

**PRODUCTIVE HETEROTOPIAS AS A CONCEPTUAL BASIS
FOR THE DESIGN OF SUSTAINABLE LOW-INCOME HOUSING
WITHIN THE CAPE TOWN INNER-CITY**

N. VAN NIEKERK

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Productive Heterotopias as a Conceptual Basis for the Design of Sustainable Low-Income Housing within the Cape Town Inner-City

Neil van Niekerk

s214289206

Submitted in partial fulfilment of the requirements for the degree Master of Architecture (Professional)

**Nelson Mandela University
School of Architecture
Port Elizabeth, South Africa**

NELSON MANDELA

UNIVERSITY

DEPARTMENT OF ACADEMIC ADMINISTRATION

EXAMINATION SECTION

SUMMERSTARND NORTH CAMPUS

PO Box 77000
Nelson Mandela Metropolitan University
Port Elizabeth
6013
Enquiries: Postgraduate Examination Officer

DECLARATION BY CANDIDATE

NAME: Neil van Niekerk

STUDENT NUMBER: s 214289206

QUALIFICATION: Master of Architecture (Professional)

TITLE OF PROJECT: Productive Heterotopias as a Conceptual
Basis for the Design of Sustainable Low-Income
Housing within the Cape Town Inner-City

DECLARATION:

In accordance with Rule G4.6.3, I hereby declare that the above-mentioned treatise/ dissertation thesis is my own work and that it has not previously been submitted for assessment to another University or for another qualification.

SIGNATURE: Neil van Niekerk

DATE: 14 - 09 - 2020



Abstract

Lasting colonial and patriarchal spatial strategies have resulted in South African cities characterised by vast inequalities and unsustainable patterns of development. These include explosive low-density sprawl, fragmentation, separation and a city-wide pattern of core and periphery. Housing justice for the urban poor is a critical component in addressing this, however, numerous studies have found that low-income housing projects have in the majority of cases ended up perpetuating these socially, economically and environmentally unsustainable patterns of development and reinforcing existing spatial injustices. For this reason, design research into more sustainable and productive architectural design strategies for low-income housing appropriate to the South African urban context is particularly important and forms the central concern of this treatise.

To be more specific, this study questions how the theoretical idea of productive heterotopias and reimagining the role of the architect as that of a spatial agent could be used to generate a practical low-income housing strategy for a site in the Cape Town inner-city – one that is socially, economically and environmentally sustainable. To achieve this, a critical theoretical lens was adopted in conducting the research and a range of open-ended qualitative research methods were employed to gather, analyse and synthesise data. Because of its particular appropriateness to design research, data analysis primarily relied on abductive reasoning. This study is valuable in that it provides an exploration into the application of critical theory to low-income housing design in South African cities and demonstrates the architectural understandings gained within a set of design scenarios and architectural prototypes.

This study argues that any low-income housing strategy in South Africa needs to recognise the complexities of the housing process, make use of time as an important building material and advance the right to the city of the urban poor, i.e. finding a balance between structure and agency that allows greater freedom for ordinary people to have a hand in co-creating the city through spontaneity, improvisation and incremental development, for that strategy to be truly sustainable and productive, as well as to assist in cultivating positively performing and equitable urban environments. In particular, this study rejects the top-down housing methods employed within mainstream development practice in favour of finding an alternative approach that will result in a more supportive housing project. Finding this new supportive approach involved investigating co-operative forms of organisation, methods for allowing community participation, sustainable building materials, simple construction methods and incorporating urban farming as a strategy for supplementing income. Additionally, this study argues that the chosen site for the design, namely Harrington Square, functions as a public urban square at the centre of a larger shared space while simultaneously supporting the proposed housing intervention.

Keywords: co-operative housing, sustainability, heterotopia, the right to the city, spatial justice, spatial agency, praxis

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Figure 1 'Lina Bo Bardi's laundry room at Casa de Vidro', by Ciro Miguel for the 2th International Architecture Biennale in São Paulo, which was dedicated to the architecture of everyday life. (*Source*: Ciro Miguel, 2019)

1 Introduction and Research Methodology

1.1. Introduction

1.1.1. Background

'Architecture and architectural freedom', as argued by Italian-born Brazilian architect Lina Bo Bardi (cited in Bergdoll, 2013: ix), 'are above all a social issue that must be seen from inside a political structure, not from outside it'. Moreover, as argued by Hungarian-born French architect Yona Friedman (quoted in Lynch, 2017), '[p]eople can improvise the city; people can improvise architecture [...] [t]hat means the city shouldn't resist [its] inhabitants, but obey [its] inhabitants [...] [w]e need to get back to elasticity.' These quotes effectively capture the understanding of architecture and urbanism that underpins this treatise, i.e. that buildings should not simply be viewed as facts to be reproduced, but rather as something that is produced through social relations.

Because these relations are ever-shifting and because they are imbued with power and meaning, any alterations made to the built environment, whether at the architectural or urban scale, can never be regarded as neutral or, using Bo Bardi's choice of words as quoted above, as being outside of a political structure. This understanding of space, which disrupts the traditional Cartesian view of space as being homogeneous and absolute, has most notably been pioneered in the work of French social theorist Henri Lefebvre in his book *The Production of Space* (1991a), first published in 1974, as well as by his contemporary Michel Foucault as documented in his book *Power/Knowledge: Selected Interviews and Other Writings, 1972-1977* (1980a). Furthermore, understanding space in this way is fundamental to imagining new ways of producing feminist, queer and postcolonial space through the critical engagement with the deep-rooted colonial and patriarchal power structures that still dominate mainstream spatial production.

In particular, this treatise is preoccupied with the idea of heterotopias – an idea which has been explored by both Lefebvre and Foucault. While Foucault (1986: 24-27) describes heterotopias as 'other spaces', 'coun-

ter-sites' and 'effectively enacted utopias', it is argued by geographer David Harvey (2012: xvi) that Lefebvre viewed them as 'liminal spaces of possibility'. Despite these differences, the idea of heterotopias essentially refers to real, existing places (as opposed to utopias, which are fundamentally unreal places) that are somehow 'other' in that they disrupt the normative modes of spatial production that dominate the contexts in which they are embedded. Further narrowing the use of this term, this treatise makes use of the idea of productive heterotopias – a term which this study will use to specifically refer to real, existing places that assist in countering the wide-spread imposition of what Lefebvre calls 'abstract space' by creating opportunities for the emergence of what Lefebvre calls 'differential space'. Abstract space brutally reduces the differences that are inherent to the social realities of ordinary people, whereas differential space restores unity to the fragmenting effects of abstract space and accentuates differences (Lefebvre, 1991a: 52, 62-3). The idea of productive heterotopias is useful to this study as it provides a conceptual basis to help generate strategies for establishing a kind of 'counter-project'¹.

Put simply, the increasing commodification of space that coincides with the interests of neoliberal capitalism² and profit-based urbanism dominates spatial production today and is overwhelmingly producing abstract space. In contrast, heterotopias that help to facilitate differential space and advance the right to the city of those with little material power can be regarded as being productive in nature. This is because such places prioritise use-value over exchange value

¹ The idea of a 'counter-project', which is used interchangeably with the term 'counter-space', is mentioned by Henri Lefebvre in his book *The Production of Space* (1991a: 349, 367, 381-3, 419-20) to refer to an 'initially utopian alternative to actually existing "real" space'.

² Neoliberalism is a policy model that emphasises the value of free-market competition, is committed to the freedom of trade and capital, is characterised by a belief in sustained economic growth and minimal state intervention in social and economic affairs, and is commonly associated with laissez-faire economics (Encyclopædia Britannica Online, 2020a). As demonstrated throughout *Planet of Slums* (2006) by urban theorist Mike Davis, neoliberalism can be viewed as a natural successor to colonialism as it exploits existing inequalities and perpetuates colonial spatial patterns to generate capital and reinforce existing power structures.



Figure 2 'Imizamo Yethu/Hout Bay 1' (2018), by Johnny Miller. (Source: Johnny Miller, 2018)



Figure 3 'Cape Town - Dunoon/Killarney' (2018), by Johnny Miller. (Source: Johnny Miller, 2018)



Figure 4 'Papwa Sewgolum Golf Course 1' (2018), by Johnny Miller. (Source: Johnny Miller, 2018)



Figure 5 'Lake Michelle/Masiphumelele' (2018), by Johnny Miller. (Source: Jonny Miller, 2018)



Figure 6 'Primrose/Makause 1' (2018), by Johnny Miller. (Source: Johnny Miller, 2018)



Figure 7 'Cape Town - Khayelitsha' (2018), by Johnny Miller. (Source: Johnny Miller, 2018)



Figure 8 'Cape Town - Manenberg/Phola Park' (2018), by Johnny Miller. (Source: Johnny Miller, 2018)



Figure 9 'Pietermaritzburg - Otto's Bluff Area' (2018), by Johnny Miller. (Source: Johnny Miller, 2018)

and leave enough room for spontaneity, improvisation and incremental development. As argued extensively by Lefebvre in *The Production of Space* (1991a) and in his writing on the idea of the right to the city (1991b), by Afghanistan-born architect Nabeel Hamdi in his book *Small Change: About the Art of Practice and the Limits of Planning in Cities* (2004) and by Italian design academic Ezio Manzini in his book *Design, When Everybody Designs: An Introduction to Design for Social Innovation* (2015), designing in a way that allows ordinary people the freedom to express differences and to have a hand in co-creating the city is essential in developing the built environment in ways that are sustainable in the holistic sense of the word, i.e. socially, economically and environmentally.

Consequently, this treatise is also preoccupied with reimagining development practice in a way that is more sustainable and that incorporates critical theory into a kind of praxis by making use of the idea of the architect as a spatial agent – a term developed by architects Nishat Awan, Tatjana Schneider and Jeremy Till in their book *Spatial Agency: Other Ways of Doing Architecture* (2011). This idea is more in line with the understanding of space advanced by Lefebvre and Foucault and involves reimagining the role of the architect in a way that expands his or her responsibilities to include the negotiation of existing power structures without losing the specificity of architecture. According to Awan, Schneider and Till (ibid.: 43–4), a spatial agent can be defined as ‘one who effects change through the empowerment of others, allowing them to engage in their spatial environments in ways previously unknown or unavailable to them, opening up new freedoms and potentials as a result of reconfigured social space’.

Both of these ideas, namely the idea of productive heterotopias and the idea of the architect as a spatial agent, are used in this treatise in search of a more socially, economically and environmentally sustainable strategy for low-income housing in the Cape Town inner-city. In the context of South African cities, which are characterised by vast inequalities and immense housing injustice, low-income housing strategies that are productive in nature are critical in counteracting the lasting colonial and patriarchal spatial patterns of development as outlined by architects Roelof Uytendogaardt and Dave Dewar in their book *South African Cities: A Manifesto for Change* (1991: 73) and which include explosive low-density sprawl, fragmentation, separation and a city-wide pattern of core and periphery, as well as to assist in cultivating positively performing and equitable urban environments. The vast extent of these patterns of development are

especially apparent when looking at aerial pictures from the 2018 photo series ‘Unequal Scenes’ by photographer Johnny Miller (Figures 2–9). Moreover, numerous grassroots social movements such as Abahlali baseMjondolo (Zulu for ‘people who live in shacks’) in Durban and Reclaim the City in Cape Town have emerged in response to the powerful structures of inequality embedded on South African cities, to amplify the voices of those who remain marginalised and to fight for housing justice in particular.

In order to be productive as opposed to reductive, it is important that low-income housing strategies further the right to the city, i.e. the right to co-create the city as first developed by Lefebvre (1991b: 34), of those who are currently excluded from that right. This includes those whose income is below subsistence, those who are presently excluded from the benefits of urban life, those who have been historically displaced, those who have had to resort to various forms of self-help both in terms of illegal subdivision and squatting, those who live in informal dwellings or in informal settlements³ and those who are stuck in what urbanist Edward Soja (2010: 39–40) calls ‘geographies of disadvantage’ on the urban periphery. These groups make up the majority of the urban population and it is this vast scale of deprivation where households with low incomes are unable to afford the cheapest formal housing (Centre for Affordable Housing Finance in Africa, 2019: 236–237), accompanied by the fact that the majority of these households either do not qualify for government assistance or are on long waiting lists⁴ that have created a massive housing problem within South African cities.

As defined by *Cambridge Dictionary Online* (2020), the term housing commonly refers to the collective term for ‘buildings that people live in’ and which is acceptable provided that what is understood as buildings includes other spatial objects that are more ephemeral and unfixed in nature, but nonetheless serve as homes. Alternatively, it can refer to ‘the providing of places for people to live’ (ibid.). This latter definition, however, can be problematic as it often leads to a brutal reduction of the housing process by seeing it as

3 An informal dwelling can be defined as a ‘makeshift structure not approved by a local authority and not intended as a permanent dwelling’ (Housing Development Agency, 2013: 6), while an informal settlement can be defined as an ‘unplanned settlement on land which has not been surveyed or proclaimed as residential, consisting mainly of informal dwellings (shacks)’ (ibid.).

4 In 2019 the housing backlog was estimated at 2.3 million homes, with households on low incomes unable to afford even the cheapest newly built housing (Centre for Affordable Housing Finance in Africa, 2019: 236–237). This backlog is defined by the Department of Human Settlements as ‘households living in informal settlements, backyard shacks and rooms, and in overcrowded circumstances in existing houses and inner city buildings’ (Gardner, 2018: 2).

a purely quantitative matter. According to Dutch architect John Habraken (1972: 5), a housing problem only exists when the relationship of the various forces acting upon housing is in a state of crisis, and in his 1995 book *Housing Without Houses: Participation, Flexibility, Enablement*, Hamdi (1995: 7) argues that the housing process is more than simply the quantity of houses built and should be viewed as a much larger equation that includes location, standards, cost and timing. Hamdi (ibid: xii) further distinguishes between two distinct paradigms⁵ in housing, namely the provider paradigm, which is reductive in nature and leads to unsustainable development, and the support paradigm, which is productive in nature and leads to sustainable development. The Maskan Mehr housing project in Tehran, Iran (Figure 10) can be seen as an example of the reductive provider paradigm, whereas the Quinta Monroy social housing in Iquique, Chile (2003), by Elemental (Figure 11) serves as an example of the productive support paradigm.

1.1.2. Principle Issue

The Department of Human Settlements (2004: 12) defines sustainable settlements as ‘well-managed entities in which economic growth and social development are in balance with the carrying capacity of the natural systems on which they depend for their existence and result in sustainable development, wealth creation, poverty alleviation and equity’. However, the key findings in a 2018 report by the National Treasury (Gardner, 2018: vii) found that mainstream low-income housing strategies in the country, which overwhelmingly make use of the provider paradigm in developing new settlements, ‘continue to deliver predominantly large-scale, peripheral and income-polarised housing development with limited economic opportunity’. In other words, these strategies can be

5 A paradigm can be defined as ‘is the generally accepted view about a topic within a discipline or within a field’, whereas a routine is the ‘expression of the limits of an “accepted view” and is something that is governed by paradigms (Crouch & Pearce, 2012: 21).



Figure 10 The Maskan Mehr housing project, Tehran, Iran. (Source: Kuzu Group, 2020)

viewed as socially, economically and environmentally unsustainable as they impose normative ways of living (often around the spatial requirements of the nuclear family⁶) onto an exceptionally complex and heterogeneous society, make existing inequalities worse, inhibit the development of qualitatively rich and sufficiently complex urban settlements and perpetuate existing spatial injustices⁷ and colonial patterns of development. The most extreme example of this approach to low-income housing in the routine of mainstream development practice in South Africa is possibly Blikkiesdorp (Afrikaans for ‘Tin Can Town’) (Figures 12-13) – a low-income housing intervention by the City of Cape Town consisting of approximately 1,600 one-room structures located almost 30 kilometres from the inner-city. Moreover, the Department of Human Settlements’s recent shift to developing megaprojects⁸ and new cities on the urban periphery is equally problematic and unsustainable.

1.1.3. Research Aim

Consequently, the aim of the research is to investigate how the idea of productive heterotopias can be used

6 The nuclear household is defined by Statistics South Africa (2018: 86) as consisting of ‘spouses living alone, or with their children’, and by *Encyclopaedia Britannica Online* (2020b) as a ‘group of people who are united by ties of partnership and parenthood and consisting of a pair of adults and their socially recognized children’ and was once widely held to be the ‘most basic and universal form of social organization’, however, anthropological research has shown ‘so much variability of this form that it is safer to assume that what is universal is a “nuclear family complex” in which the roles of husband, wife, mother, father, son, daughter, brother, and sister are embodied by people whose biological relationships do not necessarily conform to the Western definitions of these terms’.

7 Spatial justice is an overarching term defined by Edward Soja (2009: 4) as looking at social, environmental and ethical justice from a critical spatial perspective in order to open up new possibilities for social and political action.

8 This shift, which has been discussed in various editions of the *Breaking New Ground* journal (Department of Human Settlements, 2017: 46-51; Department of Human Settlements, 2018a: 20-2; Department of Human Settlements, 2018b: 40-3), occurred in 2014 and has most notably been problematised by researchers Richard Ballard and Margot Ruben in their 2017 article *A ‘Marshall Plan’ for Human Settlements: How Megaprojects Became South Africa’s Housing Policy*, as well as in their 2018 article *Why Megaprojects to Deliver Houses in South Africa Might Not Work*.



Figure 11 ‘Quinta Monroy’, Iquique, Chile (2003), by Elemental. (Source: Elemental, 2008)

as a conceptual basis to identify a practical architectural design strategy for the development of a socially, environmentally and economically sustainable low-income housing intervention on an appropriate site in the Cape Town inner-city – one that advances the right to the city of the urban poor and effectively functions as a counter-project to the reductive and normalising tendencies of mainstream development practice.

1.1.4. Research Objectives

In order to achieve the research aim, it is necessary to differentiate between a number of research objectives:

1. Examining various texts to compile a comprehensive theoretical underpinning to the treatise to guide further research into finding practical design strategies.
2. Evaluating various housing precedents in terms of how they express spatial agency in order to draw valuable inferences.
3. Determining an appropriate site to act as a playground for the design intervention, as well as subsequently analysing the site context in order to generate a set of constraints and opportunities.
4. Exploring a range of design principles needed for the design process, which include co-operative organisational possibilities, methods for enabling participation and the urban design response.
5. Concluding the research in such a way that a comprehensive design brief can be formulated in order for the design development process to begin.

1.1.5. Structure of the Research

This document is divided into two distinct parts. Part I deals with the research necessary to generate a comprehensive design approach, a design aim and a set of design objectives and consists of the following five chapters:

Chapter 2 deals with Research Objective 1 and is divided into four sections. The first section focuses on the changing role of the architect when acting as a spatial agent and includes an investigation into the concepts of space, place and time as understood by Lefebvre and Foucault, the space produced by modernisation, and the concepts of utopias and heterotopias in architecture. The second section focuses on how development practice in design can be altered to be more sustainable and includes an investigation into the concepts of the right to the city, spatial justice, critical urban

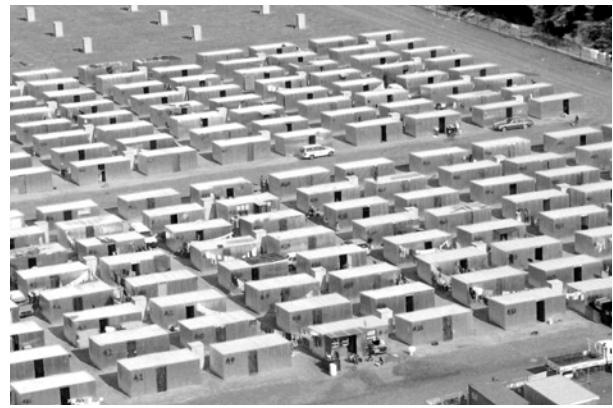


Figure 12 Photograph of Blikkiesdorp, Cape Town. (Source: Chris Martin, 2015)



Figure 13 Photograph of Blikkiesdorp, Cape Town. (Source: Chris Martin, 2015)

theory and assemblage urbanism, as well as exploring the characteristics of positive urban environments. The third section focuses on spatial agency and sustainable development practice in low-income housing design and includes an investigation into defining the housing problem and the differences between the provider and support paradigms in housing. The last section makes use of what has been learned in the previous three sections to examine current low-income housing strategies in South African cities and includes an investigation into the spatial practice that characterise South African cities and the examples of spatial agency that have been demonstrated by various urban grassroots social movements.

Chapter 3 deals with Research Objective 2 and is divided into four sections. The first section focuses on analysing housing precedents that express spatial agency in how they influence social relations and includes the occupation of Zuccotti Park, New York City (2011), by Occupy Wall Street, 'Urban Forest' (2015), by Atelier Bow Wow and Kolabs, and 'Gando Teacher's Housing', Gando, Burkina Faso (2004), by Kéré Architecture. The second section focuses on analys-

ing housing precedents that express spatial agency in terms of physical relations and includes 'Quinta Monroy', Iquique, Chile (2003), by Elemental, 'Pelip Housing', Port Elizabeth, South Africa (1999), by Noero-Wolff Architects, and SuperAdobe housing (1984), by Nader Khalili. The third section focuses on analysing housing precedents that express spatial agency in their organisational structure and includes 'Centraal Wonen', Hilversumse Meent, Netherlands (1977), by Leo de Jonge and Pieter Weeda, 'La Borda', Barcelona (2018), by Lacol, and the 'iLinge Labahlali Housing Co-operative', Cape Town (2002), by iLinge Labahlali. The last section focuses on analysing housing precedents that express spatial agency in producing knowledges and includes 'Narkomfin', Moscow (1930), by Moisei Ginzburg and Ignaty Milinis, 'Communal Villa', Berlin (2015), by Realism Working Group and Dogma, and 'Manufactured Sites', San Diego/Tijuana, U.S./Mexico Border (2005), by Estudio Teddy Cruz. In order to draw valuable design inferences, this analysis will involve discussing each precedent's approach to generating supportive housing and cultivating productive urban environments, as well as each precedent's approach to empowering ordinary people and finding a balance between structure and agency.

Chapter 4 deals with Research Objective 3 and is divided into three sections. The first section focuses on the selection of an appropriate site for the intended low-income housing intervention and includes the laying out of a set of site selection criteria, the evaluating of a range of possible sites according to those criteria within the Cape Town inner-city and, finally, the selection of the site. The second section focuses on analysing the context in which the chosen site is embedded in terms of general location and setting, climatic conditions, space defining elements, connectedness, activities, and special conditions and regulations. This analysis will be done at the city scale, the district scale and the street scale – these three scales having been argued by journalist Jane Jacobs in her influential book *The Death and Life of Great American Cities* (1961: 117) as being useful in understanding neighbourhoods. The last section focuses on condensing the contextual understanding gained in the previous section into a set of constraints and opportunities that will be used to guide the development of the urban design response and the final design in Part II.

Chapter 5 deals with Research Objective 4 and is divided into three sections. The first section explores the possibilities for co-operative ownership in low-income housing. The second section explores possible methods for participation, engagement and building

programmes. The third section explores aspects of and possibilities for the urban design response, which includes principles to guide the design of public urban squares, shared space streets and urban green spaces.

Chapter 6 deals with Research Objective 5 and serves as a conclusion to the research conducted in Part I.

Building on the research conducted in the first part of this document, Part II deals with the design development process and consists of the following two chapters:

Chapter 7 deals with documenting the design development process and is divided into three sections. The first section focusses on generating a comprehensive design brief in response to the research conducted in Part I and that includes an elaboration on the design approach, the design aim and the design objectives. The second part documents the design of the urban design framework to which the final design needs to respond. The third section documents the design iterations that have resulted from the design development process. The reason multiple iterations are generated before reaching the final design is because the design process is not a linear but a cyclical one in which 'understandings in one stage feed back into, and lead to adjustments to, the others' (Uytenbogaardt & Dewar, 1991: 15).

Chapter 8 deals with documenting the final design intervention, including a set of design scenarios and architectural prototypes. This serves as an interpretation of the theoretical and practical understandings that have been gained from conducting the research, but should be understood only as one possible interpretation that is very specific to the South African urban context and the chosen site in particular.

1.2. Research Methodology

1.2.1. Design Problem

Research in design always starts with addressing a design problem, and defining the problem is fundamental in generating a solution. However, it should be noted that there are no optimal solutions to design problems, but rather a whole range of acceptable solutions (Lawson, 2008: 122). According to design researchers Christopher Crouch and Jane Pearce (2012: 20-21), in the social realm there exists a dynamic network of problems and solutions, with no solution in itself ever being complete and often revealing or creating new problems. Crouch and Pearce (ibid.: 24)

also argue that sometimes problems can be viewed as 'wicked' in that they respond to different formulations depending on who is asking the questions about it. The design problem dealt with in this treatise is that mainstream low-income housing interventions in South Africa make use of socially, economically and environmentally unsustainable design and development practices that frequently ends up perpetuating the lasting colonial and patriarchal patterns of development, spatial injustices and inequalities in its cities. These interventions also impose normative and reductive ways of living onto their inhabitants which are at odds with the social complexities inherent to South African society.

1.2.2. Research Question

It must be understood that design problems cannot be solved by simply synthesising information, and an important tool in modelling the problem/solution dynamic is the formulation of a research question. According to Crouch and Pearce (*ibid.*: 19), the research question is particularly useful as it can prompt information about strategies for resolving dilemmas or the resolution of a task. Consequently, the research question dealt with in this particular study is the following: in what way can the theoretical idea of productive heterotopias and the reimagining of the role of the architect as that of a spatial agent be used to generate a practical architectural design strategy for a low-income housing intervention on an appropriate site in the Cape Town inner-city that is socially, economically and environmentally sustainable?

1.2.3. Research Position

The broader principles that underpin certain research methods, i.e. the particular strategies used when conducting research, can be understood as the research methodology (Crouch & Pearce, 2012: 63). Furthermore, it is helpful to further separate a research methodology into three components (Walter, 2010: 3-31): the research position, which influences the other components; the particular theoretical or conceptual lens through which the phenomena being studied is viewed; and the methods used in collecting, analysing and presenting research data. The research position forms a critical component of a design research methodology as it provides an opportunity for the researcher to be reflexive by acknowledging his or her own pre-understandings and the ideologies, i.e. 'the imaginary relationship of individuals to their real conditions of existence' (Althusser, 1971: 109), that shape their worldview. In considering my own research position, it is clear that my geographical location gives me a valuable understanding of South African cities but that my perspective has been limited in a number

of ways:

First, my experience living in formalised and well-served historically white areas has limited my understanding of the lived experiences of the vast majority of South Africans who have been negatively impacted by the colonial and patriarchal spatial structures that dominate South African cities. Second, my culture as an Afrikaans person limits my knowledge of the different and complex ways in which people with different cultural backgrounds than my own live. Third, being a white male has limited my understanding of the challenges women face in South African cities, as well as the many systemic hurdles that people of colour still experience in contemporary South Africa. Fourth, in coming from a middle-income white household (which is vastly more well off than what is considered middle-income in black households), my understanding of the economic challenges that come with living in South Africa is extremely different from that of half the South African population who live below the upper-bound poverty line (Statistics South Africa, 2019a).

Additionally, my experience in studying architecture has been greatly influenced by the normalised and institutional ideological positions that dominate mainstream architectural practice, discourse and the reproduction of ideas within the field. As argued by Awan, Schneider and Till (2011: 35-38, 50-60), these are slanted towards Western ideas of spatial production and are largely guided by neoliberal interests of viewing buildings as commodities and meeting the needs of those with power over those who cannot afford the services of an architect. This is supported by Crouch and Pearce (2012: 10) who argue that those reproducing the values of the most powerful (often characterised by wealth) in a particular field are not necessarily aware that they are doing so and often view this as unproblematic – however this results in only some individuals having the ability to promote ways of looking at the world that favours them.

1.2.4. Theoretical Lens

This treatise is underpinned by a concern with ethics and identifying very practical ways of changing dominant practices in low-income housing strategies, as well as a belief that design is never a neutral activity. Because of this, the theoretical position maintained in this treatise is firmly based in the critical lens. Critical theory is concerned with empowering individuals to overcome the circumstances that constrain them and includes a range of specific movements including feminism, queer theory and critical race theory (O'Reilly & Kiyimba, 2015: 16). This involves understanding

social phenomena through larger societal structures and processes associated with gender, social class and race (Parker & Lynn, 2002: 7-22).

When using a critical lens, the researcher's role involves critically observing design practices in order to initiate or facilitate change, and the purpose of research is to explore how the user is affected by design practices, objects and systems in order to disrupt the material practices and rituals of design (Crouch & Pearce, 2012: 60-61). Furthermore, the critical lens draws from the interpretive lens in viewing the researcher as a subjective observer and acknowledging the limitations of his or her perspective (*ibid.*). The critical lens also typically explores how individuals relate to the larger social and institutional context in which they work by questioning 'the assumptions which a discipline or field takes to be self-evident' (Stonach & MacLure 1997: 3).

1.2.5. Research Methods

As this treatise is interested in how the world is experienced by human beings in natural settings, the methodological framework used will be based in the qualitative school of thought. Qualitative research can be defined as the search for general statements about relationships and underlying themes (Marshall & Rossman, 2006: 154) and is in diametric opposition to quantitative research which focusses on numerical data gathering and analysis (Brown & Gibson, 2009: 3). Consequently, open-ended methods for gathering data that are grounded in the qualitative school of thought have been selected. These will include a range of primary and secondary methods. Primary methods refer to research methods that generate primary data either by the researcher, a research participant or by someone relevant to the research question, whereas secondary methods refer to research methods that rely on secondary data, such as commentaries or claims, which have been generated by other researchers, reporters or commentators (*ibid.*: 66-67).

Primary data gathering methods will include compiling an unstructured review of literature and documents relevant to answering the research question, unstructured site observations including producing observation notes and mapping the position of various components that form the site context. Secondary methods will include document analysis, gathering of factual information, consulting research into building systems, materials and construction methods, collecting images and diagrams that reinforce specific arguments within the treatise, and collecting images,

diagrams, maps, plans and sectional drawings of examples and precedents selected for analysis.

Furthermore, analysis of qualitative data is typically an exploratory, creative and iterative process due to the open-ended nature of qualitative research (Crouch & Pearce, 2012: 73-74), and deductive, inductive or abductive reasoning can be used to analyse qualitative data and reach conclusions. Deductive analysis involves 'top-down' analysis where a researcher begins with a relevant theory or hypothesis and then collects facts to test its validity (*ibid.*). Inductive analysis does not start with a prior hypothesis and can be seen as 'working up' from the collected data to generate a working theory (*ibid.*). Abductive analysis involves forming a conclusion from the information that is known (Merriam-Webster Online, 2020), and this approach is especially useful to designers as it encourages the researcher to think of what could happen if things were rearranged (Crouch & Pearce, 2012: 22). In particular, the uncertainty of rejecting routine and questioning paradigms creates a space for abductive thinking to thrive (*ibid.*).

This study, therefore, will take a predominantly abductive approach to generating inferences and will make use of a range of methods for data analysis and synthesis. These include thematic analysis of research data, identifying links between different sets of data, identifying patterns of movement over time, identifying networks that form the context at different scales, generating constraints and opportunities of context, analysing networks at various scales, setting lists of criteria to analyse various examples, precedents and site context, generating visual representations of data gathered, and drawing conclusions from research data to generate design iterations. The results of the research analysis will be presented in the form of a new research text which will use visual means of conveying information as much as possible. In doing so, a range of methods of presenting information will be used. These include a final research text that conveys the most important information and arguments, diagrams and drawings illustrating important points, indicating information on maps at different scales, written narratives accompanying drawings and maps, precedent studies that present relevant analysis and drawings, traditionally architectural drawings such as plans, sections and elevations and non-traditional architectural representations of design ideas such as cartoon images, zines, sketches, GIF images and small animations in order to make information accessible to a wider audience.

Part I Research

2 Literature Review

2.1. Investigation into the Changing Role of the Architect when Acting as a Spatial Agent

2.1.1. Space, Place and Time

As defined by feminist geographer Doreen Massey in her book *For Space* (2005: Part 3, Paragraph 2), space can be regarded as the 'sphere of the continuous production and reconfiguration of heterogeneity in all its forms – diversity, subordination, conflicting interests'. This view of space corresponds with that of Lefebvre and Foucault who's understanding recognises that space is a social reality composed of dynamic relations that are imbued with power and meaning. It is argued by Massey in her book *Space, Place and Gender* (1994: 4) that this view lends itself special appropriateness for debates of the moment. This is evident in the fact that, since the turn of the century, there has been a diffusion of spatial thinking beyond the traditional spatial fields of architecture and urban planning and across virtually all disciplines in what has been referred to as a 'spatial turn' or a 'new spatial consciousness' (Soja, 2009: 1-2; 2010: 13-20). This new spatial consciousness has extended its reach into academic fields such as postcolonial critique, feminist critique, anthropology, race theory, queer theory, economics, legal studies and literary criticism, as well as into the public and political realms as demonstrated by the increasing search for the right to the city and spatial justice (ibid.).

The idea that '(social) space is a (social) product' is central to the unitary theory of space developed by Lefebvre (1991a: 26), with the concept of space denoting all possible spaces within the indefinite multitude that exist in the world. Lefebvre (ibid.: 299, 341-2, 352) argues that produced space can serve as both a tool for thought and action as well as a means of control and power, is both abstract and concrete, can be broken up and analysed in the same way as white light is broken up into a spectrum, and is made of two distinct components: representations of space, i.e. space that is conceived in the mind, and representational spaces, i.e. spaces that are directly lived. Moreover, this understanding views the production of space as a shared en-

terprise, as inherently political, and as not being fixed to a single moment of completion.

In order to fully understand how space is produced, it is important to define a range of key terms used in the unitary theory of space developed by Lefebvre. Additionally, these terms will be used as tools for spatial analysis throughout this treatise. The first set of terms consists of spatial practice (perceived space), representations of space (conceived space) and representational spaces (lived space), which are important as space can only be produced through the interaction of these three components; the second set of terms consists of the three fields of space, namely natural space, social space and mental space; the third set of terms consists of absolute space and abstract space; the fourth set of terms consist of dominated space and appropriated space; and the last set of terms consists of contradictory space and differential space.

As stated before, space can be seen as being composed of two aspects, namely representations of space, i.e. space that is *conceived* in the mind, and representational spaces, i.e. space that is directly *lived*. The third component of the perceived-conceived-lived triad is that of spatial practice, i.e. space that is *perceived*. This term refers to the material production of space of a given society (ibid.: 31), with each society/mode of production producing its own space. In order to better explain these concepts, Lefebvre makes use of the analogy of the human body (ibid.: 40): spatial practice, i.e. that which is perceived, involves the presupposition of the uses of the hands, members, sensory organs and the various gestures of work and activity unrelated to work; representations of the body, i.e. that which is conceived, are derived from accumulated scientific knowledge which is distributed in combination with ideology; and when considering representational spaces in terms of the human body, i.e. that which is directly lived, it is useful to imagine how strangely different the heart is lived as opposed to how it is perceived or conceived.

It is helpful to further differentiate between three dif-

ferent spatial fields. The first spatial field described by Lefebvre is that of natural space. According to Lefebvre (ibid.: 70, 117-8, 142), this field cannot be divorced from the earth, can either be marked or simply traversed and provides the initial basis for social space and mental space to impose their own meshwork and textures onto it. The second spatial field is that of social space, which can be seen as the result of natural space being marked and which refers to the multiplicity of social spaces that exist (ibid.: 86, 141). Lefebvre (ibid.: 101, 191) argues that the form of social space, which is always simultaneously a field of action and a basis of action, is the encounter, assembly and simultaneity of everything that there is in space – this includes living beings, things, objects, works, signs and symbols. Furthermore, where natural space juxtaposes and disperses, social space implies actual or potential assembly at a single point and contains the potentialities for reappropriation and differential space (ibid.: 101, 349). The third spatial field is that of mental space which serves to reduce the complexities of social space through the use of ideology and scientific practices – thus creating the illusion of a less chaotic reality (ibid.: 299-300).

Lefebvre also makes use of the concepts of absolute space and abstract space in his spatial analysis. According to Lefebvre (ibid.: 48, 236-7), absolute space refers to those spaces, both political and religious in nature, that were made up of fragments of nature located at sites such as caves, mountaintops, springs and rivers and chosen for their intrinsic qualities. These spaces, of which the Greek agora and Shintoist sanctuaries are examples, had strictly symbolic existences and served as both receptacles and stimulants to social energies and natural forces (ibid.). Abstract space, on the other hand, specifically refers to the reductive, homogeneous and inherently violent representations of space which are used as tools for domination by hegemony and power and are based on the law of being reproducible and repetitive (ibid.: 62-3, 285, 326, 370, 387, 396). This space has its origins in the division of labour in the West and the source of its continued application is the production of exchange value (ibid.: 49, 348). According to Lefebvre (ibid.: 93), fetishized abstract space leads to two practical abstractions. The first is that of 'users' who cannot recognise themselves within that space, and the second is a way of thinking that cannot conceive of adopting a critical stance toward the abstraction of space. Lefebvre (ibid.: 285) elaborates on the primary goal of this type of space:

We already know several things about abstract space. As a product of violence and war, it is political; instituted by a state, it is

institutional. On first inspection it appears homogeneous; and indeed it serves those forces which make a tabula rasa of whatever stands in their way, of whatever threatens them – in short, of differences.

To elaborate on the destructive effects of abstract space, Lefebvre differentiates between dominated and appropriated spaces. Dominated spaces are always the realisation of a master's project and are characterised by having been transformed or mediated by technology and practice. The idea of dominated space, however, can only be fully understood by contrasting it to the opposite concept of appropriation. Any space that has been modified by a group to serve the needs of that group can be seen as having been appropriated and, according to Lefebvre (ibid.: 164-7), in an ideal situation these spaces would be combined in a situation where the outside space of the community being dominated, while the indoor space of family life is appropriated. But as Lefebvre (ibid.) argues, the history of capital accumulation is also the history of their separation and mutual antagonism.

The last two terms that need to be elaborated upon are those of contradictory space and differential space. Lefebvre uses the term contradictory space to refer to the inherent contradictions found in the production of abstract space, which he argues has a 'contradictory character within the framework of the dominant tendency towards homogeneity (i.e. towards the establishment of a dominated space)' (ibid.: 411.). In *The Production of Space*, Lefebvre (1991a: 355-60, 396-7) elaborates on a wide range of contradictions produced by abstract space which effectively slice up, degrade and eventually destroy urban space – examples of which include the contradictions between the global and the subdivided, the centre and the periphery, and the clash between the capitalist consumption of space and the spaces of enjoyment in the city such as green spaces and public parks which are seen as 'unproductive' since they do not generate surplus value. In order to counteract the tendency of abstract space toward homogeneity and the elimination of existing differences and peculiarities, Lefebvre (ibid.: 52) developed the contrasting idea of differential space – a type of space that has the ability to 'restore unity to what abstract space breaks up' by producing a new space that accentuates differences.

According to Massey (1994: 1-2, 25), this conceptualisation of space stands in opposition to the understanding of space as the 'realm of the dead', which has its roots in the work of the fifteenth century French philosopher René Descartes who viewed space as be-



Figure 14 Photograph of the Erbil Citadel, Kurdistan Region, Iraq (1950). (Source: Unknown, 1950)

ing absolute and divine (Descartes, 1976: 135). According to Lefebvre (1991a: 1-7, 14, 299), the Cartesian view furthers the Euclidean understanding that sees space as being isotropic. As a result, the Cartesian view can be regarded as substituting ‘true space’, which is complex and chaotic, for a more simplified and illusory ‘truth of space’ (ibid.). Put another way, Cartesian thinking reduces the realities of space, which is in reality a simultaneous and dynamic multiplicity of social relations that contains infinite possibilities, to that of a static, homogeneous and effectively dead mental space.

Furthermore, the concept of space is closely tied to that of place – a concept that can be defined as space that is meaningful to someone (Manzini, 2015: 189) and which, in a manner similar to the use of the term space, denotes all places that might exist. Corresponding to the split between the Cartesian view of space and that of space as relations, the concept of place can either be seen as bounded, fixed and opposed to time, or it could be viewed as porous, relational, inextricable from time and as referring to particular moments within the ever-shifting network of social relations (Massey, 1994: 3-4.). What is more, Lefebvre (1991a: 118, 339-40) argues that time and space are not separable within the textures produced by different societies/modes of production – as exemplified by the Erbil Citadel that has been constantly appropriated and re-appropriated since at least the fifth century B.C. (Figure 14) – and to conceive of space separate from time is contradictory. Instead, it has to be understood that no place ever disappears completely but always leaves traces (ibid.: 118, 164, 412). Moreover, as discussed by both Lefebvre (ibid.: 205) and French scholar Michel

de Certeau in his 1980 book *The Practice of Everyday Life* (1984: 117), the space of daily life is composed in intersections of mobile elements and contains a multiplicity of rhythms that interpenetrate each other.

According to Lefebvre (1991a: 163, 366-70), because a great variety of places exist that sometimes oppose, complement or resemble one another, the concept of place can be further divided into three specific types which he refers to as topias. These topias include: isotopias, which can be seen as analogous places; heterotopias, which can be seen as contrasting places; and utopias, which can be seen as the ‘places of what has no place or no longer has a place’ (ibid.). The isotopia-heterotopia-utopia divide constitutes the first of three conceptual grids developed by Lefebvre to help decipher complex spaces. However, as Lefebvre (ibid.) notes, there is no reason why there should be a limit to the number of possible grids that could prove useful in achieving this task. The second grid identified and discussed by Lefebvre (ibid.) is more concrete and classifies places according to their attributions as private, public or mediational (such as passages and pathways). The third grid discussed by Lefebvre (ibid.) is more strategic and has an ability to ‘reveal the measure of order that exists between the chaotic surface of space’. This grid, according to Lefebvre (ibid.), involves investigating the junctions between:

‘[...] the market in space and the spaces of the market, between spatial planning and development and the productive forces occupying spaces, and between political projects and the obstacles they run into – that is to say, those forces that run counter to a given strategy and occasionally succeed in establishing a “counter-space” within a particular space.’

All three grids can be viewed in terms of the distinction between dominated and appropriated spaces that deal with the dynamics of power relationships within space, and possibility of establishing a counter-space or counter-project through critically analysing spatial production is particularly significant in challenging unjust power structures. Lefebvre (ibid.: 60) elaborates on this idea of establishing a counter-project:

By seeking to point the way towards a different space, towards the space of a different (social) life and of a different mode of production, this project straddles the breach between science and utopia, reality and ideality, conceived and lived. It aspires to surmount these oppositions by exploring the

dialectical relationship between 'possible' and 'impossible', and this both objectively and subjectively.

As argued by both Lefebvre (1991a: 11) and Foucault (1984: 252; 1980a: 141-2), nobody is outside of power and no space is untouched by hegemony as space itself is 'fundamental to any exercise of power and any form of communal life'. According to Foucault (1980a: 148-50), 'a whole history remains to be written of spaces – which would also be the history of powers (both of these in the plural)'. It is evident that architecture in particular has always been closely linked to furthering the economic and political interests of systems of power. Foucault (*ibid.*) expands on some of this history by arguing that, before the eighteenth century, the role of architecture was to manifest power in great architectural forms such as the church, palace and stronghold. Since that time, however, architecture became involved in problems of population, health and the urban question and space started to be widely used as tools for power, which had long since become a machinery that nobody owns and that can no longer be identified with any individual. (*ibid.*: 149-50, 156; Lefebvre, 1991a: 312-4). In turn, this led to a new interest in the design of institutional buildings such as schools, barracks and hospitals around what Foucault describes as a panoptic system⁹ based on 18th century social theorist Jeremy Bentham's utopian idea of the Panopticon (Figure 15), as well as the replacement of 'residence' with 'housing' and the specification of function to spaces within the dwelling which, before then, had remained undifferentiated (*ibid.*).

