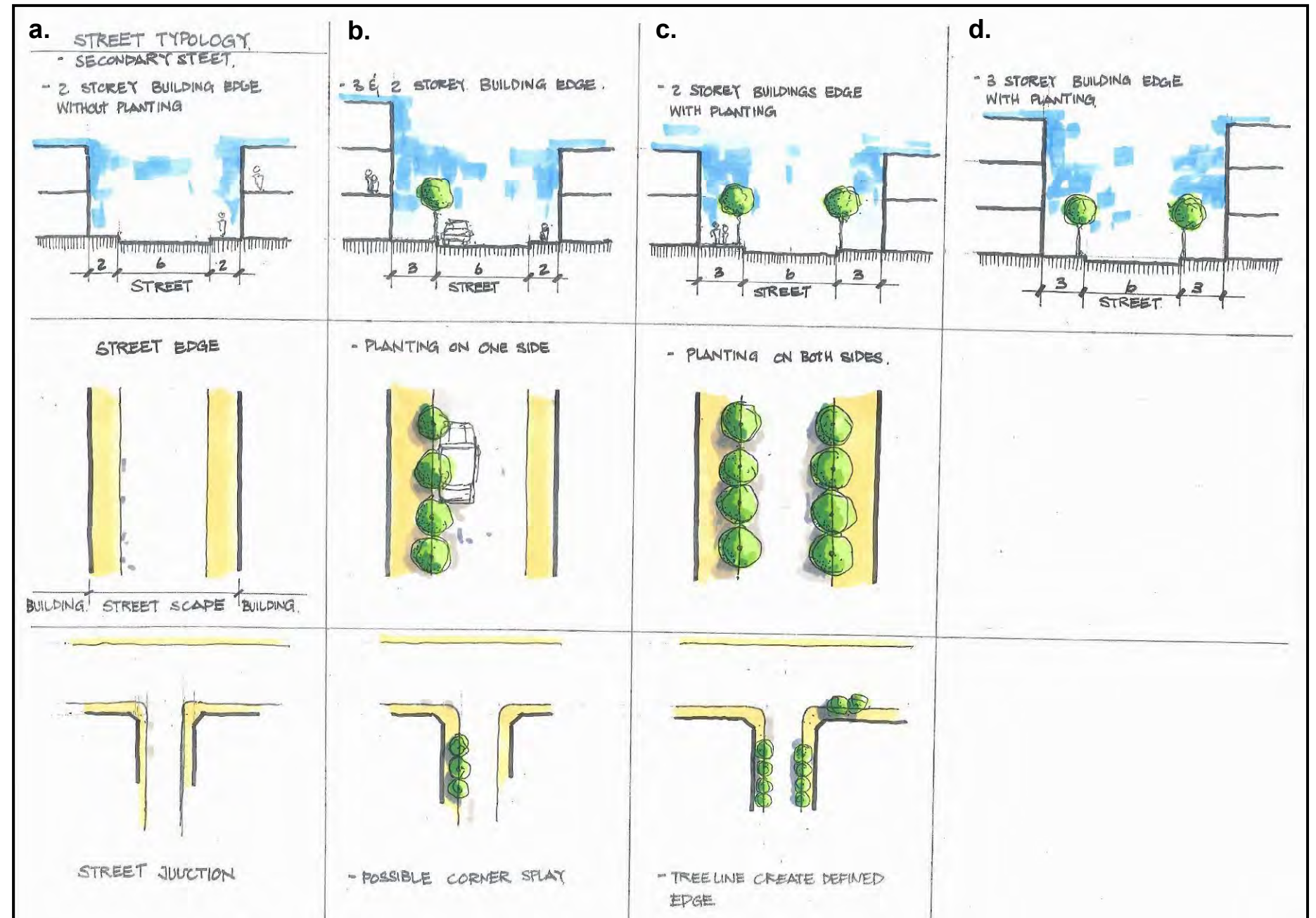


Fig.58 Canterbury Building frontage & streetscape Layout

4.5 DESIGN CODES - URBAN STREETS TYPES

4.5.1 Philosophy

While a vital element of the access and mobility strategy (explored in 4.2.4 above) streets have been included within the urban form strategy by virtue of their role in place making. On a practical level the existing roads through the site that are in use carry the majority of the existing bulk services which may need to be designed and reinforced to cope with the new development. This need for reinforcement and upgrading offers the opportunity to reassess the width, alignment and urban cross section of these streets and that they contribute positively to the image and experience of the East City precinct.

Motivated that the streets within should be more than conduits of traffic; streets are primary social spaces for the community. The framework seeks to reinforce this condition and create a hierarchy of streets which supports social interaction and community life.

4.5.2 Application

The adjacent plan (Fig.59) illustrates the hierarchy of streets within the proposed framework. As such, the approach to the potential reorganisation of the street network is based on the following:

- Streets will follow the alignment of the historic patterns of the inner city (Area between Buitenkant Street and Harrington Street).
- Streets are to be narrow and contain on-street car parking as a means of slowing vehicle speed and improve pedestrian safety.

The streets which follow the old historic grid and run perpendicular to the contours will be steeper in nature and may require steps within the sidewalk and in particular where sections of roads and pavements exceed gradients of 1:10.

While not strictly compliant with regulations, this characteristic of the streetscape contributes to the sense of place and reconnects to the memory of the site. Due to their orientation, these north-south orientated streets form spatial and visual

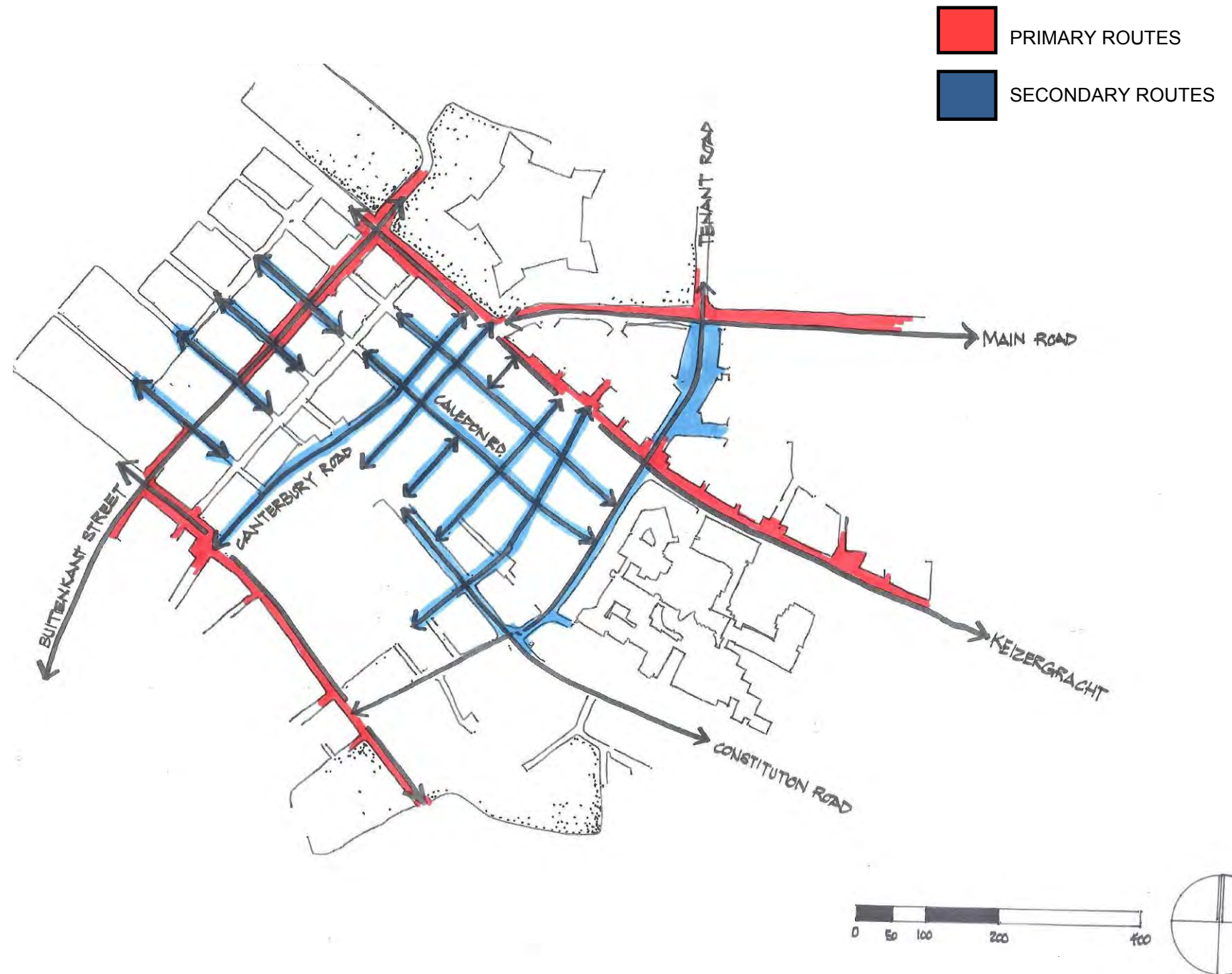


Fig.59 Street Hierarchy

linkages between the sea and the mountain and will be more susceptible to the effects of the wind.

Tree planting may help buffer the wind and create more pleasant places to be in. These streets will contain on street car parking and the changes in level along these routes will provide the primary points of access to basement car parking. (See perspective views fig. 65-67)

Streets which will run parallel to the contours are to be promoted as social spaces. These streets are better protected from the dominant winds by built form and is more level creating a more usable street environment and greater opportunities for social interaction.

4.6 STREET TYPOLOGIES

The street sections which follow are illustrative and the intention is that they are refined through design codes. As a general principle street widths are defined spatially by the distance between building frontages and not by the lanes of traffic.

The streets in study area are similar to the streets of historic Cape Town and former District Six and are in general narrower than conventional road standards to discourage speeding and create safer environments for pedestrians and cyclists.

4.6.1 Primary Streets – Keizergracht

At the highest order of the street hierarchy are primary streets. Keizersgracht is the single most important street within the network because of its location to the site and surroundings.

The design code suggest that all buildings fronting onto Keizergracht should be required to have a covered colonnade providing pedestrians with shelter from the sun and inclement weather (Fig64 i). The fall across the street allows for the creation of an urban balcony on the sunny, north facing side of the street, slightly raised from the level of the street. This space could be used as a spill out space for restaurants or retail and to be suitable areas for organised street trading.

This narrow width and regular intersections serve to slow traffic movement through the area. In addition the on street car parking

could be regulated in such a manner that during peak periods, parking is suspended and the one lane may be operated as a time limited priority bus lane to facilitate the services operating during peak hours.

4.6.2 Secondary Streets

Secondary streets are primarily a step down from Keizergracht in nature however; some streets such as Constitution Street and Canterbury Street are encouraged to have some commercial or retail uses on the ground and first floors. The units at ground floor should be designed to be flexible so that they are able to be converted to live-work units which take advantage of high pedestrian movement and exposure to passing traffic.

The street width at this stage is envisaged to be approximately 15m wide, building face to building face, and able to accommodate parallel on-street parking on both sides

The following streets are identified as secondary streets: Caledon Street, Constitution Street, Primrose Street and Longmarket Street.

4.6.3 Street Planting

The use of trees in the public realm is important in establishing the character of streets and the landscape framework for the East City. Tree species vary according to location and function.

4.7 URBAN BLOCKS

Complementing the public space structure, the definition of streets and the open space system, is the treatment of urban blocks. To ensure the public use and vibrancy of streets (at its various scales) urban blocks and development parcels which are resolved during design redevelopment will be required to adhere to the following design code principles;

4.7.1 Principles

- Block sizes should be informed by the remnants of historic blocks /street grid which favour provision of small blocks (50x50 metres in length / width) (Fig. 60 a – d)
- Block shapes should be regular where possible
- Building layouts to create a perimeter block with clearly defined public private and semi-private spaces

- Blocks should have active public frontages - Buildings should engage with the street 'reaching out' with windows, balconies, level changes, etc. to provide overlooking and allowing public interaction with the streets (Fig 60 e)
- Orientate active uses of buildings to open outwards towards outdoor spaces (both public and private) (Fig 60 j)
- Frontages are to be broken up to create rhythms, articulation of facades, lively internal uses visible from outside (Fig. 60 d & h)

4.7.2 Application

4.7.2.1 Block Size

Historically the block sizes of the former District Six varied depending on the local topography and influence of speculative development patterns. When planning the various precincts the following design codes are to be considered:

- reinstating the shape of the historic urban grid (on the premise that if District Six had not been demolished, the urban blocks would still retain their original geometry);
- the use of a range of block sizes to promote variety of building type and use; (Fig. 60 d)
- the favouring of the provision of small blocks (50x50 metres and/60–85 metres), the latter being in keeping with the Cape Town historic CBD grid; and
- larger blocks should be broken up by finer grain pedestrian routes to maintain high levels of permeability.