In order to grasp the complexities of its various mechanisms, Foucault (1980a: 72, 98, 116) argues that power should not be viewed as one individual, group or class's homogeneous domination over others, nor should it be understood as something with a fixed location, but rather that it should be analysed as something that circulates, that in reality is more ambiguous and which only functions in the form of a chain. Foucault (*ibid.*) further contends that individuals do not only circulate between the threads of power, but rather that, since each person has at their disposal a certain power, they can act as vehicles for transmitting a wider power. Power is thus highly dynamic and difficult to analyse. However, it is useful to view space as socially constructed and as being constituted by a multiplicity of interlocking social relations that are stretched-out

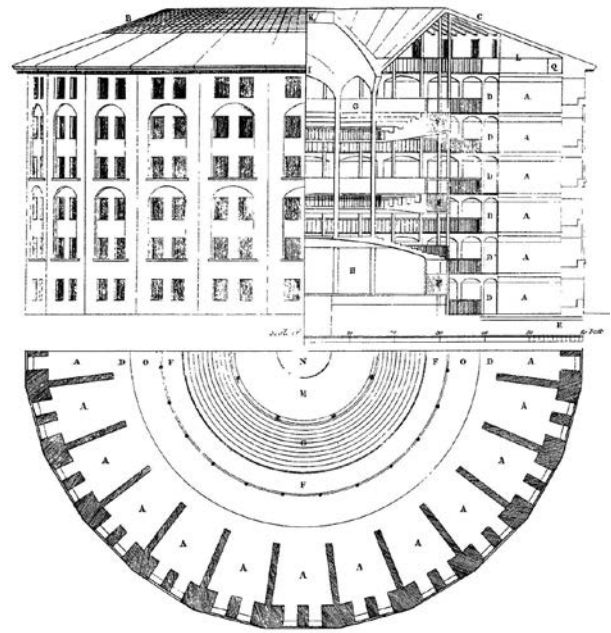


Figure 15 Plan of the Panopticon (1843), by Jeremy Bentham (1748-1832). (Source: Jeremy Bentham, 1843)

over all scales (global, national and within the town, settlement, household and workplace) to be able to start such analysis – an analysis which Massey (1994: 4, 22) argues must entail an analysis of the economy and society more generally. It is also critical to use an intersectional¹⁰ framework when conducting this analysis as it is clear that not everybody is affected equally by power. To this point, Massey (*ibid.*: 149-51) expands upon the concept of 'power-geometry' to help understand the ever-shifting geometry of power/social relations and the ways in which differential mobility can undermine the power of others:

Now, I want to make one simple point here, and that is about what one might call the *power geometry* of it all; the power of geometry of time-space compression. For different social groups and different individuals are placed in very distinct ways in relation to these flows and interconnections. The point concerns not merely the issue of who moves and who doesn't, although that is an important element of it; it is also about power in the relation to flows and the movement. Different social groups have distinct relationships to this anyway-differentiated mobility: some are more in charge of it than others;

⁹ The term 'Panopticism' refers to a particular mechanism of power that really exists but which can best be illustrated in the 18th century social theorist Jeremy Bentham's utopian idea of the Panopticon (Foucault, 1980a: 164). Foucault equates the importance of the idea of the Panopticon for order of power to that of the steam engine for production (*ibid.*: 71-2).

¹⁰ Intersectionality is a sociological concept defined as 'the interconnected nature of social categorisations such as race, class, and gender, regarded as creating overlapping and interdependent systems of discrimination or disadvantage' (Oxford English Dictionary Online, 2019).

some initiate flows and movement, others don't; some are more on the receiving end of it than others; some are effectively imprisoned by it.

Consequently, mobility, and control over mobility, both reflect and reinforce power. This can be demonstrated clearly by citing prominent examples such as Georges-Eugène Haussmann's boulevards (Figure 16 and Figure 17) which destroyed the qualitative complexity of Paris in the 19th century and acted as a means of military control of rebellious citizens (Lefebvre, 1991a: 312; Harvey, 2012: 117), German philosopher Friedrich Engels' 1845 description of Manchester in which he describes the engineering of the city in such a way as to allow the plutocrats to live their entire life without ever having to see the slum conditions of the working class districts (Engels, 1968: 54-5), the re-engineering of the American inner-cities after the uprisings of the 1960s to create highway barriers between high value downtown property and impoverished neighbourhoods (Harvey, 2012: 117), and technocratic and state-bureaucratic society projected into the space of Brazil's capital city Brasília which was founded in 1960 (Lefebvre, 1991a: 312).

In analysing the ways in which modalities of social disempowerment are inscribed on cities, it is useful to distinguish between what Certeau (1984: 30-7) calls 'strategies' and 'tactics'. Strategies refer the manipulation of power relationships as soon as a subject with will and power, such as a business, an army or a city, can be isolated. Tactics, on the other hand, refer to acts of the weak who are forced to negotiate the spaces developed by the strategies of the powerful. South African cities in particular are still plagued by the racist spatial strategies devised by the apartheid regime, as

will be discussed in greater detail in subsection 2.4.2.

In addition to its connections to mobility, the concept of power can be tied to the production of knowledges. As argued by Foucault (1980a: 119), power would be a very fragile thing if all it did was repress and, consequently, it should be regarded as a productive network that induces pleasure and, in particular, produces forms of knowledge and discourse. Knowledge, according to Foucault (1972: 150), can be seen as 'the space in which a subject may take up a position and speak about the objects with which he [sic] deals with in his [sic] discourse'. This understanding is important when critically evaluating the role of the architect in housing for two reasons. First, architects can either retreat to their own representations of space that end up reproducing abstract space or, alternatively, they can be open to sharing knowledge and incorporating knowledges from ordinary people and other disciplines. Second, architects are prone to disseminating certain value sets within space that benefit certain groups of people with more material power while dominating the space of those with less material power. Crouch and Pearce (2012: 10) elaborate on this:

Material power gives individuals and groups of individuals the ability to promote ways of looking at the world that favour them, and sometimes the ability to change the way in which others live their lives. It is often characterized by wealth and the benefits it entails. [...] the wielding of power through the managing of ideas and people is often invisible to those who are being managed. The reproduction of the values of the most powerful group by the least powerful in this way is often seen as unproblematic because

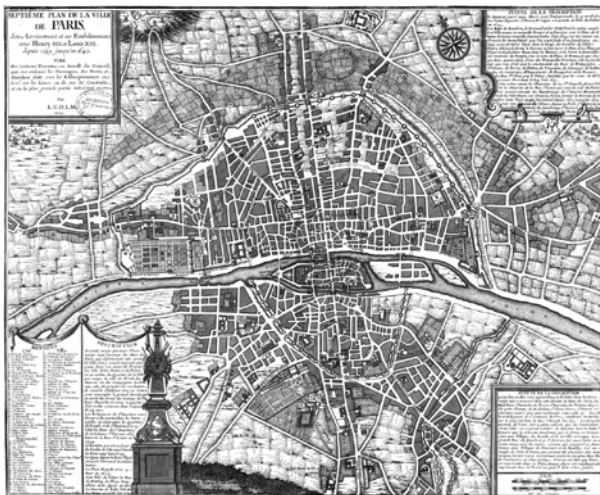


Figure 16 Map of Paris in 1643 showing original complex network of streets. (Source: Wordpress, 2014)

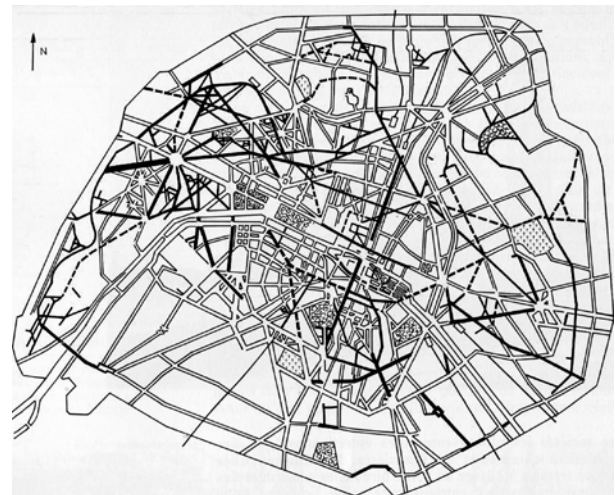


Figure 17 Map of Paris with thick lines representing Haussmann's boulevards. (Source: Wordpress, 2014)

those in the field of reproducing these values are also not necessarily aware that they are doing so.

Furthermore, it is argued by Lefebvre (1991a: 361-3) that neither the eye of the architect, the lot on which he or she builds or the blank sheet of paper on which he or she sketches is neutral and that the space of the architect is in reality a 'subjective' space which is 'freighted with all-too-objective meanings'. Lefebvre (ibid.: 42, 118) contends that it is helpful to think of architecture as 'archi-textures' in which each building is 'viewed in its surroundings and context, in the populated area and associated networks in which it is set down, as part of a particular production of space', and that it is indisputable that representations of space which they use to intervene in and modify spatial textures, which are 'informed by effective knowledge and ideology', have a practical impact. Lefebvre's writing here can be seen as a comment on mainstream architectural discourse, which he describes as having 'sterilizing tendencies' (ibid.: 361-3). Foucault (1980b: 100-1) elaborates on the nature of discourse:

Discourses are not once and for all subservient to power or raised up against it... We must make allowance for the complex and unstable process whereby discourses can be both an instrument and an effect of power, but also a hindrance, a stumbling-block, a point of resistance and a starting point for an opposing strategy. Discourse transmits and produces power: it reinforces, but also undermines and exposes it, renders it fragile and makes it possible to thwart it.

However, Lefebvre (1991a: 361-3) writes the following on architectural discourse:

It may thus be said of architectural discourse that it too often imitates or caricatures the discourse of power, and that it suffers from the delusion that 'objective' knowledge of 'reality' can be attained by means of graphic representations. This discourse no longer has any frame of reference or horizon. It only too easily becomes – as in the case of Le Corbusier – a moral discourse on straight lines, on right angles and straightness in general, combining a figurative appeal to nature (water, air, sunshine) with the worst kind of abstraction (plane geometry, modules, etc.).

The architect, according to Lefebvre (ibid.: 396-7), 'occupies an especially uncomfortable position' in

that they have to 'bridge the gap between product and work' and 'has a stake in difference' – in other words, the architect has to find a balance between allowing for differences and their obligation to produce within a capitalist framework, which is diametrically opposed to the right to difference. Mainstream architecture, however, overwhelmingly capitulates to the fetishized abstract space of modernity in which individuals are reduced to 'users' or 'inhabitants' whose lived space, i.e. the concrete space of their everyday activities, is at odds with the representations of space advanced by architects, urbanists and planners (ibid.: 93-4, 361-3). Lefebvre (ibid.: 338) expands upon how this capitulation and the reductive tendencies of architectural discourse results in the 'imposition' of normalised lifestyles:

The graphic elements involved (in drawings, sections, elevations, visual tableaux with silhouettes or figures, etc.), which are familiar to architects, serve as reducers of the reality they claim to represent – a reality that is in any case no more than a modality of an accepted (i.e. imposed) 'lifestyle' in a particular type of housing (suburban villa, high rise, etc.). A 'normal' lifestyle means a normalized lifestyle. Meanwhile, the reference to the body (the 'modulor'), along with the figures and the promotional pattern, serve literally to 'naturalize' the space thus produced, as artificial as it may be.

Consequently, mainstream architectural practice is characterised by strong normalising tendencies in which standard solutions are applied to all contexts in a 'practice makes perfect' manner and as is evident the indifference and non-engagement of the cities made up of office and apartment blocks all around us (Awan, Schneider & Till, 2011: 32-8). The effect of this is that space is typically seen as being composed of calculations instead of individual subjects¹¹ (Lefebvre, 1991a: 361-2). According to gender theorist Judith Butler (1997: 93) however, the subject should not be understood as being produced in totality at any moment, but as constantly being in the process of being produced. Thus Butler (2004: 8) argues that to live a liveable life requires various degrees of stability. Thus, normalisation and the repeated inculcation of norms

¹¹ According to Foucault (1985: 5; 1998: 98), people can be viewed as individual subjects who are involved within the practices of self-construction, recognition and reflection and who are constituted through the process of subjection, which can be defined as the way in which the subject experiences him or herself in the 'game of truth' where he or she relates to him or herself. Foucault (1989: 313) argues further that the subject undergoing a process of subjection starts from a certain number of rules, styles and conventions that are found in their culture.

can infringe upon the ability of people to live such a life.

Butler argues further that some lives are not considered lives at all, which often gives rise to physical violence directed towards subjects who live precarious lives outside the normative – for this reason it is important to expand our notions of kinship outside the heterosexual frame (ibid.: 25). Butler's focus is on gender norms in particular, arguing that the subject is produced as a gendered matrix of relations and that the dividing up of bodies into male and female has a specifically political use and has historically served the economic needs of heterosexuality and lend it a naturalistic gloss (Butler, 1990: 112; 1993: 7-8). According to Butler (2004: 25-6), for those 'looking to become possible, possibility is necessary', and those who are not recognisable within norms are 'foreclosed from possibility'. As argued by Massey (1994: 256), for those whose understanding is ruled by the radical distinction between genders, the powers maintained between them and the repetition of norms (such as child-rearing being performed overwhelmingly by members of one sex makes), it difficult to conceive of 'third possibilities' – that is to say alternative social arrangements outside of the normative.

Allowing the emergence of third possibilities is important in producing postcolonial, feminist and queer space and disrupting the continued perpetuation of Western, patriarchal and normative space. This relates to the concept of Third Space developed by critical theorist Homi Bhabha, which is pertinent in understanding how cultures develop over time and how meaning is produced in space. According to Bhabha (1990: 201-209; 1994: 36-39), culture is in a constant state of hybridity and it is necessary for these productive liminal spaces of cultural difference, or Third Spaces, to exist in order for new meaning to emerge 'in the spirit of alterity and otherness'. Bhabha (1990: 208) makes clear, however, that this is fundamentally different to the Western liberal tradition of acknowledging cultural diversity and multiculturalism within their own universal framework which is simply another form of control.

2.1.2. The Space Produced by Modernisation

As argued by Lefebvre (1991a.: 123-6, 303-5), the twentieth century witnessed mainstream architectural production becoming divorced from the street and the realities of the city. Similarly, Manzini (2015: 95) argues that twentieth century modernity lead to the idea of well-being as liberation from the weight of everyday activities, with the skills and capabilities possessed by individuals being replaced by a growing



Figure 18 'Les Femmes d'Alger (O Version O)' (1907), by Pablo Picasso. (Source: Pablo Picasso, 2020)

series of products and services to be purchased on the market or received from the state. This way of thinking, however, has huge environmental, social and economic costs, as well as tending to propagate the idea of passive and solitary subjects. The end result is a 'vicious circle by which, in the quest for a well-being based on the idea of reducing our obligation to do things ourselves (in terms of everyday life), we end up having to work more and more' (ibid.).

The outcome of this is the design of what Lefebvre (1991a.: 95, 227) calls 'reduced models' that have come to dominate modern spatial practice. This involves an approach in which buildings and even cities are seen as both objects of control by power and objects of commercial exchange, in which social relationships are brutally condensed and in which time has vanished from social space and has become 'as isolated and functionally specialised' as modernity itself (ibid.). This can especially be seen within the style of administrative buildings from the nineteenth century onwards, as well as in apartment buildings that comprise of stack after stack of 'boxes for living in' which are commonplace in modernised cities. These are spaces which have become more functionalised, fixed and, consequently, removed from the diverse and complex lived time of its 'users' and less susceptible to appropriation (ibid.: 98, 356-7). Moreover, Lefebvre (ibid.: 329-30) argues that the finiteness of the earth's resources, as discussed within architect Buckminster Fuller's seminal 1969 book *Operating Manual for Spaceship Earth*, is being challenged by the 'infinite power of abstraction' of modernity in which natural space is commodified and in which new and ever increasing scarcities are emerging and which are



Figure 19 'Taliesin I', Wisconsin (1911-1959), by Frank Lloyd Wright, photographed in 1914. (Source: Frank Lloyd Wright Foundation, 2019)



Figure 20 'Villa Savoye', Poissy, France (1929-31), by Le Corbusier. (Source: Flavio Bragaia, 2016)

becoming increasingly spatial and local.

According to Lefebvre (ibid.: 43, 303-5), the emerging space of modernity was foreshadowed at the beginning of the twentieth century by the space produced by Picasso in his paintings (Figure 18), as well as in the work produced by architects such as by Frank Lloyd Wright (Figure 19), whom Lefebvre argues pursued a 'communitarian representational space deriving from a biblical and Protestant tradition' and 'set out to abolish enclosing walls designed to separate the inside from the outside', and Le Corbusier (Figure 20), whom Lefebvre argues was 'working towards a technicist, scientific and intellectualized representation of space'. The space advanced by modernist architects, however, differs from the space created by Picasso in a key way: where the modernists produced abstract space filled with contradictions, the Spanish painter 'bore witness to the emergence of another space, a space not fragmented but differential in character' by discovering and disclosing the contradictions of 'fragmented space' (ibid.: 302-5). Moreover, Lefebvre (ibid.: 303-5) expands upon Le Corbusier's contribution in particular:

The disarticulation of external space

(façades, building exteriors) may be clearly observed in Le Corbusier, as much in his written works as in his buildings. Le Corbusier claims to be concerned with 'freedom': freedom of the façade relative to the interior plan, freedom of the bearing structure relative to the structural frame. In actuality, what is involved here is a fracturing of space: the homogeneity of an architectural ensemble conceived as a 'machine for living in', and as the appropriate habitat for a man-machine, corresponds to a disordering of elements wrenched from each other in such a way that the urban fabric itself – the street, the city – is also torn apart.

In Lefebvre's opinion, however, the emergence of 'a neglected knowledge and a misconstrued reality' that has since come to dominate spatial production and has resulted in the widespread reduction and fracturing of space can be fixed to the 'historic' role of the Bauhaus School (ibid.: 123-6). The Bauhaus was founded by German architect Walter Gropius in 1919 and the school's philosophy of spatial production, which centred around programmatic concerns, is demonstrated in Gropius' design for its Dessau facilities.



Figure 21 The Bauhaus building, Dessau, Germany (1925-26), by Walter Gropius. (Source: Thomas Lewandowski, 2014)



Left: Figure 22 'ABCD' (1923-4), by Raoul Hausmann. (Source: Artists Rights Society, 2020)



Right: Figure 23 'Fountain' (1917), by Marcel Duchamp. (Source: Alfred Stieglitz, 2016)

ities (Figure 21). Even though the space produced by the Bauhaus alongside modernist architects such as Le Corbusier was considered both rational and revolutionary at the time, Lefebvre (ibid.: 126) argues that, in hindsight, the claim made by Bauhaus and others that they were revolutionaries cannot legitimately be made for anyone during that period except for the Dadaists (Figure 22 and Figure 23) and a few surrealists.

However, as critical urban theorist Kanishka Goonewardena (2012: 89-90) argues, even though the efforts of the Bauhaus, Le Corbusier and others to 'change the world' foundered, they should not be dismissed as 'the ruse of reason gone mad', nor should critical analysis of their ideas fall into the trap of producing reductive repudiations as found in celebrated postmodern texts such as *Learning from Las Vegas* (1975) by Robert Venturi and his co-authors. What is more, according to Goonewardena (2012: 89-90), it was the 'transatlantic triumph of military-Keynesian capitalism after the Second World War and the consolidation of state socialism in the Comintern era after Lenin that exhausted and extinguished the revolutionary energies of modernism, ushering in modernization', which can be summed up in the equation 'modernization = modernism – revolution'. Goonewardena (ibid.: 93) elaborates on this:

The crucial line to be drawn in the sand of architecture and urban planning through the last century runs not between what are often casually referred to as "modernism" and "postmodernism"; it runs between those who found out how a "revolution could be avoided" and those who fought for "architecture and revolution". For it is the former who embraced so readily the ideology of modernization – the episteme of development – and ushered in the reifications of technology and efficiency that have since



Figure 24 The Pruitt-Igoe housing complex, St. Louis, Missouri (1951-1955), by Minoru Yamasaki, demolished in 1972-76. (Source: Bettmann/Corbis, 2015)

been regnant in the production of space, not only in the overdeveloped West, but also in the former socialist and still underdeveloped countries long compelled to follow the advanced capitalist world very much on its own economic and imperialist terms of combined and uneven development.

Furthermore, Goonewardena (ibid.: 92) argues that it was the publication of Henry Russell Hitchcock and Philip Johnson's *The International Style* (1932) cataloguing the Museum of Modern Art, New York's architectural exhibition a year before CIAM's Charter of Athens that dates the death of modernism and the birth of modernisation. This is as opposed to the 'misleading' timing suggested by Charles Jencks in his 1977 book *The Language of Postmodern Architecture* (Jencks, 1984) of the demolition of Pruitt-Igoe (Figure 24) at 3:32pm on July 15, 1972 in St. Louis (Goonewardena, 2012: 92.). Awan, Schneider and Till (2011: 52) add to this criticism by arguing that Jencks, by overlooking the contributing institutional, racial and economic factors, 'brilliantly conjoined social demise with architectural failure'. As a result, Jencks demonised architecture's association with social issues at a stroke and then breaks any attachment in his replacement of modernism with postmodernism (ibid.).

Awan, Schneider and Till (ibid.) argue further that to push political issues aside, as they argue the postmodernists did, does not mean they go away, and that the 'retreat of postmodern architects into discussions of style was accompanied by a capitulation to the political forces of Reaganism'. Lefebvre (1991a: 9-10) makes a similar argument, stating that the idea of capital and its hegemony has overwhelmingly influenced practical matters relating to space in the last century, from the construction of buildings to the distribution of investments and the worldwide division of labour. Moreover, as demonstrated in Richard Hamilton's 1956 artwork 'Just What Is It That Makes Today's Homes So Different, So Appealing?' (Figure 25), the abstract space that is produced by capitalism with its goal of homogeneity are 'sometimes so laden with signs – signs of well-being, happiness, style, art, riches, power, prosperity, and so on – that not only is their primary meaning (that of profitability) effaced but meaning disappears altogether' (Lefebvre, 1991a: 160).

Put simply, it has become evident that the programmatic stance advanced by the Bauhaus, Le Corbusier and others, as Lefebvre (ibid.: 123-6, 303-5) argues, was in reality tailor-made for the architectural requirements



Figure 25 'Just What Is It That Makes Today's Home So Different, So Appealing?' (1956), by Richard Hamilton. (Source: Richard Hamilton, 2020)

of the state – whether of the state-capitalist variety or of the state-socialist variety, as identified during the same period by the Russian Constructivists. It therefore needs to be understood that state capitalism and state socialism have both produced abstract space (ibid.: 53-55). As critical urban theorists Bruno Flierl and Peter Marcuse (2012: 237-48) argue, cities under 'really existing capitalism' reveal the dominance of the profit motive as one obstacle to creating cities for people, whereas cities under really existing socialism¹² reveal the dominance of a government concerned with maintaining its own power as another obstacle. Furthermore, Lefebvre (1991a:53-5) argues that because really existing socialism did not 'manifest a creative capacity in its effects on daily life', it should be regarded as a failed transition. For this reason, it is Lefebvre's opinion that a truly socialist architecture has never existed (ibid.).

Because of the effects of abstract space as propagated by modernisation, Hamdi (2004: 82-4) argues that mainstream practice which at the moment seeks certainty has to be moved 'toward an appreciation of pluralism' and 'an acceptance of ambiguity and paradox'.

¹² According to Bruno Flierl and Peter Marcuse (2012: 232), '[r]elations of power can prevent the development of cities for people just as the profit-driven market can, although on different ways, and [t]his is why so many socialists insist on using the phrase "really existing socialism", and juxtapose it to "democratic socialism", to make the point that radically changing economic relations are a necessary but not a sufficient condition for creating a better world and better cities; changing (or eliminated) relations of power is necessary as well'.

Such a form of practice is especially important for sustainable development in cities within Africa and across the global South where resources are particularly scarce due to the legacy of colonial and imperialist power, as well as subsequent neoliberal policies which, as discussed at length by Davis in *Planet of Slums* (2006), act as a natural successor to colonialism. It is evident that the unsustainable and normalising spatial practice of modernisation, which is a practice with roots in Western and patriarchal thinking, is especially unsuited for the context of African cities which, as argued by Simone (2004: 16), should be seen as 'more than simply cities in need of better management, more popular participation, more infrastructure, and less poverty'. According to Simone (ibid.), if limited resources deployed for urban development in Africa are to be effective, it is important to 'make common cause with the daily efforts of African residents' by using the city as a 'generator of imagination and well-being' and of 'making links with and operating in concert with the larger world'.

2.1.3. Utopias and Heterotopias in Architecture

As mentioned in subsection 2.1.1, Lefebvre (1991a: 163, 366-70) distinguishes between three types of places, namely isotopias (analogous places), heterotopias (contrasting places) and utopias (places of what has no place or no longer has a place). As discussed in subsection 1.1.1 of this document, the concept of heterotopias is most central to this treatise as it investigates how this idea can be used to identify realistic design strategies in developing a type of 'counter-project' – one that can assist in disrupting Western and patriarchal forms of spatial production within South African cities that further colonial spatial patterns, result in unsustainable development and seek to reduce

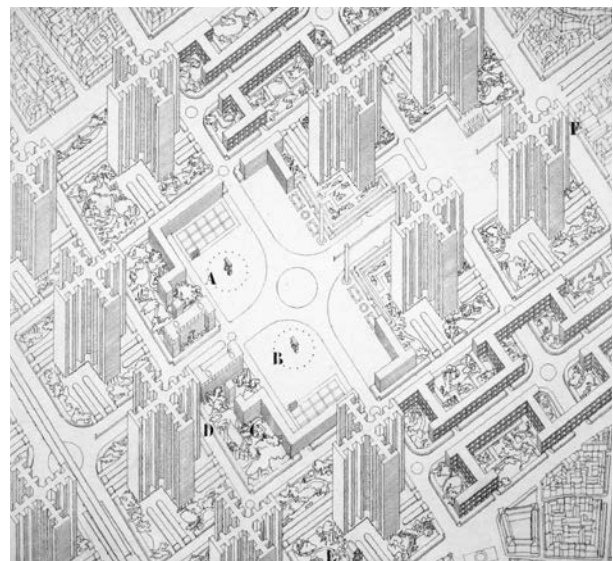


Figure 26 'Ville Contemporaine' (1922), by Le Corbusier. (Source: Le Corbusier, 2013)

and normalise everyday life. It is useful, however, to briefly discuss the rich history of utopias within architecture in order to understand how they differ from heterotopic spaces. According to Awan, Schneider and Till (2011: 129-31), the 1920s and 1960s each witnessed new waves of utopian architecture, each responding to the socio-economic context of their times.

Le Corbusier's idea for the *Ville Contemporaine* (Figure 26) is a particularly important example of the social utopias imagined in the 1920s as it would go on to inspire his design for the *Ville Radieuse* (1930), or Radiant City, which, although unrealised, would become very influential within architecture and urbanism. Notably, Jacobs (1961: 20-1) delivered a scathing evaluation of the consequences of Le Corbusier's vision, which she describes as heralding a new wave of 'anti-city planning' centred around 'liberty from ordinary responsibility' that resulted in the 'death' of many cities and an undermining of their economies. Nevertheless, the idea for the Radiant City was characteristic of Le Corbusier's homogenising approach to space which, as argued by Lefebvre (1991a: 308), resulted in an authoritarian and brutal spatial practice, reminiscent of Haussmann but more codified, involving the effective application of the analytic spirit in and through dispersion, division and segregation.

The next big wave of utopian architecture in Europe was in the 1960s, with groups like Archigram and Archizoom focussing on 'emerging cultural conditions, such as mobility and flexibility' (Awan, Schneider & Till: 2011: 129-31). Archigram's ideas for the Walking City and Plug-In City (Figure 27) exhibit their faith in technology and interest in architecture that transform contemporary culture while avoiding a directly political stance, whereas Archizoom's idea for the No-Stop City (Figure 28) exhibits their 'ironic response to Archigram's consumerist logic and desire to detach architecture from politics' while exploring flexible and technology-based approaches to urban design, focussed on 'emerging cultural conditions, such as mobility and flexibility' (ibid.).

During the same period, architects such as Constant Nieuwenhuys and Yona Friedman saw their utopias as instruments of societal change and focussed on creating visions for architecture after the future abolition of work due to greater automation in which citizens have greater democratic control over the city (ibid.: 129-31, 266-7, 319-21). Friedman wrote about his ideas about architecture which empowered the user to participate in creating the city within his 1956 manifesto *Architecture Mobile* and which resulted in his seminal project and lifework the *Ville Spatiale* (Figure

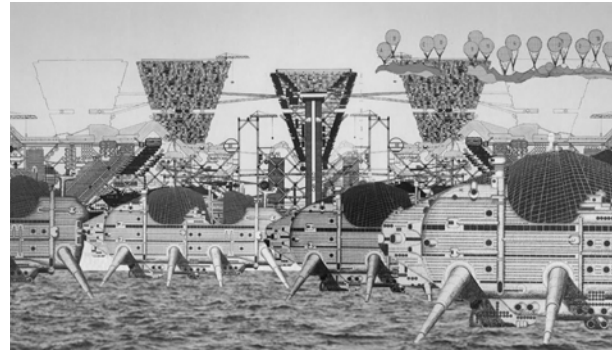


Figure 27 'Walking City' and 'Plug-In City' (1964), by Archigram. (Source: Peter Cook, 2013)

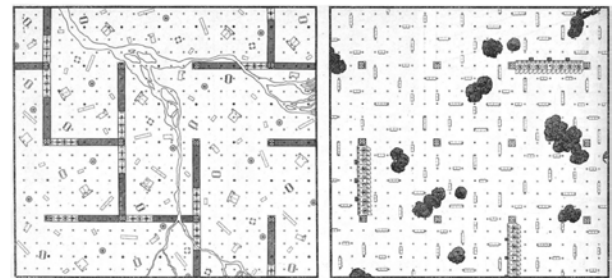


Figure 28 'No-Stop City' (1971), by Archizoom Associates. (Source: Archizoom, 2019)

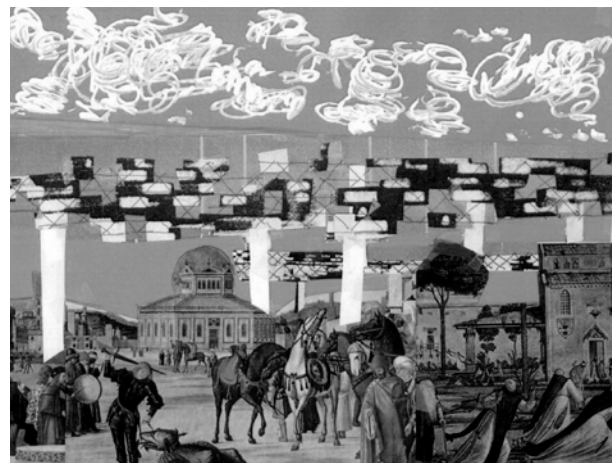


Figure 29 Drawing of the *Ville Spatiale* (1958-62), by Yona Friedman. (Source: Yona Friedman, 2006)

29). Friedman also elaborates on his idea for a 'mobile architecture' in his book *Toward a Scientific Architecture* (1975) in which he argues that 'users' or 'inhabitants' of the city should be allowed to participate in trial-and-error space-making activities in order to solve their own spatial needs in a democratic way. According to Friedman (1975: 9-13), 'any system that does not give the right of choice to those who must bear the consequences of a bad choice is an immoral system'.

In contrast to utopias, heterotopias are real places that exist within society that are somehow 'other' and that challenge the normative modes of spatial production

that surround them. Two good examples of heterotopic spaces can be found in the Occupy Wall Street camp in Zuccotti Park (*Figure 30*) in which protesters occupied a public space within the financial centre of New York City and set up an ephemeral community after the 2008 financial crisis exposed the irresponsible and unsustainable nature of global neoliberal capitalism, as well as in Cairo's City of the Dead (*Figure 31*) where a squatter community has appropriated a portion of a large inner-city cemetery out of need and turned it into improvised housing. Additionally, as demonstrated by American author bell hooks, whose work centres around the intersectionality of race, capitalism and gender and in which she writes about the 'heterotopic margin' as a space in which society can 'move in solidarity to erase the category coloniser/colonised' (bell hooks, 1990: 152), the idea of heterotopic space has particular relevance to the imagining of feminist, queer and postcolonial space.

Furthermore, as briefly discussed in subsection 1.1.1, both Foucault and Lefebvre have elaborated on the idea of heterotopias in very different ways. Foucault's most renowned elaboration on the concept of heterotopias was during a talk given to a group of architects in 1967, titled *Of Other Spaces: Utopias and Heterotopias* (Foucault, 1986), in which he states that certain 'other-spaces' or 'counter-sites' interested him as they seemed to be linked to all other spaces while simultaneously contradicting them (ibid.: 22). Of these 'curious' sites he distinguished two types, namely utopias and heterotopias. Utopias are 'fundamentally unreal places' and can be seen as 'sites with no real places' (ibid.). However, Foucault (ibid.: 24) states the following about heterotopias:

There are also, probably in every culture, in every civilisation, real places – places that do exist and that are formed in the very founding of society – which are something like

counter-sites, a kind of effectively enacted utopia in which the real sites, all the other real sites that can be found within the culture, are simultaneously represented, contested, and inverted. Places of this kind are outside of all places, even though it may be possible to indicate their location in reality. Because these places are absolutely different from all the sites they reflect and speak about, I shall call them, by way of contrast to utopias, heterotopias.

Foucault (ibid.: 24-7) contends that the ship is the ultimate example of a heterotopia, however he makes use of various examples to demonstrate possible types of heterotopias and to elaborate on a few general principles shared by all heterotopic spaces:

1. Every culture on earth establishes heterotopic spaces, however there is no universal form of a heterotopia. To reinforce this point, Foucault (ibid.) points to how different cultures establish 'crisis heterotopias', i.e. places that deal with individuals who are in a state of crisis in relation to society, such as adolescents, menstruating women, pregnant women and the elderly, or 'heterotopias of deviation', i.e. places that deal with individuals who stray from societal norms and include examples such as psychiatric hospitals and prisons.
2. Heterotopias can be made to function in different ways as a culture develops. Foucault makes use of the changing role that the cemetery has played in the city since the start of the nineteenth century as an example of this principle. Once the 'sacred and immortal heart of the city', its role has since transformed into that of the 'other city' located at the external border of the city (ibid.).
3. Heterotopias are capable of juxtaposing in a sin-



Figure 30 The Occupy Wall Street camp in Zuccotti Park, New York City in 2011. (Source: David Shankbone, 2011)



Figure 31 A woman who lives in Cairo's 'City of the Dead' cleaning a tomb. (Source: Asmaa Waguhih/Reuters, 2016)

gle real place several incompatible spaces. According to Foucault (ibid.), the oldest example is the historic gardens of the Orient and Ancient Persia which functioned as a microcosm that represented both the 'smallest parcel in the world' and 'the totality of the world'. Contemporary examples include the theatre, which brings a whole range of places foreign to one another onto stage, and the cinema which is a rectangular room at the end of which three-dimensional space is projected onto a two-dimensional screen.

4. Heterotopias are most often linked to slices of time. Foucault (ibid.) argues that only when a person arrives at a sort of absolute break with their traditional time does a heterotopias function at full capacity, and that these slices of time can be labelled as 'heterochronies'. The aforementioned example of the cemetery begins for the individual with a very strange heterochrony – the loss of life. These heterochronies can be divided into two categories: firstly, those of indefinitely accumulating time, as found in the library; and secondly, those that are temporal rather than eternal in the mode of a festival, as found in fairgrounds and vacation villages.

5. Heterotopias have a system of opening and closing and are not generally freely accessible. According to Foucault (ibid.), in order to gain access to a heterotopia, one must have permission or make a certain gesture. Examples of this include purification activities before entering a mosque or a Scandinavian sauna or, alternatively, entry might be compulsory such as in the case of army barracks or prisons.

6. Heterotopias have a function in relation to all other space that remains. In fulfilling this function, Foucault (ibid.) argues that heterotopias could fall under one of two extreme categories depending on the space they create. Heterotopias of illusion create a space that in a way exposes every real space that partitions human life as still more illusionary – this was the role played by the famous brothels of history for example. Heterotopias of compensation create space that 'other', another real space that is 'as perfect, as meticulous, as well arranged as ours is messy' – an example of this being the Puritan societies that the English founded in North America or the Jesuit colonies established in South America.

Foucault's understanding of heterotopic spaces can be contrasted to that of Lefebvre, which Harvey (2012: xvii-xviii) expands upon:

Lefebvre's concept of heterotopia (radically different from that of Foucault) delineates

liminal social spaces of possibility where "something different" is not only possible, but foundational for the defining of revolutionary trajectories. This "something different" does not necessarily arise out of a conscious plan, but more simply out of what people do, feel, sense, and come to articulate as they seek meaning in their daily lives. Such practices create heterotopic spaces all over the place. We do not have to wait upon the grand revolution to constitute such spaces. Lefebvre's theory of a revolutionary movement is the other way round: the spontaneous coming together in a moment of "irruption," when disparate heterotopic groups suddenly see, if only for a fleeting moment, the possibilities of collective action to create something radically different.

Despite the differences between various authors in their understanding of such spaces, it is clear that the idea of heterotopias provides a useful way of conceptualising real spaces within our society that can counter the strong forces of normalisation that dominate mainstream spatial production. In other words, the idea of heterotopias can provide an understanding of how a network of counter-spaces can successfully challenge the hegemony of abstract space and move towards the emergence of differential space. In moving forward, this idea will be used to identify other heterotopic spaces and as a conceptual tool for the exploration of realistic low-income housing strategies that can lead towards the setting up of a counter-project that is productive in nature as opposed to being reductive.

2.1.4. The Architect as a Spatial Agent

In *The Production of Space*, Lefebvre (1991a: 408) argues that what is needed is a transition towards a new differential mode of spatial production which is more democratic, open-ended and in which answers as to what will emerge are not definitive. The goal then of establishing a counter-project is thus to move in the direction of this transition. In order to establish a way forward that will allow the exploration of architectural strategies for low-income housing that will advance differential space as opposed to abstract space, it is necessary to relook at the responsibilities of the architect and how imagining the role of the architect as a spatial agent, as is explored at length by Awan, Schneider and Till in their book *Spatial Agency: Other Ways of Doing Architecture* (2011), broadens his or her responsibilities without losing the specificity of architecture. To be specific, Awan, Schneider and Till (2011: 43-44) define a spatial agent as:

[...] one who effects change through the empowerment of others, allowing them to engage in their spatial environments in ways previously unknown or unavailable to them, opening up new freedoms and potentials as a result of reconfigured social space.

Lefebvre's very different spatial understanding is central to the idea of the architect as a spatial agent, as developed by Awan, Schneider and Till (2011: 37-9). This is evident by the authors' understanding of architecture in which 'buildings are not seen as determinants of society (the primacy of the individual) nor as determined by society (the primacy of structure) but rather as in society' (ibid.: 41). It is argued by Awan, Schneider and Till (ibid.: 39), however, that since the year that Lefebvre published his analysis of space, many factors have multiplied that have clear implications on spatial production. These most clearly include issues of globalisation, climate change and the rise of the virtual.

The idea of agency can be understood as a sociological term which describes the capacity of individuals to act in the world and which is a reflection of the empowered individual's ability to make decisions based on rational choices (Barnes, 2000: 1-11) or, as defined by Awan, Schneider and Till (2011: 39-41) as a term usually held in a dialectical paring with structure in which structure is understood as the way in which society is organised and agency describes the ability of the individual to act independently of the constraining structures of society. It is also necessary to relook at mainstream architectural practice and understand the importance of incorporating critical thinking into a kind of praxis – a term which refers to the practical application of theory and can be used as a way of understanding both agency and the consequences of agency (Crouch & Pearce, 2012: 44).

In applying this idea to architectural practice, it can be said that an architect that acts as a spatial agent understands that architecture should not be viewed as a fact to be reproduced, but as something that is produced through social relations. As argued by Awan, Schneider and Till (2011: 39-44), 'spatial agents are neither impotent nor all-powerful: they are negotiators of existing conditions in order to partially reform them', and neither side of the structure/agency divide is more appropriate than the other, as a balance between both is critical. Making use of the terms used by Hamdi (2004: 21), this involves finding a balance between 'structure' and 'emergence', which can be understood as questioning 'how much structure will be needed

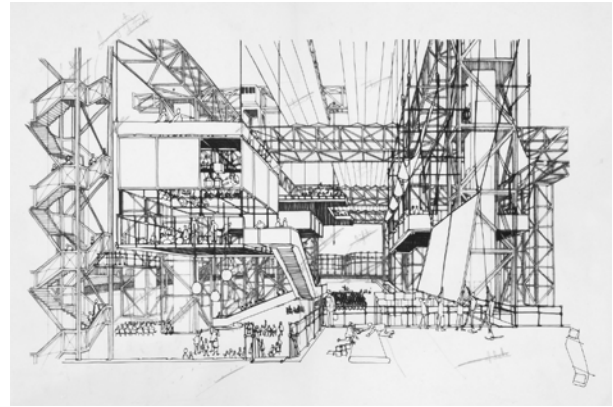


Figure 32 Drawing of Cedric Price's Fun Palace (1960-1). (Source: Cedric Price, 2014)

before the structure itself inhibits personal freedom' and 'gets in the way of progress'.

Awan, Schneider and Till (2011: 340-43) maintain that the approach taken by English architect Cedric Price, who always maintained a suspicion of institutions and their desire to use buildings to consolidate power, 'probably most clearly embodies the role of the architect as a spatial agent'. Price's idea for the Fun Palace (1960-1) (Figure 32) demonstrates his time-based approach in which 'architecture is conceived as a series of interventions that were both adaptable and impermanent' (ibid.). Price (1969) also developed his idea of Non-Plan in which he rejects current planning systems, instead encouraging unevenness of development and the exploitation of peculiarities that would permit change and would hand control back to users in order to allow for self-organised processes to occur. According to Price (1969: 269), this would result in 'activities and forms as yet realised', where 'different' would supersede the binary distinction of 'good' or 'bad'. Spatial agency is thus closely linked to the production of differential space and the right to difference as theorised by Lefebvre. However, as argued by Goonewardena (2012: 94), Lefebvre's understanding of differences is vastly different from the celebration of difference by postmodern architecture which is 'at peace with the reifications of capital and the state'.

However, mainstream practice, as argued by Awan, Schneider and Till (2011: 33-5, 39-41), is characterised by the dominance of structure over agency, strong ties to market forces and a mindset in which buildings are viewed as commodities in which their exchange value takes precedence over their use value. As a result, dominant architectural practice withdraws from critically engaging with societal structures (ibid.). Moreover, most architectural professionals ignore the possibilities to act 'otherwise' and, in order to 'give themselves

authority over others', refuse to relinquish the assumption that stable knowledge will lead to a certain solution (ibid.: 41-4). As opposed to architects who act as spatial agents as understood by Awan, Schneider and Till, professional architects generally use their agency to exert power over others (ibid.). For these reasons, Awan, Schneider and Till (ibid.: 36-8) argue that critical theory should be applied to normative practice in a manner that aligns with the idea of praxis.

Furthermore, Awan, Schneider and Till (ibid.: 44-7) contend that spatial agents demonstrate a number of skills that are not characteristic of mainstream practice and which include: spatial judgment, i.e. the ability to exercise spatial decisions in a way that understands how the formal aspects of space affect the social and the initiating of empowering social relationships; mutual knowledge, i.e. expanding the means by which knowledge may be displayed and developed, an openness as to what may contribute to spatial production and an approach in which both the 'instinct of the amateur is accepted as having equal potential as the established methods of the supposed "expert"'; and critical awareness, i.e. an approach which involves the evaluation of the opportunities, challenges, freedoms and restrictions presented by a given context and the need to act in a self-critical manner instead of imposing the same solutions onto different places in an unthinking way.

According to Awan, Schneider and Till (ibid.: 50-76), most examples of spatial agency are usually motivated by politics, professionalism, pedagogy, the humanitarian crisis or ecology. Examples motivated by politics start with the political implications of a given context and use that understanding to 'creatively transform space for the better'; examples motivated by professionalism rupture the 'closed loop' whereby the profession designates knowledge which architects must possess by including amateurs in the process and by rejecting the idea of 'the building as the sole source and representation of expertise'; examples motivated by pedagogy have explored spatial agency 'most profoundly in educational settings outside the academy'; those motivated by the humanitarian crisis include the architectural ingenuity devoted to the design of emergency shelters; and those motivated by ecological concerns deal with the interchange of the social and the environmental and expand the understanding of the environment beyond the technical realm in which it is 'isolated to matters of energy reduction and efficiency' by engaging with the wider networks of which it is made up (ibid.).

Moreover, the expression of spatial agency may be

found in one or more of four possible 'sites'. According to Awan, Schneider and Till (ibid.: 79-80), the sites of spatial agency 'often starts with one site, and that site's initial boundaries, and then develops into other expressions and actions over time':

1. The first possible site of spatial agency is an engagement with social structures and involves 'an understanding of the significance of the connections within social structures in addressing and challenging underlying systems of the production of space' and that architecture can 'play an ultimately positive role instead of being seen as part of the social and economic problem' by valuing these relations as a site for action (ibid.: 80-5).

2. The second site of spatial agency is that of physical relations and 'focuses in particular on how buildings and other spatial objects are conceived, produced and occupied' and empowering others in enabling physical relations (ibid.: 85-90). This includes addressing the realities of the changing needs and desires of users, using architecture as a tool for self-help learning, and using local building materials over those that have to be shipped, thereby building more sustainably, strengthening the local skill base and economy and reducing reliance on multinational conglomerates.

3. The third site of spatial agency is organisational structure, which involves the reconfiguration of spatial practice in explicitly collaborative and interdisciplinary ways, such as setting up worker and other co-operatives (ibid.: 90-4).

4. The last site of spatial agency is in the way that knowledge may break free of professional control. As Awan, Schneider and Till (ibid.: 93-9) argue, 'not knowing equates to not having power' and 'knowing becomes a tool for empowerment since it allows everyone to evaluate and critically judge the position within which they find themselves in the world, allowing them to question, to interrogate, to intervene, to challenge and to propose other ways'.

Lastly, spatial agents also display a wide range of ways of operating and strategies for enacting spatial agency (ibid.: 100-22):

1. Expanding briefs – Often spatial agents expand the design brief they are given as a traditional brief 'acts against the spirit of agency in so much that by setting parameters it tends to close things down and limit operations', e.g. the design approach taken by Cedric Price for whom 'the space between the lines of a set

of given instructions was often more interesting than what the brief said' (ibid.: 101-3).

2. Initiating – Many spatial agents, in fact, start projects before a brief is written and thereby act as 'pro-active initiators working through negotiation with others to get a project started', e.g. the approach taken by Kéré Architecture in Burkina Faso which opens up new social, political and economic opportunities by going beyond the 'architect-developer' model and whose 'Gando Teacher's Housing' project (2004) will be analysed in subsection 3.1.3 (ibid.: 104-6).

3. The economy of spatial agency – Some examples of spatial agency prioritise equity and self-management over addressing questions about fees, fee structures, expenditure and the imperatives of utility and return (ibid.: 104-8), e.g. the autonomous settlement of Christiania who has its own system of exchange and Abahlali baseMjondolo movement in South Africa whose campaigns 'deal directly with the living conditions of the urban poor, demanding essential services and the basic right to a home in the city' and which operates at the level of bottom-up initiatives that have recently started to include the setting up of projects in informal settlements such as crèches, gardens and working collectives (ibid.: 135-41)

4. Appropriating – Many examples make use of appropriation as a means of harnessing underused resources or else unsettling the status quo. This is an especially important way of operating in a context such as South Africa which is characterised by material and economic scarcity, because physical appropriation of existing space 'together with the myriad often illegal self-building practices which simply employ the use of available resources' are often very effective (ibid.: 108-111), e.g. the appropriation of various abandoned inner-city Cape Town buildings by Reclaim the City (Figures 33-5).

5. Delightful indeterminacy – Many spatial agents act against the tendency of architecture, as a 'beautified and technologized object', to take itself too seriously by incorporating an element of 'delightful indeterminacy' which captures the 'delightful aspects' of architecture, takes into account the everyday, the ordinary, and the mundane, and leaves enough room for appropriation by others, e.g. in the social housing work in Iquique by the Chilean practice Elemental in 2003, which will be discussed in greater detail in subsection 3.2.1 (ibid.: 111-2).

6. Making things visible – As long as the power of political, social and economic structures remain hidden

they will remain untouched, and so an important aim of spatial agency is to expose these hidden structures and make them visible. Therefore, spatial agents often see it as their task to 'research, record, visualise and analyse the links and relationships between different nodes and actors, using maps, diagrams, drawings, talks, and tours in order to explicate and often simplify otherwise impenetrable information and datasets', e.g. in the work by Estudio Teddy Cruz, whose project 'Manufactured Sites' will be discussed in greater detail in subsection 3.4.3 (ibid.: 112-4).

7. Networks – Establishing networks is another important strategy for spatial agents as it enables 'individualised pockets of power located around the periphery' to 'combine to take on the otherwise so elusive centre, which would have presented a substantial barrier for each single actor within the network but not for its combined force', e.g. various residential or squatting networks (ibid.: 114-6) with squatting being broadly defined as 'the occupation and transformation of land and buildings that are unused or underused' and in the global South is 'often tied to housing rights and strategies of survival', while in the global North it is 'usually tied to ideological struggles and the desire to find alternative ways of living' (ibid.: 359-60).

8. Sharing knowledge – Some examples of spatial agency operate by disrupting the way spatial knowledge is developed and shared, understanding that knowledge can become a transformative tool and 'understand knowledge in the same way as they understand space: as a product of participative spatial encounters that cross disciplinary boundaries', e.g. the sharing of construction knowledge by community design/technical aid centres and self-build agencies, as well as the deliberate sharing of resources and creating space as a shared enterprise as in the 'social condenser' 'Narkomfin' (1930), by Moisei Ginzburg and Ignaty Milinis which will be discussed in greater detail in subsection 3.4.1 (ibid.: 115-9).

9. Subverting and opposing – Lastly, many practices and groups who act as spatial agents 'take an extremely politicised stance and radically oppose, resist and refuse to work within frameworks set by power structures set by the neoliberal economy', e.g. the work of Harvey, who argues for 'the importance of a radical opposition against the standard forms of spatial production', as well as that of Marcuse, who argues that 'opposition today should be directed against forms of capitalism that are destructive of human justice, and against the exploitation of the global South and continuing sexism and racism enforced through planning' (ibid.: 119-20).



Figure 33 Ahmed Kathrada House in Green Point, Cape Town, occupied by Reclaim the City. (Source: Moeketsi Moticoe, 2018)



Figure 34 Cissie Gool House in Woodstock, Cape Town, occupied by Reclaim the City. (Source: Tessa Knight, 2019)



Figure 35 Irene Grootboom House in District Six/Zonnebloem, Cape Town, occupied by Reclaim the City. (Source: Reclaim the City, 2018)

2.2. Investigation into Socially, Economically and Environmentally Sustainable Development Practice

2.2.1. The Right to the City and Spatial Justice

According to Lefebvre (1991a: 386), the city is both the setting of struggle as well as the stakes of that struggle. Postcolonial theorist Edward Said (1993: 7) builds on this by arguing that nobody is completely free from this struggle and that it is 'not only about soldiers and cannons but also about ideas and forms, about images

and imaginings'. In other words, the struggle includes the question about which groups are afforded the right to express ideas within space and, consequently, who is excluded from having this right. In South Africa, numerous grassroots social movements have emerged since 1994 to fight for the right to the city – a right which, as argued by critical urban theorist Peter Marcuse in *Cities for People, Not for Profit: Critical Urban Theory and the Right to the City* (2012a: 30–31), is a demand made by those whose work injures their health, those whose income is below subsistence, those excluded from the benefits of urban life, and includes the homeless, the hungry, the imprisoned and the persecuted on gender, religious and racial grounds. Moreover, as Lefebvre (1991b: 34) makes clear, this right is not limited to the right of access to urban resources, but includes the right to produce the city, to have a hand in co-creating it, to have the agency to shape it through the processes of making and remaking:

The right to the city, complemented by the right to difference and the right to information, should modify, concretize and make more practical the rights of the citizen as an urban dweller (*citadin*) and user of multiple services. It would affirm, on the one hand, the right of users to make known their ideas on the space and time of their activities in the urban area; it would also cover the right to use the centre, a privileged place, instead of being dispersed and stuck in ghettos (for workers, immigrants, the 'marginal' and even for the 'privileged').

The right to the city is an especially important concept in working towards more socially, economically and environmentally sustainable development in African cities where, as argued by urbanist Abdou Maliq Simone in his book *For the City Yet to Come Changing African Life in Four Cities* (2004: 4), life has essentially been reduced to a state of emergency. As shown by urban theorist Mike Davis in his 2006 book *Planet of Slums*, this state of affairs can be attributed to the profit-based urbanism which ends up perpetuating colonial and patriarchal patterns of development and which is largely advanced by the neoliberal interests of global capitalism. As discussed in the previous section, profit-based urbanisation that is tied to the process of modernisation overwhelmingly produces abstract space which is violently at odds with the differences and social complexities that characterise everyday life in contemporary African cities. Therefore, instead of being seen as failed cities, Simone (2004: 6–8) argues that African cities should be understood as examples

of everyday resistance against misplaced urban and development plans, as being extremely productive and as containing shifting forms of social co-operation which do not fit within the normative framework that abstract space imposes.

Furthermore, in *Design, When Everybody Designs* (2015: 87), Manzini argues that African cities have the potential to undergo a type of 'social leapfrogging' in which the fragile and unsustainable development stage of modernisation is essentially skipped in favour of a new form of collaborative organisation which is more sustainable and resilient - a transition that countries in the West are only now undergoing as well. Manzini's argument centres around the idea that for development to be socially, economically and environmentally sustainable, it needs to move beyond the abstract, reductive and hierarchical approach of modernisation and towards more diffused systems that create the conditions for new collaborative organisations¹³ and social innovations¹⁴ to emerge over time. In fact, Manzini (ibid.) maintains that African cities have a distinct advantage over those in the West as African cultures already have a complex form of solidarity embedded within them which is known as *ubuntu*. Moreover, many new initiatives in African cities aimed at solving complex problems and that serve as examples of spatial agency make use of this tradition of solidarity and use digital devices to support it (ibid.).

Additionally, this exploration of new and innovative ways of using design in advancing the right to the city of the urban poor is important in addressing the myriad spatial injustices that exist within South African cities. According to Soja (2009: 2), the term spatial justice is not a substitute for social, economic, or other forms of justice, but rather a way of looking at justice from a critical spatial perspective. In his opinion, the concept of spatial justice is useful as it can help bring together the diverse movements that are built around specific axes of unequal power into a common project, as justice in the contemporary world has been

developing a political meaning transcending defined categories and other forms of exclusive group or community identity (Soja, 2010: 23). Soja (2009: 4) further argues that combining the terms 'spatial' and 'justice' opens up a range of new possibilities for social and political action. South African cities display a wide array of spatial injustices that are perpetuated by mainstream spatial practice and which will be elaborated upon in subsection 2.4.1. These include locational discrimination, security-obsessed urbanism and the rapid commodification and privatisation of public space amongst others – many of which are vestiges of apartheid spatial strategies and unsustainable urban and development plans.

2.2.2. Critical Urban Theory and Assemblage Urbanism

According to Uytendogaardt and Dewar (1991: 17-8), cities are intensely dynamic places that, when displaying genuine 'qualities of city', enrich the lives of both their rich and poor inhabitants and provide the pre-conditions necessary for them to meet their physical, social, psychological and sensory needs. They can also be seen as standing in direct opposition to the model of suburbia which is heavily dependent on private means and the use of expensive, resource-wasteful technologies (ibid.). As discussed by urban researcher Christian Schmid (2012: 44-50, 59), Lefebvre's inquiry into the idea of the right to the city has revealed three important markers that can assist in identifying when a space is genuinely urban in nature, i.e. when it displays the qualities of city and can be considered as being productive. These include: mediation, which refers to the role of urban space to act as a mediating level situated between the private and the global; centrality, which involves the city as a place of encounter, communication and information, that is full of possibilities for unexpected and transformative situations, and in which 'constraints and normality are dissolved'; and difference, which refers to the specific quality of urban space due to the 'simultaneous presence of very different worlds and value-systems, of ethnic, cultural, and social groups, activities, and knowledge' (ibid.).

The importance of urban space where ordinary people have a hand in its invention and reinvention is evident: such a space provides the opportunity for disrupting the hegemony of colonial and patriarchal spatial structures by creating the conditions necessary for developing something new and unexpected, something that is more in line with postcolonial, feminist and queer conceptions of space. Moreover, Schmid (ibid.) argues that the struggle Lefebvre talks about taking place both in cities in the West and in the global South is a struggle against social exclusion and mar-

¹³ Collaborative organisations are defined by Manzini (2015: 83-90) as 'social groups emerging in highly connected environments' whose members 'choose to collaborate with the aim of achieving specific results, and, in doing so, they also create social, economic, and environmental benefits'. These organisations are 'characterized by freedom of choice (their members can freely decide whether, when, and how to join or leave the group) and openness (they present a positive attitude toward "others": other people, other ideas, other organizations' (ibid.).

¹⁴ Social innovations is a term which can be defined as 'new ideas (products, services and models) that simultaneously meet social needs and create new social relationships or collaborations', or in other words, 'innovations that are both good for society and enhance society's capacity to act' (Manzini, 2015: 11). This usually involves creatively reorganising the resources that are presently available in such a way that something new is created.

ginalisation, as well as a demand for centrality and for access to the material and immaterial resources of a city. Furthermore, this struggle only exists because opportunities for interaction and urban resources are scattered unevenly across urban space (ibid.).

Lefebvre (1991a: 98-9) makes clear that this situation should not be understood as some 'sickness' of society, but rather that modern cities should be understood as the product of the capitalist and neoliberal system. As demonstrated by Harvey (2012: 14-20) as well as by critical urban theorists Neil Brenner, Peter Marcuse and Margit Mayer (2012: 1-2), this struggle persists because profit-driven urbanisation has commodified urban space alongside basic services such as housing. This does not mean, however, that urban development in real existing socialist cities did not brutally reduce space as well. As argued by Brenner, Marcuse and Mayer (ibid.), 'both negative and positive lessons can also be drawn from the experience of cities under real-existing socialism, in which top-down, centralized state planning replaced commodification as the structuring process of sociospatial organization'.

In countering this, critical urban theory seeks to promote alternative, radically democratic and sustainable forms of urbanism (ibid.: i). According to Brenner (2012: 11), the term critical urban theory is used as a shorthand to refer to the writings of leftist or radical urban scholars during the post-1968 period, such as those of Lefebvre, Harvey and Marcuse. Incorporating critical urban theory into this study will be useful for finding practical and sustainable low-income housing strategies that can make use of spatial agency to advance housing justice. This is because one of its key functions is to 'expose and evaluate both the strengths and weaknesses of the existing system' and to inform practice as to what strategies it might adopt (Marcuse, 2012a: 28). Furthermore, there are five central concerns that drive urban theory, as identified by Brenner, Marcuse and Mayer (2012: 5):

In the most general terms, critical approaches to urban studies are concerned: (a) to analyze the systemic, yet historically specific, intersections between capitalism and urbanization processes; (b) to examine the changing balance of social forces, power relations, sociospatial inequalities and political-institutional arrangements that shape, and are in turn shaped by, the evolution of capitalist urbanization; (c) to expose the marginalizations, exclusions and injustices (whether of class, ethnicity, "race", gender, sexuality, nationality and otherwise) that

are inscribed and naturalized within existing urban configurations; (d) to decipher the contradictions, crisis tendencies, and lines of potential or actual conflict within contemporary cities; and on that basis, (e) to demarcate and politicize the strategically essential possibilities for more progressive, socially just, emancipatory, and sustainable formations of urban life.

Additionally, Brenner alongside David J. Madden and David Wachsmuth (2012: 118-33) argue that applying assemblage urbanism in a primarily methodological approach can be useful in exploring and mapping the 'emergent geographies of dispossession, catastrophe, and possibility' within cities in a way that is not reductionist or simplified, but open-ended enough to open up new questions for both thought and action. This is important because there are no definitive right or correct solutions to urban problems. The term assemblage urbanism specifically refers to an emergent strand of the actor-network-theory (ANT) which involves viewing the city as a bundle of networks and actors – networks referring to 'working alliances of multifarious composition' and actors, or actants, simply referring to 'things that act', i.e. anything that resists or impacts other things (ibid.: 120-2). Brenner, Madden and Wachsmuth (ibid.: 128-30) argue, however, that for assemblage urbanism to be an effective tool critically analysing space, it needs to incorporate analysis of economic and political structures in which these networks and actors are embedded¹⁵.

2.2.3. Characteristics of Positive Urban Environments

Throughout *The Production of Space* (1991a), Lefebvre makes clear that the interrelated rights to difference, to information and, most importantly, to the city are critical to developing urban social space that incorporates the social actions of individual and collective subjects in a way that these subjects can both modify and enjoy such as space – however, Lefebvre (1991a: 33-4, 396-7) argues that these are rights that have to constantly be fought for and can only be achieved through practical action. What is more, only through the dissemination of these rights to those with the least material power can the city grow in a way that results in it being characteristic of a work, i.e. where social relations shape a space that is unique, original

15 These include: 'formations of capital accumulation and investment/disinvestment; historically entrenched, large scale configurations of uneven spatial development, territorial polarization, and geopolitical hegemony; multiscale frameworks of state power, territorial alliance formation, and urban governance; and the politico-institutional legacies of socio-political contestation around diverse forms of dispossession, deprivation, and discontent' (Brenner, Madden & Wachsmuth, 2012: 128).

and associated with a particular time and of which Venice is a perfect example, as opposed to a product (ibid.: 73). This relates back to the need for finding a balance between structure and agency or control and emergence in architecture and urban planning in order for the sustainable development of equitable and productive urban environments. However, as argued by Davis (2006: 85), rational city planning needs to work to overcome the challenges of rampant neoliberal and capitalist speculation which render it impossible. Building on this idea, it is necessary to elaborate on what characteristics the urban environments that emerge as a result need to exhibit in order to be regarded as performing positively, equitably and productively. The writings on cities by Uytendogaardt and Dewar in their 1991 book *South African Cities: A Manifesto for Change* and by Jacobs in her 1961 book *The Death and Life of Great American Cities* provide invaluable insight into this topic.

According to Uytendogaardt and Dewar (1991: 19, 24), cities are in a constant state of becoming and for urban plans and frameworks to result in the development of cities that perform positively, i.e. which are sufficiently intense, have diverse activity and where there is relative equitable access to urban opportunities, they should not be impositionary in nature, but rather should create opportunities and increase choices for individuals to act. In other words, sustainable and productive urban plans and frameworks should never be complete in nature, but should always take a partial approach whilst still maintaining enough structure to maintain order. Moreover, in order to develop in a way that is characteristic of a work in the spirit of Venice as opposed to a product, cities should grow incrementally as a result of action and reaction over time (ibid.). To this end, Uytendogaardt and Dewar (ibid.: 25-30) elaborate on three types of actions which could be used in urban plans and frameworks, namely holding actions, i.e. actions which are made to reserve options for future generations, structural actions, i.e. positive actions which create opportunities for people, and controlling actions, i.e. actions which restrict freedom of decision-making in order to 'preserve relationships or characteristics of perceived value'. Such urban plans are important as every urban area has to deal with two specific problems, namely accommodating new growth and dealing with remedial problems (ibid.: 36).

As discussed briefly in subsection 2.2.2, Uytendogaardt and Dewar (ibid.: 13-14, 20-2) argue that all successful urban settlements have common characteristics (not common forms), which include enriching the living conditions of both the rich and

the poor, respecting ecological considerations and resource sensitivity, allowing for the spontaneous to occur, accepting conflict, providing a variety of ranges of exposure, not imposing any one set of values but act as 'many placed places', and displaying a large degree of integration as opposed to monotony. What is more, urban systems that provide opportunities for informal activity, where the friction of distance is minimised and where alternative forms of income such as finding subsistence from the soil is possible are especially important in cities of the global South where the formal economy is limited (ibid.: 16, 63-4). Uytendogaardt and Dewar (ibid.: 38-60) also elaborate on six important structural relationships that should be pursued in the management of urban growth. These are establishing and maintaining the relationship between non-urban and urban land; encouraging urban systems to develop their own logic instead of following regional transportation routes; compacting the city and increasing densities; celebrating public spaces and places; providing appropriate public facilities, promoting their multifunctional use and encouraging sharing; and promoting more complex processes of city development.

In *The Death and Life of Great American Cities*, Jacobs (1961: 4-7) demonstrates how incompetent and simpleminded city building centred around the car have had destructive effects on the world's cities and points to the vast sums of money spent on housing and highways that have caused more problems than they resolved as proof that the elimination of slums does not depend on the amount of money spent. According to Jacobs (ibid.: 14-5), it is futile to plan a city's appearance as cities are dynamic entities in which a close grained diversity of uses that give each other constant and mutual economic and social support are the most important. Throughout the book, Jacobs demonstrates that self-organisation is what gives cities their order, and that the supposed order imposed from above in the form of comprehensive city plans is misguided and only serves to suppress the real order that is struggling to exist (ibid.). Furthermore, Jacobs elaborates on the importance of sidewalks (ibid.: 29-89), parks (ibid.: 98-111) and neighbourhoods (ibid.: 114-139) within urban ecosystems to support life and to maintain safety, as well as the importance of mixed primary uses and small block sizes to maintain the diversity generated by cities (ibid.: 143-186).

2.2.4. Sustainable Development Practice

Having gained an understanding of praxis and spatial agency in subsection 2.1.4, as well as an understanding of Lefebvre's idea of the right to the city and its links to spatial justice, critical urban theory and the cultiva-

tion of positively performing urban environments in subsections 2.2.1, 2.2.2 and 2.2.3, it is important to apply this knowledge in relooking at mainstream development practices, as low-income housing in South Africa is inextricably linked to the idea of development. In particular, this will involve making use of Hamdi's writing on socially, economically and environmentally sustainable practice in his book *Small Change: About the Art of Practice and the Limits of Planning in Cities* (2004), as well as Manzini's writing on how design can contribute to such a practice in his book *Design, When Everybody Designs: An Introduction to Design for Social Innovation* (2015).

As Hamdi (2004: 23) argues, practice 'can and does promote one set of truths, belief systems, values, norms, rituals and gender relations in place of others', and can 'impose habits, routines and technologies that may lead to new and unfamiliar ways of thinking, doing and organizing, locally, nationally and even globally'. He explains that this can be because existing structures of development have become malignant or it could even do so in the interest of one power elite over another. According to Hamdi (ibid.), in order to 'think and act globally', socially, economically and environmentally sustainable development practice needs to first 'think and act locally' by building on the collective wisdom of people and organisations on the ground. Hamdi (ibid.: 26) argues further that in order to generate more resilient designs, the 'search for scientific precision' intrinsic to normative practice should be displaced in favour of informed improvisations, practical wisdom, integrated thinking and good judgment based on a shared sense of justice and equity, and on common sense.

The concept of emergence is central to the approach advocated by Hamdi. Hamdi (ibid: 21) argues that this idea has many similarities to the idea of development as both concepts include 'quantum systems' which are self-organising, indeterminate and which, as defined by Danah Zohar (1997: 137), contain individual bits or cells that:

[...] have no fully fixed identity until they are in relationship. This gives the quantum system maximum flexibility to define itself as it goes along. It co-creates with its environment. All of nature's complex systems are at their most creative when they are delicately poised between fixedness and unfixedness – poised at the edge of chaos.

Hamdi (2004: 26) contends that, as argued by Jacobs (1961), these quantum and emergent systems are what

give cities their life and order, and that 'skilful and creative practice hinges on our capacity to handle the unexpected in controlled but creative ways, and on chance encounters and chance learning', as well as on the 'ability to improvise as we stumble upon good ideas and as problems manifest themselves unpredictably, and on upside-down thinking, and on making mistakes and being reflective'. He does clarify, however, that unlike the emergence exhibited in nature as discussed in the quote above, development 'needs a designed structure with rules and routines that provide continuity and stability and that offer a shared context of meaning and a shared sense of purpose and justice' (2004: 21). Hamdi (ibid.: 172-3) expands on the definition of good development practice, which he argues needs to facilitate emergence:

Practice – the art of making things possible, of expanding the boundaries of understanding and possibility in ways which make a

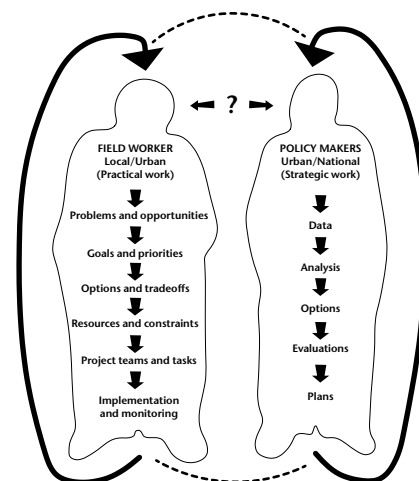


Figure 36 Diagram showing how conventional planning in mainstream development practice operates. (Source: Nabeel Hamdi, 2004)

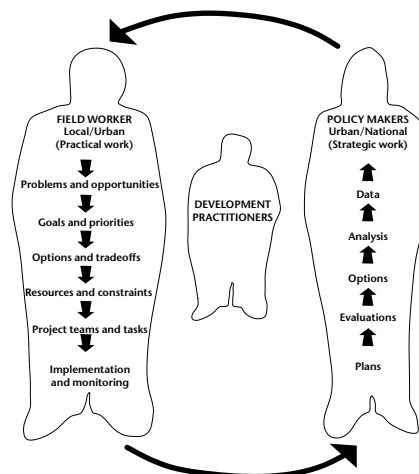


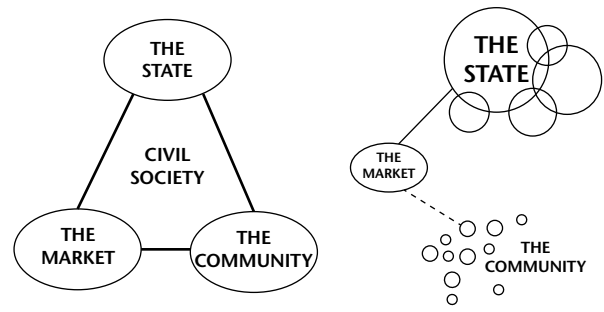
Figure 37 Diagram showing how action planning in development practice operates. (Source: Nabeel Hamdi, 2004)

tangible difference for now and for later, making expert knowledge more widely accessible, turning it all into common sense and common sense into experts' sense, coupling knowledge with power (Shovkry), creating opportunities for discovery (Chambers), finding creative ways of making one plus one add up to three or even more.

Furthermore, Hamdi (ibid.: 146-58) argues that the conventional planning of mainstream development practice (Figure 36) in which there is an assumption made that good programmes will somehow follow good top-down policies needs to be disturbed. In place of this, Hamdi (ibid.) argues for a more cyclical process (Figure 37) in which the role of 'the outsider' (which could refer to an architect or designer acting as a spatial agent, but could also refer to individuals who work in other fields but who are outside of the local community) is consolidated as a 'catalyst, mediator, facilitator or enabler'. Conceptually, Hamdi (ibid.: 164-8) argues that although the diagram illustrated in Figure 38 represents the idealised power relationship between the three partners in the triadic relationship of development, i.e. the state, the market and the community, this diagram is not helpful in practice as in reality this power relationship looks more like the diagram illustrated in Figure 39. Moreover, when expanding the diagram to represent the triadic relationship at the three different scales of community, i.e. the local, the national and the global, it would look more like the one represented in Figure 40.

In *Design, When Everybody Designs: An Introduction to Design for Social Innovation*, Manzini (2015: 5) contributes to this discussion on development practice and elaborates on the idea of working collectively toward a common purpose by writing that experimentation, replication and connection are the three lines of action that should constitute the 'basic practices of a huge design project: open-design experimenting, able to embrace and align a multiplicity of initiatives throughout the world toward shared objectives'. According to Manzini (29-32), dominant practice today is stuck in a 'conventional mode' of thinking which has an attitude of 'we do it like this because we have always done so', and what is needed is for designers to combine critical sense, creativity and practical sense in order to 'imagine something different'. Manzini (ibid.: 32) elaborates on the reason a dramatic shift in thinking towards designing for social innovation is needed within dominant practice:

Although it is true that the current context encourages people to design their own lives,



Left: **Figure 38** Diagram showing idealised power relationship between state, market and community. (Source: Nabeel Hamdi, 2004)

Right: **Figure 39** Diagram showing the reality of the power relationship between state, market and community. (Source: Nabeel Hamdi, 2004)

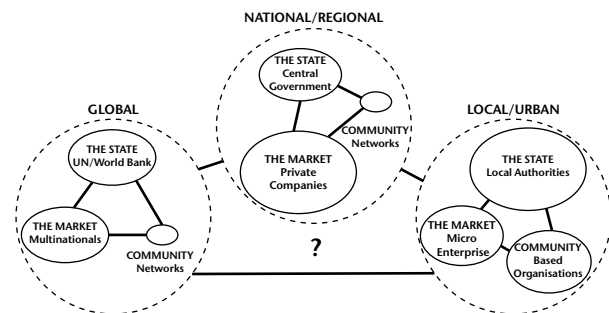


Figure 40 Diagram showing power relationships between state, market and community at global, national/regional and local/urban scales. (Source: Nabeel Hamdi, 2004)

it is also true that the same context hinders them by creating expectations that cannot be satisfied, strewing difficulties in their path and reducing their practical possibility of realizing their life projects.

Furthermore, Manzini (ibid.: 44-5) argues that when problems are complex, as is the case with housing and development in South Africa, there are always several ways of tackling them, and thus 'it is clear discussion cannot be limited to technical ground, must also concern meanings if it is to be truly workable, emerging cultures diagram, grassroots organisations and their actions to live and produce in a more sustainable way'. In order to generate solutions to such problems that could result in 'radical innovations' which empower people to actively participate in solving their own problems together with those of their peers and which are built on an economic model in which 'societal and environmental interests converge', Manzini (ibid.: 14, 25) argues for the design of collaborative organisations, as discussed in subsection 2.2.1.

Moreover, these organisations need to be understood as living organisms that require an 'enabling eco-

system', i.e. a favourable environment to start, last, evolve into mature solutions, and spread, as well as the inclusion of an 'ecology of times' where 'different types, with different characteristics and different places, coexist' as an important ingredient in order to generate sufficient complexity (ibid.: 25, 90-2). As Manzini (ibid.: 151-7) argues, it is not possible to design people's behaviour, but it is entirely possible to create preconditions to make some ways of being and doing more probable than others by setting up such an enabling ecosystem. However, Manzini (ibid.: 26-7) argues further that there are powerful forces fighting against the emergence of a new and sustainable world, and currently such collaborative organisations are 'islands in a sea of unsustainable ways of being and doing that is the mainstream'.

2.3. Exploration of Spatial Agency and Sustainable Design Practice in Low-Income Housing Design

2.3.1. Defining Housing and the Housing Problem

The works of two contributors to Western philosophy that have been influential in understanding the importance of the house or dwelling are those of French philosopher Gaston Bachelard in his seminal book *The Poetics of Space* (1964) and German philosopher Martin Heidegger in *The Thing* (1971a), first published in 1962, and *Building, Dwelling, Thinking* (1971b), first published in 1954. Both of these authors, according to Lefebvre (1991a: 120-22), view the dwelling as a special, sacred and quasi-religious space. For Bachelard, the house is as much cosmic as it is human, whereas for Heidegger the act of dwelling stands in opposition to a wandering existence (ibid.). The house or dwelling thus has a particular significance in the everyday life of individual subjects, however it is necessary to also elaborate on the collective term 'housing'

As argued by architect John Turner in the book *Freedom to Build* (Turner & Fichter, 1972: 148-175), the term 'housing' should not be understood as a noun but rather as a verb. This argument is reinforced by Hamdi (1995: 7) who contends that the housing process is more than simply the quantity of houses built and that it should be viewed as a much larger equation that includes location, standards, cost and timing. Moreover, as Davis (2006: 27) argues, the urban poor have to solve a complex equation as they try to optimise housing cost, tenure security, quality of shelter, journey to work and even sometimes personal safety in particular, and for some people a location near a job is even more important than a roof.

Habraken elaborates on the nature of the housing process and how the built environment should ideally be formed both in his 1972 book *Supports: An Alternative to Mass Housing* and his 1998 book *Structure of the Ordinary: Form and Control in the Built Environment*. Habraken contends that there exists a 'natural relationship' between people and building that, when allowed to take place, results in the development of towns and cities that are in harmony with their populations (1972: 29). To reinforce this point, Habraken (1998: 2-3) argues that for thousands of years, environments of great richness and complexity have arisen informally and endured, arguing further that it is only since the transformation of architectural practice in the modern era that domestic architecture, which had once been unquestioned and resulted from ordinary people shaping the built environment around implicit structures and a common understanding, has come to be regarded as a design problem. This subject also forms the central theme in architect Bernard Rudofsky's influential 1964 book *Architecture Without Architects: An Introduction to Non-Pedigreed*

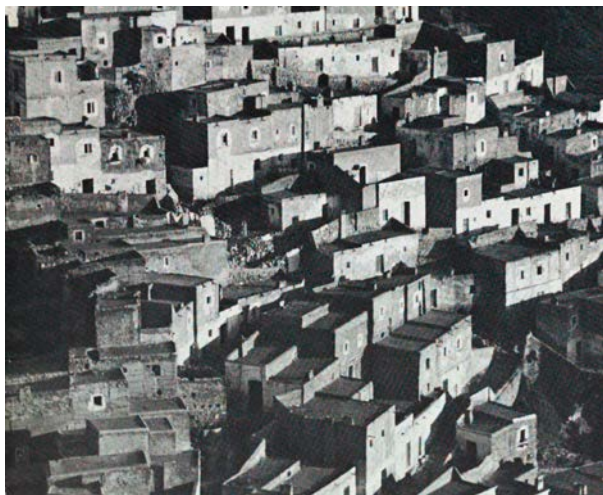


Figure 41 Aerial photograph of the Italian hill town of Anticoli Corado. (Source: Bernard Rudofsky, 1964)



Figure 42 Aerial photograph of a settlement constructed by the cliff dwellers of the Dogon. (Source: Bernard Rudofsky, 1964)



Figure 43 Aerial photograph of the aquatic town consisting of houseboats in Shanghai's Soochow Creek. (Source: Bernard Rudofsky, 1964)



Figure 44 Photograph of a nomadic holiday encampment on the Ajdir Plateau in the Sahara Desert. (Source: Bernard Rudofsky, 1964)

Architecture in which he sites examples such as the Italian hill town of Anticoli Corado (Figure 41), the cliff dwellers of the Dogon (Figure 42), the aquatic town consisting of houseboats in Shanghai's Soochow Creek (Figure 43) and the nomadic holiday encampment on the Ajdir Plateau in the Sahara Desert (Figure 44).

Thus, Habraken (1972: 5) is able to conclude that a housing problem exists only when the relationship between the various forces that act upon the housing process is in a state of crisis. According to him, because the notion of dwelling is completely subjective and unrelated to any form, addressing the housing problem should entail paying attention to the process that results in the dwelling instead of on the form of the final product (ibid: 14-18). He makes use of Oscar Niemeyer and Lucio Costa's design for the city of Brasília (Figure 45) to problematise the predetermination of mainstream architectural and planning practice since the advent of modernity which he argues overwhelmingly results in sterility, in the development of projects that look best as models but are at odds with everyday

life, unable to cope with the unforeseen and in need of constant replacement instead of being enriched over time, and in the worsening of the disturbed balance in the housing process (ibid.: 32-8). Habraken (1998: 7-8) expands on this:

For designers and planners, use is typically set a priori – immobilized – to allow optimized problem solving during programming and design. But in reality, use is neither static nor passive. Use marks the beginning and end of each act of transformation, forming part of the cycle of actions by which the built environment lives. To perceive how buildings' intrinsic capacity to adapt and transform represents the key to their survival, the perspective that has given rise to programmatic functionalism must be transcended. We must learn to look afresh at the intricate ongoing symbiosis between people and built matter.

According to Foucault (1980a: 148-9), the house remained an undifferentiated space during the eighteenth century, after which it gradually became specified and functional as architecture started to become involved in problems of population, health and the urban question. Foucault (ibid.) argues that the reason for this functionalisation of space during the nineteenth century was to fix the working family in place for achieving economic and political ends. Hamdi (1995: 13) contributes to this line of argument, maintaining that the house as a product has become an instrument of political power and social class differentiation, and that housing policy has always been more an instrument of political and social reform than a way to increase the supply of houses. The effects of this approach in which houses are viewed as static, finished objects can thus be problematised and its effects can be seen in the vast extent of the housing crisis today in which the relationship between the forces that constitute the housing process are brutally reduced. Marcuse (2012b: 215) elaborates on this:

Commodification of housing is *the* underlying problem. Commodification is the handling of housing not as one of life's necessities, something that provides shelter, protection, privacy, space for personal and family activities, but rather as something that is bought and sold and used to make money. Commodification is handling something that is a necessity of life and needed for its use value as something that is acquired for its exchange value, so it can be ex-

changed for profit, so that people can make money out of its sale, management, and financing.

Marcuse (2012b: 223-7) argues further that in order to address the housing crisis and to find effective strategies that might be put into practice to address this crisis, it is important to first expose the three pillars of the housing crisis. According to him, these are the fact that housing is produced in accordance with the capitalist system, that it is regulated by the state to maximise profit, and that it is supported by manipulated ideological and cultural underpinnings (ibid.). The effects of this commodification process can also be seen in the primacy of property over possession. As Habraken (1972: 12-13) argues, property is a legal term, but to take possession of something is something completely different as 'we may possess something which is not our property, and conversely something may be our property which we do not possess'. Residents of mass housing, according to him (ibid.), 'remain lodged in an environment which is not part of themselves' and in which the only way to identify with such an environment is for them to change.

Habraken (1998: 2-3) stresses the point that there can be no revival of the naïve past, however architectural practice can make another shift – one in which priority is placed on 'designing the ordinary'. As has been discussed in great detail so far, this focus on leaving enough room within plans for ordinary individuals to inscribe their differences onto the city in a way that advances their right to the city is absolutely critical for the development of socially, economically and environmentally sustainable cities that perform positively. To achieve this, architects are required to expand the services they provide without losing the specificity of

architecture (Hamdi, 1995: xii). Besides making use of sustainable development practice, this involves the architect acting as spatial agent by engaging with existing power structures to find strategies for empowering others to engage in their spatial environments in ways previously unknown or unavailable to them, as defined by Awan, Schneider and Till (2011: 43-4).

2.3.2. The Provider Paradigm in Housing

Within the fields of architecture and urbanism, the approach in which housing is viewed as a finished product to be consumed is the accepted view of mainstream practice and constitutes what Hamdi (1995: 26-32) calls the provider paradigm in housing. From the arguments made by Turner (1972; 1976), Habraken (1972; 1998) and Hamdi (1995; 2004) in particular, it is evident that barrack-like housing projects and rigid master plans that are generated making use of the provider paradigm (Figure 46) overwhelmingly produce abstract space and end up contributing to reductive, unsustainable and sterile development of cities that do not exhibit the important qualities of urban space. Moreover, as demonstrated by Davis in *Planet of Slums* (2006: 64-5), the disconnect between housing projects and the realities of urban life in cities of the global South can be particularly socially disastrous.

According to Hamdi (1995: 26-30), the provider paradigm has a number of identifiable key characteristics. Its objectives include building houses for people, using house building to fuel the economy, centralising resources to facilitate management and control standards, building organisations that facilitate central initiatives, consolidating and centralising building production, and sectoralising development activities for ease of management and single-function projects. Its methods include building large projects to achieve



Figure 45 An aerial view of the south wing of Brasília's Pilot Plan in 2010. (Source: Joana França, 2013)



Figure 46 Example of housing generated in the provider paradigm in Boston. (Source: Boston Housing Authority, 1995)

scale, manufacturing housing to speed up production, building fast by building instantly, standardising projects and operations, clearance and redevelopment, and telling people what to do. Its products or components include projects, behaviourally deterministic planning, industrialised building systems and master plans; and its key actors include consultants, government agencies, funders, and large contractors or developers.

2.3.3. The Support Paradigm in Housing

In direct opposition to the provider paradigm, Hamdi (1995: 26-30) identifies what he calls the support paradigm in housing which also has a number of key characteristics. Its objectives include allocating resources for people to organise their own house building, using the economy to fuel house building, decentralising resources to support local enterprise and home building, building regulations to support and give structure to local initiatives, fragmenting building production and supporting small builders, and integrating development activities and linking housing to larger urban systems of employment and production. Its methods include building programmes and allocating resources for many small projects, managing resources to increase volume, building fast by building incrementally, promoting variety, improvisation, infill, sites and services, and telling people how to find out what to do, then how to find out how to do it. Its products include interventions, technical aid centres, training, housing options and loan packages, guidebooks, guidelines, tools and methods, appropriate technologies and structure plans; and its key actors include families, community groups, tenant organisations, nongovernmental organisations, government agencies, small contractors, funders, formal and informal private community developers, and consultants.

Furthermore, the support paradigm is grounded in finding solutions to the housing crisis in everyday practice and is thus more aligned with Foucault and Lefebvre's understanding of space as social relations. In contrast, it is evident that the provider paradigm which seeks universally applicable solutions is much more aligned with the traditional Cartesian understanding of space. Moreover, as argued by Hamdi (1995: xi-xii), generating housing strategies within the support paradigm requires the architect to incorporate time as an important building material in which housing cannot be seen as a finished building and to find ways of practice that promote rather than hinder spontaneity, improvisation and incremental development. In other words, it requires the architect to think and act as a spatial agent by finding a balance between control and emergence. Hamdi (*ibid.*) ex-

pands on this:

We need methods for deciding about the structure of our design interventions – the choice of physical and non-physical elements, their size, position, configuration and hierarchies – that encourage rather than inhibit pluralism in built form and that are tolerant of all the inventive surprises and improvisations that are a daily and productive part of informal building.

According to Hamdi (1995), this understanding of design practice is built on the three themes of flexibility, participation and enablement:

Flexibility in housing is defined by Schneider and Till (2005b: 287) as housing that can adapt to the changing needs of users – a definition which is deliberately broad. Schneider and Till (2005a: 158-9) argue, however, that true flexibility in housing which leaves room for user participation is different from the idea of flexibility used in housing designed following modernist ideology which only served as a means for the architect to exert control over the building into the future. For Hamdi (1995: 51), flexibility refers to the freedom to choose among options or devise programs that fit individual needs and aspirations, whether for building, finance, ownership, or management. Beyond this, Hamdi (*ibid.*: 51, 57) argues that it describes the 'capacity designed into buildings, building programs, or building technologies to ensure an initial good fit and to enable them to respond to subsequent change', encompasses three facets of growth, namely improvisation, extension and addition, and is a preoccupation that only became a legitimate goal for the first time in architecture and planning during the 1960s. This shift in perceptions about change and growth was reinforced by observations in the highly productive informal sectors in cities of the global South in which building was done on a vast scale but through a series of increments and over substantial periods of time (*ibid.*).

Participation specifically refers to the empowerment of communities and local organisations to take control of their environments both during the design stage and post-occupation and is central to both flexible housing design and the sustainable development of human settlements (Schneider and Till, 2005a: 159-61). According to Habraken (1972: 43-4), participation in housing should not resemble the type of participation found in a parade, as this betrays the complexity and immense potential provided by the surrounding environment, as well as results in housing that is un-

able to cope with the unexpected. Instead, Habraken (ibid.) argues that participation in housing should be more like playing a game in which a number of people move about a field in an orderly manner without excluding the spontaneity of life. As discussed by Hamdi (1995: xi-xii, 75) the participation of non-professionals including users and community clients in design is an important part of decision making and of guaranteeing the efficiency of the building in use, and even though participation gets in the way of professional freedoms, it does not undermine the discipline of architecture, nor the role of architects, nor need it turn architects into political activists or social workers as some believe.

According to Hamdi (1995: 88), where participation in housing is about shifting patterns of control, i.e. where communities and local organisations get more control, enablement is the process by which people are empowered to exercise that control. Enablement can be thought of as 'the operational side of the support paradigm', because it is primarily concerned with the practice of intervention, i.e. 'the why, when how and with what to intervene to get things going and keep them going' (ibid.). In Hamdi's words, 'participation without enablement is like trying to drive a car without fuel', and 'both, without flexibility, are likely trying to drive the same care if it is programmed to move only in one direction and always predictably from A to B' (ibid.).

As Hamdi (ibid.: 26, 30, 175) argues, supporters challenge the narrow conception of production of the dominant provider paradigm which encourages consumption as opposed to fulfilling human needs, and instead advocates for the more open and dynamic methods of the support paradigm which recognises that true productivity demands assistance that is flexible, participatory and enabling. Hamdi (ibid.:3) further contends that the thinking underpinning the support approach is especially pertinent in contexts such as that of South Africa where resources are scarce but the housing problem is exceptionally vast and complicated:

The debate becomes even more complicated in the developing world where high political aspirations are often coupled with scarce resources; where equity is sometimes sacrificed for efficiency; where export production is seen as more important to national development than local use of essential building materials; where uncertainty is intrinsic to practice rather than just a passing condition; and where housing deficits miraculously be-



Figure 47 'Aranya Low Cost Housing', Indore, India (1986), by Vāstu-Shilpā Consultants. (Source: Vāstu-Shilpā Foundation, 2018)

come surpluses, depending largely on what one counts, how one counts, and who one counts.

In the global South, an excellent example of the support paradigm can be found in the Aranya Low-Cost Housing project in Indore, India (1989), by Balkrishna Doshi's Vāstu-Shilpā Consultants (Figure 47). This project tried to create a model of housing which could be afforded by those with very few resources, incorporated a variety of income groups and used strategies such as providing a variety of options depending on what could be afforded by individual residents, i.e. the option of purchasing a plot only or a built service core of kitchen, washroom and an additional room (Awan, Schneider & Till, 2011: 370-4). As Hamdi (1995: 24) argues, however, it is also important to learn from failed projects in the support paradigm in which key aspects of the housing process were still ignored, such as in those that displaced people who depended for their work on inner cities to the periphery of cities and in which fewer economic opportunities were presented than in mixed economies of informal settlements. Nevertheless, despite the consensus that the support approach leads to more socially, economically and environmentally sustainable housing interventions that are productive in nature and help to cultivate complex and qualitatively rich environments, the unsustainable and consumptive provider paradigm which seeks visible and countable results still remains dominant in mainstream development practice.