4.7.2.2 Block Shapes

Various block shapes should be considered, depending on the pattern of existing infrastructure. The design codes should consider:

- reinstating the shapes of the historic urban grid; (Fig.59 a-d)
- differently proportioned blocks allow for the accommodation of a range of commercial and residential uses; (Fig. 59 e)

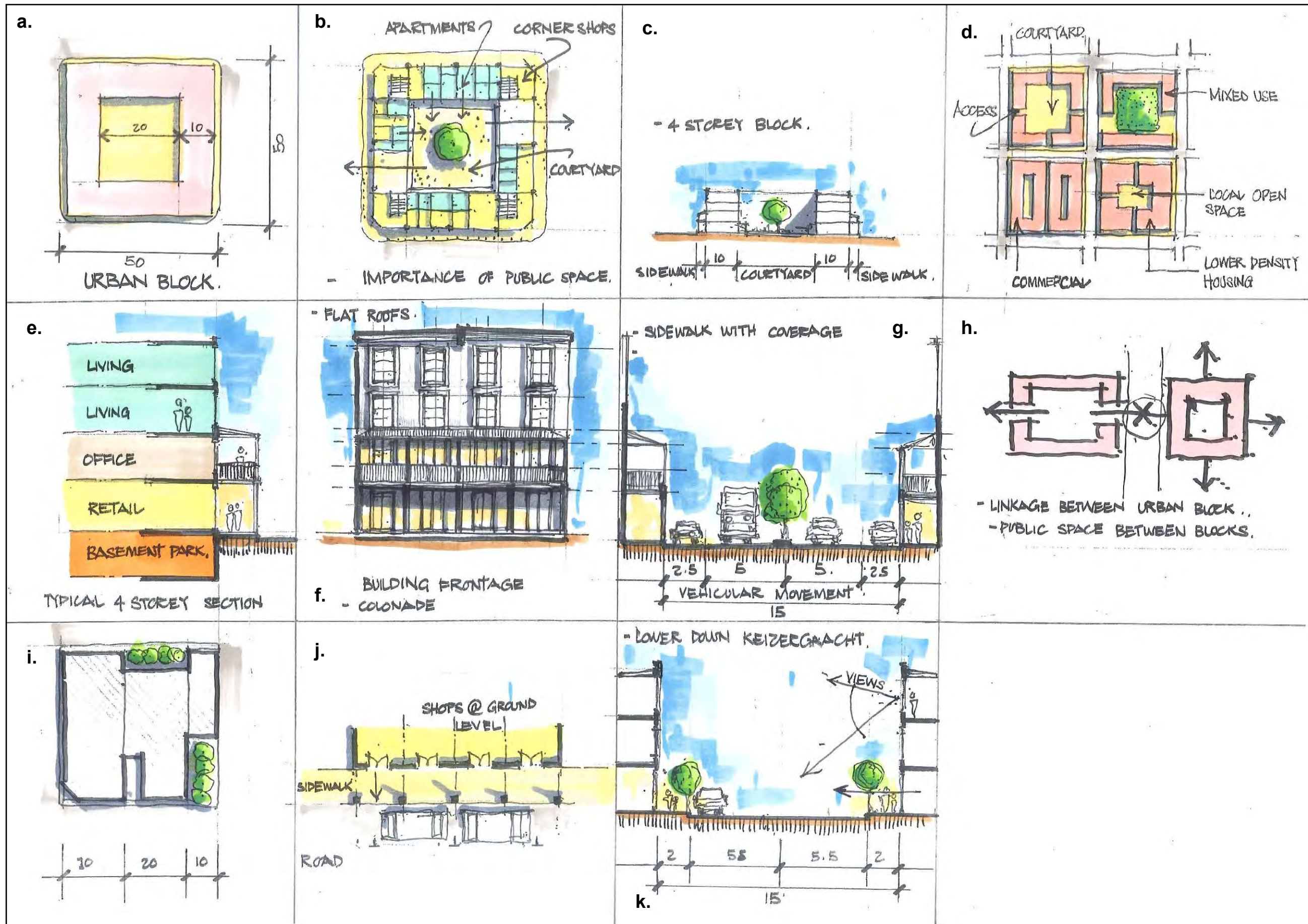


Fig.60 Urban Block Development

4.8 URBAN FORM STRATEGY

4.8.1 Philosophy

The East City is an integral part of the bigger city centre. As part of the city bowl, the site has historically been a logical extension of the city in terms of the street grid, the built-up fabric, massing and form. Historically the East City Precinct shared these urban form qualities and the design code should retain these qualities – albeit in a manner appropriate to the contemporary 21st century condition. In the development of the design code, the following principles have been considered:

4.8.2 Principles

Reinforcement of the Public Spatial Structure

- Built form to respond positively to reinforce the public space structure, creating a legible hierarchy of spaces and places

Reinstate the grain of the historic street grid

- The design code should make evident and retain the old alignment of the streets and where not represent these in a modern / contemporary manner

Differentiation and characterization

- Acknowledge and express different gradients;
- Prominent features and landmarks (vertical expression of community buildings – height, towers, churches)

Views and Vistas

- Connect visually to the sea and mountain (Fig. 61)
- Celebrate landmarks and focal points

Texture, Grain and Fabric of Urban Form

- Consistent urban form texture that responds to the underlying urban structure and is appropriate to the topography, local context and capacity of the study area;
- Permeable urban block to facilitate ease of movement (Fig.61)
- Repetition of rhythmic intervals (street patterns, celebrating corners, courtyards, etc); (Fig. 64 a & d)
- Similarity or harmony of form and surface, both horizontally and vertically

Simplicity of Form

- Clarity and simplicity of visible form (in a geometrical sense); (Fig.61)

Edge and Continuity

- Continuity of massing (to create an even fabric, a skyline); (Fig. 64 b)
- Continuity of street frontage to create active streets and spaces. (Fig. 64 f)