2.4. Examination of Current Low-Income Housing Strategies in South African Cities

2.4.1. Spatial Practice in South African Cities

As discussed in subsection 2.2.3, urban areas all over

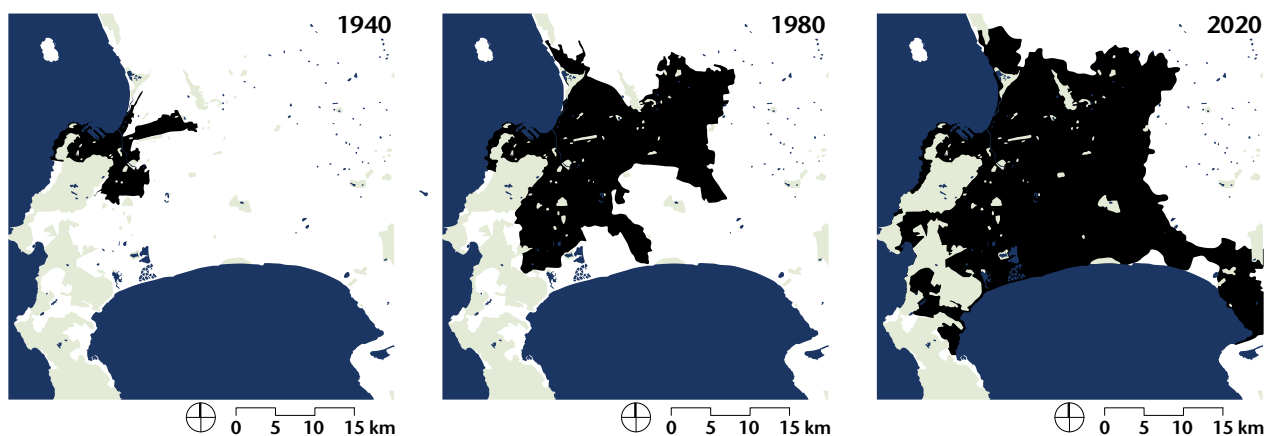


Figure 48 Expansion of Cape Town's urban fabric between 1940 and 2020. (Source: Author, 2020)

the world have to deal with two specific problems, namely accommodating new growth and dealing with remedial problems (Uytenbogaardt & Dewar, 1991: 36). It is thus necessary to examine these two problems in the context of spatial practice within South African cities. Although Cape Town will be the focus area of this study, it is a city that faces similar issues as every other major urban centre in the country – the first of these being, as argued by Uytenbogaardt and Dewar (ibid.: 10-11, 67), that the fast rate of urbanisation (Figure 48) largely among the poorest population due to both migration and natural increase of the population is resulting in increasing levels of poverty, unemployment and poverty. This is accompanied by serious environmental and social problems, a massive and growing housing crisis and a legacy of inappropriate and unsustainable urban planning and managing practices (ibid.). Consequently, deeply embedded spatial injustices and unjust geographies, largely stemming from apartheid spatial strategies¹⁶, are being both perpetuated and scaled up.

In his paper *The City and Spatial Justice* (2009) and his book *Seeking Spatial Justice* (2010), Soja elaborates on the various forms of spatial injustice stemming from colonial-apartheid strategies that still characterise South African cities today. These include locational discrimination, security-obsessed urbanism and the rapid commodification and privatisation of public space. Locational discrimination, which Soja (2009: 3) argues is fundamental in the production of spatial injustice and lasting spatial structures of privilege and disadvantage, is created through biases imposed on certain populations because of their other geographical location and is shaped primarily by the forces of

class, race and gender. Security-obsessed urbanism is another form of spatial injustice that is increasingly prevalent in South African cities and which can be witnessed in the construction of citadel-like housing estates and shopping malls. As argued by Davis (2006: 115-118), the fortified network of gated developments and self-sufficient worlds that allow those with privilege to hide from the harsh realities of South African cities and to effectively become nomads is rapidly becoming more widespread. According to Soja (2010: 43), this phenomenon is characterised by 'pervasive and privatising reconfigurations of urban life that expresses territorial power' that essentially impoverishes public space. Furthermore, public space, which should ideally be viewed as an urban extension of common property or 'demarcated spaces of collective responsibility' that assure residents' rights to the city, is also increasingly being commodified (ibid.: 45-

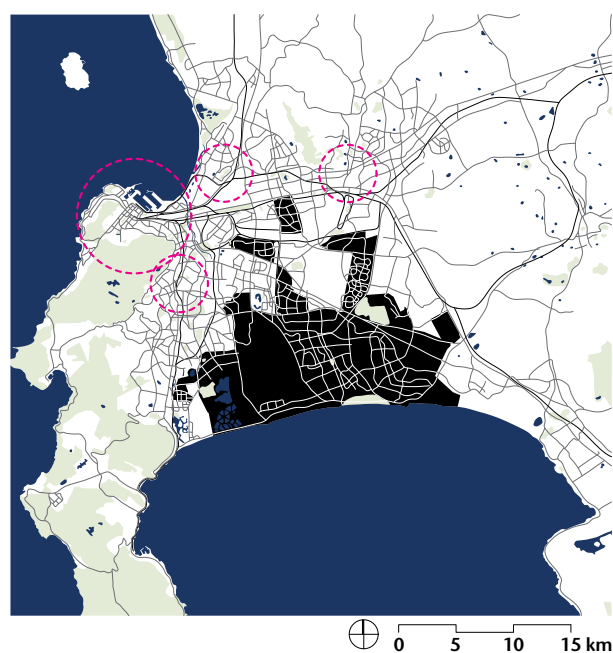


Figure 49 Peripheral geographies of disadvantage (in black) in relation to urban interior (in magenta). (Source: Author, 2020)

¹⁶ Apartheid is a 'system of spatial or territorial control associated with the formerly racist regime of the Republic of South Africa and now a symbolic reference to all forms of cultural domination and oppression arising from spatial strategies of segregation and boundary making' (Soja, 2010: 39).

46). As a result, public space is becoming increasingly dominated in nature and unavailable to the appropriation activities of ordinary people.

Probably the most glaring spatial injustice in Cape Town in particular is that the majority of poorer people live on the featureless, less hospitable Cape Flats (Uytenbogaardt & Dewar, 1991: 69). According to Soja (2010: 39-40), these peripheral areas (*Figure 49*) originally served as an apartheid strategy to assure disproportionate economic advantage for the white population and continue to serve as 'geographies of disadvantage' or 'straitjackets of spatial control' today. Moreover, Davis (2006: 47) bleakly argues these areas function as a 'human dump' to this day. Worsening this situation, Uytenbogaardt and Dewar (1991: 69) argue that the tendencies within mainstream planning and city management where there is no structural control that creates opportunities for people to respond to, but instead a focus on administrative control based upon the implementation of rigid rules, is resulting in simplification, standardisation and the destruction of complexity. It is also argued in a 2017 research report by Andrew Charman and his co-authors titled *Post-Apartheid Spatial Inequality: Obstacles of Land Use Management on Township Micro-Enterprise Formalisation* that current land use management systems both intentionally and unintentionally reinforced apartheid-era town planning and spatial injustice in the township economy instead of fostering growth.

Using Cape Town as an example, the effects of this can

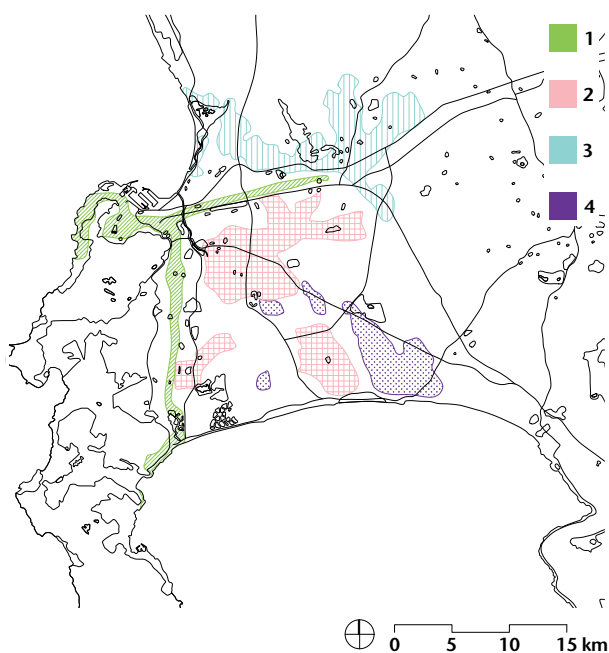


Figure 50 Distribution of the four urban structural sub-types. (Source: Roelof Uytenbogaardt and Dave Dewar, 1991)



Figure 51 Structural subtype 1: Older, integrated area – the southern spine as an example. (Source: Google Earth, 2020)



Figure 52 Structural subtype 2: Formal, fully planned townships – Mitchell's Plain as an example. (Source: Google Earth, 2020)



Figure 53 Structural subtype 3: Speculative sprawl – Constantia as an example. (Source: Google Earth, 2020)



Figure 54 Structural subtype 4: Informal housing – Crossroads as an example. (Source: Google Earth, 2020)

be seen in the distribution of the four main structural sub-types identified by Uytendogaardt and Dewar (1991: 70-3), namely the integrated older development, planned townships, private sprawl and squatter pockets (*Figures 50-54*). The planned townships essentially function as dormitory areas characterised by fragmentation and sterility. Fragmentation and sterility also characterise the private sprawl sub-type, however these areas are much better located and have far greater access to urban resources and higher order activities. In contrast, the older and more integrated areas of the city are vibrant and perform positively.

Similarly, the countless squatter pockets and areas that contain informal housing, as demonstrated by Charman and fellow researchers Thiresen Govender and Sarah de Villiers in their 2017 case study of Ivory Park, display a vibrancy not found in planned townships and speculative sprawl and productive networks of small enterprise. In their report, Charman, Govender and de Villiers (*ibid.*: 19) found, however, that land-use zoning, municipal by-laws and building regulations are out of touch with the spatial realities in townships and informal settlements¹⁷ where common spatial changes, such as backyard dwellings, conversion of the front of house to a business or shop, intense interior arrangement to optimise income, conversion of an entire dwelling for commercial use, encroachment outside property boundaries to provide business infrastructure and provision of passageways to open up pedestrian movement, take place as a result of mutual agreement between neighbours in contravention of such regulations.

According to Davis (2006: 95), the root of this urban slumming lies not in urban poverty but in urban wealth. This relates back to Massey's idea of power-geometries in which she argues that mobility, and control over mobility, both reflects and reinforces power (1994: 149-51). In other words, the wider forces keeping the urban poor in squatter and informal areas are necessary for maintaining the existing privileges held by the rest of the population. Furthermore, although Simone (2004: 13-15) warns that the struggle in squatter and informal areas should not be romanticised as they are areas of extreme deprivation and exploitation, he argues that they do provide an important lesson that the informal parts of everyday life, small-scale enterprise and decentralised authority are of extreme value in making cities 'work'.

Hamdi (1995: 15-19) contributes to this argument, maintaining that informal settlements are increasingly being seen not as a blight but as evidence of working cities and that informal housing should not be seen as housing in deterioration but as housing in the process of improvement. Moreover, Lefebvre (1991a: 373) argues that the spontaneous architecture and planning found in squatter and informal settlements shows that appropriation of a remarkably high order can be found here. Similarly, researchers Judith Ojo-Aromokudu, Claudia Loggia and Catherine Ndinda (2018: 63-6) maintain that the perspective of the residents of informal settlements in which they view the fact that their dwellings have reasonable access to the city and are less burdened by the nuances of formal housing positively should be taken into consideration in order to adequately respond to the complexity of informal urbanisation. Ojo-Aromokudu, Loggia and Ndinda (*ibid.*) argue that doing so could lead to informal dwellings being reconsidered from a more progressive perspective and in effective and sustainable interventions to support communities.

Furthermore, Uytendogaardt and Dewar (1991: 73-5) argue four recent physical patterns of development overshadow all others and are perpetuating the inequalities and spatial injustices described above. These consist of explosive low-density sprawl (*Figure 55*), fragmentation (*Figure 56*), separation (*Figure 57*), and a city-wide pattern of core and periphery (*Figure 58*). These patterns are described by Uytendogaardt and Dewar (*ibid.*) as having a 'savage' effect on the lives of the urban poor in particular. This is because the low-density, sterile and uniform settlements they create inhibit the needed pre-conditions for efficient and widely accessible public transport and, thereby, result in the urban poor having to pay more in time and money to overcome the friction of distance (*ibid.*). As a result, these patterns aggravate poverty, unemployment and inequality, result in environmental destruction and pollution, and create an economic situation in which only large economic units can flourish (*ibid.*). In effect, these patterns cultivate socially, economically and environmentally unsustainable urban environments and, therefore, need to be actively disrupted. To counter these unjust physical patterns of development, Uytendogaardt and Dewar (*ibid.*: 38-60) lay out six methods for managing urban growth sustainably, which were discussed in subsection 2.2.3 of this document.

What is more, it is evident that these patterns of development in which urban growth is led by large infrastructure such as highways also have a negative effect on housing justice and contribute to the already out of

17 As shown in the Socio-Economic Rights Institute of South Africa (SERI) report *Informal Settlements and Human Rights in South Africa* (2018: 6), approximately 1 in every 5 households in South African cities lives in an informal dwelling.



Figure 55 Unjust physical pattern of development 1: Sprawl. (Source: Roelof Uytenbogaardt and Dave Dewar)



Figure 56 Unjust physical pattern of development 2: Fragmentation. (Source: Roelof Uytenbogaardt and Dave Dewar)



Figure 57 Unjust physical pattern of development 3: Separation. (Source: Roelof Uytenbogaardt and Dave Dewar)

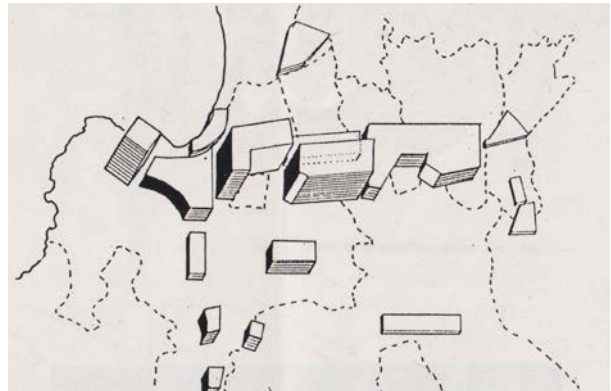


Figure 58 Unjust physical pattern of development 4: Core-periphery. (Source: Roelof Uytenbogaardt and Dave Dewar)

control housing crisis in South African cities. As discussed by Uytenbogaardt and Dewar (ibid.: 64-6), the net outcome of these patterns and the reliance on the provider paradigm, which Hamdi (1995: 26-32) argues rests on a narrow conception of the housing process, seeks instant delivery of houses and relies on a technological fix to the housing problem, is large-scale sterility, massively simplified order, an urban grain that is coarse and non-continuous, and an economic situation where 'most capital invested finds its way back into very limited pockets'.

2.4.2. Grassroots Social Movements in South African Cities

To counter the unsustainable patterns of development discussed in the previous subsection, it is important, as Hamdi (2004: 54-60) shows, to start small and focus on creating enabling conditions for ordinary people to participate in developing the city – an undertaking that is only possible when people on the ground organise and stand together, especially through the setting up of co-operatives and collaborative organisations. As discussed by Manzini (2015: 41-53), grassroots organisations play an important role in facilitating this. Manzini (ibid.) argues further that until recently, these organisations have been in the minor-

ity, but the possibilities created by the internet and by digital media fundamentally changed this, with the result that grassroots organisations are increasingly evolving into collaborative organisations by becoming more open, flexible and consisting of differently motivated people. These organisations that struggle for the right to the city and justice are present in both the global North and the global South – however, in the global South, as argued by Mayer (2012: 63-5), the struggle against privatisation, dispossession, evictions, and displacement is even more existential.

Two notable urban grassroots social movements in South Africa who primarily fight for housing justice are Abahlali baseMjondolo (Zulu for 'people who live in shacks') in Durban and Reclaim the City in Cape Town. As mentioned in subsection 2.1.4, both of these organisations employ operations of spatial agency in their struggle. Abahlali baseMjondolo, which is considered to be the largest movement of the poor in post-apartheid South Africa, mainly focusses on organising actions against local government, but has recently begun setting up bottom-up projects in informal settlements and organising working collectives (Awan, Schneider & Till, 2011: 135-41). Reclaim the City, on the other hand, has focussed on occupy-



Figure 59 Aerial view of Warwick Junction. (Source: Richard Dobson and Tasmi Quasi, 2016)



Figure 60 Traditional medicine trading conditions before interventions. (Source: Dennis Gilbert and Gerald Botha, 2009)



Figure 61 Disused freeway off-ramps that became the Traditional Medicine Market. (Source: Dennis Gilbert and Gerald Botha, 2009)



Figure 62 An aerial view of the Traditional Medicine Market. (Source: Richard Dobson and Tasmi Quasi, 2016)



Figure 63 Brook Street trading conditions before interventions. (Source: Dennis Gilbert and Gerald Botha, 2009)



Figure 64 The Brook Street Market after interventions. (Source: Dennis Gilbert and Gerald Botha, 2009)



Figure 65 The wholesale clay market at Warwick Junction. (Source: Dennis Gilbert and Gerald Botha, 2009)



Figure 66 Cardboard collectors selling materials salvaged from the neighbourhood. (Source: Dennis Gilbert and Gerald Botha, 2009)

ing and appropriating abandoned buildings on public land as a means of challenging the unjust commodification of public land that has prevented any meaningful attempts at addressing the housing crisis in Cape Town. It can be said that Reclaim the City routinely makes use of direct action – a term that refers to a valuable method of protest in many social movements and struggles that ‘seek to change material conditions directly, rather than through governmental politics, which is perceived to have failed or to have been inadequate’ (ibid.: 244-6).

Furthermore, Manzini (2015.: 87) argues that the concept of *ubuntu*, which was discussed in subsection 2.2.1, can be firmly linked to several new initiatives – many of them supported by digital devices – and is capable of ‘inspiring design guidelines for new solutions’. In South Africa, a good example of such an initiative can be found in the Warwick Junction Urban Renewal Project in the heart of Durban by Richard Dobson and Patrick Ndlovu (*Figures 59-66*) which was documented by Dobson, Caroline Skinner and Jillian Nicholson in their 2009 publication *Working in Warwick: Including Street Traders in Urban Plans*. This project was innovative in that it enabled a multi-stakeholder engagement between architects, social scientists and informal traders which resulted in the emergence of the non-governmental organisation (NGO) Asiye eTafuleni. This organisation was ‘set up to support informal traders, and others who use public spaces for their work, by providing design and development expertise’, thereby buttressing the often fragile livelihoods of informal entrepreneurs with better knowledge of development norms which they did not have before in order to build capacity within the informal sector (Awan, Schneider & Till, 2011: 165-7).

2.4.3. Current Low-Income Housing Strategies in South African Cities

The socio-economic context of South Africa is one characterised by extreme wealth inequality and where the majority of people are living in abject poverty. According to Statistics South Africa (2019b), half of the adult South African population (49,2%) were living below the the upper-bound poverty line (UBPL) in 2015, which stood then at R 992,00 per month (Statistics South Africa, 2019a: 3). What is more, in 2020 around 25,2% of South Africans, which represents 13,8 million people, were living under the food poverty line (FPL) (Pietermaritzburg Economic Justice and Dignity Group, 2020: 1), which then stood at R561 per person per month (Statistics South Africa, 2019a: 3). As discussed in subsection 2.4.1, much of this can be attributed to the profit-motivated spatial production that still dominates mainstream development prac-

tice in South African cities – spatial production which is undeniably perpetuating unsustainable patterns of development that have clear colonial and patriarchal roots.

According to the Centre for Affordable Housing Finance in Africa (2019: 235-238), a South African household earning R10,000.00 per month would only be able to afford a house valued at R285,917.00 assuming a mortgage payment of R3,000.00 per month. Further, households earning between R1,879.00 and R4,238.00 per month are only able to afford a house valued at a maximum of R131,758.00 (ibid.). However, the cheapest newly built house (40 m² in area) by a formal developer in South Africa costs an average of R436,200.00 with the average rental of this unit being R2,300.00 per month (ibid.). Taking this into consideration, along with the fact that half of the South African population lives under the UBPL, it is clear that even the cheapest newly built houses are unaffordable to most households.

To deal with this situation, the South African government has developed two main subsidised housing schemes for low-income households (ibid.). The first of these is subsidised ownership housing where the government provides a 40m² house without any cost to the applicant. However, this scheme, which is commonly referred to as RDP housing, is only available to households earning under R3,500,00 per month. The second scheme, which is meant for households in urban areas earning between R1,500,00 and R15,000,00 per month, is government subsidised rental housing and is commonly referred to as social housing. Unlike RDP housing, which is fully subsidised and provided by the national government, social housing schemes are provided by accredited housing institutions and are only partially subsidised by government. Furthermore, government also partners with the private sector in subsidising what is commonly referred to as GAP housing. This scheme is meant for households earning more than the R3,500,00 limit required to qualify for RDP housing, but less than is required to qualify for a bank loan (Western Cape Government, 2009: 25-6).

However, three major concerns are evident. First, all of these housing schemes have strict criteria aside from income thresholds, meaning that many who need them simply cannot access them. Second, in 2019 the housing backlog was estimated at 2.3 million homes (Centre for Affordable Housing Finance in Africa, 2019: 235-238). It is thus evident that South Africa is facing an enormous housing crisis which, as discussed in subsection 2.3.1, exists only when the rela-

tionship between the various forces that act upon the housing process is in a state of crisis. Third, a recent report by the National Treasury (Gardner, 2018) found that since 1994, these low-income housing strategies have continued to perpetuate the unsustainable and spatially unjust patterns of development that characterised apartheid-era town planning, as mentioned in subsection 1.1.2 of this document. According to the report (ibid.: vii):

Over two decades of subsidised housing delivery in South Africa has achieved notable quantitative success, but this has also perpetuated undesirable urban form, including low-density, mono-functional and predominantly low-income residential areas on the periphery of cities with limited related economic opportunity.

To illustrate this last concern, it is helpful to look at a couple of examples of low-income projects that were completed in Cape Town in the post-apartheid era. Specifically, it is helpful to look at where these projects are located in relation to areas of employment and the geographies of disadvantage, which were discussed in subsection 2.4.1. *Figure 67* shows areas of employment in relation to these geographies, whereas *Figure 68* shows where people reside in relation to these geographies. *Figure 69* depicts an example of RDP housing in Cape Town and *Figure 70* indicates its location within the city. This particular example is located in the Cape Town suburb of Delft, which is a massive set-

tlement far on the periphery of the city and consists almost entirely of government subsidised housing built after 1994. Infamously, the temporary relocation area of Blikkiesdorp (Afrikaans for ‘Tin Can Town’) which, in the end, turned out to be permanent, is also located in this suburb. This brutal housing development, which consists of approximately 1,600 one-room tin structures, is the site where many poor Cape Town residents were relocated from better located areas of the city to make room for the 2010 FIFA World Cup. Similarly, housing options for those who qualify for social and GAP housing are also typically located on the urban periphery, as shown in *Figures 71-74*. Thus, looking at government subsidised housing for the poorest urban residents unfortunately reinforces the argument made by Davis (2006: 47) that the urban periphery still functions as a ‘human dump’, just as it did under apartheid.

Making matters worse, and as can be seen in typical floor plans for such projects (*Figures 75-76*), the low-income housing schemes that are generated from these strategies ignore the differences inherent to the people they are designed for and provide no opportunity for improvisation, spontaneity and incremental development – activities which, alongside financing and location, have been shown in this study to be important ingredients in housing for cultivating positively performing urban environments which are socially, economically and environmentally sustainable. The result is that dwellings designed around the Western idea of the nuclear family are uniformly



Figure 67 Map of Cape Town showing employment density. (Source: City of Cape Town, 2018)



Figure 68 Map of Cape Town showing residential density. (Source: City of Cape Town, 2018)



Figure 69 An example of an RDP house in Delft, Cape Town. (Source: Janine Fortuin, 2012)



Figure 71 Aerial view of the Steenberg housing project as an example of social housing. (Source: The Remey Group, 2020)



Figure 73 Harmony Village, Mitchells Plain as an example of GAP housing. (Source: Cape Town Community Housing Company, 2020)

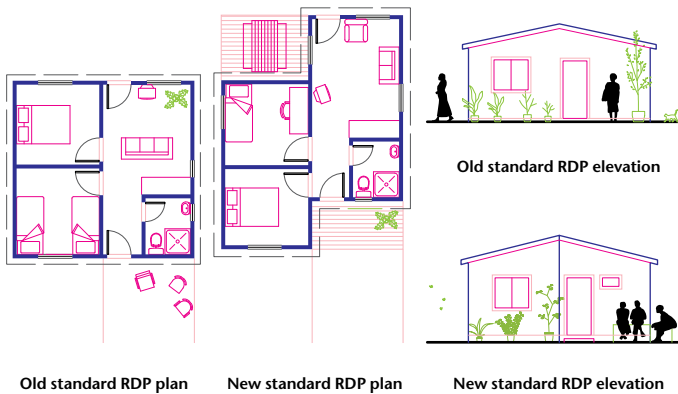


Figure 75 Standard plans and elevations of RDP housing. (Source: Kotze, 2019)

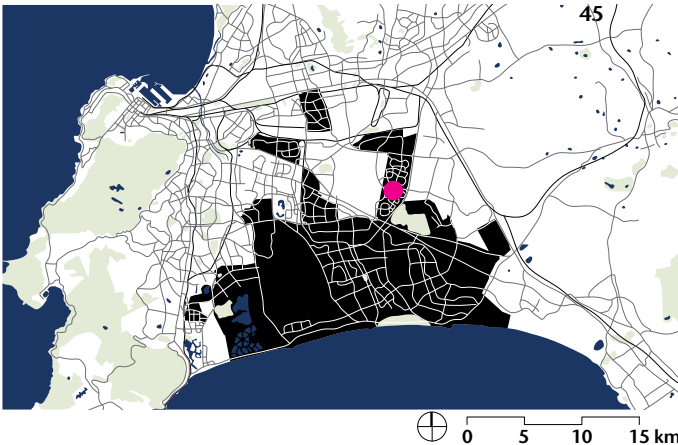


Figure 70 Location of the RDP house example within Cape Town, indicated in magenta. (Source: Author, 2020)

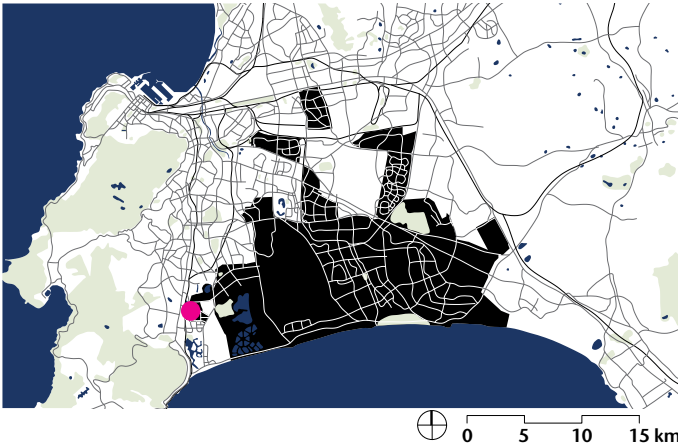


Figure 72 Location of the Steenberg housing project within Cape Town, indicated in magenta. (Source: Author, 2020)

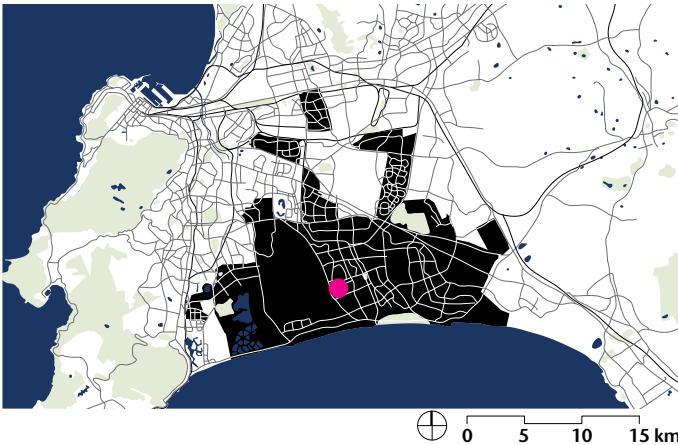


Figure 74 Location of the Harmony Village within Cape Town, indicated in magenta. (Source: Author, 2020)

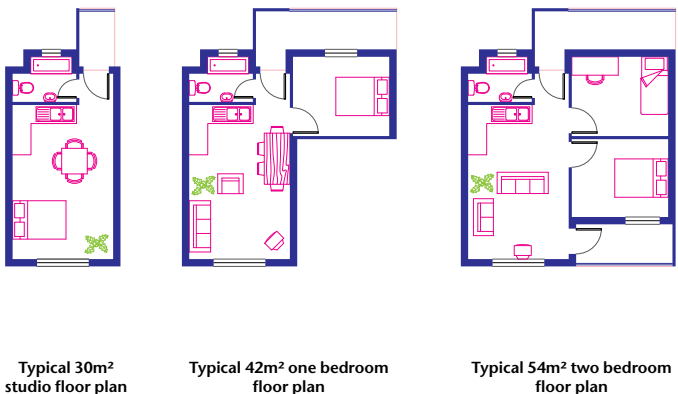


Figure 76 Plans of the Walmer Link and Fairview Link housing projects, Port Elizabeth, by IMIZI Housing. (Source: IMIZI Housing, 2015)

imposed on a population which, as shown in Statistics South Africa's *General Household Survey 2018*, very rarely conform to this idea.

These reductive strategies, which seek quantitative over qualitative results, are unquestionably situated in the provider paradigm in housing, as discussed in subsection 2.3.2. It is also clear that this paradigm will continue to dominate mainstream development practice as the new approach by government shifts focus from smaller low-income housing projects to constructing a couple of megaprojects on the urban periphery that serve as 'new cities' (Department of Human Settlements, 2017: 46-51; Department of Human Settlements, 2018a: 20-2; Department of Human Settlements, 2018b: 40-3). This new approach has been problematised by researchers Richard Ballard

and Margot Ruben in their 2017 article *A 'Marshall Plan' for Human Settlements: How Megaprojects Became South Africa's Housing Policy* in which they argue that these projects have the potential of exacerbating urban sprawl. It is unclear why a more sustainable, supportive and resource efficient approach to addressing the housing crisis has largely been ignored – however, Ballard and Ruben in their 2018 article *Why Megaprojects to Deliver Houses in South Africa Might Not Work* argue that this is largely for political reasons as the provision of finished dwellings is the most visible way for government to show that they are making good on their promises. This also accords with the argument made by Hamdi (1995: 3-4) that equity in housing is often sacrificed for efficiency in the developing world where 'high political aspirations are often coupled with scarce resources'.

3 Precedent Analysis

3.1. Analysis of Housing Precedents that Express Spatial Agency in Social Structures

3.1.1. 'Occupation of Zuccotti Park', New York City (2011), by Occupy Wall Street

As discussed in subsection 2.1.3, the 2011 occupation of Zuccotti Park (Figure 77) by Occupy Wall Street serves as an excellent example of a heterotopia. This ephemeral community, which was set up in the heart of New York City's Wall Street financial district (Figure 78 and Figure 79) and persisted for nine weeks before occupiers were dispersed, marked the start of the wider Occupy moment – a global protest movement against economic inequality which became exceedingly apparent after the global financial crisis of 2008. According to Massey and Snyder (2012), the occupiers made use of tactics borrowed from Quaker meetings, Latin American popular assemblies, Spanish *acampadas*, and other traditions of protest and political organisation, and demonstrated new possibilities 'for public life and political action created at the intersection of urban places and online spaces'.

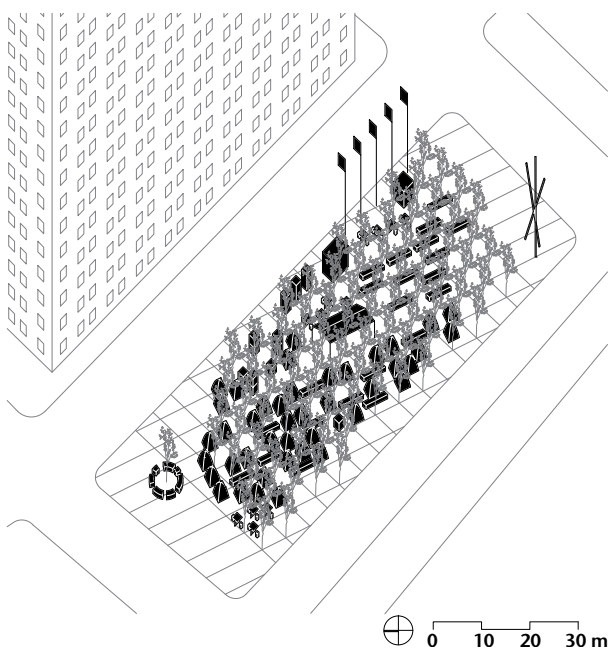


Figure 77 Axonometric projection of the occupation of Zuccotti Park by Occupy Wall Street in 2011. (Source: Author, 2020)

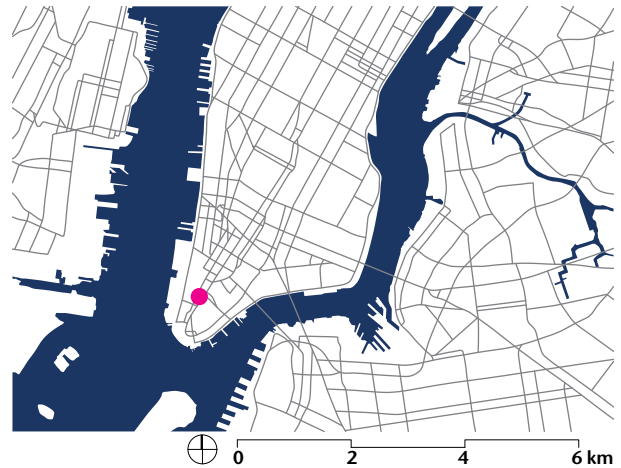


Figure 78 Location of Zuccotti Park in New York City. (Source: Author, 2020)



Figure 79 Site plan showing Zuccotti Park's surrounding context. (Source: Author, 2020)

In terms of its approach to generating supportive housing and cultivating productive urban environments, the temporary appropriation of this public space created an enabling environment in which protesters could use a combination of spatial objects – both brought in and existing on site already – and ephemeral materials to collaborate in making space. This environment also enabled protesters to find cooperative ways of living together and to set up a space in which they could organise, while simultaneously challenging the destructive and spatially unjust

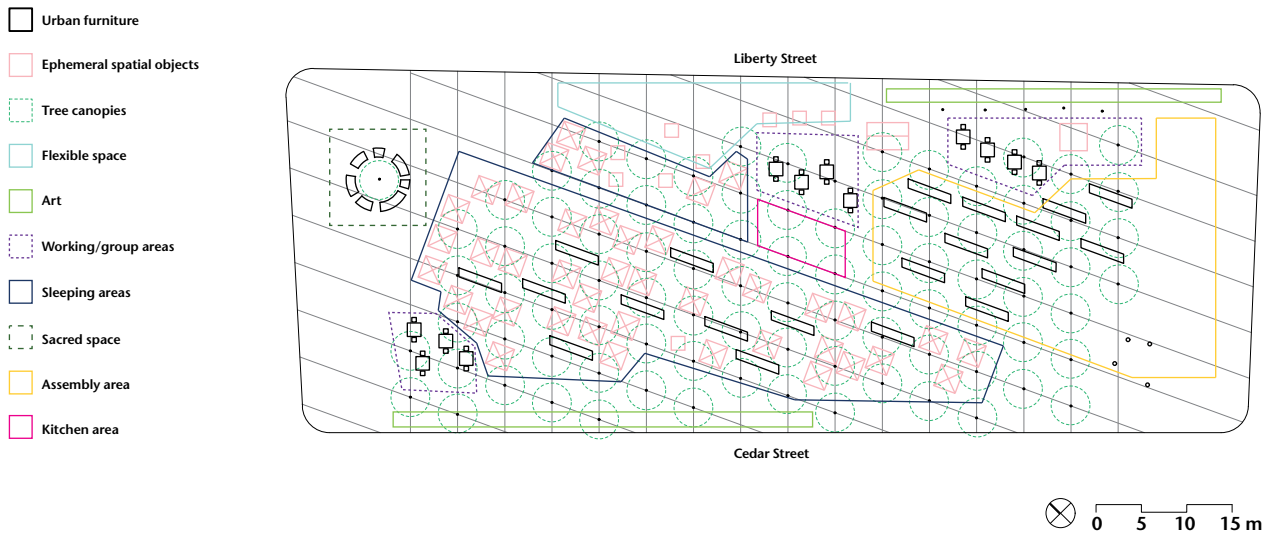


Figure 80 Plan of Zuccotti Park during the Occupy Wall Street occupation showing zones for different uses. (Source: Jake Deg, 2012)

commodification of public space by profit-motivated planning in the city. As diagrammed in *Figure 80*, this involved organising the square into different areas for working, gathering and sleeping, as well as providing social support structures around the setting up of a sacred space, a flexible space, spaces for art, a sick bay, medical area, a communal library, kitchen, ablutions and providing points for internet access. It is also evident that private areas that require quiet, such as sleeping areas and the sacred space, were positioned towards the lower order streets to the South and West. Similarly, more public spaces and areas that need direct access to the street were positioned closer to the higher order streets to the North and East. Moreover, interaction between the inhabitants and the public

was made possible by the strong connection to the street and a single pathway running through the community to allow for movement and enable interaction between occupiers.

In terms of its approach to empowering ordinary people and finding a balance between structure and agency, the occupation of Zuccotti Park demonstrates an understanding that the protesters who constitute this movement and their spatial actions are part of and not outside of a complex web of social relations. This involves an understanding that occupying this prominent public space which is located in one of the centres of global capitalism, even temporarily, can ultimately play a positive role and contribute to challenging underlying power structures that are increasingly dominating and commodifying the production of space. Furthermore, it is clear that the occupation of Zuccotti Park also demonstrates a number of operations of spatial agency. These include prioritising equity between occupiers and self-management of the ephemeral community, appropriating urban objects and urban space to unsettle the status quo, sharing knowledge between occupiers and protesters, subverting and opposing the unsustainable actions of unregulated capitalism and exploitation of the poor and working class, making these actions visible to the larger public, and establishing a larger network of protest action globally.

3.1.2. 'Urban Forest' (2015), by Atelier Bow Wow and Kolabs

Urban Forest (*Figure 81*) is a housing concept designed by Atelier Bow Wow and Kolabs for a 2015 lecture series entitled *Wohnungsfrage* (German for 'The Housing Question') and in reference to the writings on housing by Friedrich Engels published at the beginning of the

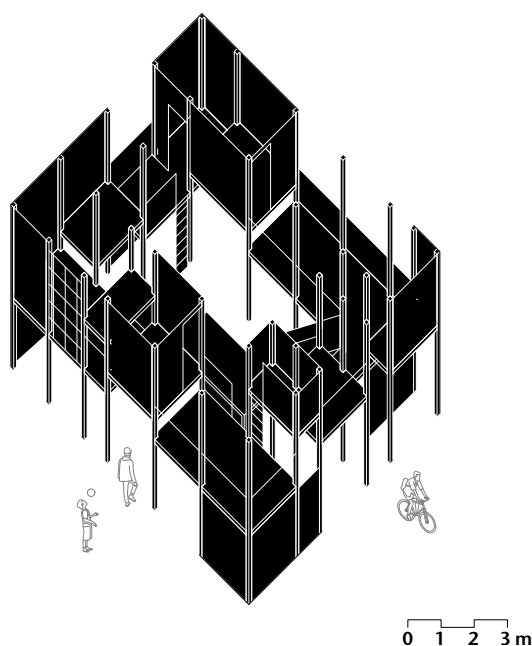


Figure 81 Axonometric projection of Urban Forest by Atelier Bow Wow and Kolabs. (Source: Author, 2020)



Figure 82 Picture of the central zone of Urban Forest, which is open to the public and contains a community table. (Source: Atelier Bow Wow and Kolabs, 2015)

1870s) by Haus der Kulturen der Welt (HKW). Atelier Bow Wow is a design and research group based in Tokyo, whose work includes buildings, research and design practice and who focus more on ‘constructing situations rather than objects’ (Awan, Schneider & Till, 2011: 168-71), while Kolabs is a collective of young students looking to live as a community. The principle issue that these two groups were seeking to address is that students are not innocent in the gentrification process, but can act as one of the primary driving forces (HKW 100 Years of Now, 2015a). In response to this

issue, these groups generated the idea of Urban Forest, as depicted in *Figure 82*, which is a housing concept for a group of people to ‘use space efficiently by dividing it into multi-functional zones rather than prescribed rooms’ (Zero Waste Labs, 2015).

In terms of its approach to generating supportive housing and cultivating productive urban environments, this project centres around establishing a method for creating flexible housing installations within empty buildings and warehouses that could function as affordable housing for students, refugees or any other group affected by current housing problems. These installations consist of a set number of individual components that can be assembled in a wide variety of ways and contain a number of private and semi-private spaces that centre around a communal, double-volume ground floor area around which services are arranged. The individual components, which allow for a large amount of flexibility and are diagrammed in *Figure 83*, include column elements, platforms, vertical circulation components and enclosure elements. Within this project, residents are enabled to rent whichever size private space they wish and freely change their mind depending on their budget or personal preference. The private spaces are primarily used for sleeping and can be configured to act spatially like nests or caves, depending on the preference of the specific inhabitant (HKW 100 Years of Now, 2015a). Private spaces connect to interface spaces that can be differentiated to host various activities at different

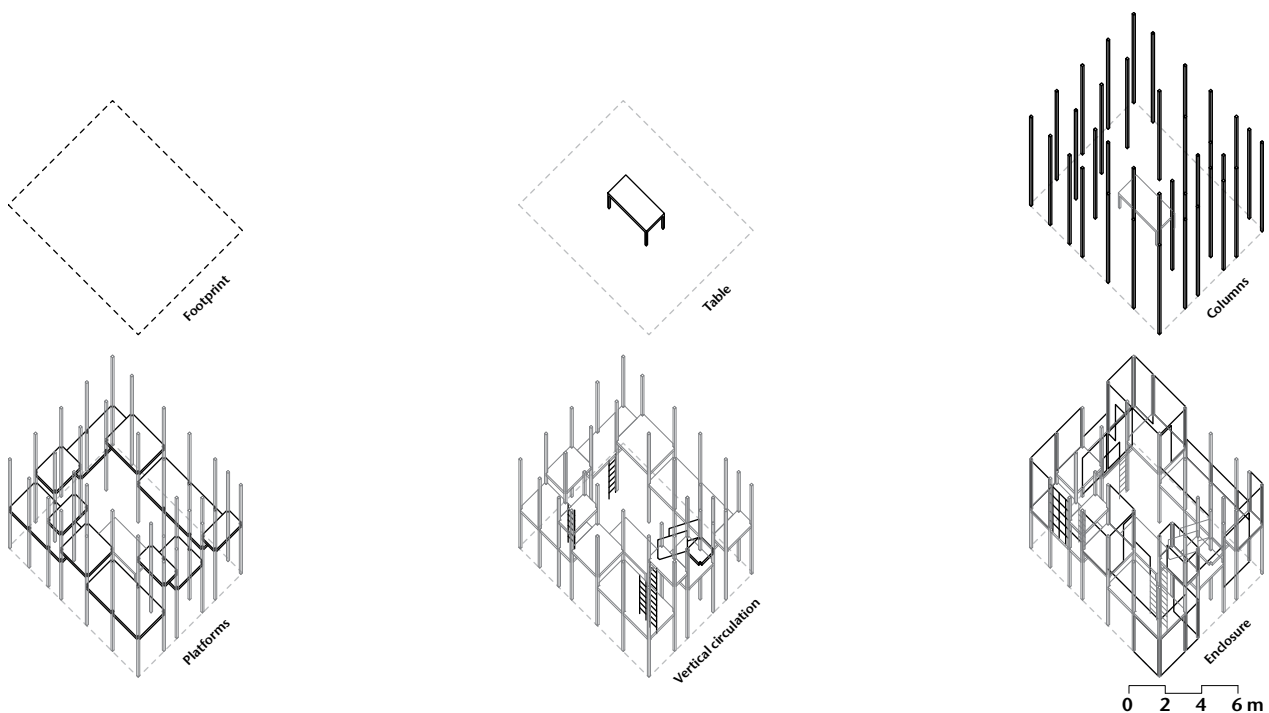


Figure 83 Diagram of Urban Forest showing the arrangement of the various elements that constitute the design. (Source: Author, 2020)

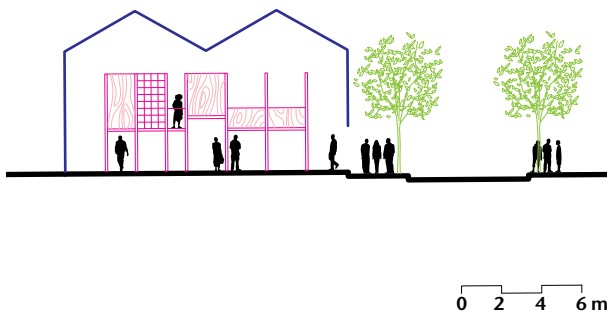


Figure 84 Section through Urban Forest its position within an empty building, as well its intended connection to the surrounding context. (Source: Author, 2020)

times of the day. These interface spaces substitute the need for corridors and, in addition to the communal ground floor space that can be accessed by the public, foster the possibility of interaction between residents.

In terms of its approach to empowering ordinary people and finding a balance between structure and agency, the design for Urban Forest demonstrates an understanding that the spatial actions of its intended users, namely students, fit into the larger web of social relations and often contribute to displacing poorer urban residents through gentrification. To actively oppose and subvert this, Urban Forest appropriates leftover spaces within the city that would otherwise remain unused, e.g. abandoned warehouse buildings (Figure 84), to host the housing intervention. Additionally, the ownership structure in which private sleeping spaces are rented while other spaces are com-

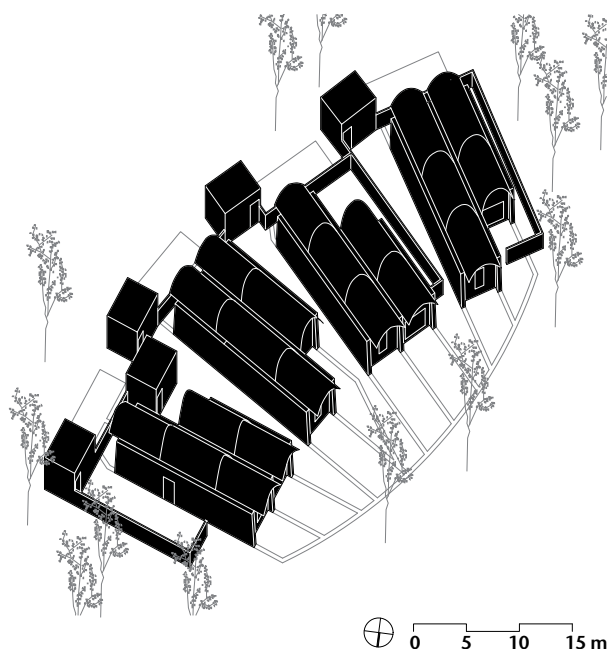


Figure 85 Axonometric projection of Gando Teacher's Housing by Kéré Architecture. (Source: Author, 2020)

munally owned fosters greater cooperation and social support between residents, as well as creates the opportunity for residents to share knowledge between each other. Moreover, by providing the necessary service spaces around a central ground floor gathering space, the rest of the spaces within the structure are allowed to remain undifferentiated. This creating the possibility for these spaces to be appropriated in new and different ways by its inhabitants and means that the housing project comes to life through the self-organised activities of its users.

3.1.3. 'Gando Teacher's Housing', Gando, Burkina Faso (2004), by Kéré Architecture

Diébédo Francis Kéré is an architect from Burkina Faso who is known for adapting technology from the industrialised world to produce low-cost buildings that are suitable to their context. According to Awan, Schneider and Till (2011: 286-289), Kéré's projects take a holistic approach by linking architecture with development and his association has 'expanded its remit beyond building schools to organising women's co-operatives, supporting education for girls and providing much needed employment for youth through training and projects, proving the socially transformative potential of architecture'. This particular housing project (Figure 85), which is located on the same site as a primary school that Kéré designed and built in his home village of Gando (Figure 86 and Figure 87), was designed to attract teachers to the countryside, as well as to promote the use of earth as a sustainable and durable building material (Kéré Architecture, 2016). According to Kéré (Kéré Architecture, 2020), the houses 'were realized as a series of adaptable modules, each of comparable size to the traditional round huts typically found in this region'.

In terms of its approach to generating supportive housing and cultivating productive urban environments, Gando Teacher's Housing combines an enabling and participatory approach in designing and constructing Gando Teacher's Housing that productively adds to his home village. As can be seen in Figure 88, Kéré's plan for this housing intervention provides the necessary flexibility for inhabitants to adapt the space by combining the single modules in various ways to form a larger composite whole. Furthermore, as shown in Figure 89, Kéré combines both local materials, such as the loam rendering applied to the outside walls and stabilised earth blocks, with previously unheard of construction techniques in this region, such as barrel vaults, to generate an architecture that makes use of local resources and is climatically efficient. According to Kéré (Kéré Architecture, 2016), the roof heights 'alternate between 100cm and 150cm, therefore when

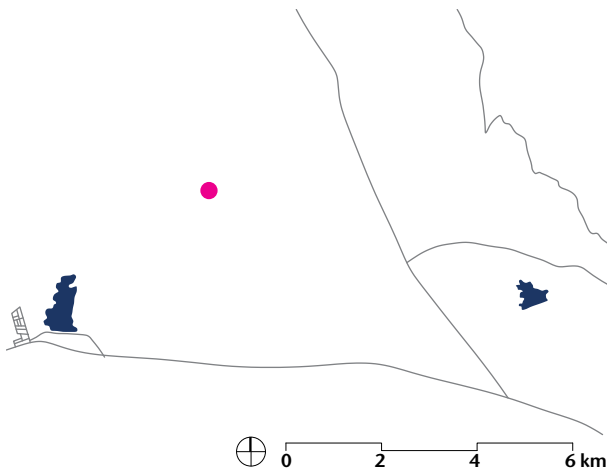


Figure 86 Location of Gando Teacher's Housing in Gando. (Source: Author, 2020)



Figure 87 Site plan showing Gando Teacher's Housing's surrounding context. (Source: Author, 2020)

they overlap a sickle-shaped opening is formed and serves as a means of ventilating the interior and providing daylight'.

In terms of his approach to empowering ordinary people and finding a balance between structure and agency, Kéré acts as a spatial agent in this project by treating this building as a form of empowerment in which everyone 'gained not only new skills but also a sense of responsibility, awareness and sensitivity to both the traditional and the innovative aspects of building' (Kéré Architecture, 2020), as well as by playing the role of community activist, fund raiser, architect and builder (Awan, Schneider & Pearce, 2011: 105). As mentioned in subsection 2.1.4, this housing project exhibits a key operation of spatial agency in productively initiating a project from the ground up and thereby going beyond the traditional architect-developer model. In doing this, Kéré effectively opens up new social, political and economic possibilities to the residents of Gando and reinforces the value of local skills and knowledge which mainstream practice often disregards. Furthermore, in using spatial intervention as a means to attract teachers to the region, this project demonstrates an understanding that social relations

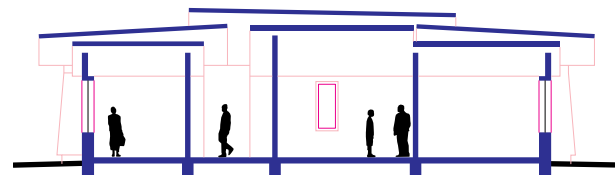


Figure 89 Section through Gando Teacher's Housing. (Source: Kéré Architecture, 2020)

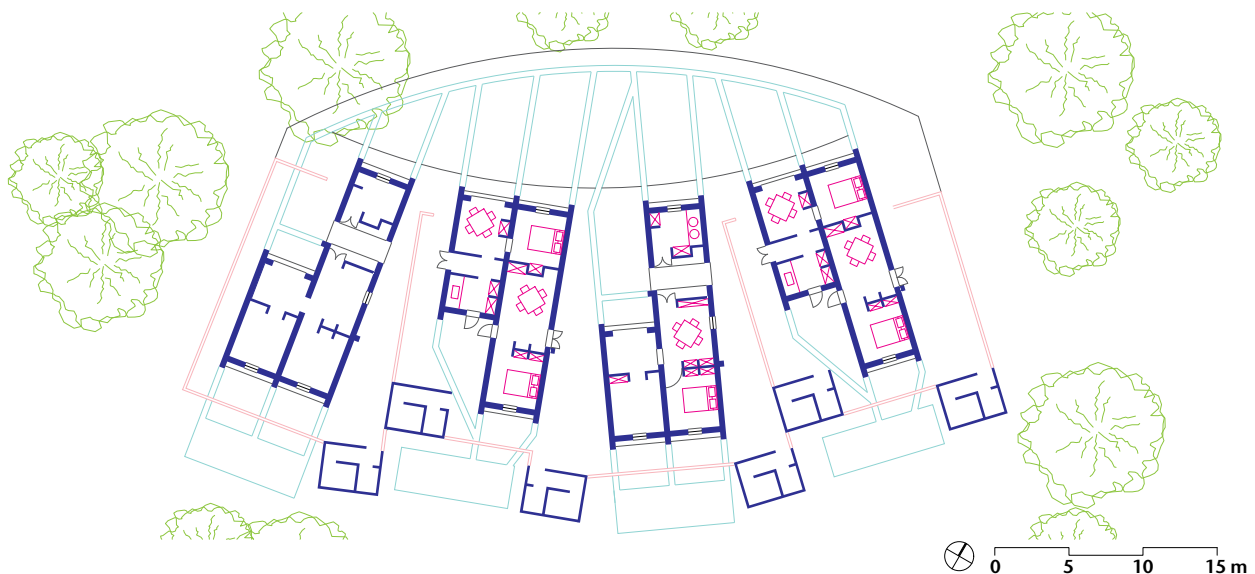


Figure 88 Plan of Gando Teacher's Housing. (Source: Kéré Architecture, 2020)

can be a valuable site for action and that architecture can ultimately play a positive role in addressing social and economic problems.

3.2. Analysis of Housing Precedents that Express Spatial Agency in Physical Relations

3.2.1. 'Quinta Monroy', Iquique, Chile (2003), by Elemental

This social housing project (*Figure 90*) by Chilean architectural practice Elemental, co-founded by architect Alejandro Aravena, is located on an inner-city site in the city of Iquique (*Figure 91* and *Figure 92*) and designed for a group of 97 families who had occupied the same 5000m² site illegally since the 1960s (Tory-Henderson, 2020). By making use of the residents' innate self-building skills as squatters, Elemental managed to find an effective architectural strategy to use the extremely low budget of \$7,500.00 per family, which had to cover the land, infrastructure and building costs, by providing 'half houses' (*Figure 93*) on the same inner-city site which the families could incrementally fill-in as they saved up more funds (Elemental, 2016). This meant that the community did not have to relocate to a site far from where they work and have existing social ties, as well as that the tough choice between tiny dwellings located on this expensive inner-city land or dwellings big enough for a family located on cheap peripheral land far from opportunities for jobs, education, transportation and access to health facilities did not have to be made.

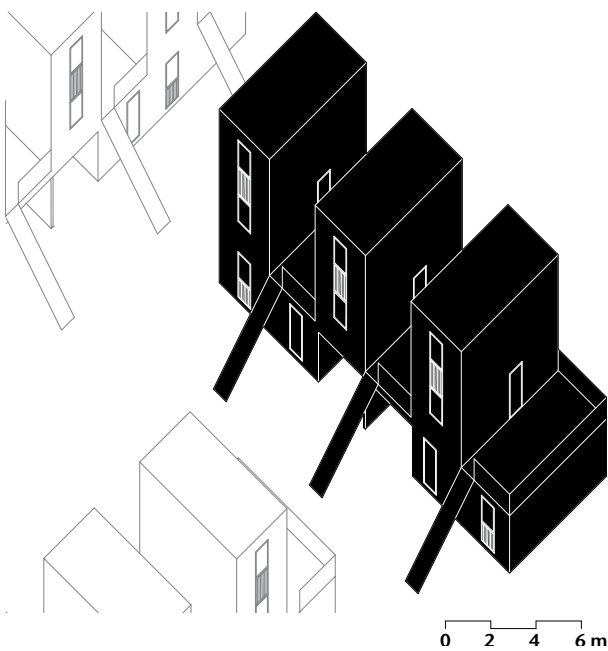


Figure 90 Axonometric projection of Quinta Monroy by Elemental. (Source: Author, 2020)



Figure 91 Location of Quinta Monroy in Iquique. (Source: Author, 2020)

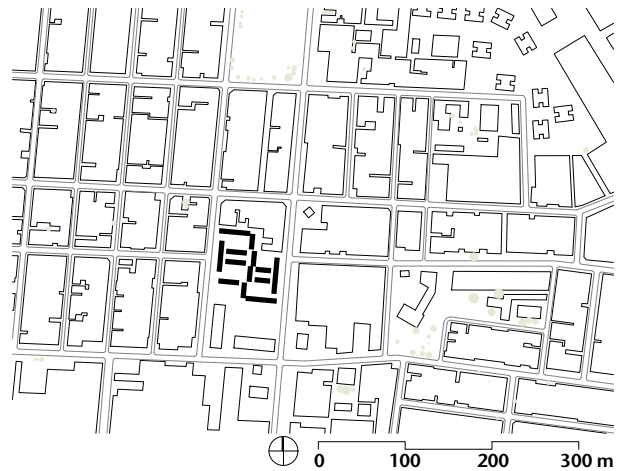


Figure 92 Site plan showing Quinta Monroy's surrounding context. (Source: Author, 2020)

In terms of its approach to generating supportive housing and cultivating productive urban environments, this housing intervention recognises the complexities of the housing equation by keeping poor urban residents located close to job opportunities and existing social ties, prevents unsustainable sprawl on the periphery of the city and provides a housing framework in which ordinary people can productively co-create the city of Iquique. Specifically, Quinta Monroy aims to balance three specific elements: developing a low-rise, high-density project; doing so without overcrowding; and doing so with the possibility of expansion. As can be seen in *Figure 94* and *Figure 95*, this balance is achieved by building a comb-like variation on row housing instead of detached houses, with each unit initially consisting of the necessary spaces for living but with enough slack space provided for improvisation, addition and extension. This strategy made the most of the financial resources and outdoor space, as well as making use of the strong self-build tradition of the people who were to move into these houses. Moreover, the fact that residents are allowed to make



Figure 93 Elemental's half houses in Iquique before handover (left), and the subsequent incremental appropriation by residents after the handover (right). (Source: Cristobal Palma, 2020)

the houses their own in this way contributes to a more complex understanding of ownership in this project.

In terms of its approach to empowering ordinary people and finding a balance between structure and agency, this housing intervention addresses the realities of the changing needs and desires of users over time, and enables them to conceive, produce and occupy this housing project in ways that fit their individual and evolving spatial needs. To achieve this, the design for Quinta Monroy incorporates delightful indeterminacy, as discussed in subsection 2.1.4 of this document, which capture the 'delightful aspects' of architecture, take into account the everyday, the ordinary, and the mundane, and leaves enough room for appropriation and reappropriation (Awan, Schneider & Till, 2011: 111-2). Additionally, in treating their technical drawings and design for this project as open-source content which can legally be made use of by the larger public,

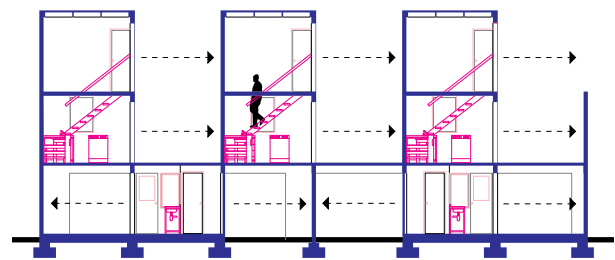
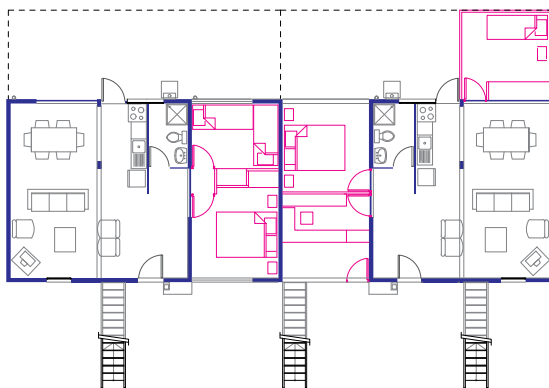
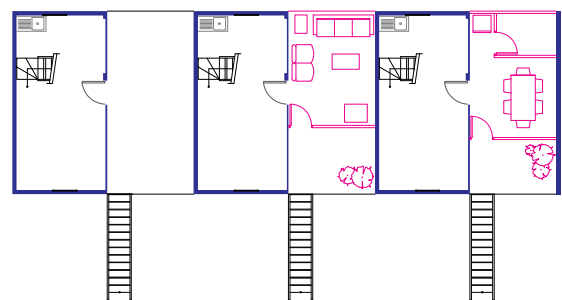


Figure 94 Section through Quinta Monroy showing provision of basic living spaces and services. (Source: Elemental, 2020)



Ground floor plan



First floor plan

Future expansion

Figure 95 Plan of Quinta Monroy showing how improvisation, spontaneity and incremental development is allowed to take place. (Source: Elemental, 2020)

the architects also act as spatial agents by showing an understanding that knowledge can become a transformative tool.

3.2.2. 'Pelip Housing', Port Elizabeth, South Africa (1999), by Noero-Wolff Architects

Noero-Wolff Architects, which has since split into Noero Architects and Wolff Architects respectively, was an architectural practice based in Cape Town whose work, according to Awan, Schneider and Till (2011: 321-4), has always reflected a belief that 'grass-roots projects involving the local community have the ability to transform lives'. This particular housing project (Figure 96), which is located in the city of Port Elizabeth (Figure 97 and Figure 98), aimed to challenge the generally accepted norms for social housing in South Africa (Wolff Architects, 2020) and formed part of a bigger intervention that also involved Noero-Wolff's successful, though controversial, design for the Red Location Museum Precinct. According to the architects (ibid.), the idea was that 'every part of this project, the street, this housing, the museum and the further buildings, would each contribute to making street space that has intensity and vitality to it'.

In terms of its approach to generating supportive housing and cultivating productive urban environments, Pelip Housing acknowledges the importance of location in housing for the urban poor by locating the project between major public transport nodes, as well as productively adding to the urban fabric of New Brighton by establishing a project that reinforces the qualities that make a vibrant street, enables residents to participate in co-creating space and that leaves enough room for improvisation, addition and extension (Figure 99). According to the architects (Wolff Architects, 2020), this specific location was chosen to stimulate economic opportunity and to intensify



Figure 96 Axonometric projection of Pelip Housing by Noero-Wolff Architects. (Source: Author, 2020)

social interaction, and the houses were designed to allow ground floor shops, accommodate people with physical disabilities, store water for urban agriculture, while also catering for the possibility of future additions. Additionally, and most importantly in the architects' opinion, most of the units were made with a second entrance to allow the owners to sublet the house and thereby generate an income, and the backyard also allowed space for the construction of a self-built shack that could be rented out (ibid.).

In terms of its approach to empowering ordinary people and finding a balance between structure and agency, Pelip Housing shows thoughtfulness in trying to understand the ways of living, ways of generating income and self-building skills of its residents and de-

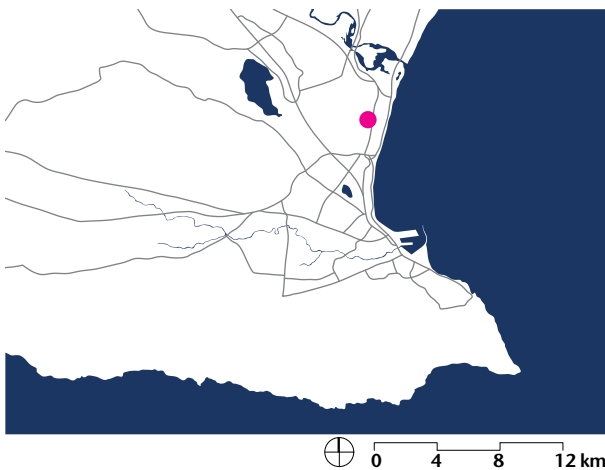


Figure 97 Location of Pelip Housing in Port Elizabeth. (Source: Author, 2020)

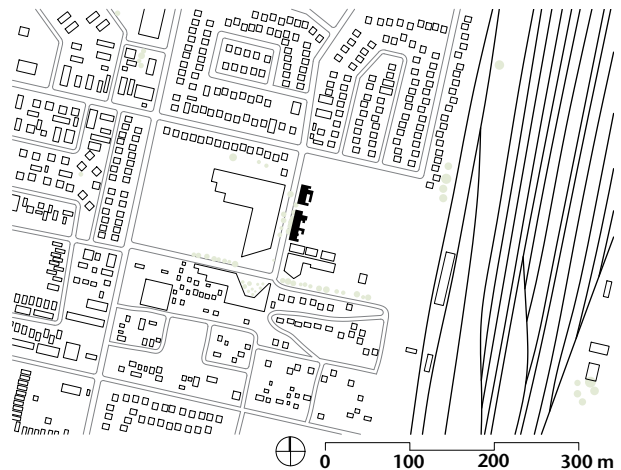


Figure 98 Site plan showing Pelip Housing's surrounding context. (Source: Author, 2020)

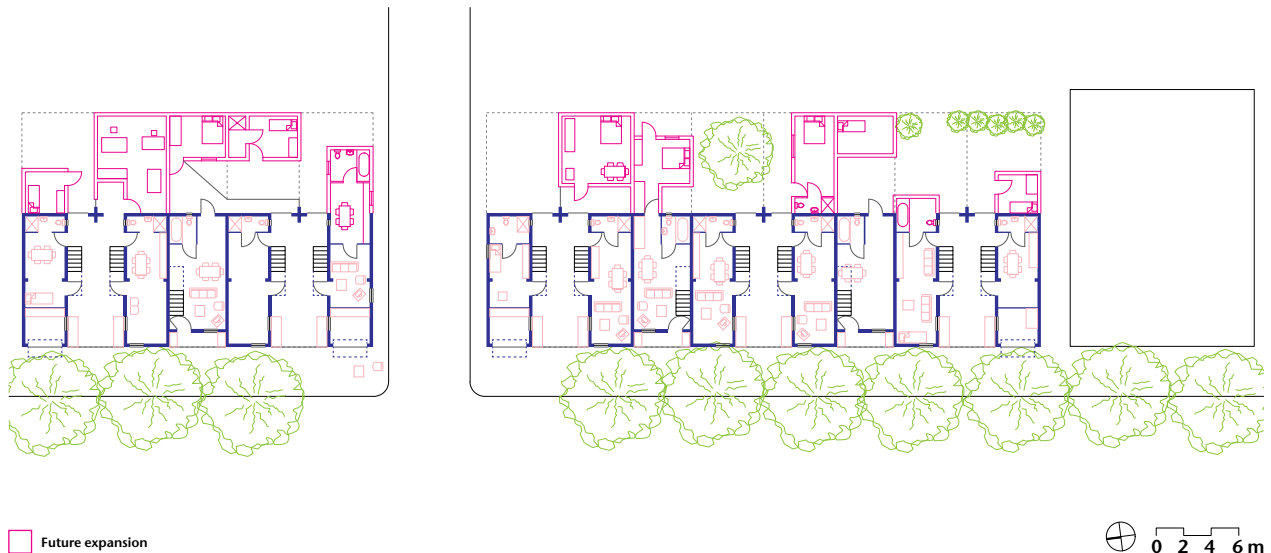


Figure 99 Plan of Pelip Housing showing how improvisation, spontaneity and incremental development is allowed to take place. (Source: Noero-Wolff Architects, 2020)

signing in a way that these can be used to empower residents. This thoughtfulness to the changing needs and desires of users is similar to that shown by Elemental in the design for Quinta Monroy, as discussed in the previous subsection. It is clear that both precedents have a deep understanding of the context they are working in and make use of delightful indeterminacy as an operation of spatial agency. Furthermore, in disrupting the unsustainable norms of mainstream development practice, as discussed in subsections 2.4.1 and 2.4.3 of this document, this project works toward subverting and opposing such a practice and furthers a development practice which is more socially, economically and environmentally sustainable, as well as making a contribution to addressing lasting spatial injustices and the colonial spatial legacy of apartheid that dominate the city of Port Elizabeth and which are still largely perpetuated by other contemporary housing developments.

3.2.3. 'SuperAdobe Housing' (1984), by Nader Khalili

The technique known as SuperAdobe, or Earthbag construction (Figure 100), developed by Iranian architect Nader Khalili in 1984 – initially in response to a call from NASA for establishing human settlements on the Moon and Mars – can be viewed as an example of architectural ingenuity devoted to designing human shelter in response to the growing humanitarian crisis (Awan, Schneider & Till, 2011: 71-2, 289-91). This highly effective building system integrates traditional earth architecture, inspired by that found in the deserts of Iran, with contemporary global safety requirements for contemporary use (CalEarth, 2020a). This building system, which has been used to house refugees in Iran since the first Gulf War, is incredibly versatile and can be used to construct structural arch-

ers, domes and vaults (Figures 101-103), conventional rectilinear shapes, silos and landscaping elements, or infrastructure like dams, cisterns, roads, bridges, and for stabilising shorelines and watercourses.

In terms of its approach to generating supportive housing and cultivating productive urban environments, the SuperAdobe construction method enables people in need of shelter, but who have limited financial resources and no prior knowledge of such building techniques to produce the built environment without having to rely on professionals. This construction method consists of laying sandbags filled with earth in courses to construct a structure that has compression strength based on the principle

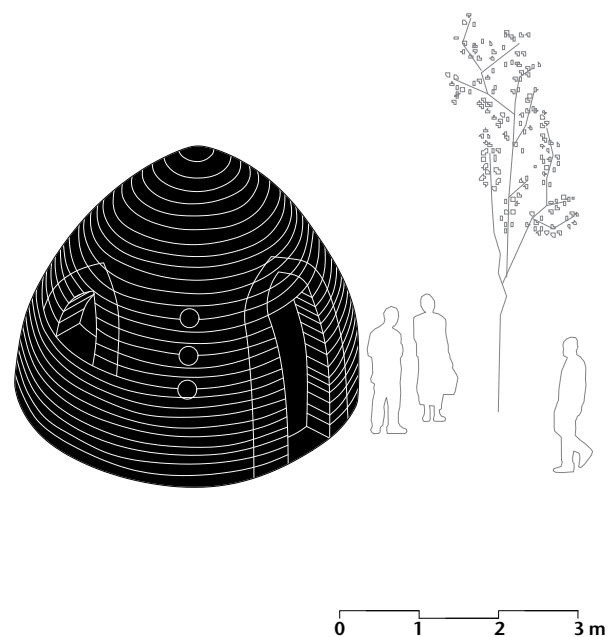


Figure 100 Axonometric projection of a SuperAdobe/Earthbag dwelling by Nader Khalili. (Source: Author, 2020)



Figure 101 Use of the SuperAdobe/Earthbag construction method in California. (Source: CalEarth, 2020)

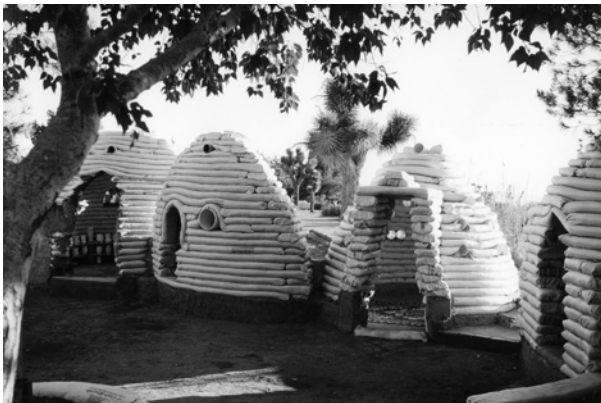


Figure 102 Use of the SuperAdobe/Earthbag construction method in an emergency shelter village. (Source: CalEarth, 2020)



Figure 103 Use of the SuperAdobe/Earthbag construction method in Haiti after devastating earthquake in 2010. (Source: CalEarth, 2020)

of domes with barbed wire placed between the bags to provide tensile strength. The result is that users are enabled to participate in the housing process, and the inherent nature of this construction method means that the structure can be adapted flexibly in both form and spatial layout. Moreover, this system can be used either temporarily or made permanent by applying a waterproof finish to the exterior (Awan, Schneider & Till, 2011: 289-90).

In terms of its approach to empowering ordinary people and finding a balance between structure and agency, Khalili's SuperAdobe system takes a similar approach to Kéré's design for Gando Teacher's housing, discussed in subsection 3.1.3, in that it empowers those who do not have advanced building skills to participate in making space, as well as to Elemental's design for Quinta Monroy, discussed in subsection 3.2.1, in that this construction method allows the development of open-source plans that are cheap and adaptable to the spatial needs of individual users. This construction method is especially empowering to those who are currently most marginalised in society as it enables refugee women, children and even the elderly to build shelters themselves without having to rely on contractors and specialists. As Awan, Schneider and Till (ibid.) argue, the solidity of the buildings generated using the SuperAdobe method restores a sense of dignity to the lives of refugees and 'can give an air of permanence to fragile lives in a way that standard emergency solutions such as tents cannot'.

3.3. Analysis of Housing Precedents that Express Spatial Agency in Organisational Structure

3.3.1. 'Centraal Wonen', Hilversumse Meent, Netherlands (1977), by Leo de Jonge and Pieter Weeda

Centraal Wonen (Figure 104), which was designed by architects Leo de Jonge and Pieter Weeda and is located in a suburban area outside of Amsterdam called Hilversumse Meent (Figure 105 and Figure 106), is one of the earliest experiments in cohousing in the Neth-

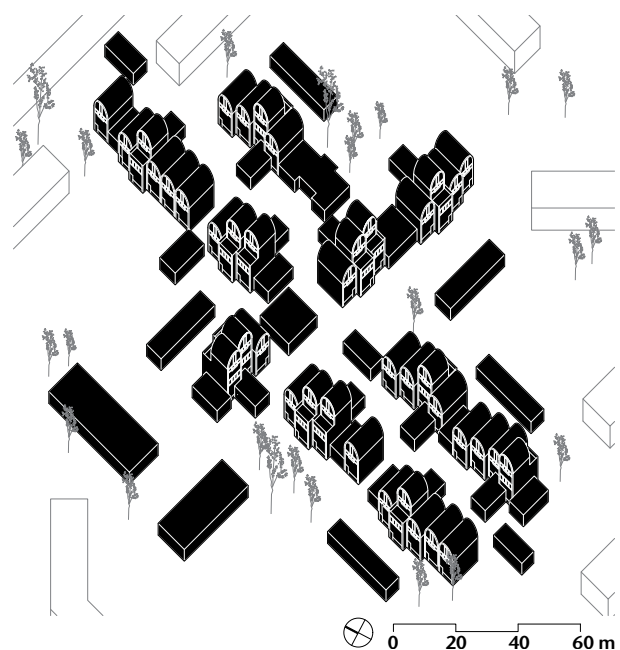


Figure 104 Axonometric projection of Centraal Wonen by Leo de Jonge and Pieter Weeda. (Source: Author, 2020)



Figure 105 Location of Centraal Wonen in Hilversum. (Source: Author, 2020)



Figure 106 Site plan showing Centraal Wonen's surrounding context. (Source: Author, 2020)

erlands – a movement which started in the late 1960s in Denmark both as a means of reducing the burden of housework, childcare and preparing evening meals, through shared communal services in a time with an increasing number of women working, as well as to strengthen social relations and develop a sense of

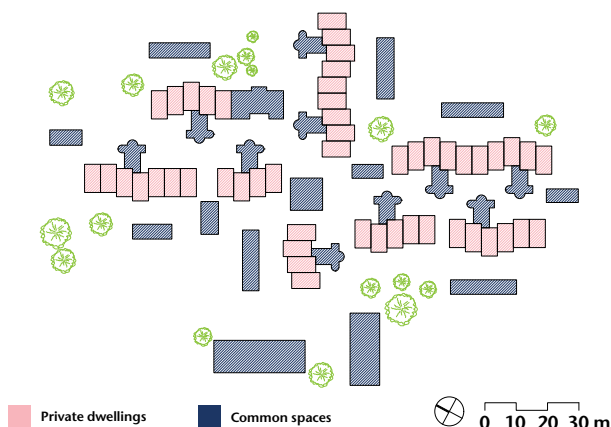


Figure 107 Diagram showing the distribution of residential units and communal spaces within the overall scheme of Centraal Wonen. (Source: Marcel Barzilay, 2016)

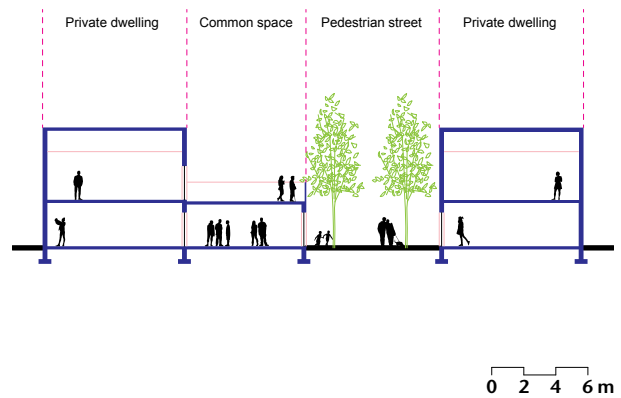


Figure 108 Section through the central pedestrian street in Centraal Wonen. (Source: Author, 2020)

community (Awan, Schneider & Till, 2011: 207-9). This particular cohousing scheme was designed to be converted into regular housing if the experiment proved unsuccessful (Barzilay, 2016). However, this was not the case and the community still operates co-operatively today. As diagrammed in *Figure 107*, this particular scheme consists of 50 rental units arranged in clusters of four or five with communal spaces being scattered amongst these clusters (Ahn, Tusinski & Treger, 2018: 34).

In terms of its approach to generating supportive housing and cultivating productive urban environments, a range of communal spaces that include communal kitchens, co-dining spaces, common house, library, gymnasium, guestrooms, meeting room, café, youth centre, communal garden and laundry facilities are arranged in between the clusters of housing units and arranged along four pedestrian streets. As can be seen in *Figure 108*, these pedestrian streets provide space for encounter and have a strong visual connection with the communal roof terraces. Furthermore, as shown in *Figure 109* and *Figure 110*, each housing cluster, which is provided with a communal kitchen

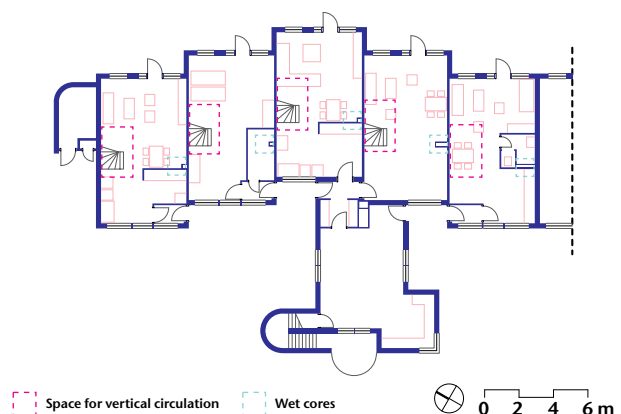


Figure 109 Ground floor plan of a residential cluster in Centraal Wonen showing location of wet cores and spaces for vertical circulation elements. (Source: Marcel Barzilay, 2016)

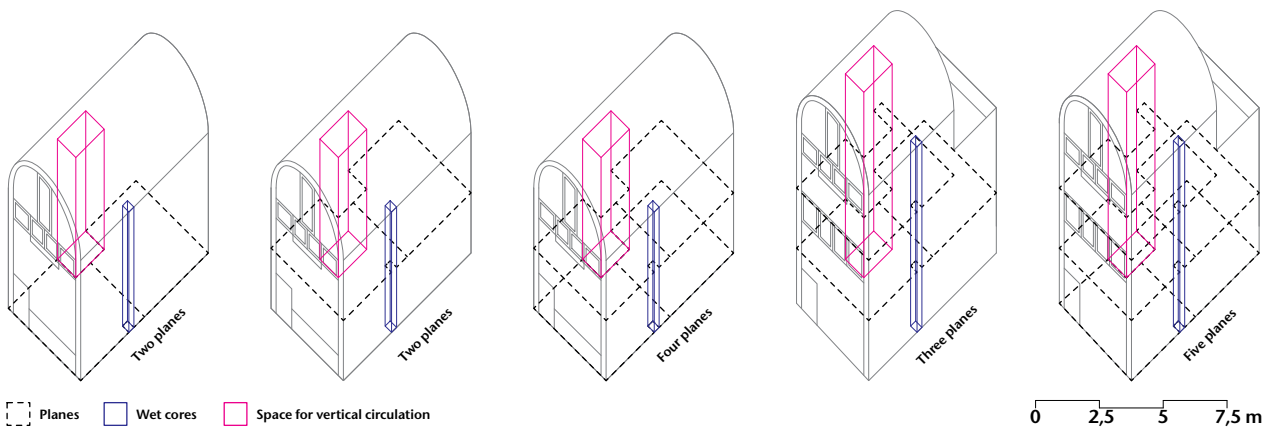


Figure 110 Axonometric diagram of Centraal Wonen showing different possible unit configurations around the wet cores and space for vertical circulation. (Source: Author, 2020)

and dining area, provide a range of different options for spatial configurations depending on the occupant, with each floor being divided into planes and containing a wet core for possible services and a zone for stairs enable vertical connection.

In terms of its approach to empowering ordinary people and finding a balance between structure and agency, Centraal Wonen physically structures the built environment in a way that the community can organise itself in a more socially supportive manner – especially in allowing women greater freedom, providing community support in looking after children and giving elderly residents a productive role in the community as well as protecting them from social isolation. In so doing, Centraal Wonen subverts mainstream spatial production which is still largely organised

along patriarchal lines and leaves room for third possibilities, a concept which was discussed in subsection 2.1.1 of this study. Additionally, the various options for reconfiguring residences and the range of communal spaces provided generates a complex mix of residents who maintain a variety of lifestyles and who are at different stages in their lives. This increases the chances of encounter between different people and, thus, the chances of transformative experiences.

3.3.2. 'La Borda', Barcelona (2018), by Lacol

La Borda (Figure 111), which was designed by Lacol and is located in Barcelona (Figure 112 and Figure 113), serves as an example of a contemporary co-housing project centred around issues of sustainability, the right to the city and the creation of new forms of co-existent social relations and community self-organisation (Royal College of Art, 2018). In a similar manner to Centraal Wonen, which was discussed in the previous subsection, a primary driver of La Borda's creation was to establish affordable housing within the city (La Borda, 2020), with the project also being

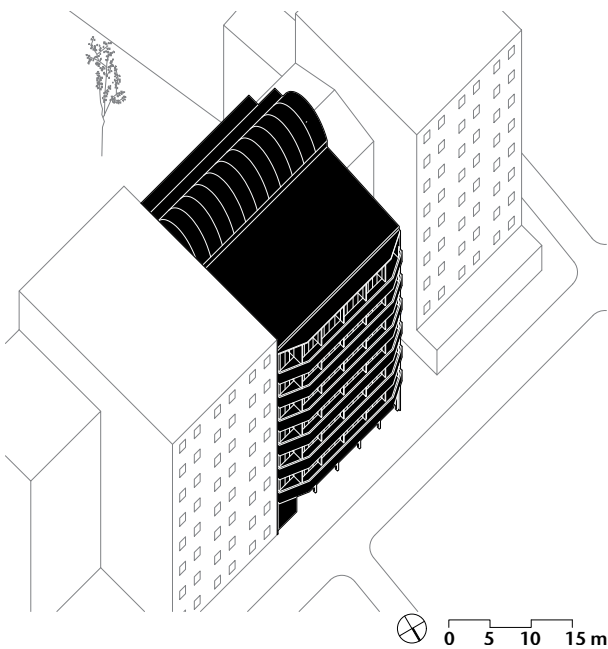


Figure 111 Axonometric projection of La Borda by Lacol. (Source: Author, 2020)

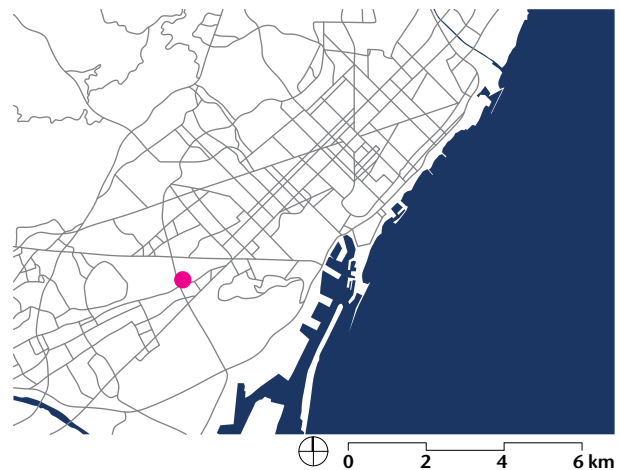


Figure 112 Location of La Borda in Barcelona. (Source: Author, 2020)

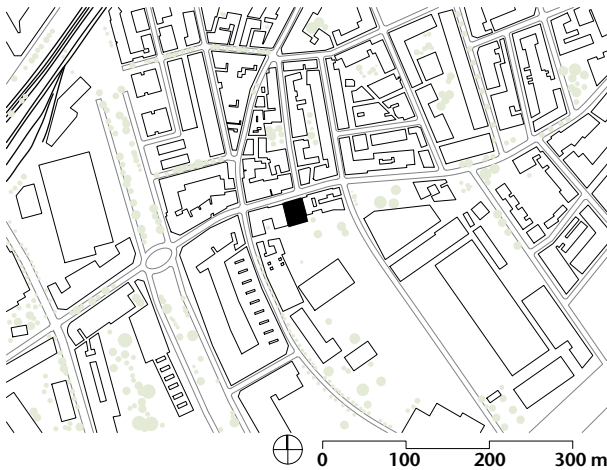


Figure 113 Site plan showing La Borda's surrounding context. (Source: Author, 2020)

strongly rooted in issues around social, political and ecological sustainability. In addition, a central driver of this project is a belief that family living is only a small part of daily life and that a larger concept of community should be fostered spatially (Royal College of Art, 2018).

In terms of its approach to generating supportive housing and cultivating productive urban environments, La Borda actively prioritises advancing the right to the city of residents and, as depicted in *Figure 114*, facilitates their participation in designing the layout of their individual residences within the housing scheme. Similar to Centraal Wonen, La Borda incorporates a variety of common spaces to provide social support to the residents and to allow for greater sharing of resources. As shown in *Figure 115*, most of the



Figure 114 Photograph showing the participation of residents of La Borda in making design decisions. (Source: Lacol, 2020)

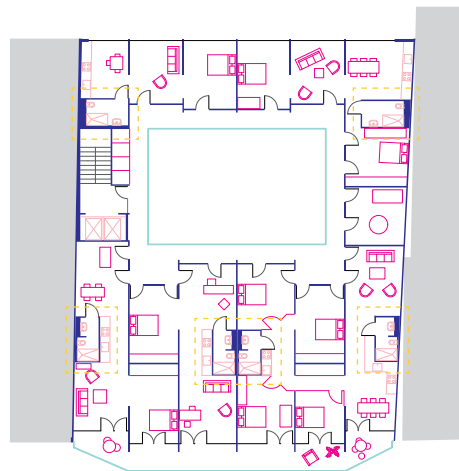
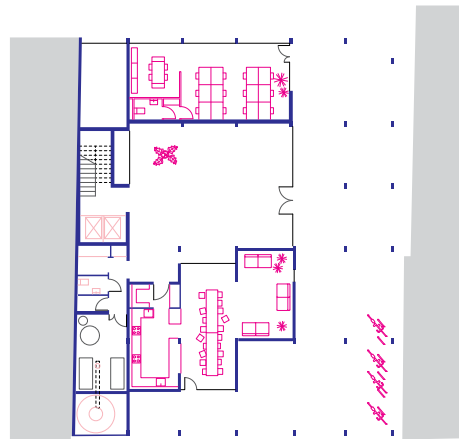


Figure 115 Ground floor plan (top) and third floor plan (bottom) of La Borda showing interface between collective spaces and the street, the arrangement of spaces around central courtyard and the location of common infrastructure. (Source: Lacol, 2018)

larger communal spaces for cooking and dining together as well as co-working spaces are located on the ground floor and have a direct relationship with the street, while smaller common areas such as the laundry, childcare, sick bays and guest rooms are located on the upper levels. Large undifferentiated spaces are also located on the first and sixth floors.