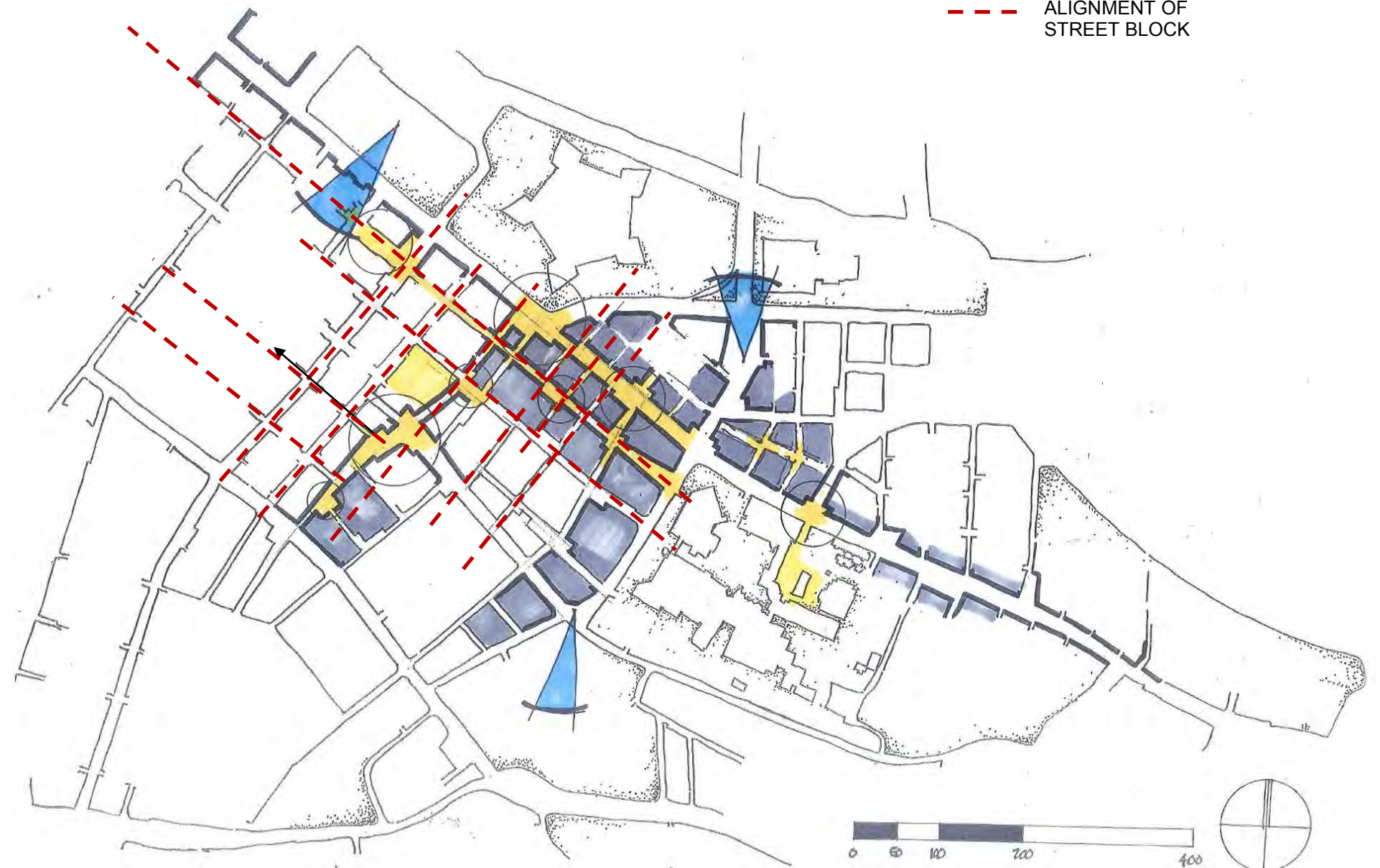
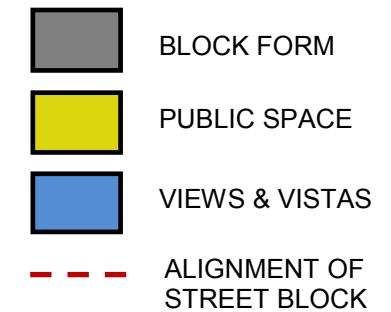


Fig.61 Principles

4.9 HEIGHTS, BULK AND MASSING

The heights, bulk and massing strategy is to reinforce the public spatial structure and the nature of the character areas identified earlier in the development framework. The height and scale of buildings are as much determined by questions of density, as they are influenced by issues of heritage and the desired overall form and texture of the urban plan. The design code principles which underlie the heights strategy for the site include (Fig. 60)

4.9.1 Principles

- General uniformity of building mass across the study area creating a layer of development which reflects the topography of the site
- Building heights to relate sensitively to the existing built fabric
- Building heights to reinforce the public space structure highlighting focal points of activity
- Building heights along the primary elements of public structure such as Keizergracht to be between 4 and 6 storeys
- Medium height buildings of 3-4 storeys should run perpendicular to the contours framing views of the mountain and sea
- A minimum 2 storey building height
- Height to be varied along the street in relation to the topography to create interest within the skyline
- Higher buildings will be permitted at key gateways

4.9.2 Application

Height interpretation is illustrated in the adjacent heights plan (Fig.62). The roofline of the settlement as a whole will form a soft and varied silhouette against the mountain and variations in height in excess of 2 storeys within an urban block or the design code will not be permitted except at key corners. The minimum building height within East City precinct is 2 storeys. Most development will be 3-4 storeys in height with taller buildings located within the East City where buildings up to 8 storeys exist. (Near Buitenkant Street)

4.9.3 Building Size/Scale

Historical buildings in District Six and the East city had a particular size and scale that complimented the quality of the urban blocks and the fine grain of the urban fabric. In the provision of new buildings in the East City precinct, the development and design code of individual buildings should;

- issue of height (exploit height to make focal point of activity, control height of buildings in order not to

- negatively affect climate, consider stepping large masses of building on the street frontage);
- control building depth (control building depth to use naturally lit and ventilated spaces);