Figure 115 also shows how individual units within the project were designed to accommodate a large number of different spatial configurations with the main recurring element in each unit being a common infrastructure module containing the bathroom and kitchen space. These unit configurations range from small to large (*Figure 116*) and are intended to act as 'flexible typologies' that will allow for various living configurations to be possible (*ibid.*). These include

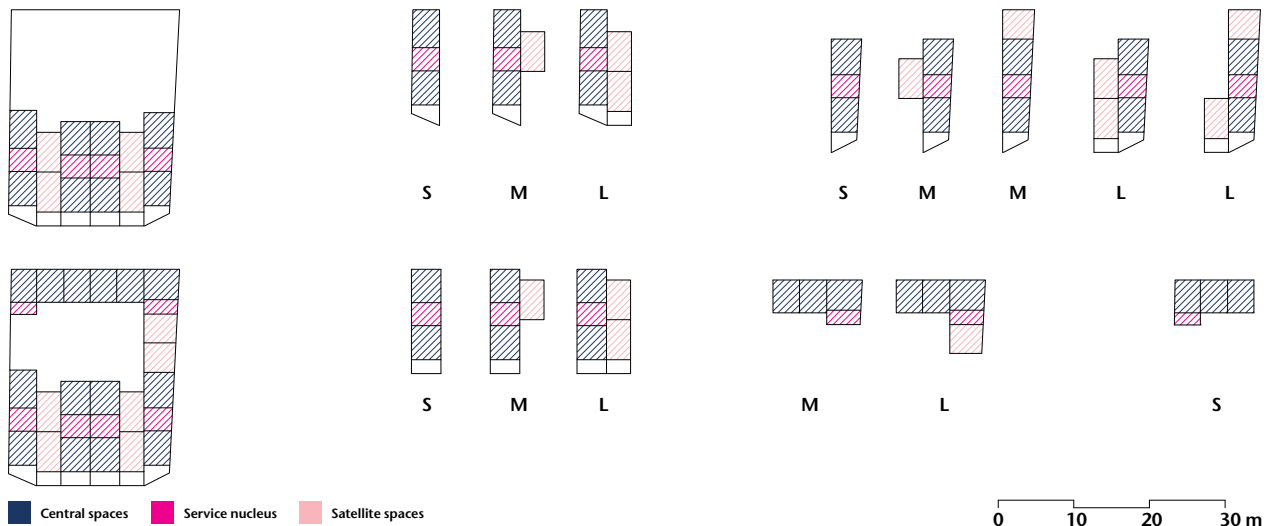


Figure 116 Diagram showing different possible unit configurations in La Borda. (Source: Lacol, 2018)

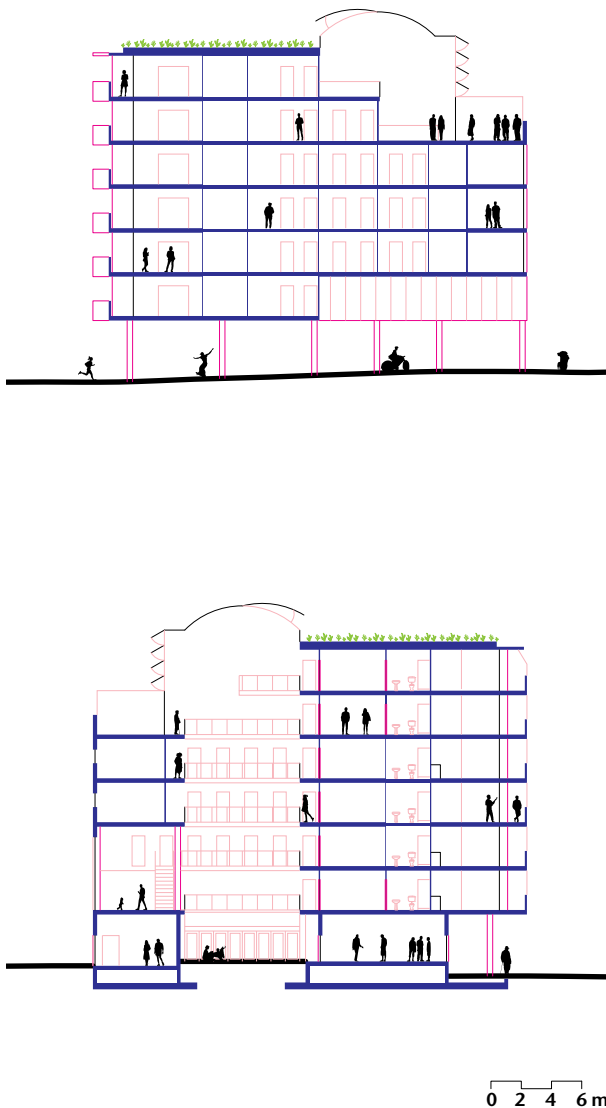


Figure 117 Sections through La Borda showing movement through public passage on ground floor (top) and the central atrium and courtyard (bottom). (Source: Lacol, 2018)

couples, families, cohabitation, as well as people who come from squat movements and are used to living collectively. Furthermore, a range of architectural devices are employed to facilitate the possibility of interaction between different individuals in the community and between residents and the city. As shown in Figure 117, this includes a public passage through the ground floor of the building which brings the public into contact with the inhabitants, a large atrium running through all the floors of the building and a central courtyard on the ground floor.

In terms of its approach to empowering ordinary people and finding a balance between structure and agency, La Borda, in a way similar to that of Centraal Wonen, physically structures the built environment in a way that the community can organise itself in a more socially supportive manner through forming a self-organised housing co-operative. In particular, this housing project demonstrates two operations of spatial agency most clearly. The first is that the project was initiated by residents and the architects themselves. The second is that this housing intervention, which is built on public land with a leasehold of 75 years, was conceived precisely to subvert and oppose the speculative housing market that has caused and perpetuated housing injustice in the city of Barcelona (Lacol, 2019). In so doing, La Borda also demonstrates spatial agency in prioritising equity and self-management, over addressing questions about fees, fee structures, expenditure and the imperatives of utility and return.

3.3.3. 'iLinge Labahlali Housing Co-operative', Cape Town (2002), by iLinge Labahlali

The iLinge Labahlali Housing Co-operative (Figure 118) was formed by the residents of various hostels

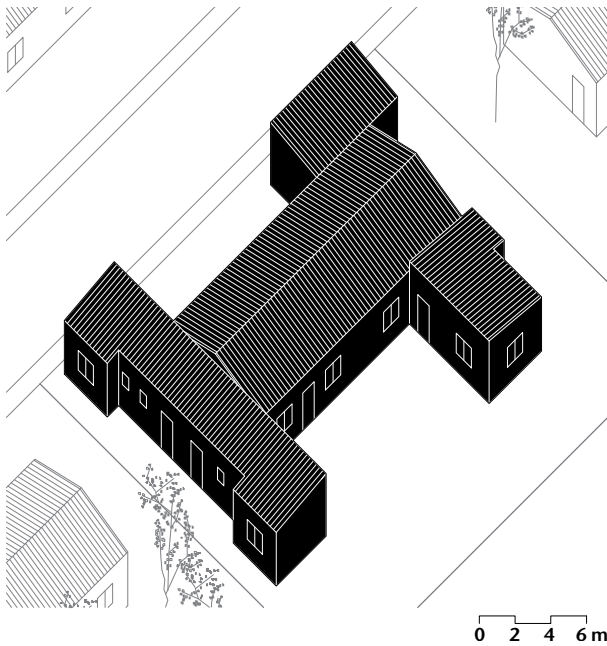


Figure 118 Axonometric projection of iLinge Labahlali Housing Co-operative (Bonnita/Parmalat hostels). (Source: Author, 2020)

in Nyanga, Cape Town (Figure 119 and Figure 120), which were originally built by employers in the 1960s and 70s, primarily for migrant Xhosa workers from the Eastern Cape (Herbst, 2010: 103). These types of hostels which are built on public land, are known as 'grey sector hostels', and the residents who formed iLinge Labahlali (Xhosa for 'Community Initiative') live in ones that were managed by companies such as PenBev (Coco Cola), Bonnita (Parmalat Dairy), Racec, Frankipile and Watertite (Duke, 2007: 1, 7). Originally, these hostel buildings typically contained several bedrooms containing several beds each and shared a kitchen, toilet and washing facilities, but as the men who lived here were accompanied by their families over time, these hostels, which were originally in-

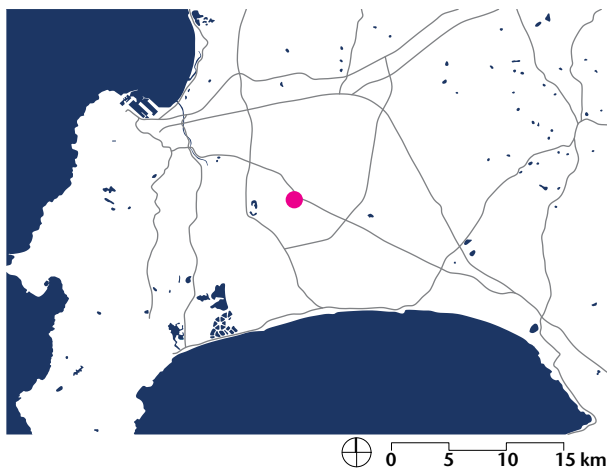


Figure 119 Location of iLinge Labahlali Housing Co-operative in Cape Town (Bonnita/Parmalat hostels). (Source: Author, 2020)



Figure 120 Site plan showing iLinge Labahlali Housing Co-operative's surrounding context (Bonnita/Parmalat hostels). (Source: Author, 2020)

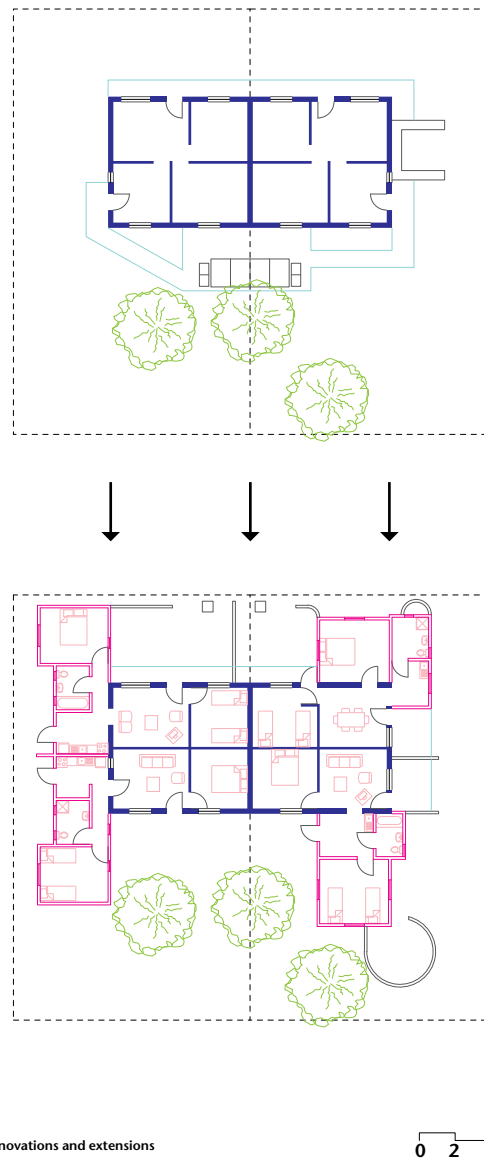


Figure 121 Ground floor plan of a typical hostel in the iLinge Labahlali housing co-operative showing layout before and after renovations. (Source: Jim Duke, 2007)



Figure 122 Photograph depicting iLinge Labahlali before residents started organising. (Source: Rooftops Canada, 2011)



Figure 123 Photograph depicting iLinge Labahlali after residents started organising. (Source: Rooftops Canada, 2011)

tended to be temporary housing, became overcrowded and the living conditions worsened (ibid.). However, by the time the co-operative had formed, most of the hostels had been reconfigured into four bedroom dwellings with many of the kitchens and dining rooms having been turned into bedrooms (ibid.: 6). After this transformation, a typical hostel building can be seen as containing four one room units (Figure 121), with cooking done inside the rooms and with shared toilets and washing facilities outside the rooms.

In terms of its approach to generating supportive housing and cultivating productive urban environments, the iLinge Labahlali Housing Co-operative has set up an organisational structure for decision making and sharing of resources which enables residents to participate in affecting spatial change that benefits them both individually and as a whole. This is because this structure allows the residents to stand collectively to fight for their right to the city, to secure funds from the government, to self-organise and to take concrete action in addressing the violent and dehumanising spatial legacy of apartheid planning. In taking this action, the residents are making significant inroads in transforming the brutal conditions they were forced to live in into a more productive, socially supportive and vibrant urban space. The positive effects of their efforts are clear in the difference between Figure 122, which depicts iLinge Labahlali before residents started organising, and Figure 123, which depicts iLinge

Labahlali after residents started organising.

In terms of its approach to empowering ordinary people and finding a balance between structure and agency, iLinge Labahlali reconfigures spatial practice in its section of Nyanga in collaboratively and interdisciplinary ways by setting up a housing co-operative. In doing this, the residents are empowered to transform their surrounding environment, share knowledge between each other, appropriate spaces using the available resources and, similar to La Borda which was discussed in the previous subsection, prioritise equity and self-management over addressing questions about fees, fee structures, expenditure and the imperatives of utility and return. Although co-operative organisational structures in housing receive very little support from current legislation (Herbst, 2010: 98-102), this precedent shows that it is possible to set up a successful housing co-operative in the South African context which makes use of resource sharing, self-organisation, participation and the concept of *ubuntu* to greatly empower the urban poor and advance their right to the city.

3.4. Analysis of Housing Precedents that Express Spatial Agency in Producing Knowledges

3.4.1. 'Narkomfin', Moscow (1930), by Moisei Ginzburg and Ignaty Milinis

As a founder of the *Ob'edineniye Sovremennikh Arkhitektorov* [Union of Contemporary Architects] (OSA) in the early days of the Soviet Union, Moisei Ginzburg

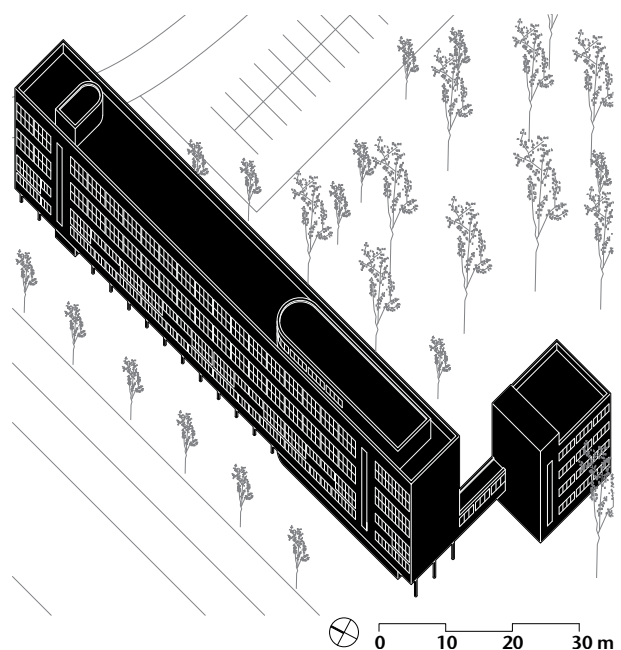


Figure 124 Axonometric projection of Narkomfin by Moisei Ginzburg and Ignaty Milinis. (Source: Author, 2020)

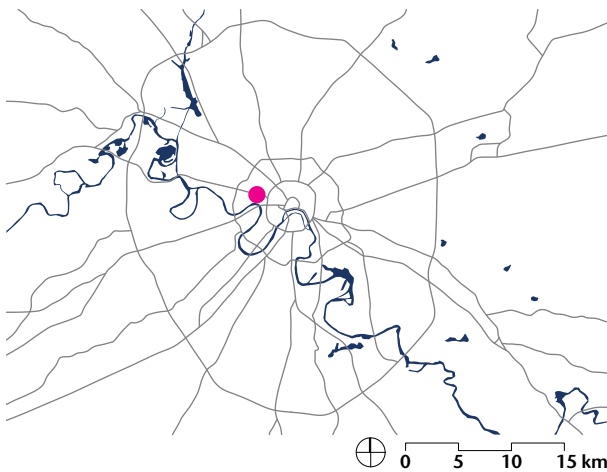


Figure 125 Location of Narkomfin in Moscow. (Source: Author, 2020)

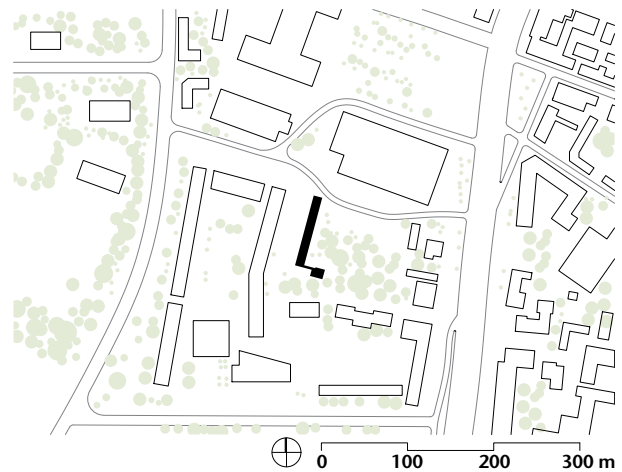


Figure 126 Site plan showing Narkomfin's surrounding context. (Source: Author, 2020)

attempted to 'change the *modus operandi* of the architect by arguing that architectural skills were central to the definition and construction of social questions and new ways of living' (Awan, Schneider & Till, 2011: 323-4). His design for Narkomfin (Figure 124), which he generated in conjunction with Ignaty Milinis and which is located in Moscow (Figure 125 and Figure 126), serves as an example of a soviet 'social condenser' – a communal residential building that attempted to restructure daily life in line with socialist ideology (Ahn, Tusinski & Treger, 2018: 24, 34) – and was originally designed as collective housing for employees of the *Narodnyo Kommissariat Finansov* [the People's Commissariat of Finance].

In terms of its approach to generating supportive

housing and cultivating productive urban environments, the design for Narkomfin centres around two main volumes – one containing all the collective spaces and the other containing all the living units, washrooms and toilets, connected to each other by a bridge on the first floor and a communal garden on the ground floor (Figure 127 and 128). Furthermore, the living unit block contains two types of units, as illustrated in Figure 129, which include the K types designed for families and the F types which originally functioned exclusively as sleeping cells that included individual study areas, but that were completely dependent on communal cooking facilities. However, small kitchen spaces were eventually added to the individual apartments (ibid.). Notably, Narkomfin makes use of split levels within its F unit types, which

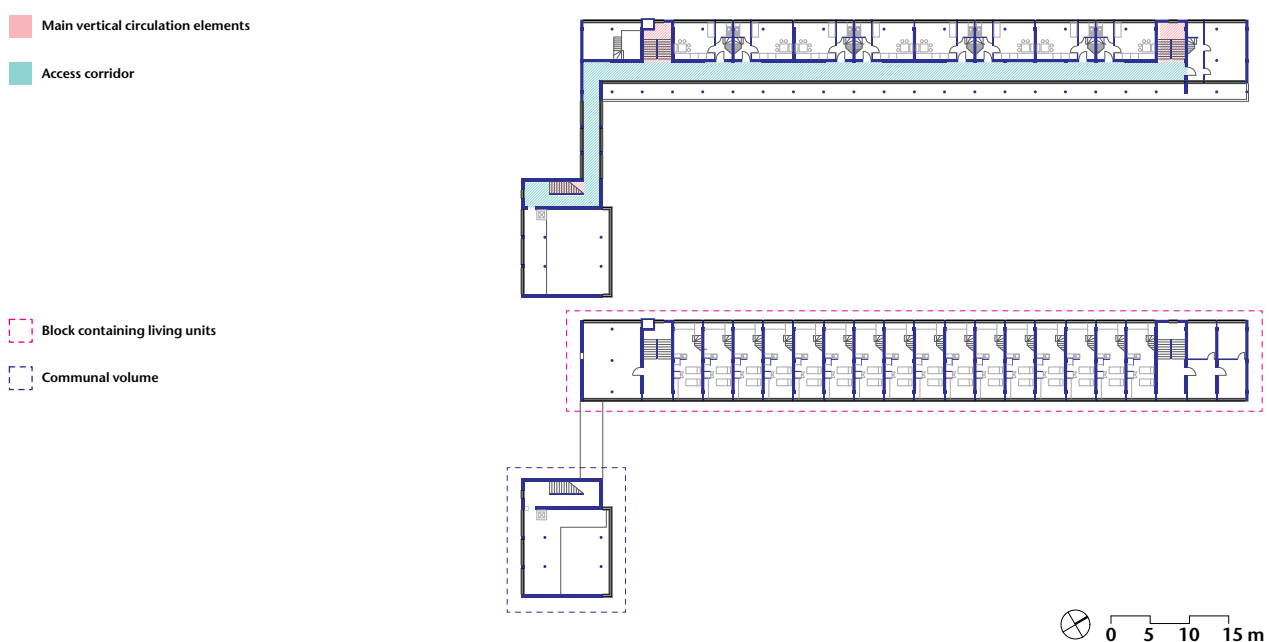


Figure 127 First floor plan (top) and third floor plan (bottom) of Narkomfin showing circulation elements and the distribution of living units and common spaces. (Source: Fosco Lucarelli, 2016)



Figure 128 Sections through Narkomfin showing the use of split levels (top) and the limited use of access corridors (bottom). (Source: Fosco Lucarelli, 2016)



Figure 129 Floor plans of different unit type within Narkomfin. (Source: Fosco Lucarelli, 2016)

can also be seen in *Figure 128*. Communal spaces include a central kitchen, canteen, communal dining area, gymnasium, library and laundry room, as well as the sharing of communal vehicles and ride sharing. It is notable, however, that this particular precedent does not display the level of enablement, participation and flexibility as the other precedents discussed in this chapter.

In terms of its approach to empowering ordinary people and finding a balance between structure and agency, Narkomfin can be seen as exhibiting spatial agency by proposing a different way of living and creating a built environment that enables sharing of knowledge, equipment, facility space and time with others. This precedent also subverts and opposes the patriarchal and Western idea of the nuclear household in a similar manner to *Centraal Wonen* and *La Borda*, which were discussed in subsection 3.3.1 and 3.3.2 respectively, and thereby empowers women and the elderly in particular.

3.4.2. 'Communal Villa', Berlin (2015), by Realism Working Group and Dogma

Similar to the idea of the Urban Forest developed by Atelier Bow Wow and Kolabs and discussed in subsection 3.1.2, the Communal Villa is a housing concept designed by Realism Working Group and Dogma for a 2015 lecture series entitled *Wohnungsfrage* (German for 'The Housing Question' and in reference to the writings on housing by Friedrich Engels, published at the beginning of the 1870s) by Haus der Kulturen der Welt (HKW). According to the designers, the intention of this project is to transform the villa typology from a 'negative utopia', which separates living from the pressure of the city and the burden of productive and reproductive work, to one in which residents live and work together and where the political and economic framework that the 'house' imposes is questioned (DOGMA and Realism Working Group, 2015). This takes the form of two design proposals for co-operative artist's housing: namely one for the Urban Villa and one for the Suburban Villa (*Figure 130*). The intention is to locate these housing experiments in leftover and forgotten sites across Berlin (*Figures 131-133*).

In terms of its approach to generating supportive housing and cultivating productive urban environments, both the Urban Villa and the Suburban Villa make use of ephemeral building components that allow residents to arrange and rearrange space in a flexible manner within a large volume of space reminiscent of inherently flexible industrial architecture. In both versions of the Communal Villa, private spaces are arranged along the exterior of the volume and

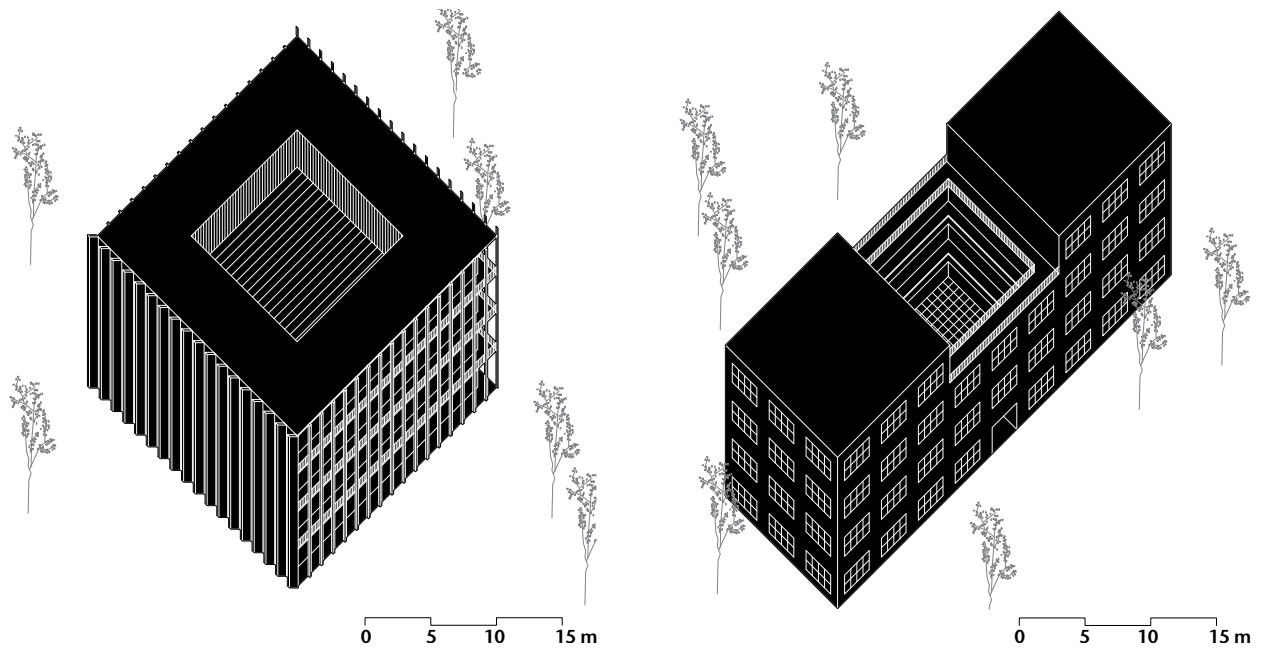


Figure 130 Axonometric projections of the Suburban Villa (*left*) and the Urban Villa (*right*) by Realism Working Group and Dogma. (Source: Author, 2020)

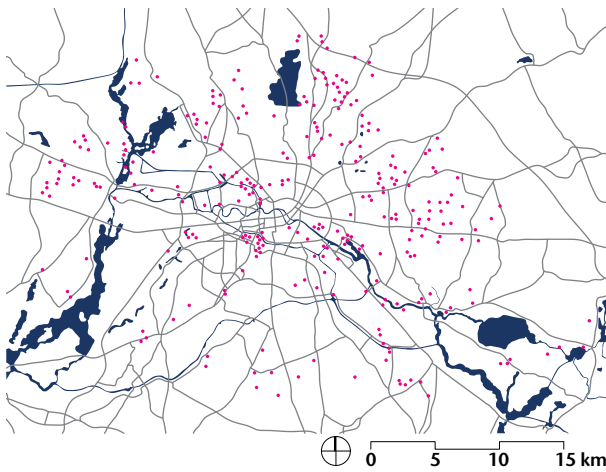
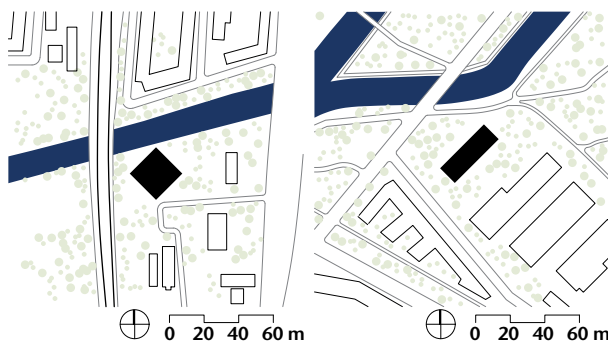
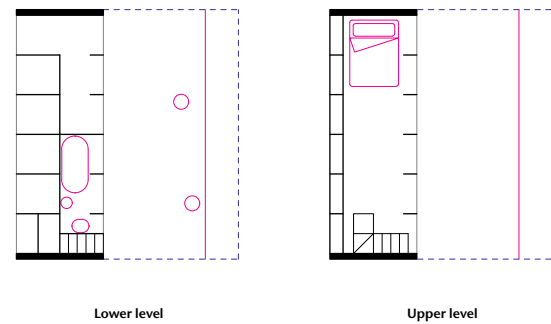


Figure 131 Different possible locations of the Communal Villa within Berlin, as specified by Realism Working Group and Dogma. (Source: Realism Working Group and Dogma, 2015)



Left: **Figure 132** Hypothetical site plan showing the surrounding context the Suburban Villa. (Source: Realism Working Group and Dogma, 2015)

Right: **Figure 133** Hypothetical site plan showing the surrounding context the Urban Villa. (Source: Realism Working Group and Dogma, 2015)

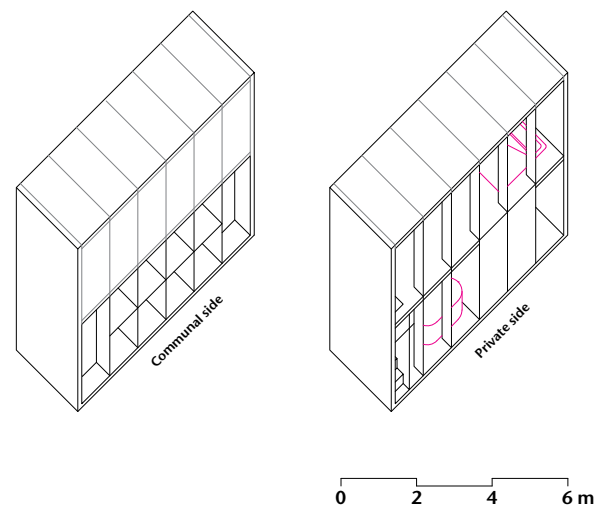


Figure 134 Plans and axonometric projections of the timber living units within Communal Villa. (Source: Dogma and Realism Working Group, 2015)

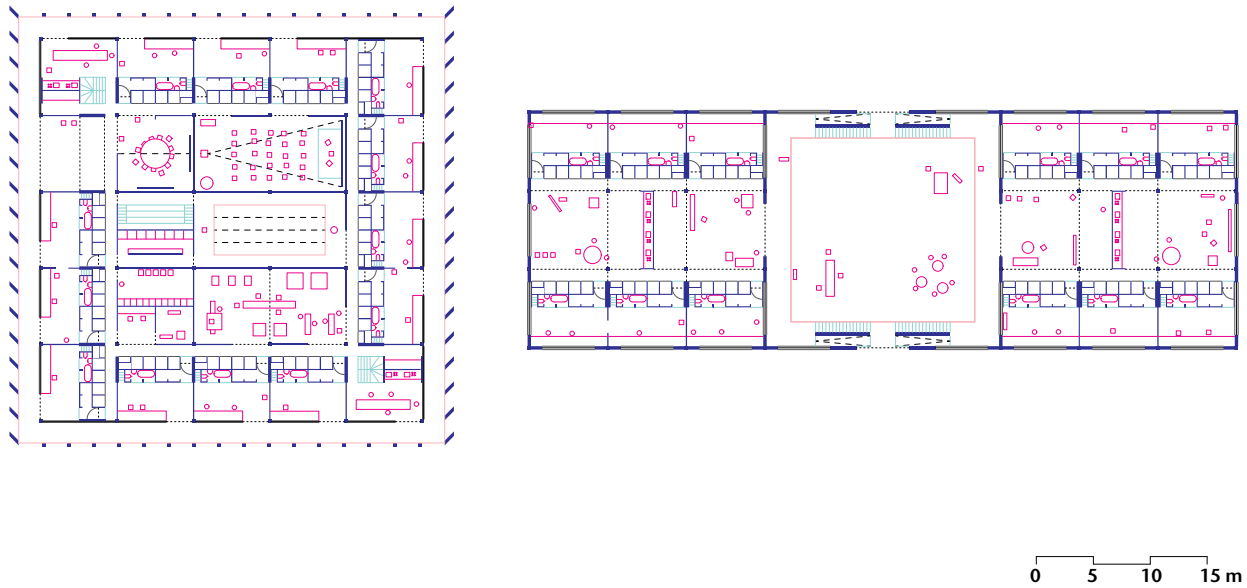


Figure 135 Ground floor plans of the Suburban Villa (left) and the Urban Villa (right) showing distribution of collective spaces and private spaces. (Source: Dogma and Realism Working Group, 2015)

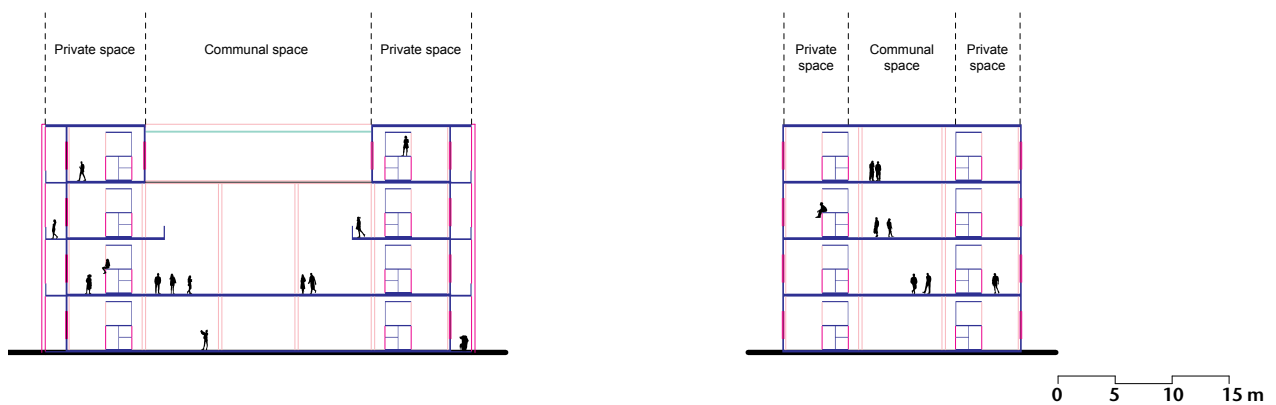


Figure 136 Sections through the Suburban Villa (left) and the Urban Villa (right) showing interface between collective space and private space. (Source: Dogma and Realism Working Group, 2015)

consist of individual rooms that are separated from the communal spaces by habitable plywood cells that each contain an individual sleeping space and bathroom, as diagrammed in *Figure 134*. Every resident receives a single cell, but adjacent rooms can be joined to merge spaces into larger living arrangements. Additional flexibility within the design is found in the central collective space, which is initially undifferentiated but that can be divided and appropriated to serve different functions through the use of room dividing elements. *Figure 135* and *Figure 136* illustrate a clear difference between the Suburban Villa and the Urban Villa, namely that the former consists of one large volume with two kitchen spaces and the main vertical circulation elements positioned at opposite corners of every floor level, whereas the latter is designed around a large central courtyard containing the main vertical circulation elements with kitchen spaces in the mid-

dle of each flank on every floor level.

In terms of its approach to empowering ordinary people and finding a balance between structure and agency, Communal Villa creates a built environment where spatial knowledge breaks free from professional control and is shared among its residents. This can be seen in the way the large amount of undifferentiated common spaces allows residents to negotiate new and different ways of appropriating them in a collaborative manner and find other ways of living. The organisational structure also provides a large amount of social and economic support to residents, and the use of leftover spaces in the city contributes positively to the larger urban environment. In so doing, this housing proposal demonstrates spatial agency in proposing a network of housing interventions in the city with the potential for transforming land that is unused or underused and with the aim of establishing more oppor-

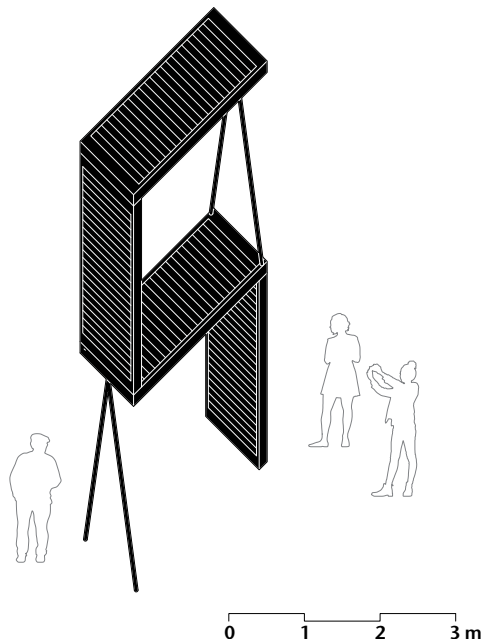


Figure 137 Axonometric projection of Manufactured Sites by Estudio Teddy Cruz. (Source: Author, 2020)

tunities for alternative ways of living.

3.4.3. 'Manufactured Sites', San Diego/Tijuana, U.S./Mexico Border (2005), by Estudio Teddy Cruz

Teddy Cruz is an architect whose practice is situated in the Tijuana/San Diego border zone and who takes inspiration from the creative reuse of 'waste' material in informal settlements to make flexible spaces with overlapping programmes (Awan, Schneider & Till, 2011: 254-6). In his 2005 project entitled *Manufactured Sites* (Figure 137), Cruz combines research with practice to generate a design for a simple prefabricated aluminium frame that is intended to provide small-scale infrastructures and services for *favela*-like settlements (Cruz, 2005: 33). As Cruz (2005: 33-6) writes, the project seeks to both address the unstable balance



Figure 138 Photograph of a model of Manufactured Sites by Estudio Teddy Cruz showing how locally salvaged material is arranged onto a base frame that acts as a scaffold. (Source: Teddy Cruz, 2005)

between the border cities of Tijuana and San Diego in which slum dwellers on the Tijuana side are exploited for their cheap labour by helping to breach the barrier that divides these two cities, as well as to learn from the role of housing in the strategies of invasion and appropriation that shape the informal communities of Tijuana.

In terms of its approach to generating supportive housing and cultivating productive urban environments, *Manufactured Sites* makes use of the frame mentioned above to 'mediate between site and house' and adds a type of urban acupuncture with the precarious periphery of Tijuana that acts as structural reinforcement without 'compromising the improvisational energies of the communities and their temporal evolution' (ibid.: 37). Each frame is fitted with a refillable water tank containing two days worth of water and essentially acts as a type of scaffolding that provides a basis upon which milk crates, tyres, sheets of corrugated metal, rammed earth and cinder blocks can be arranged (Figure 138), with a particular emphasis on vertical development in order to allow Tijuana to achieve a greater level of density (The Museum of Modern Art, 2020b). This strategy contributes productively to the urban periphery of the city as time goes

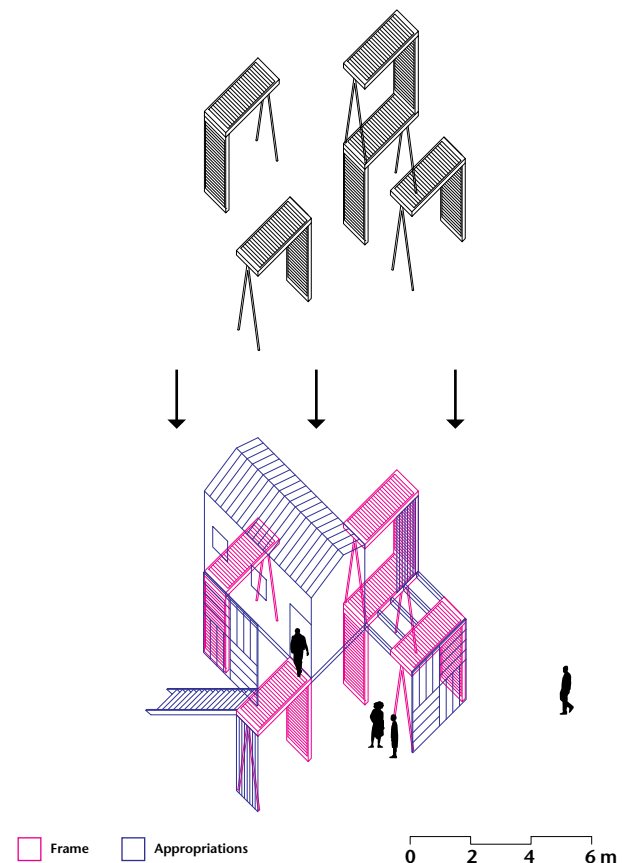


Figure 139 Diagram showing use of scaffolding frame in Manufactured Sites. (Source: Author, 2020)

by and after fulfilling its intended purpose in establishing a 'choreography of interventions' (Cruz, 2005: 37), the frame might disappear altogether. Furthermore, the open-ended nature of this strategy allows for improvisation, addition and extension and, as illustrated in *Figure 139*, establishes an enabling environment full of possibilities for new and unexpected social and physical structures to emerge over time through the processes of spontaneity, improvisation and incremental development.

In terms of its approach to empowering ordinary people and finding a balance between structure and agency, Manufactured Sites demonstrates the approach of

self-initiating a project with these exact goals in mind without being approached by a client. This project particularly demonstrates a subversion and opposition to the profit-based exploitation of those most marginalised and, as with the precedents discussed in the previous two subsections, focusses on restructuring the built environment in a way that facilitates the sharing of knowledge and the emergence of other ways of living. What is more, and as discussed in subsection 2.1.4, Cruz demonstrated spatial agency in 'making things visible' by recording, visualising and analysing the links and relationships between different nodes and actors, using maps, diagrams, drawings, talks and tours (Awan, Schneider & Till, 2011: 112-4).

4 Site Selection and Contextual Analysis

4.1. Selection of an Appropriate Site for the Low-Income Housing Intervention

4.1.1. Criteria for Site Selection and Categories for Site Analysis

This section deals with selecting an appropriate site for the design of the proposed low-income housing intervention that will take place in Part II of this document. This will involve evaluating a range of sites according to a set of site selection criteria. The sites undergoing this evaluation are all located within the Cape Town inner-city – the boundary of which is defined by the Author as illustrated in *Figure 140* and *Figure 141* at two different scales.

The reasons for limiting the search for an appropriate site to this area includes:

1. The Cape Town inner-city, as had been shown in *Figure 67* and *Figure 68* in subsection 2.4.3, is a high employment area but has very little housing compara-

tively, especially for low-income residents.

2. The urban fabric in this area is highly integrated and displays the three qualities of urban space discussed in subsection 2.2.2, namely mediation, centrality and difference.

3. As grassroots organisations like Reclaim the City frequently point out, there is an abundance of publicly owned land in this area that is suitable for low-income housing and that is currently unjustly used or wasted. Selecting a site in this area thus counters the unjust practice of locating housing for the urban poor in geographies of disadvantage, as discussed in section 2.4.

4. To help curb the unsustainable outward growth of the city, as illustrated in *Figure 142* and problematised in the City of Cape Town's *Municipal Spatial Development Framework* (2018: 4).

5. To instead make a contribution to advancing the six

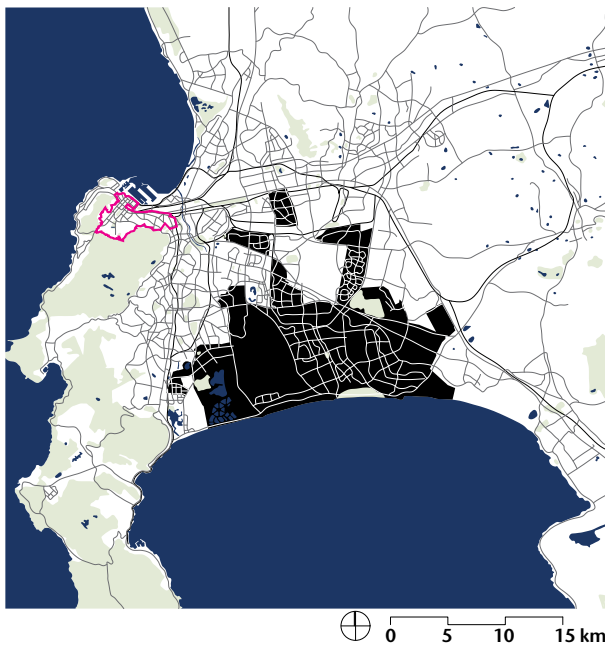


Figure 140 Map at the metropolitan scale indicating the location and extent of the Cape Town inner-city, as defined by the Author. (Source: Author, 2020)

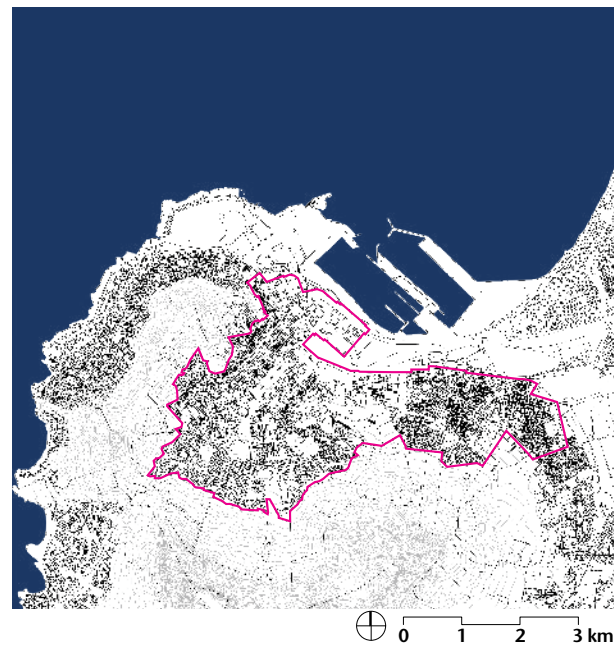


Figure 141 Map at the sub-metropolitan scale indicating the location and extent of the Cape Town inner-city, as defined by the Author. (Source: Author, 2020)

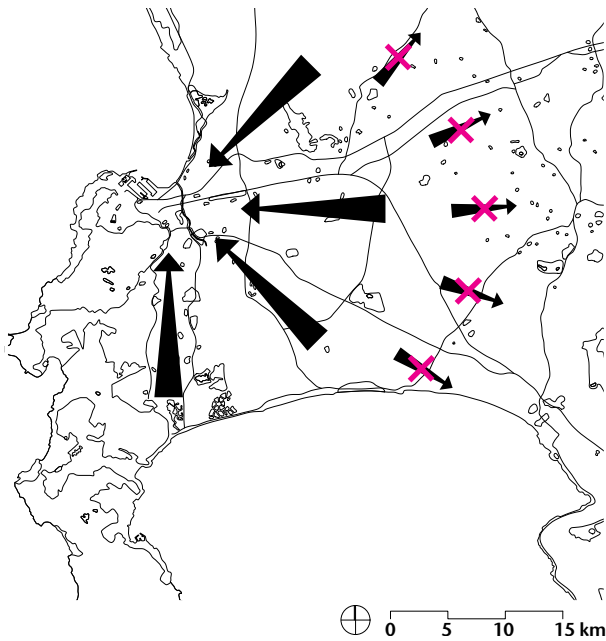


Figure 142 The need to curb Cape Town's unsustainable outward growth. (Source: Author, 2020)

important structural relationships that should be pursued in the management of urban growth laid out by Uytendogaardt and Dewar (ibid.: 38-60) and discussed in subsection 2.2.3 of this document. These include

establishing and maintaining the relationship between non-urban and urban land encouraging urban systems to develop their own logic instead of following regional transportation routes and compacting the city and increasing densities.

As shown in *Figure 143*, three sites were identified as being suited for the proposed housing intervention and will undergo evaluation in the next subsection. These sites, which include the Harrington Square site in the East City Precinct, an empty site on Newmarket Street in Woodstock and the Salt River Market site, were selected as they are all larger than 4000m², are publicly owned, and are either currently unjustly used or have been earmarked by the city for future housing development. These sites will be evaluated in the next subsection according to the following site selection criteria:

1. Physical characteristics – This pertains to the size and shape of the site, but also to its topographic features and any existing structures that may be present. A site that is larger and would allow for more freedom in exploration of ideas will score higher. An odd shaped site, a constricted site, topographic conditions with large variations and the presence of existing

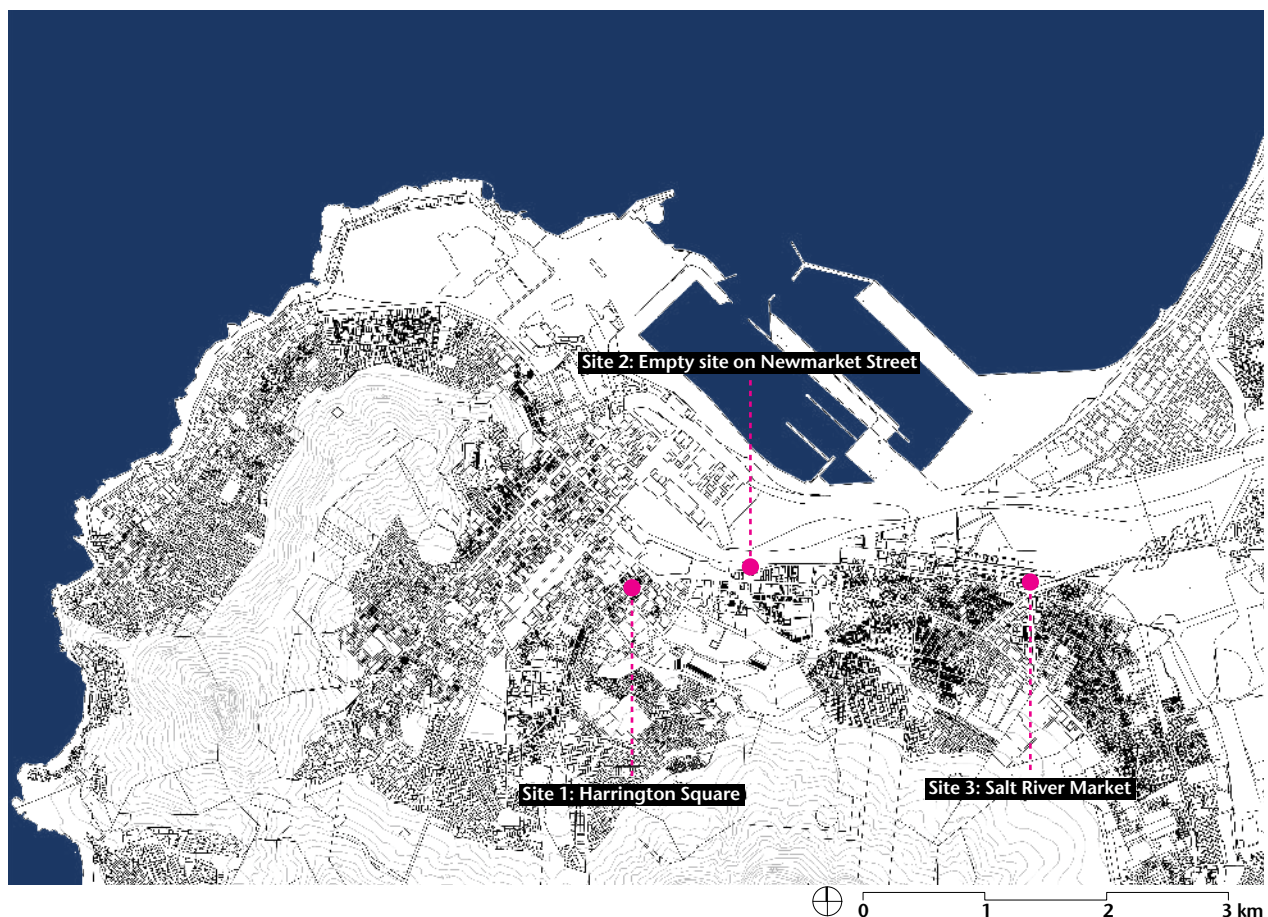


Figure 143 Map indicating the location of the three sites selected for evaluation. (Source: Author, 2020)

structures would limit this freedom of exploration.

2. Level of urbanity – This pertains to the level in which the surrounding site context displays mediation, centrality and difference, as well as the density of the surrounding site context and variation in building uses. A site with a higher level of urbanity will score higher when evaluated as this criterion is important in terms of the idea of the right to the city.

3. Proximity to services – The surrounding context should provide a range of cultural, recreational, commercial, civic and educational services and these services should be easily accessible. This criterion is important in sustaining a community, and a site that provides a larger variety of service and greater ease of access would score higher when evaluated.

4. Level of integration into surroundings – Some sites might be considered urban but be segregated from the surrounding context by infrastructure or some other barrier. A site that has fewer of these striations would score higher compared to a site that is more isolated from its surroundings.

5. Access to public transportation – It is evident that low-income housing needs to be located close to various modes of public transportation as residents are less likely to have personal vehicles. Thus, the site that is located the nearest to multiple forms of public transportation will score the highest when evaluated according to this criterion.

After these sites have been evaluated and a final selection has been made, the context surrounding the selected site will be evaluated at the city, district and street scale according to a range of site analysis categories. These categories include:

1. General location and setting – This pertains to the significance of the site as a function of its location in the larger urban fabric and involves describing the site in terms of the urban morphology, as well as understanding the role of the site in times past. This layer of analysis is important to avoid design decisions that end up destroying sense of place.

2. Climatic conditions – This involves understanding the frequency, intensity and direction of sun, wind and rain at both macro scale, i.e. regional climatic conditions, and micro scale, i.e. conditions particular to the site.

3. Space defining elements – This layer of analysis involves understanding and describing both the natu-

ral and artificial elements that define the space that makes up the site context individually, as well as the relationships between them. This requires an understanding of the previous two layers, i.e. general location and setting and climatic conditions, as they have a strong influence on the form and character of these elements. Natural features include topography, geographical features and vegetation, whereas artificial features include buildings and infrastructure. The general analysis of these elements involves understanding the grain of the urban fabric in terms of the scale of built-up spaces and their proportional relationship to unbuilt or open spaces. More specific analysis involves understanding the sense of enclosure created by these elements, their visual character and how the important relationship between buildings and the street is maintained.

4. Connectedness – This pertains to both the integration of the site with its surrounding fabric and the integration of elements on the site with one another. More specifically, this layer involves analysing visual connectedness at both eye and skyline level, as well as analysing pedestrian and vehicular movement flows.

5. Activities – This involves analysing activities as defined by regulation at the macro-scale, i.e. commercial, residential and mixed use buildings, as well as micro-scale activities that take place on or adjacent to the site and which include formal shops, informal selling, parking, rental office space, restaurants, hotel accommodation, etc.

6. Special conditions and regulations – This layer of analysis involves taking any views, focus areas, protected ecosystems, particular historical character and nature at various parts of the site into account, as well as general building regulations on the site, i.e. building lines, floor area ratios, height restrictions, building conditions and servitudes.

4.1.2. Evaluating Different Possible Sites and Making the Final Site Selection

This first site evaluated is Harrington Square (*Figure 144*) in the East City Precinct of the Cape Town central business district (CBD) – an area which functions as the interface between the CBD and District Six. The Harrington Square site is publicly owned, is roughly 5,600 m² and previously hosted a Catholic church and a handful of private dwellings. These were demolished during the 1970s in making room for the paid parking lot which still exists on the site today. As illustrated in *Figure 145*, the site is located within walking distance of the main transport node in city, i.e. Cape Town Central Station, and is one block away from Buitenkant



Figure 144 Aerial view of possible site 1: Harrington Square in the East City Precinct. (Source: Google Earth, 2020)



Figure 146 Aerial view of possible site 2: an empty site on Newmarket Street in Woodstock. (Source: Google Earth, 2020)



Figure 148 Aerial view of possible site 3: the Salt River Market site. (Source: Google Earth, 2020)

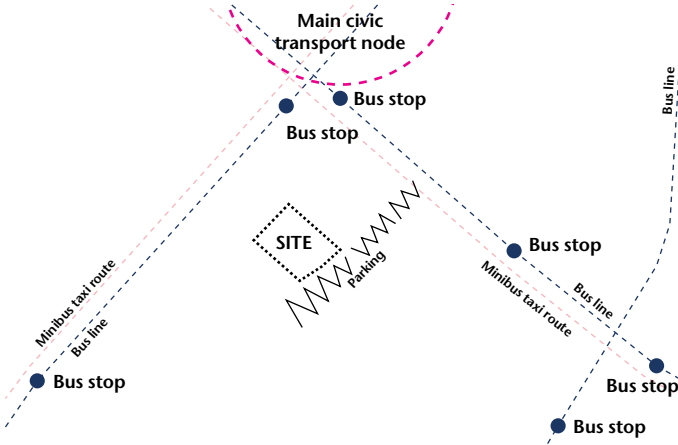


Figure 145 Analysis of possible site 1: Harrington Square in the East City Precinct. (Source: Author, 2020)

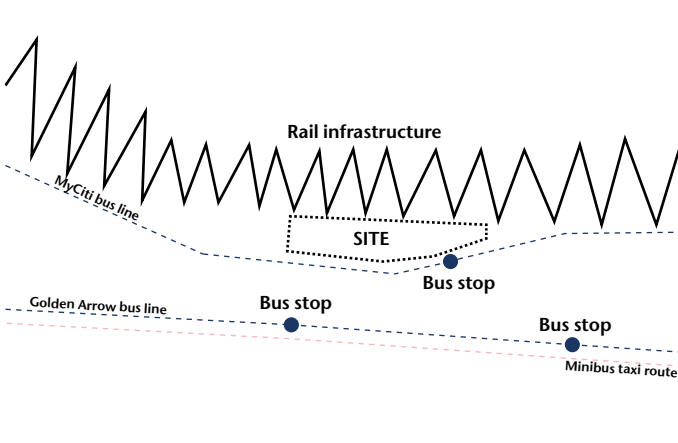


Figure 147 Analysis of possible site 2: an empty site on Newmarket Street in Woodstock. (Source: Author, 2020)

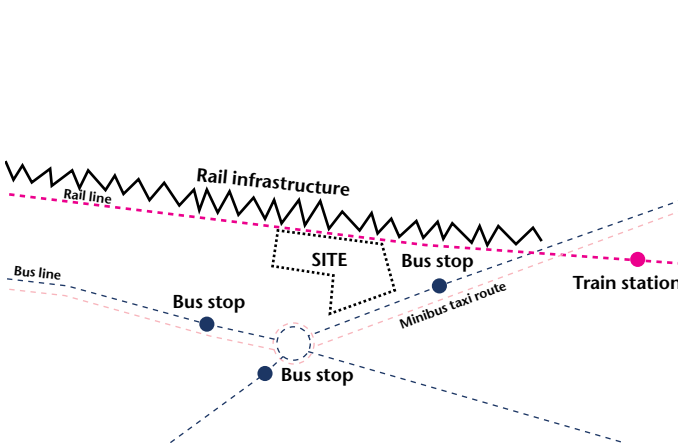


Figure 149 Analysis of possible site 3: the Salt River Market site. (Source: Author, 2020)

Site 1: Harrington Square

Physical characteristics	● ○ ○
Level of urbanity	● ● ●
Proximity to services	● ● ●
Level of integration into surroundings	● ● ●
Access to public transportation	● ● ●

Site 2: Empty site on Newmarket Street

Physical characteristics	● ● ●
Level of urbanity	● ● ○
Proximity to services	● ○ ○
Level of integration into surroundings	● ○ ○
Access to public transportation	● ○ ○

Site 3: Salt River Market

Physical characteristics	● ● ○
Level of urbanity	● ○ ○
Proximity to services	● ● ○
Level of integration into surroundings	● ● ○
Access to public transportation	● ● ○

Figure 150 Assigning scores to the various sites evaluated in terms of their comparative physical characteristics, level of urbanity, proximity to services, level of integration into surroundings and access to public transportation. (Source: Author, 2020)

Street and Darling Street – both of which are higher order streets that contain main bus and minibus taxi routes. *Figure 145* also highlights the discontinuity in the urban fabric that exists between the CBD and District Six adjacent to the site.

The second site evaluated is the empty site on Newmarket Street (*Figure 146*) in Woodstock that has previously been earmarked by the City of Cape Town for future low-income housing development. This site is roughly 9,100m² and is located on the edge of the vibrant neighbourhood of Woodstock where it meets the infrastructure-dominated Cape Town Foreshore. As illustrated in *Figure 147*, the large rail infrastructure that separates these two areas presents a major obstruction within the urban fabric. However, as *Figure 147* also shows, this site is in close proximity to many public transportation routes.

The third site evaluated is the Salt River Market site (*Figure 148*) which has recently been rezoned by the City to allow for mixed use development. This site is roughly 8,400 m², is located about 5 km from the Cape Town CBD and currently hosts an old municipal building, a fresh produce market and some old stables. As illustrated in *Figure 149*, the site is highly connected to public transportation. This includes the

nearby Salt River train station and the many different bus and minibus taxi routes on the higher order streets that border the site. *Figure 149* also shows that the rail infrastructure that borders the site presents a discontinuity in the urban fabric, but not to the large extent as in the previous site evaluated, namely the empty site on Newmarket Street.

After comparing these three sites in terms of their physical characteristics, level of urbanity, proximity to services, level of integration into surroundings and access to public transportation (*Figure 150*), Harrington Square in the East City Precinct (*Figures 151-155*) was shown to be the most appropriate site for the proposed low-income housing intervention. Consequently, this site and its surrounding context will be analysed in terms of its general location and setting, climatic conditions, space defining elements, connectedness, activities, and special conditions and regulations in the next section.

4.2. Analysis of the Surrounding Site Context

4.2.1. General Location and Setting

Harrington Square is located on the eastern edge of the Cape Town city centre within what is known as

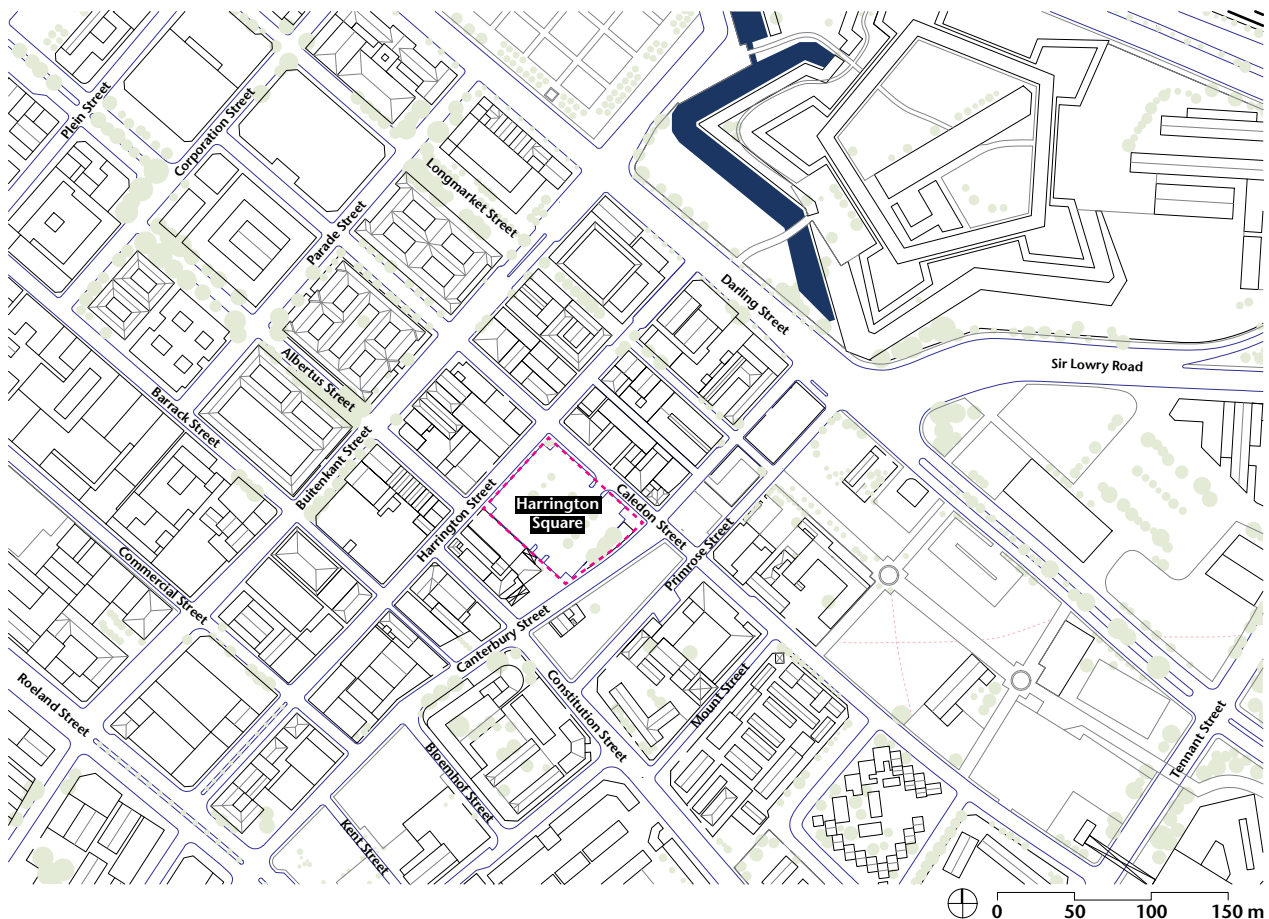
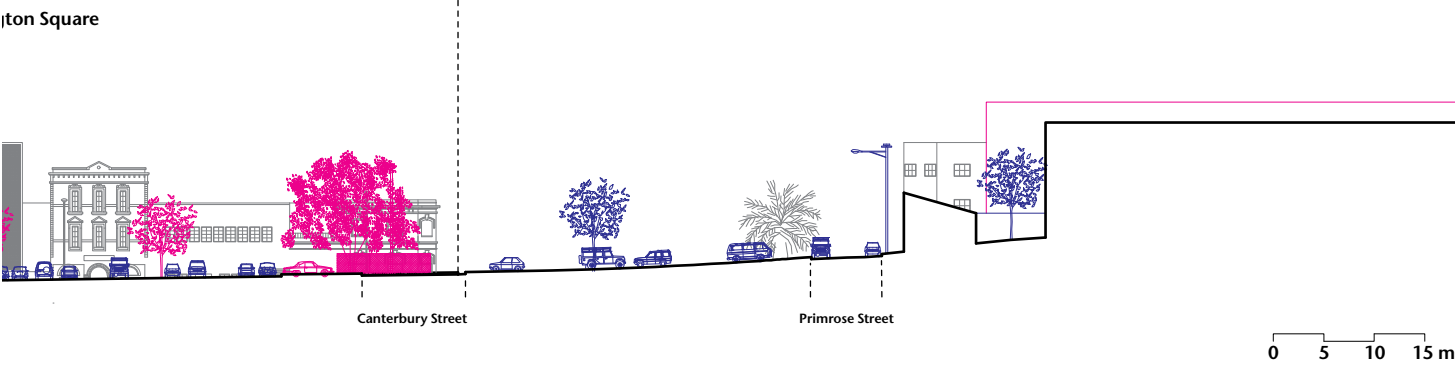
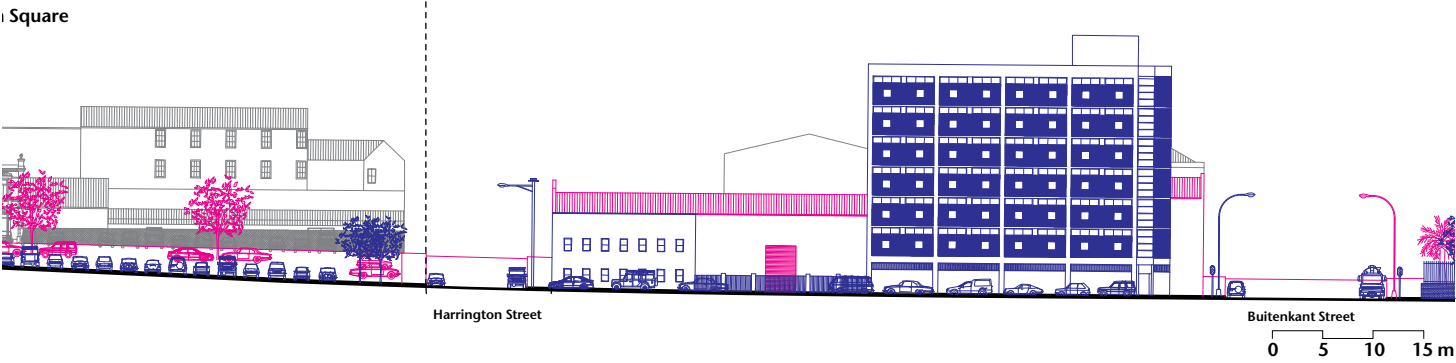
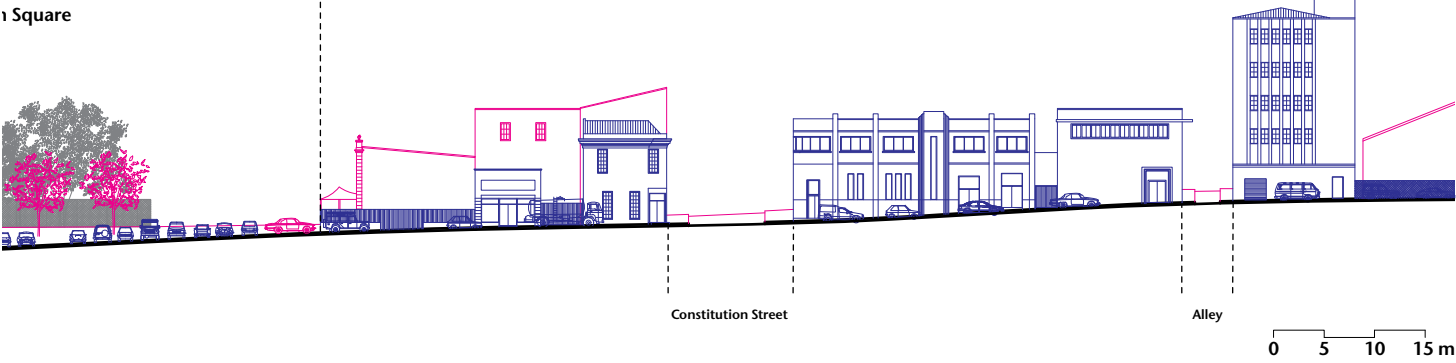
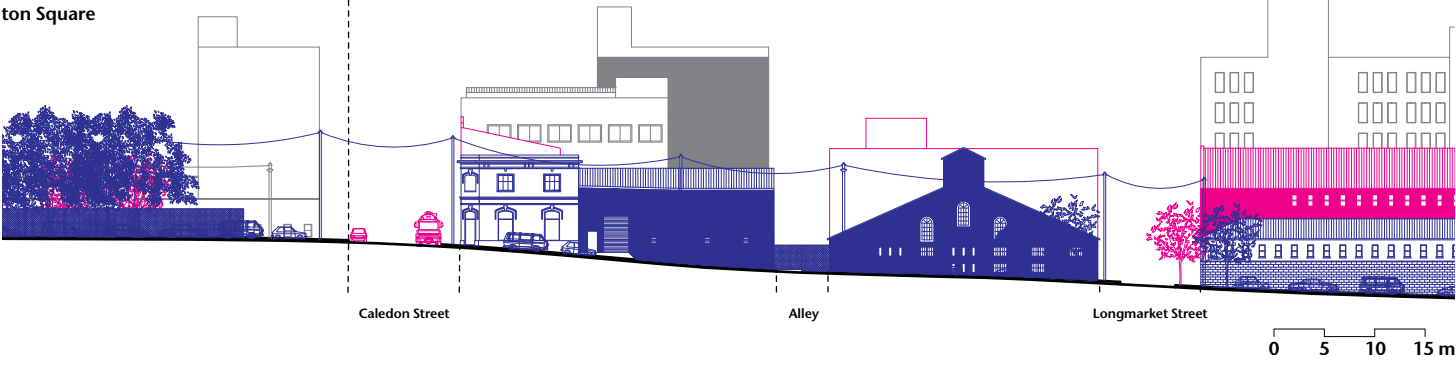


Figure 151 Map at the street scale showing the location of Harrington Square. (Source: Author, 2020)



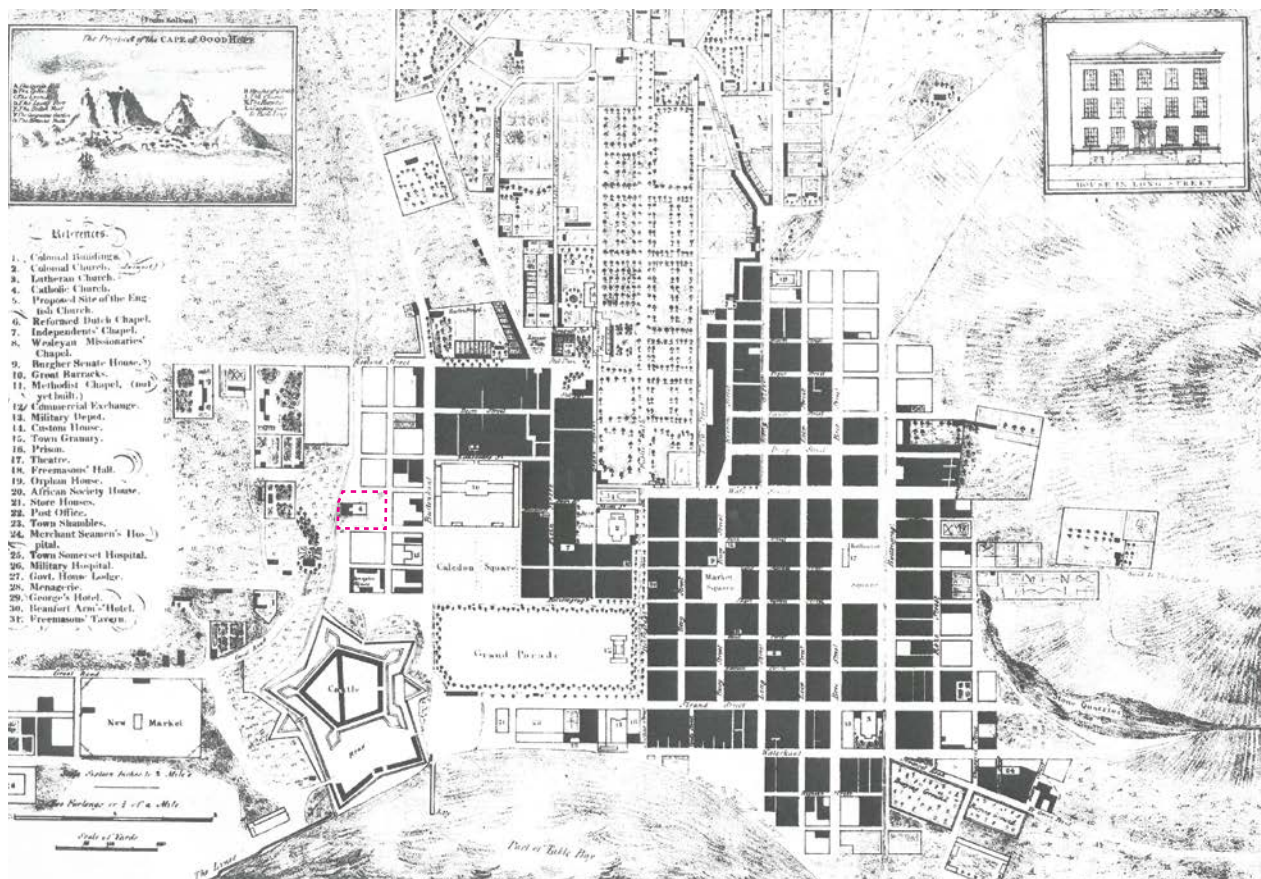


Figure 156 Map of Cape Town soon after it was settled, with the location of Harrington Square highlighted. (Source: John Rennie, 1978)

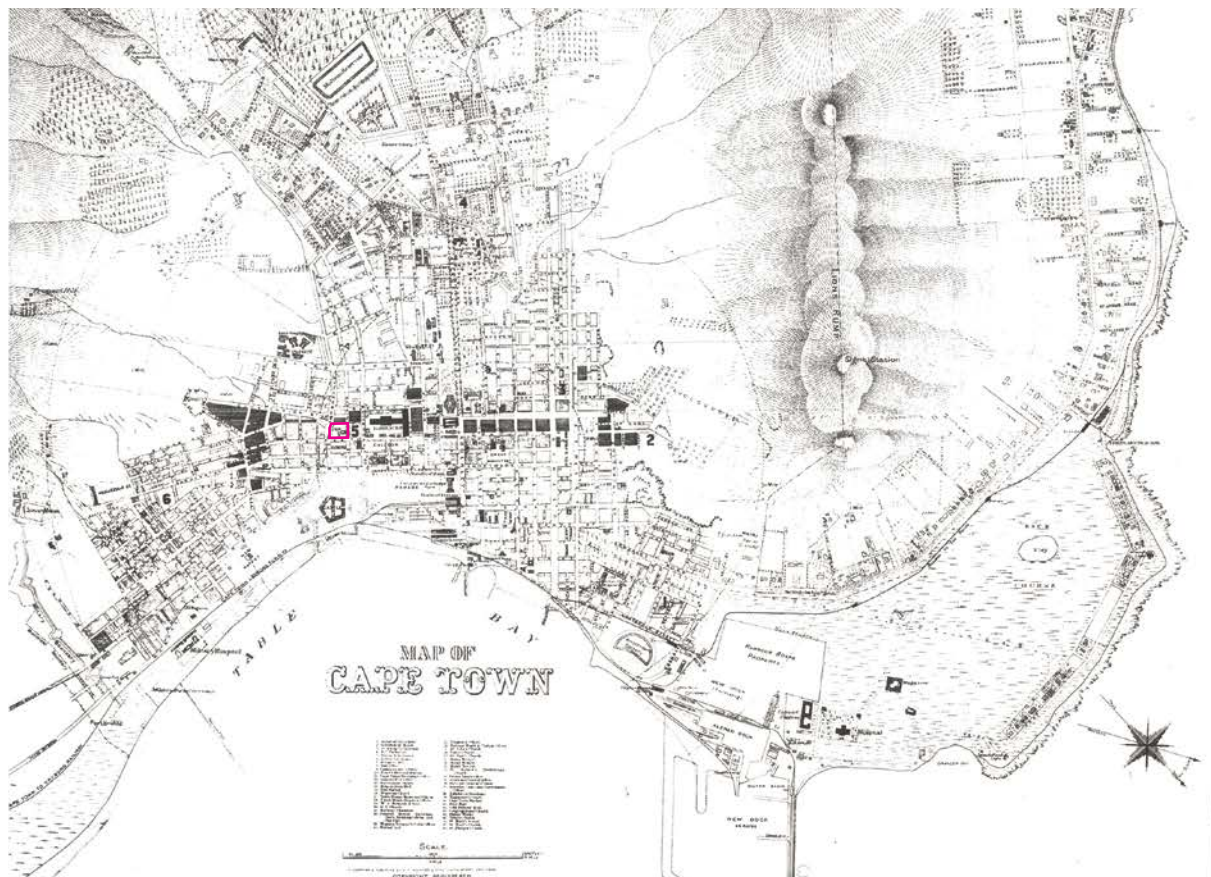


Figure 157 Growth of early Cape Town beyond original boundaries, with the location of Harrington Square highlighted. (Source: John Rennie, 1978)

the East City Precinct. This is an area located behind the Castle of Good Hope, which is the oldest colonial building in South Africa. As can be seen in *Figure 157* and *Figure 158*, Harrington Square has a long history within the development of Cape Town and was originally the site of a Catholic church which was constructed soon after Cape Town was settled. As mentioned in the previous subsection, a later version of this Catholic church alongside a handful of dwellings on the site were demolished in the 1970s to make room for a paid parking lot, which still exists to this day. Notably, *Figure 157* also shows the presence of a tributary flowing from Table Mountain to the harbour that used to flow through a man-made canal past the site and that used to mark the eastern edge of the historical town centre. Another notable aspect of the context is that to the south-east of the site, and as depicted in *Figure 158*, lies the remnants of the mixed race inner-city neighbourhood of District Six. This neighbourhood was bulldozed under apartheid laws (the Group Areas Act of 1950) and its community of 60 000 residents were moved to the barren Cape Flats (as was shown in *Figure 49*) during the 1970s (Awan, Schneider & Till, 2011: 245-8). As can be seen in *Figure 159*, the part of the city that used to be District Six (also known as Zonnebloem) remains largely empty,



Figure 158 'The Destruction of District Six Under the Group Areas Act. Cape Town, Cape. 5 May 1982' (1982), by David Goldblatt. (Source: David Goldblatt, 1982)

save for the Cape Peninsula University of Technology (CPUT), a number of religious structures that survived the demolition in the 1970s and a handful of housing developments that have been erected between District Six's destruction and the present day. District Six's absence and the schism that its destruction left on the city is markedly felt within the East City Precinct. This is most evident in the lack of vibrancy in this segment

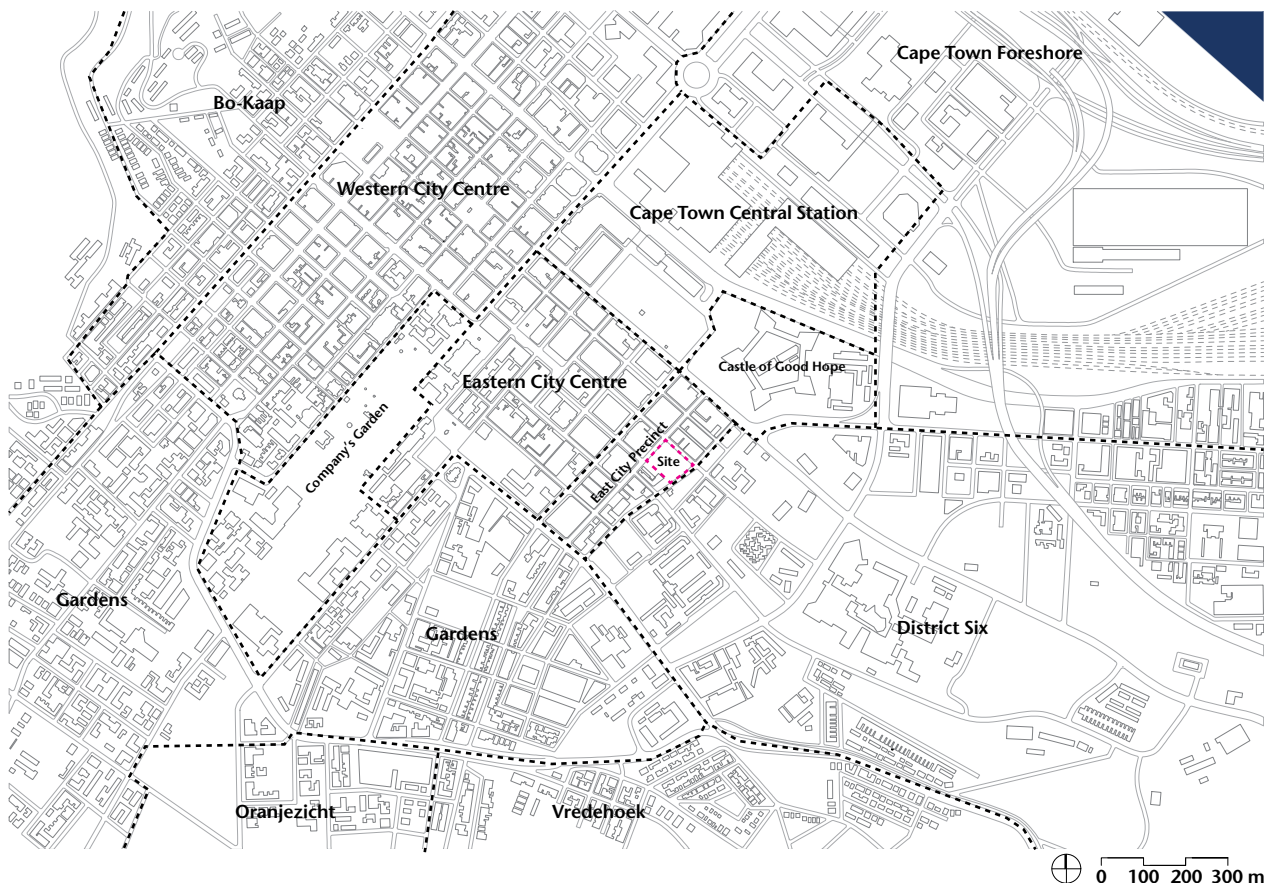


Figure 159 Map at the district scale showing the building grain and indicating the areas that make up the urban fabric surrounding Harrington Square. (Source: Author, 2020)

of the city centre compared to the segment located on the western side of the Company's Garden (the main public green space in the city) whose surrounding urban fabric remains in tact.

Besides District Six to the south-east and which contains the CPUT main campus, a clinic and a handful of residential complexes, *Figure 159* also shows the different areas that constitute the urban fabric surrounding the East City Precinct. To the north is the Castle of Good of Good Hope, the Grand Parade (the largest open public space in the city) and the Cape Town Central Station, which is the main transportation node in the City. Because it is the main civic public transport interchange, the Cape Town Central Station area generates a large amount of activity and sustains a large amount of informal activity. The coarse grained Foreshore area that lies beyond the station has very little activity as it is home to large, mono-functional buildings (mostly office, governmental and industrial buildings) that operate almost exclusively during the day. To the west is the rest of the Cape Town city centre, which can be divided into a finer grained and lively western part, i.e. to the west of the Company's Garden, and an eastern part,

i.e. to the east of the Company's Garden, that borders the East City Precinct and that is dominated by mono-functional buildings that take up entire city blocks. These include the Cape Town City Hall, the Cape Town Central Public Library, the Cape Town Central Police Station, the Cape Town Magistrate's Court, the South African Houses of Parliament and many large office and governmental buildings. To the south-west is the low density mixed-use area of Gardens, as well as the low-density residential areas of Oranjezicht and Vredehoek which are located further up the slope of Table Mountain.