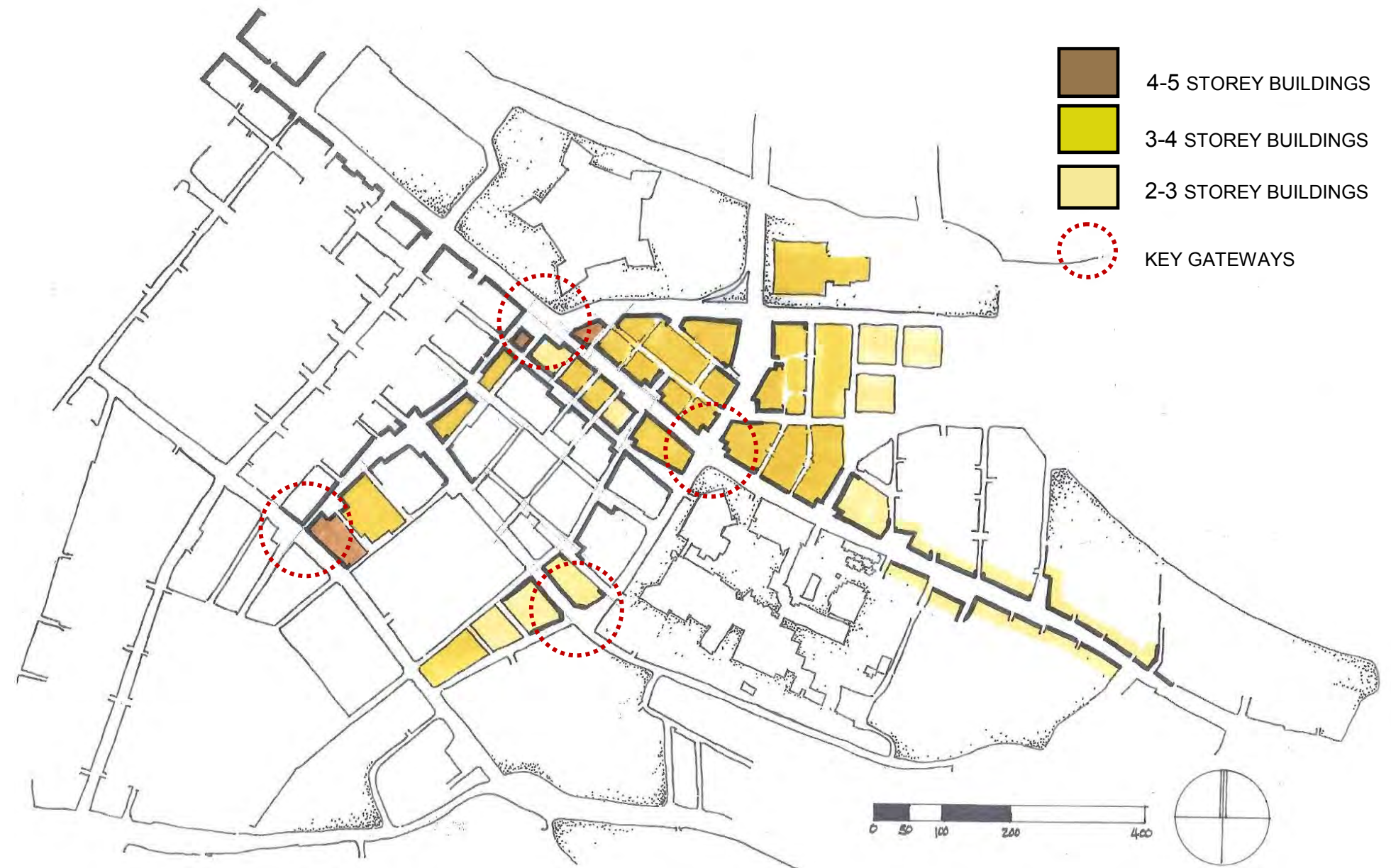


Fig.62 Building Heights, Bulk and Massing

- consider that scale and size of buildings would vary according to the location and related development of precincts. For example buildings on Caledon, Constitution, Long Market, Upper Darling Road, should be treated differently to more private and internalized routes;
- celebrate urban corners (exploit special opportunities of corner sites – corner shops, public facilities and incorporate prominent entrances on corners)

4.9.4 Element within elevation design

4.9.4.1 External Doors & Porches

- Good proportion for doors and porches that reflect the local vernacular will be encouraged (Fig 64 c)

4.9.4.2 Windows

- All windows and their subdivisions should relate to the proportioning system of the entire building. (Fig.64 j)
- Contemporary designs can draw from heritage and memory of the area and the use of larger scale windows. (Fig.64 j)

4.9.4.3 Roofs

- Roofs should be appropriately scaled and proportioned.
- Flat roofs are appropriate for terraces. (Fig. 63)
- On flat roofs, the parapet capping material must be robust

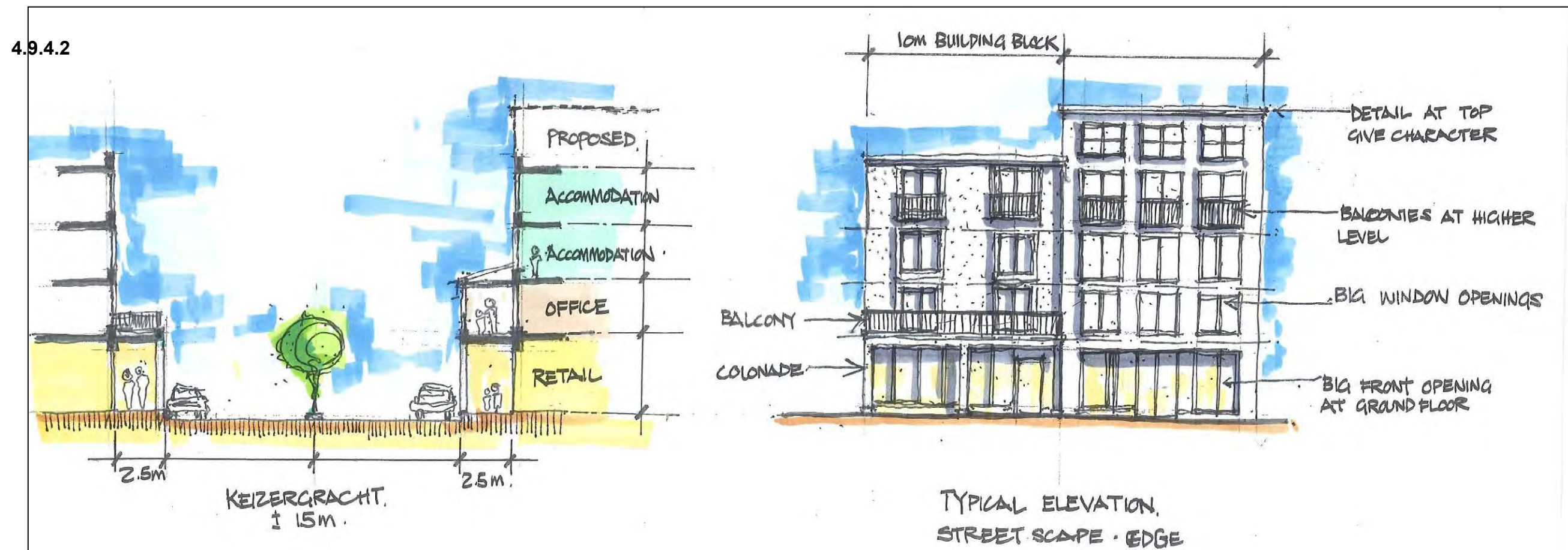


Fig.63 Building Code

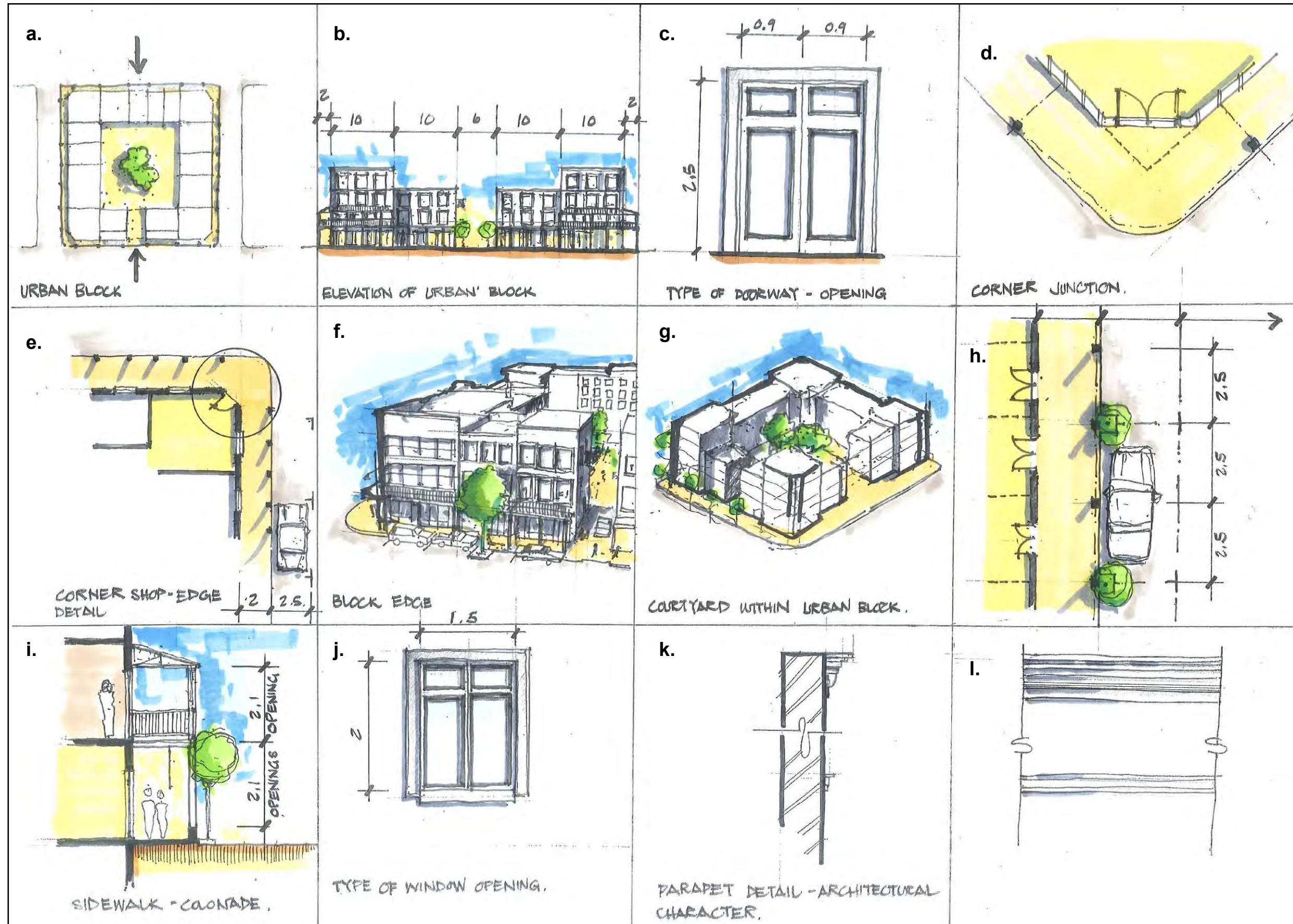


Fig.64 Building Fabric Code



Fig.65 Perspective View down Canterbury Road



ROOF SCAPE FORMS VISUAL LINE

3 STOREY HEIGHT GIVES SENSE OF ENCLOSURE OF SPACE

SETBACKS GIVES VARIATION TO URBAN BLOCK

Fig.66 Perspective View down Keizergracht at lower end



Fig.67 Perspective View down Keizergrach/Darlingt at top end

5.0 EVALUATION OF FORM-BASED CODES IN THE EAST CITY PRECINCT.

In order to evaluate whether and how Form-based code has help to address the existing urban conditions within the local context, four evaluation criteria – sustainability, connectivity, diversity, and design optimization and compactness were focussed on.

From the literature review in Chapter 2, Form-based codes in the East City is expected to be capable of synthesizing on-going improvement of urban form. The code could be an urban design plan with information in respect of shape, bulk and height of building, skyline and roof profiles, perspective and main elevations. Detailed and keyed framework plan has address the layout of the development and its relationship with the surrounding areas, and program of implementation.

Form-based codes can work with lands control to enhance economic value. This would create a positive cycle to create better place and better quality design. Form-based code is expected to provide a more predictable physical result based on prescriptive and place-specific standards. As regulations are easier to read, it can be a tool for a more certain planning process.

5.1 SUSTAINABILITY

Sustainability has been used as a general term in urban design. Sustainable Development refers to the development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987).

5.1.1 Urban green space and coverage

The framework encourages the study area to develop public open space networks and to conserve our built heritage through a policy on density and development incentives. Form-based codes encourage slightly more green space within the framework for more amenities and create more spaces for environment-friendly urban areas

5.1.2 Environmental performance

With the physical elements, Form-based codes can provide to set standards on solar orientation and building deposition to enhance environmental performance.

5.2 CONNECTIVITY

Form-based codes is intended to provide wider street standards, which creates more intersections and more blocks for street safety and street activities. Number of road intersections, general dimensions of street, length of pedestrian can be regulated.

5.2.1 Block permeability

Large urban blocks are rarely able to sustain outdoor street level activity. There are fewer opportunities for entrances and exits, thereby reducing the likelihood that users of different streets will cross paths. Form based codes can ensure suitable block sizes.

5.2.2 Pedestrian and traffic environment

Public spaces are important components of pedestrian environment. They encompass a wide variety of elements such as the streets, urban spaces, amenity areas, as well as street furniture like railings, paving, light standards, walls, trees and signs.

5.3 DIVERSITY

Diversity is closely related with mixed-used in building uses. Street frontage is the linear extent of access to the public open space. A Form-based code street frontage can enhance visibility and popularity. As shown in Form-based codes examples, a variety of block forms and frontages, in the standards can be applied to different parts of the study area according to curtain needs of activity.

5.4 DESIGN OPTIMIZATION AND COMPACTNESS

Design optimization refers to the best use of the site for public good, for mixture of different activities and creating more liveable environments. Design compactness refers to sufficient high-density development within small areas with unique visual interest, high aesthetical value or cultural value.

5.4.1 Preservation of views

The use of regulatory measures to limit building height in selected areas as a tool to protect the views to the mountain and the sea is an effective approach.

5.4.2 Cityscape

Form-based codes adopt a proactive policy to enhance the quality of our cityscape.

5.4.3 Historic preservation

Form-based codes regulates directly on the types of buildings that may affect historic preservation as infill. In terms of specifying the forms of new infill buildings, form based codes have the most impact on the massing of the structure.

5.5 POTENTIAL BENEFITS

5.5.1 Provide form control

Form-based code is not merely restriction and control but also encourages professionals to follow objectives. The potential advantage of Form-based code would be better for urban form control, better urban design for pedestrian environment and retaining the areas local characteristics.

Form-based code promotes form then function. Codes allow what to predict, what a certain area should look like and thus have greater control over the public realm. Form-based code addresses the issues of bulky buildings, lack of streetscapes, non-environmental friendly building massing, lack of relevance to the surroundings.

5.5.2 Provide user-friendly illustration

In contrast to text-based documents that can be lengthy and cause confusion, Form-based code is a simpler, easier to understand land use tool. Site layout requirements are presented in clear, concise terms. (Siegel, 2005) Form-based codes are written in plain English and make liberal use of matrices, diagrams, and other illustrations. With its graphical nature, it can help to explain to the public of what they may expect in the future development. From that point, people and different interest groups are informed in a more systematic and rational manner about how and what aspects of their living environment may be affected.

5.6 POTENTIAL DRAWBACKS

5.6.1 Require strong graphical skills

Form-based codes require strong visual design skills that most planners do not have in their tool belt (Rangwala, 2005). In a city that uses Form-based code, planners with no formal design or construction training may be relegated to simply managing or facilitating the development process. This is beside the fact that many planning departments may not have the staff to produce and administer Form-based code. Developers who are locked into conventional development patterns may object to Form-based codes.

Another critique of Form-based codes is the imposition of order on which a city cannot be justified. Order is an abstract notion and does not affect, integrate with the true nature of cities. The attempt for urban form is not in a good sense, especially in the East City's complex and dynamic condition. "To approach a city or even a city neighbourhood, as if it were a larger architectural problem, capable of being given order by converting it into a disciplined work of art, is to make the mistake of attempting to substitute art for life" (Jacob, 1961).

To many professionals, urban design should be kept to the minimal in order to ensure that the development potential and the efficiency of planning process are not being undermined. Form-based code do not provide variation in plot sizes under the development conditions, but instead provide more uniform building frontage and a sense of spaciousness by creating building walls along the streets to explore concepts of identity.

Form-based codes within the East City should implement a plan that reflects specific area intentions for sustainable environment. More importantly, it should base on the understanding of current and future urban planning needs so as to strive to exceed expectations.

5.7 APPROACH TO FORM-BASED CODE

Sustainability, connectivity, diversity, design optimization and compactness of Form-based codes are important performance indicators of the design codes. For example, the code should shape the public realm to invite pedestrian use and social interaction. The code should produce walkable, identifiable neighbourhoods that provide for daily needs.

As the ultimate goal of Form-based codes, it should produce functional and vital urbanism. Therefore, long term sustainable urban development should be the main focus for all urban development.

6.0 CONCLUSION:

Living within an environment that exposed different obstacles, urban designers must understand when and how to apply the knowledge to understand the urban world and also how to communicate with all actors within this world.

The designer's role is to translate and guide people in the reading, interpretation and application of urban design theories in practice. and to incorporate their respective needs and understanding of the whole, and not conducive to the well being of our society as a whole, and not just spaces that are replicas or clones of other places that repeats themselves which translate into monotonous spaces and ends up being spaces out meaning, but with what they have gained from their knowledge of theory that has been applied in practice.

The result of this ends up in creating public spaces with a high quality of publicness. In a context like South Africa, where resources are scarce and urbanisation is rapid, the distribution of public resources has to be strategically planned and placed, so that the majority of the population can benefit.

Furthermore, the strategy allocation of resources can help the creation of place and promote a sense of community. This is possible through the application of proper typologies, sensitivity to context and minimalist approach that allows people to respond by adding their cultural values, thus enabling them to identify themselves with the place

Internationally, the functionalist thought presented by modernism and its concern with being efficient and technology-driven, orientated the development of cities and towns. Cities were seen as "machines" and urban life was compartmentalized into different categories of "live, work, move and play"

This dissertation started with the hypothesis that form-based code is an alternative angle to review urban development in the East City precinct. The analysis further supports that form-based codes have given direct implications to the existing urban planning system with respect to urban situation within the East City.

Targeting the urban design concerns, form-based codes, which follow the theoretical base of New Urbanism, have shown the strength in regulating urban form and ensuring the expected outcome of the development. By putting emphasis on mixed use and relationships between the physical forms and the surroundings, form-based codes have the ultimate goal in the creation of an attractive public realm which can be achieved by arranging building facades, walls, doors, and windows on streets and blocks.

Form-based codes facilitate the strength and vision of building within the study area. With strong urban design emphasis, form-based codes standards particularly address the issues of place-making, urban grid, public space and streetscape.

Form-based codes can by no means be isolated from social, economic and lands issues. Having in mind that one of the challenges of form-based codes is the incorporation with existing network of systems, the principle "keep it flexible" is followed with adequate balance of mandatory, optional and hybrid codes.

6.1 Limits of the theory and direction for further studies

Form-based codes have helped to create diversity of urban places. A realistic approach of what can be achieved has been included. The hypothetical Form-based codes in the East City is largely based on what has been done in previous situation and required ground breaking implementation in the South African context. Using memory and history as a guiding tool for the

application of a design code in the East City, proves that element of a different urban environment can be implemented to another to enhance the quality of the other. The biggest limitation of form-based codes lies in their ability to the character of areas that are already heavily built-out.

Moreover, form-based codes focus on physical form. It does not preclude social and political issues but has an interlocking complexity to them. The future trend of form-based codes in general is to minimize regulations in conventional zoning.

Returning to the basis, physical environment will be the fundamental regulations with well-defined and designed essential form-based codes.

In conclusion, urban form is a complex subject related to the interests of planners, architects and urban designers. Form-based codes in the East City can guide new and changing urban development so that society will be provided with appropriate physical forms. It will contribute to the surrounding urban areas by embracing an urban fabric and providing synergistic form.

This is a possible way to bring the East City Precinct towards the goal of more sustainable urban form and environment, resulting in a greater value to the inner city and the greater Cape Town

7.0 REFERENCE:

BARNETT, J. (1974), "Urban design as Public Policy", Practical Methods for Improving Cities, New York: Architectural Record Books. (1982), *An Introduction to Urban Design*, New York: Harper and Row. (2003), *Redesigning Cities: Principles, Practice, Implementation*, Chicago: Planners Press.

BEN-JOSEPH, E (2009). Commentary: Designing Codes: Trends in Cities, Planning and Development. *Urban Studies*, Vol.46 No. 12. pp.2691-2702.

BARRY, J.M. (2008), "Form-based Codes: Measured Success Through Both Mandatory and Optional Implementation", *Connecticut Law Review*, Vol. 41, No. 1 (November. 2008), pp. 305-337.

BERG, N. (2010), "Brave New Codes", *Architect*, Vol. 99, No. 7 (July 2010), pp. 50-53.

BEZOLLI, M, MARKS, R. KRUGER, M. Texture and Memory The urbanism of District Six – Second Edition, Cape Technikon, 2002

BOHL, C.C. (2000), "New Urbanism and the City: Potential Applications and Implications for Distressed Inner-City Neighbourhoods", *Housing Policy Debate*, 2000 Vol. 2, pp. 761-801.

BORYS, H. (2012), *Ranson Transect*, PlaceMakers, accessed on 20 November 2012, <<http://www.placemakers.com/>>.

BORYS, H. and TALEN E. (2012), *Codes Study*, PlaceMakers, accessed on 1 December 2012, <<http://www.placemakers.com/wpcontent/uploads/2012/08/codesStu>>

BRESSI, T.W. (2002), *The Seaside Debates: A Critique of the New Urbanism*, New York: Rizzoli.

BURDETTE, J.T. (2004), "Form-based Codes: A Cure for the Cancer Called Euclidean Zoning?", *M.S. Thesis*, Virginia Polytechnic Institute and State University.

CARLISLE/WORTMAN ASSOCIATES (2008), *Form-Based Codes in Troy*, accessed on 19 December 2012,

CARMONA, M. and DANN, J. (eds.) (2006), "Design Codes", *Urban Design*, Vol. 101, Winter, pp. 16-35.

CARMONA, M (2009). Designing Coding and the Creative, Market and Regulatory Tyrannies of Practice, *Urban Studies*, Vol. 46 No. 12. pp. 2643-2667.

CENTER FOR APPLIED TRANSECT STUDIES (2010), *SmartCode Version 9.2*, SmartCode Central, accessed on 20 August 2012, <<http://www.transect.org/codes.html>>.

CHEMPBELL, S. (1996), "Green Cities, Growing Cities, Just Cities? Urban Planning and the Contradictions of Sustainable Development", *Journal of the American Planning Association*, p-20.

CITY OF MIAMI PLANNING DEPARTMENT (2012), *Miami 21 Zoning Code*, accessed on 19 November 2012, <<http://www.miami21.org>>.

DEWAR, D AND UYTENBOGAARDT, R.S (1978), *Housing: A Comparative Evaluation of Urbanism in Cape Town*, Urban Problems Research Unit, University of Cape Town, Cape Town.

DEWAR, D AND UYTENBOGAARDT, R.S (1991), *South African Cities: A Manifesto for Change*, Urban Problems Research Unit, University of Cape Town, Cape Town.

DOVER, V. (1996), *Alternative Methods to Land Development Regulation*, Town of Fort Myers Beach, Florida, accessed on 16 December 2012,

DUANY PLATER-ZYBERK and COMPANY (2011), *Transect*, Miami, accessed on 19 December 2012,

ELLIOTT, D.L. (2008), "Where Does Form-based Zoning Fit into All This? *A Better Way to Zone: Ten Principles to Create More Livable Cities*, accessed on 20 August 2012,

FORM-BASED CODES INSTITUTE (2011), accessed on 20 August 2012, <<http://www.formbasedcodes.org/>>.

GARVIN, E. and JOURDAN, D. (2008), "Through the Looking Glass: Analyzing the Potential Legal Challenges to Form-based codes", *Journal of Land Use*, Vol. 23, No. 2, pp. 395-421.

GASPERS. D (2006), "Form-based Code as a Regulatory Tool for Mixed Use Urban Infill Development in Lincoln, Nebraska", M.Sc. thesis, University of Nebraska, Lincoln Community and Regional Planning Program, USA.

GEORGIA DEPARTMENT OF COMMUNITY AFFAIRS (2007), *Model Land Use Management Code*, accessed on 31 October 2012,

GELLER, R.S. (2010), "The Legality of Form-based Zoning Codes", *Journal of Land Use*, Vol. 26, No. 1, pp. 35-91.

GOWDY, L.M. (2009), "A History, Evolution and Application Of Form-Based Codes", Master thesis, Kansas State University, Manhattan, Kansas.

GREENBERG, E. (2004), "From Building to Region: New Urbanist Regulations in Place", *Codifying New Urbanism: How to Reform Municipal Land Use Regulations, Planning Advisory Service 526*, Ch.3, Washington, D.C.: American Planning Association.

GUNDER, M. (2011), "Commentary: Is Urban Design Still Urban Planning? An Exploration and Response", *Journal of Planning Education and Research*, Vol. 31(2), pp.184–195.

HAAS, T. (2008), *New Urbanism and Beyond: Designing Cities for the Future*, New York: Rizzoli International Publications.

JACOBS J. (1961), *The Death and Life of Great American Cities*, New York: Modern Library.

KATZ, P. (2004), "Form First: The New Urbanist Alternative to Conventional zoning", *Planning Magazine*, November 2004, pp.16-21.

KATZ, P. and PRICE S. (2006), *Urban Advantage*, accessed on 31 October

KIM, K. (2010), "The Evaluation of the Impact of Form-based Codes and Conventional zoning on Fort Mcpherson Redevelopment", M.Sc. thesis, School of City and Regional Planning, Georgia Institute of Technology, accessed on 20 August 2012,

LENNERTZ, W. and LUTZENHISER A. (2006), "A Charrette is the Best Way to Share", *Planning*, Issue August -September 2006, pp.44-47.

MADDEN, M. E. and SPIKOWSKI, B. (2006). "Place Making with Form-based Codes", *Urban Land*, pp. 174-178, accessed on 20 August 2012,

MANSFIELD DISTRICT COUNCIL (2004), Development Control and Planning Enforcement, Mansfield, accessed on 19 December 2012,

MARSH M. (2009), "Striking the Balance: Finding a Place for New Urbanism on Main Street." M.Sc. thesis in Historic Preservation, University of Pennsylvania.

MARSHALL, S. (2011), *Urban Coding and Planning*, London: Routledge. MOULE and POLYZOIDES (2010), Organization of Building Types Along the Transect, California, accessed on 19 December 2012,

PAROLEK, D.G., PAROLEK, K. and CRAWFORD, P.C. (2008), *Form-based Codes: a Guide for Planners, Urban Designers, Municipalities, and Developers*, Hoboken, New Jersey: John Wiley and Sons.

PIETERSEN, E (2010) Counter-Currents: Experiments in Sustainability in the Cape Town region – District Six Development Framework : Prospects for urban and social sustainability, Le Grange, L& Mammon, N - Chapter 9 Pp 124-133

PLACEMAKERS (2008), SmartCode for Taos, New Mexico, Downtown, accessed on 28 November 2012,

PUNTER, J. (1999), *Design Guidelines in American Cities: a Review of Design Policies and Guidance in Five West Coast Cities*, Liverpool: Liverpool University Press.

PUNTER, J (2007), "Developing Urban Design as Public Policy: Best Practice Principles for Design Review and Development Management", *Journal of Urban Design*, Vol. 12 (2), pp. 167-202, accessed on 20 August 2012 from Academic Search Premier,

PURDY, J. (2007), "Form Based codes-New Approach to Zoning", *Smart Growth Tactics*, Issue 28. Michigan: Michigan Association of Planning, accessed on 20 August 2012,

RANGWALA, K. (2012), "Form-based Codes", *Economic Development Journal*, Vol. 11 (3), Washington, D.C.: International Economic Development Council

SAARINEN, G.E. (1943), *The City: Its Growth, Its Decay, Its Future*, New York: Reinhold Publishing Corporation.

SAN FRANCISCO PLANNING DEPARTMENT (2010), The Better Street Plan, San Francisco, accessed on 13 November 2012,

SCOTT, M. (1995), *American City Planning Since 1890*, Chicago: American Planning Association.

TALEN, E. (2009), "Design by the Rules: The Historical Underpinning of Form-based codes", *Journal of the American Planning Association*, Vol. 75 No. 2. pp. 114-160.

URBAN LAND INSTITUTE (2011), *Ten Principles for a Sustainable Approach to New Development*,

VITRUVIUS POLLIO, ROWLAND, I.D., HOWE, T.N. and DEWAR, M. (1999), *Vitruvius: Ten Books on Architecture*, New York: Cambridge University Press.

WALTERS, D. (2007), *Designing Community: Charrettes, Master Plans and Form-based Codes*, Amsterdam: Elsevier Architectural Press.

WORLD COMMISSION ON ENVIRONMENT and DEVELOPMENT (1987), *Our Common Future*, Oxford: Oxford University Press.

YEANG, L.D. (2000), *Urban Design Compendium 1*, accessed on 30 October 2012, <http://www.homesandcommunities.co.uk/sites/default/files/book/udc/communityengagement/1110_udc1_final_artwork_120306-optimised.pdf>.

(2000b), *Urban Design Compendium 2*, Accessed on 30 October 2012, <http://www.homesandcommunities.co.uk/sites/default/files/book/udc/communityengagement/1110_udc2_final_artwork_120306-optimised.pdf>.