4.2.2. Climatic Conditions

Cape Town has a warm-summer Mediterranean climate ('Csb' in the Köppen-Geiger climatic classification) with mild, moderately wet winters and dry, warm summers. As illustrated in *Figure 160*, the Cape Town region receives around 14,5 hours of daylight on the summer solstice (21 December) and around 10 hours on the winter solstice (21 June). Furthermore, as illustrated in *Figure 161*, there are no tall structures or natural features around the site that blocks it from receiving full sunlight. The city has a predominant south-easterly wind in the summer

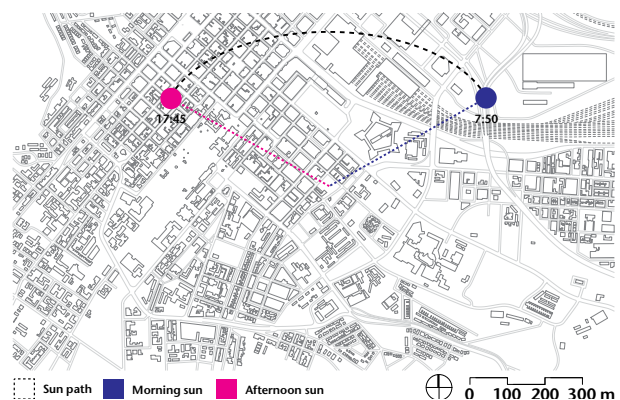
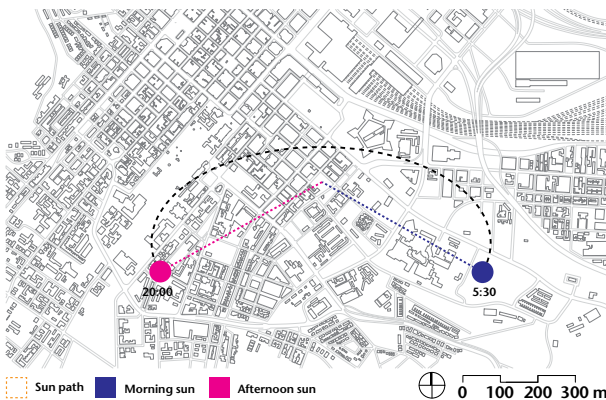


Figure 160 Map at the street scale showing sun paths on the summer solstice (21 December) (*left*) and the winter solstice (21 June) (*right*). (Source: Author, 2020)

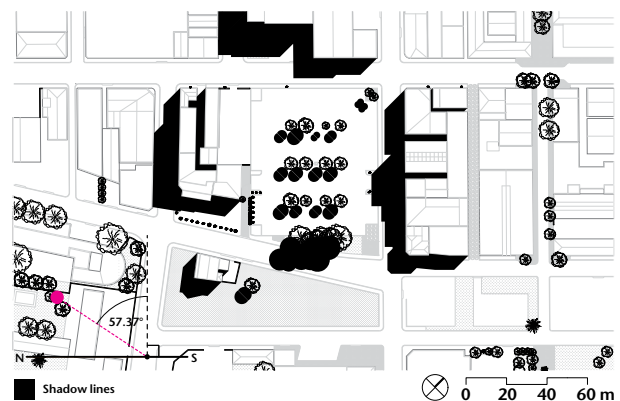
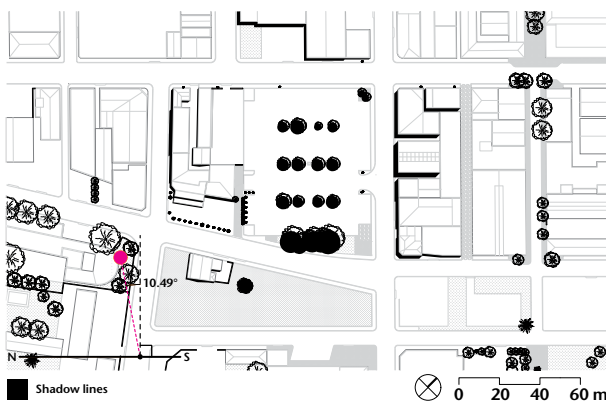


Figure 161 Site plan of Harrington Square showing sun angles and shadow lines at midday on the summer solstice (21 December) (*left*) and the winter solstice (21 June) (*right*). (Source: Author, 2020)

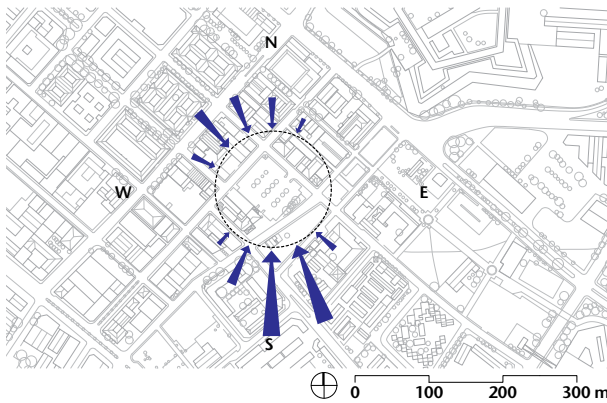


Figure 162 Map at the street scale showing frequency and intensity of different wind directions throughout the year . (Source: Author, 2020)

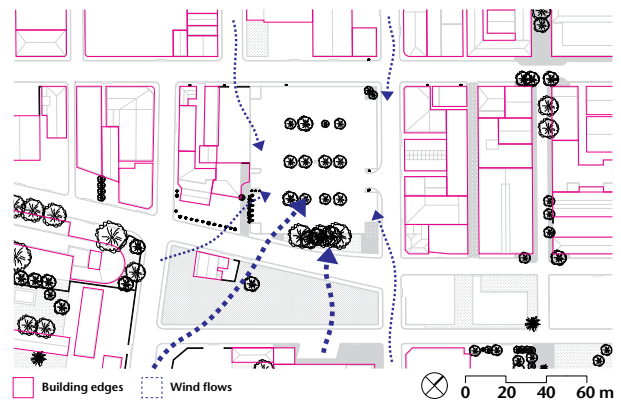


Figure 163 Site plan of Harrington Square showing movement of wind. (Source: Author, 2020)

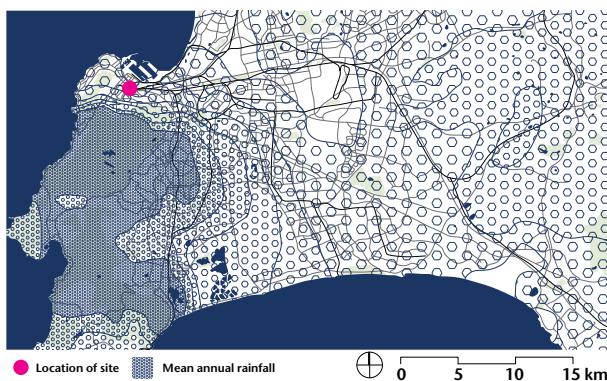


Figure 164 Map at the city scale showing distribution and amount of average annual rainfall. (Source: Western Cape Department of Agriculture, 2020)

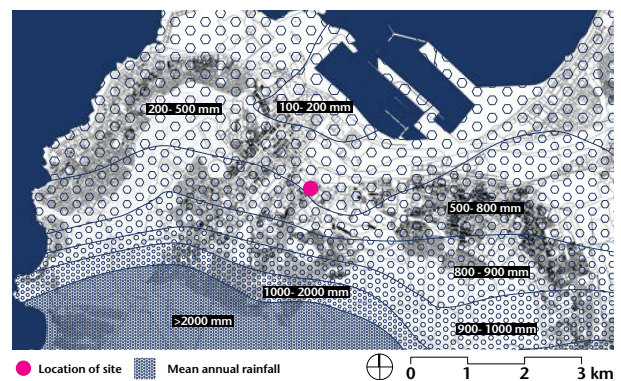


Figure 165 Map of the Cape Town inner-city showing distribution and amount of average annual rainfall. (Source: Western Cape Department of Agriculture, 2020)

months and a predominant north-westerly wind in the winter months, with the south-easterly being considerably stronger (Figure 162 and Figure 163). As can be seen in Figure 164 and Figure 165, the mean annual rainfall across the city fluctuates greatly, with neighbourhoods close to the mountain range on the Western coast receiving considerably more rainfall. Harrington Square in particular can expect to receive around 500 mm of rain throughout the year, with the wettest months being May to September.

4.2.3. Space Defining Elements

As can be seen in Figure 166, the city is strongly defined by the mountain range on its western edge within Table Mountain National Park. In addition to Cape Town's Western and Southern coastlines, this natural feature constrains the built space within the oldest parts of the city. As was discussed in subsection 4.2.2 of this study, Harrington Square forms part of this older and more integrated part of the city. Furthermore, Figure 166 also shows the vast network of transport infrastructure which has lead new outward growth and unsustainable sprawl. As it is located within the Cape Town inner-city, the site is surrounded by dramatic

natural features. This includes Devil's Peak (1000m in height) to the east, Table Mountain (1086m in height) to the south-west, Lion's Head (669m in height) to the

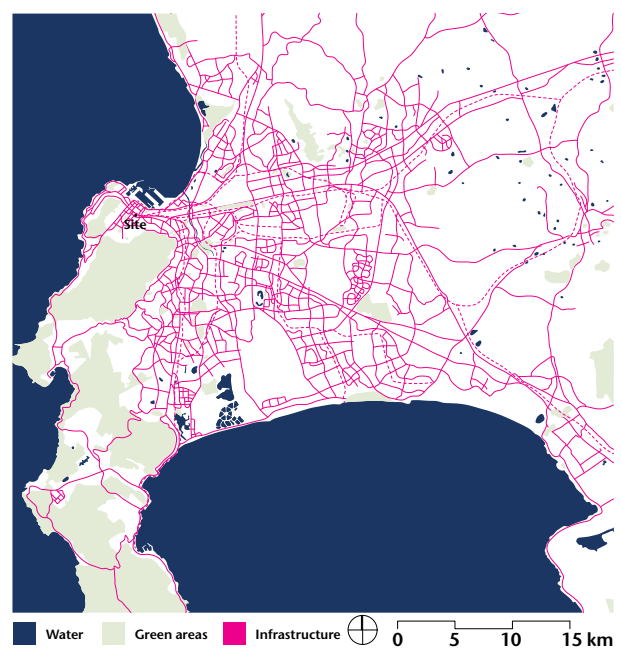


Figure 166 Map at the city scale showing natural space defining elements and movement infrastructure. (Source: Author, 2020)

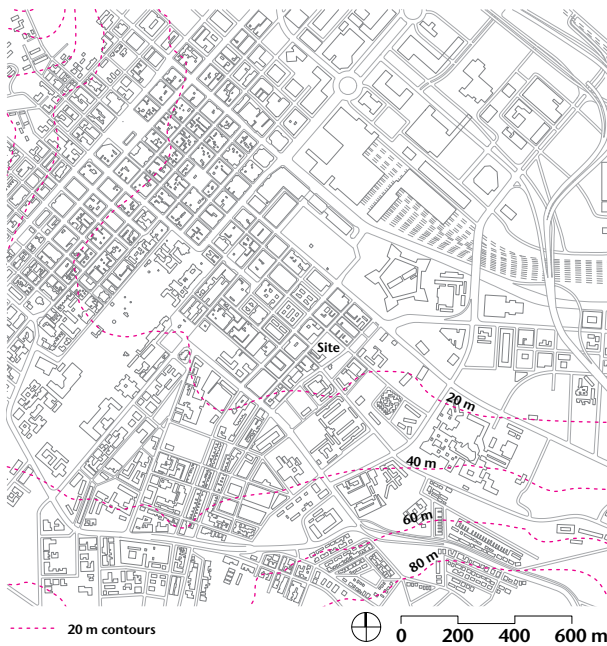


Figure 167 Map at the district scale showing topography. (Source: Author, 2020)

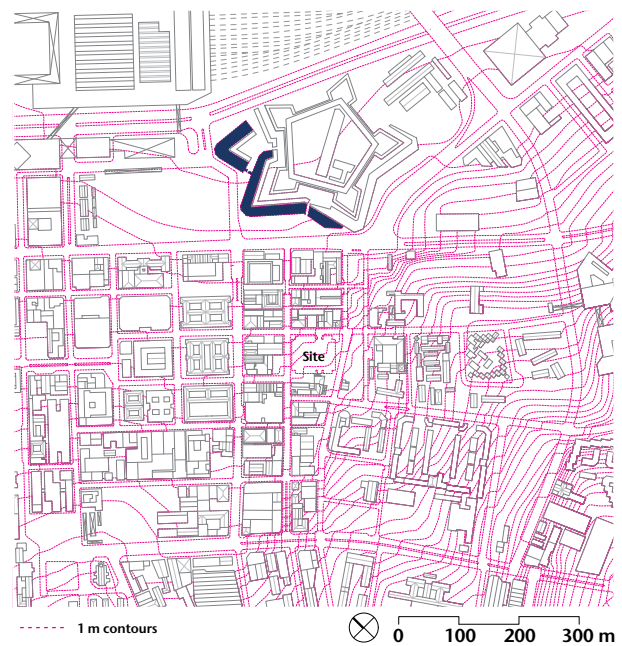


Figure 168 Map at the street scale showing topography. (Source: Author, 2020)

west and Signal Hill (350m in height) to the north-west. As a result of these natural features and as can be seen in *Figure 167* and *Figure 168*, the topographic features of the context surrounding Harrington Square changes dramatically to the south, south-west and west. The East City Precinct in which Harrington Square is located, however, remains relatively flat as it is located close to where Cape Town's coastline used to run (as can be seen in *Figure 147*) before land was reclaimed in the 1930s and 40s to establish the Cape Town Foreshore area and to expand the Port of Cape Town.

As can be seen in *Figure 169*, the city centre has one clearly dominant public green recreational space, namely the Company's Garden. Harrington Square is located to the east of this green space, with smaller parcels of green recreational space located around the Castle of Good Hope to the north (although most of this is fenced off, making it largely unavailable to the public), around the CPUT campus to the east, as well as scattered to the south. *Figure 169* also depicts two large areas of largely unbuilt green space within the district, namely Signal Hill to the north-west and District Six to the south-east. At the street scale, *Figure 170* demonstrates the clear difference between the city centre and the contemporary District Six in terms of how space is defined by natural and built features. Where the city centre is compact, is characterised by buildings that have a close connection to the street and contains very little unbuilt and green space, contemporary District Six is characterised by

buildings that essentially function as urban islands, i.e. the relationship between the building and the street is interrupted, and contains an abundance of unbuilt space. Moreover, it is notable that Harrington Square and the open space between Canterbury Street and Primrose Street is situated at the interface between these two areas of the Cape Town inner-city. It should be noted that because District Six has great historic significance as well as great personal meaning to those who were forced out of the neighbourhood during apartheid, redevelopment plans for this area have been very contentious in nature. This fact alongside inaction by city, provincial and national government has resulted in the area remaining largely empty. However, it should be kept in mind that this could change in the future and that any redevelopment would have a significant influence on Harrington Square and the East City Precinct in general.

This difference in the relationship between built and unbuilt space within the city centre and District Six, however, can more clearly be seen in the figure ground map depicted in *Figure 171*. This map also shows where the site is located in relation to the open public space network that exists in the city centre. Two intersecting pedestrian pathways connect these spaces, namely Longmarket Street which connects Riebeeck Square (1), Greenmarket Square (2), Church Square (3), the Grand Parade (4), Harrington Square and the central courtyard at CPUT (5), and St Georges Mall which connects Thibault Square (6), the plaza in front of Cape Town Central Station (7), Greenmarket

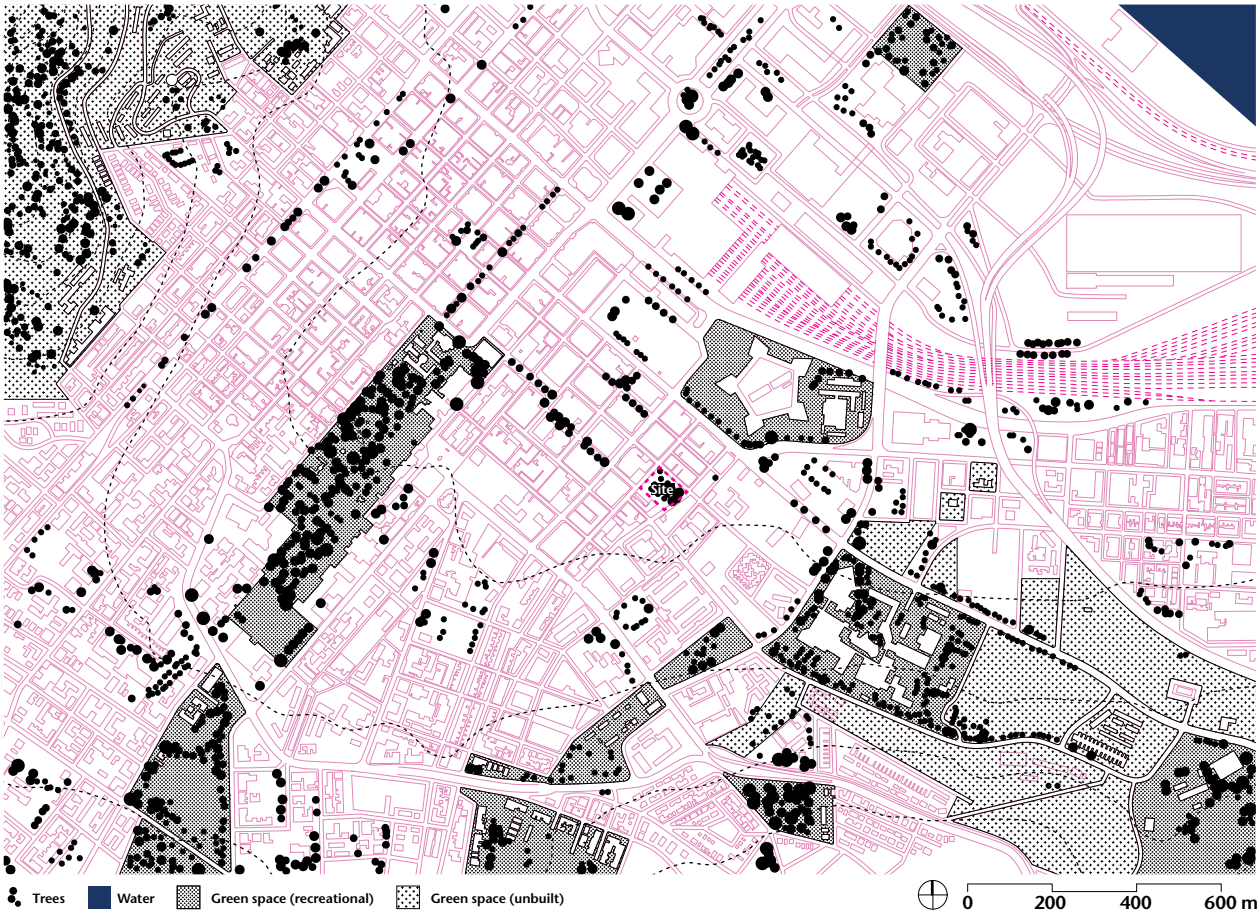


Figure 169 Map at the district scale showing natural space defining elements. (Source: Author, 2020)

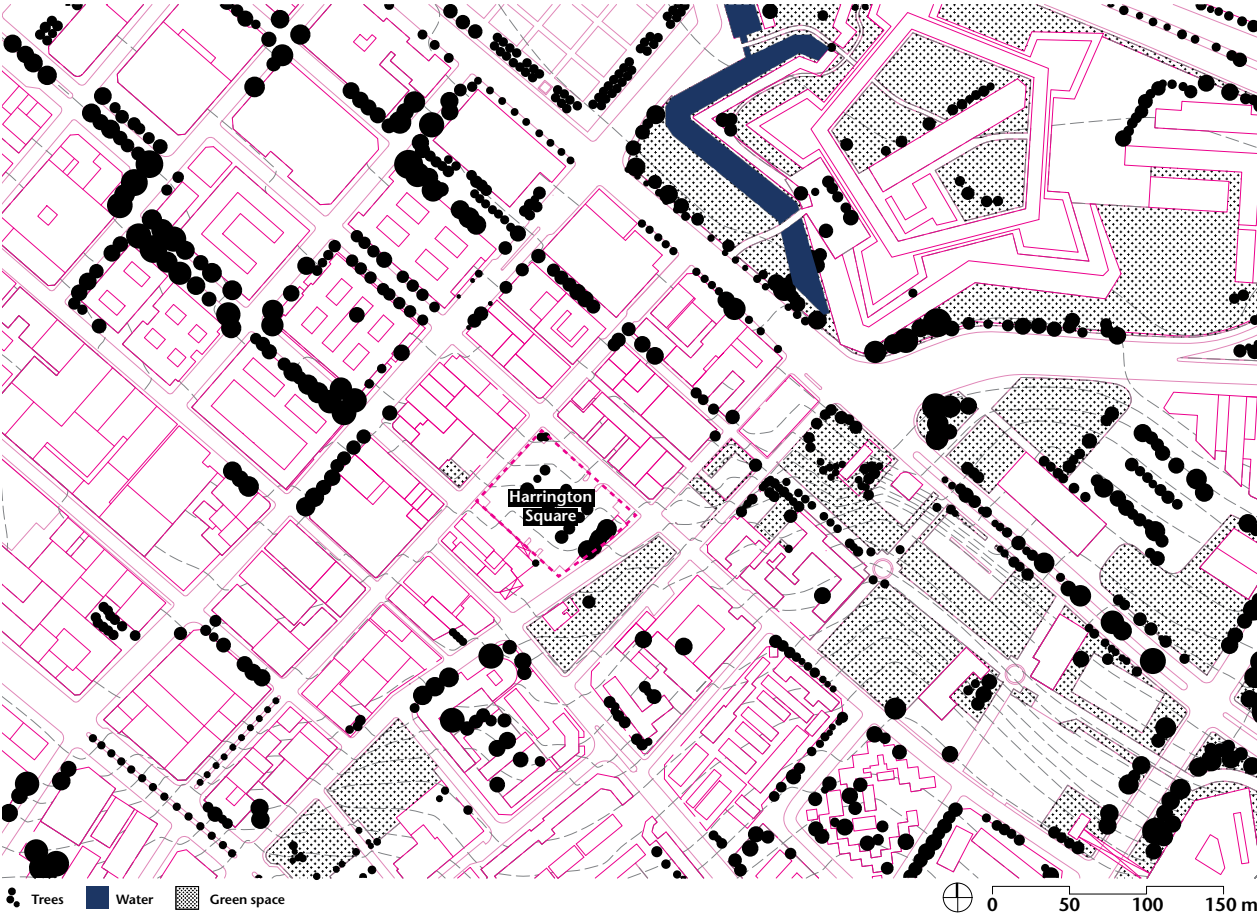


Figure 170 Map at the street scale showing natural space defining elements. (Source: Author, 2020)



Figure 171 Map at the district scale showing built and unbuilt space. (Source: Author, 2020)

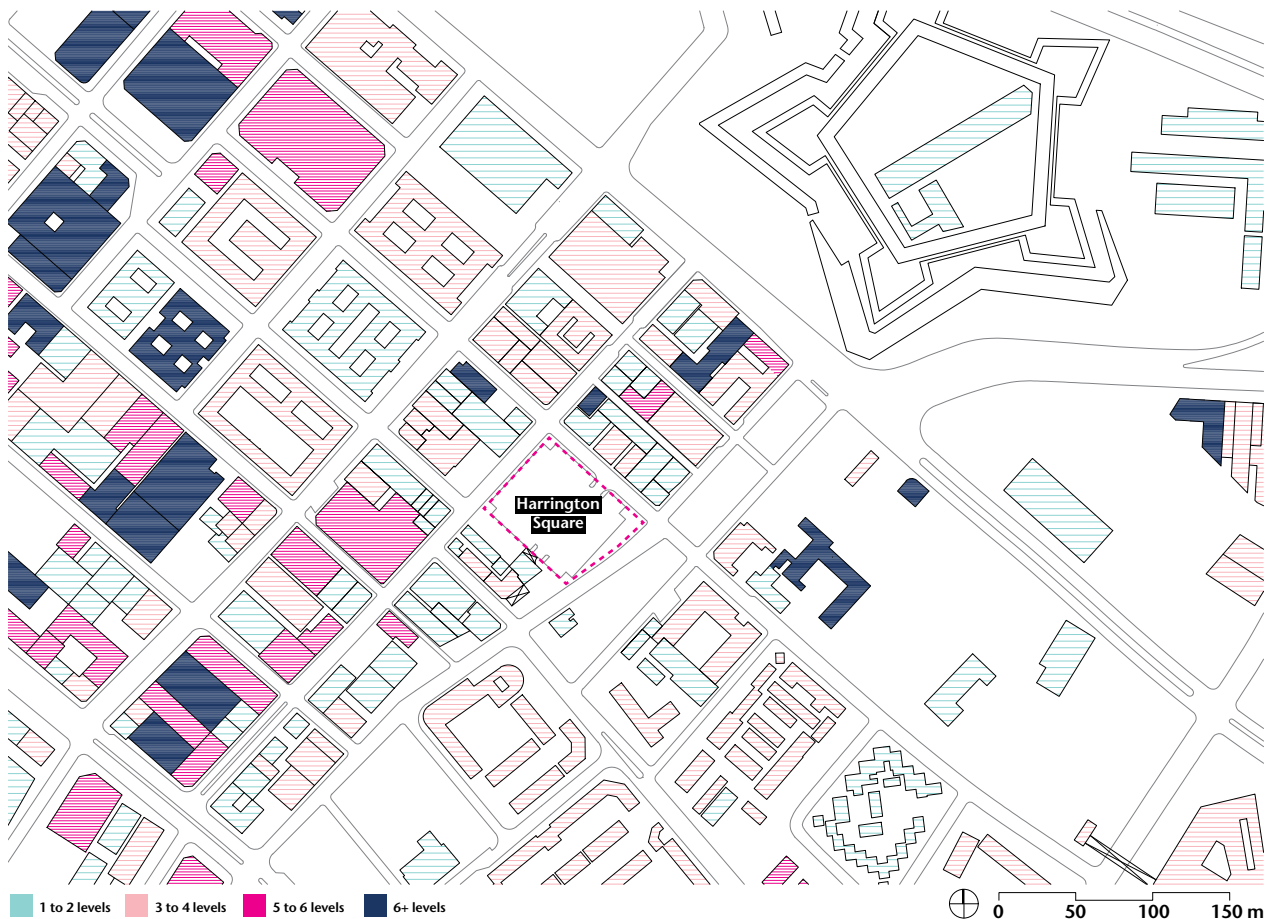


Figure 172 Map at the street scale showing building heights. (Source: Author, 2020)

Square (2) and St Georges Cathedral on the northern edge of the Company's Garden (8).

Furthermore, the map depicted in *Figure 172* shows the height of the buildings surrounding Harrington Square at the street scale. This map in conjunction with the street elevations that were depicted in *Figures 152-155* show that the built context surrounding the chosen site mainly consists of buildings of various ages and styles that are between one and four levels in height, with taller buildings becoming more common towards the city centre. This map also emphasises the fine grain of the urban fabric within the East City Precinct compared to the coarser grained Eastern city centre. Moreover, as depicted in *Figure 173* and *Figure 174*, the streets surrounding the site (1-4) have a good relationship to the surrounding buildings with the exception of Canterbury Street and Primrose Street (5).

Moving down in scale, *Figure 175* depicts a more detailed site plan of Harrington Square showing the position of electrical wires, lighting, street demarcations, manholes, bollards, drains, gutters, planter boxes, gates, fencing, surfaces, garbage cans and urban furniture around the site. Notably, *Figure 175* shows that the site has a 3,5m topographic drop between its southern and northern corners, is largely paved and currently hosts 154 parking bays arranged around twelve medium sized trees. Furthermore, the site hosts a fenced off playground at its south-eastern edge which contains six large trees that offer a large degree of protection from the dominant south-easterly wind, outdoor seating space on its south-

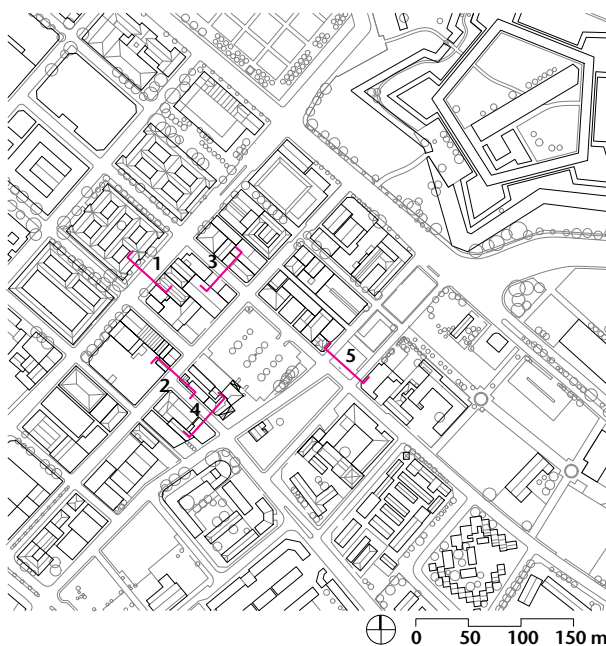


Figure 173 Map at the street scale showing location of street sections depicted in *Figure 173*. (Source: Author, 2020)

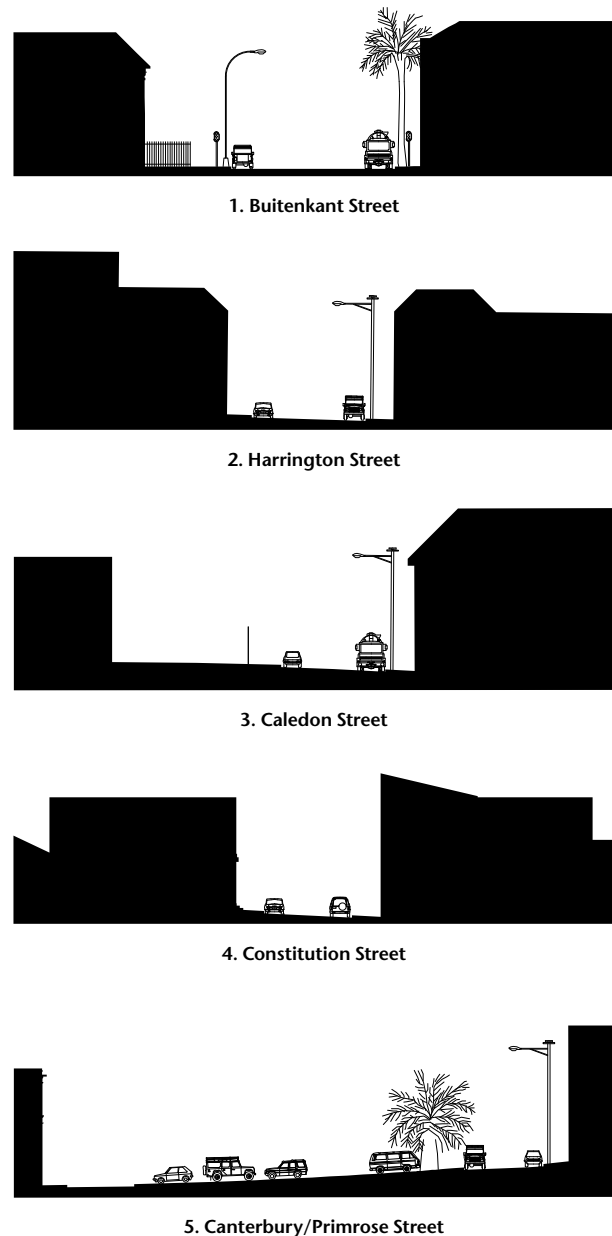
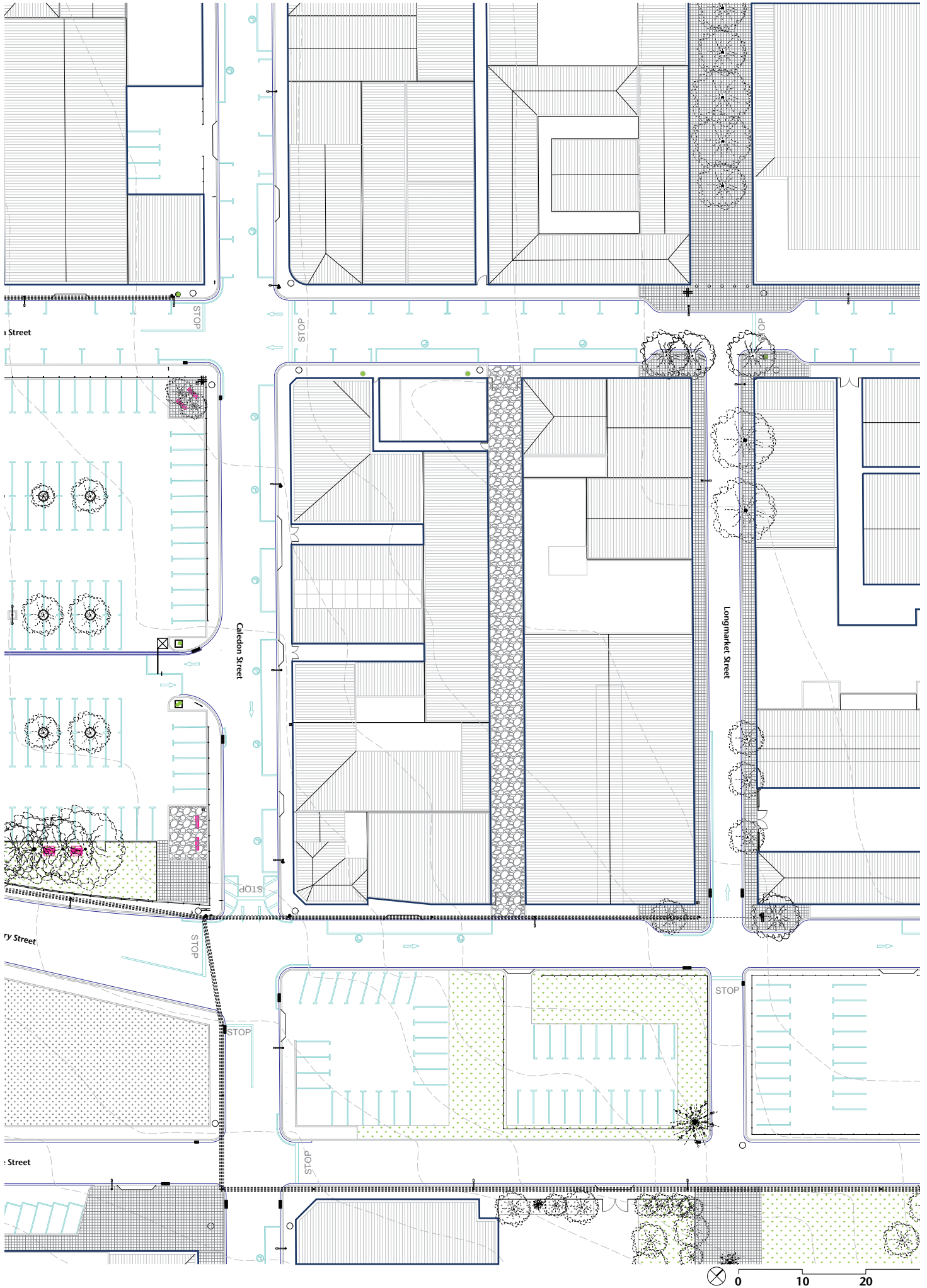


Figure 174 Sections through streets surrounding Harrington Square. (Source: Author, 2020)

western edge that is connected to the adjacent bakery, seating on its eastern corner and under two small trees on its northern corner, as well as a central stormwater gutter that carries water from the adjacent buildings to a drain on Caledon Street. Moreover, the parking area is fenced off by a very low timber division which does not inhibit pedestrian movement across the site and borders a fenced off parking area belonging to the adjacent building on Harrington Street. It is also notable that the physical building line on the southern edge of the site is set back by 13m. This creates a recessed area that is separated from Canterbury by a series of



Figure 175 Detailed site plan of Harrington Square showing space defining elements. (Source: Author, 2020)



0

10

20

planter boxes and that contains the main entrances to the buildings next to the site and is overlooked by a raised deck containing seating for the bar/lounge on the corner of Canterbury Street and Constitution Street. Across the street from this recessed area is an electrical substation that has become a landmark in the East City Precinct as it stands out from the surrounding urban fabric both physically and because it is decorated by a large and colourful mural of Nelson Mandela, the first democratically elected president of South Africa.

4.2.4. Connectedness

In terms of Harrington Square's visual connection to its surrounding context, two main components stand out. These are depicted in *Figure 176* and include a strong visual connection to the walls of the Castle of Good Hope (*Figure 177*) from both Harrington Street and Canterbury Street which border the site at its north-western and south-eastern edges, as well as a strong visual connection from the site to the skyline of the city centre to the North. At the city scale, and as shown in both *Figure 179* and *Figure 180*, the site is highly connected to the rest of the city as it is walking distance from the main civic transport node, i.e. the Cape Town Central Station. This is the central node for the widely accessible Golden Arrow bus service, the less accessible MyCiti bus service, the Cape Town Metro Rail and the more flexible city-wide network of mini-bus taxis that serve as the main mode of transport for the urban poor. *Figure 180* also shows that although it is very connected to various modes of public transport, Harrington Square is not situated on



Figure 177 Visual connection to the Castle of Good Hope. (Source: Google Earth, 2020)



Figure 178 Visual connection to city centre skyline. (Source: Google Earth, 2020)

any main vehicular or bus routes. However, as shown in *Figure 181*, there is a large amount of pedestrian movement across the site, mainly in the north-west and south-east direction. As was discussed in subsection 4.1.2 of this study, Harrington Square is located one block away from the higher order Buitenkant Street

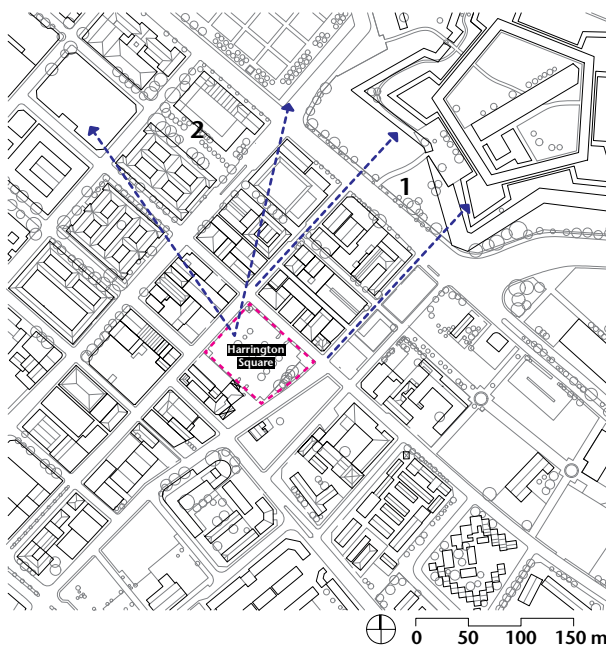


Figure 176 Map at the street scale showing points of visual connectedness. (Source: Author, 2020)

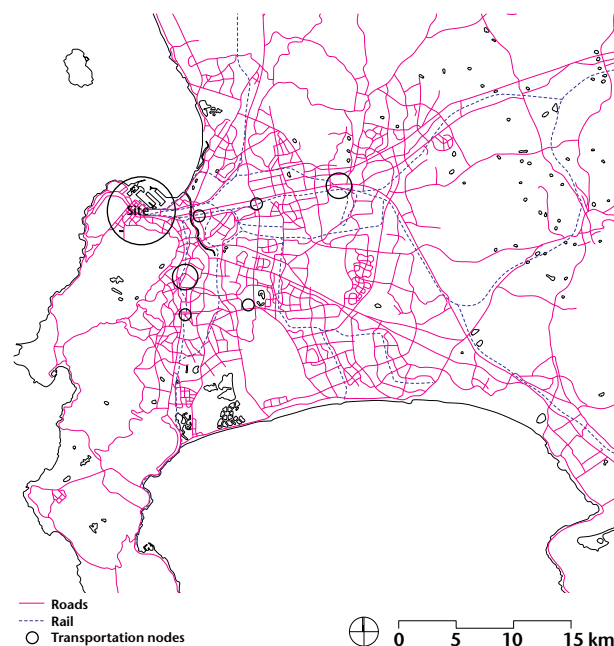


Figure 179 Map at the city scale showing movement hierarchies and transportation nodes. (Source: Author, 2020)

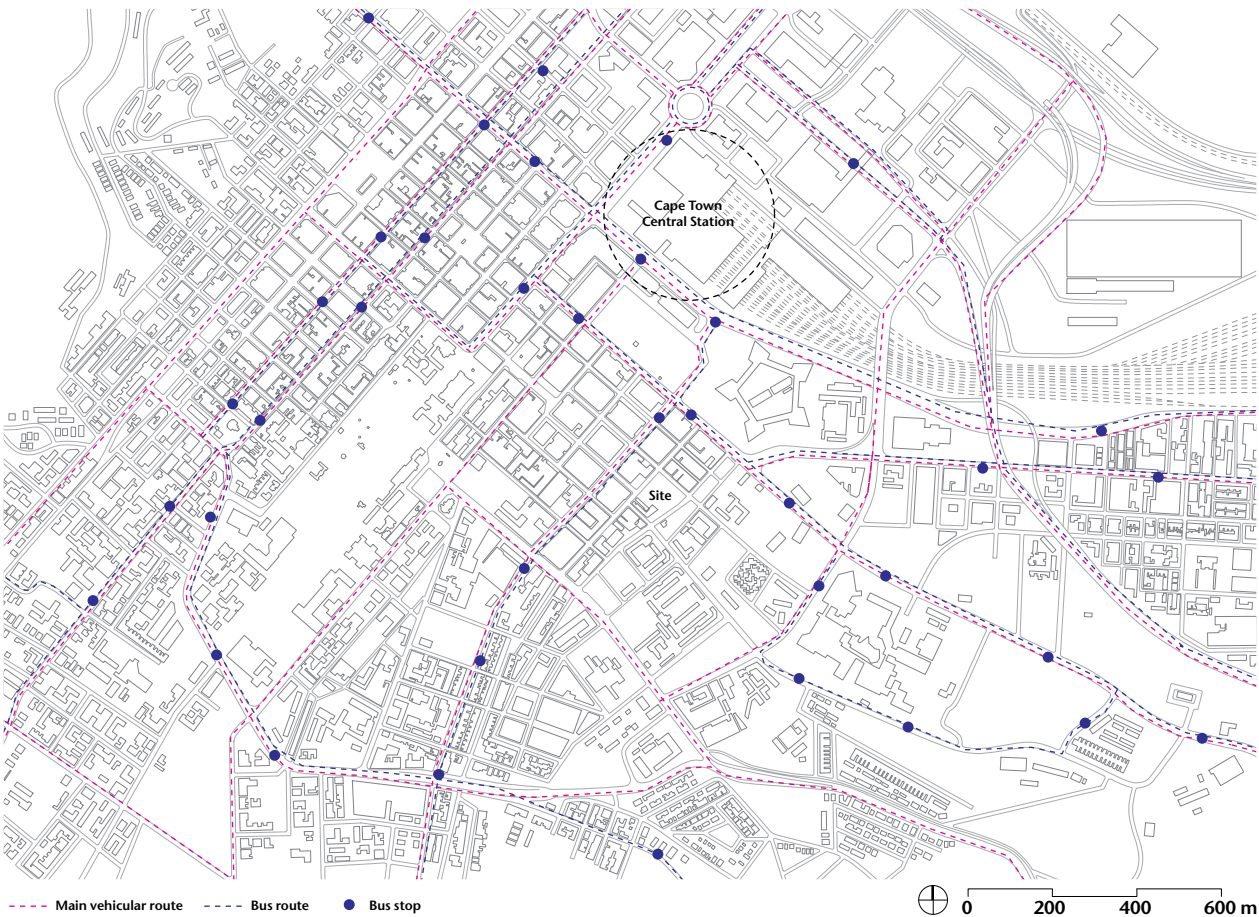


Figure 180 Map at the district scale main vehicular and bus routes. (Source: Author, 2020)

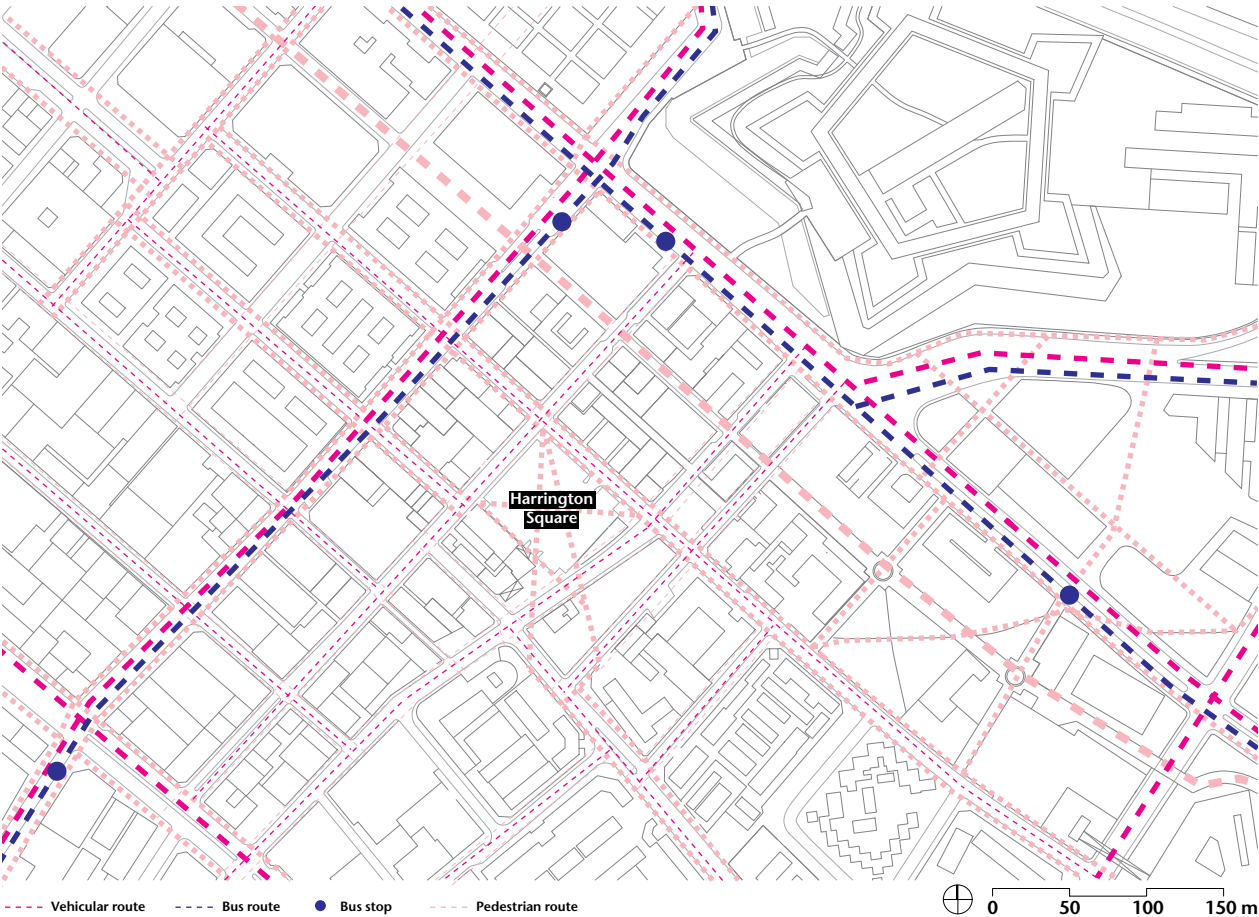


Figure 181 Map at the street scale showing hierarchies of pedestrian and vehicular movement routes. (Source: Author, 2020)

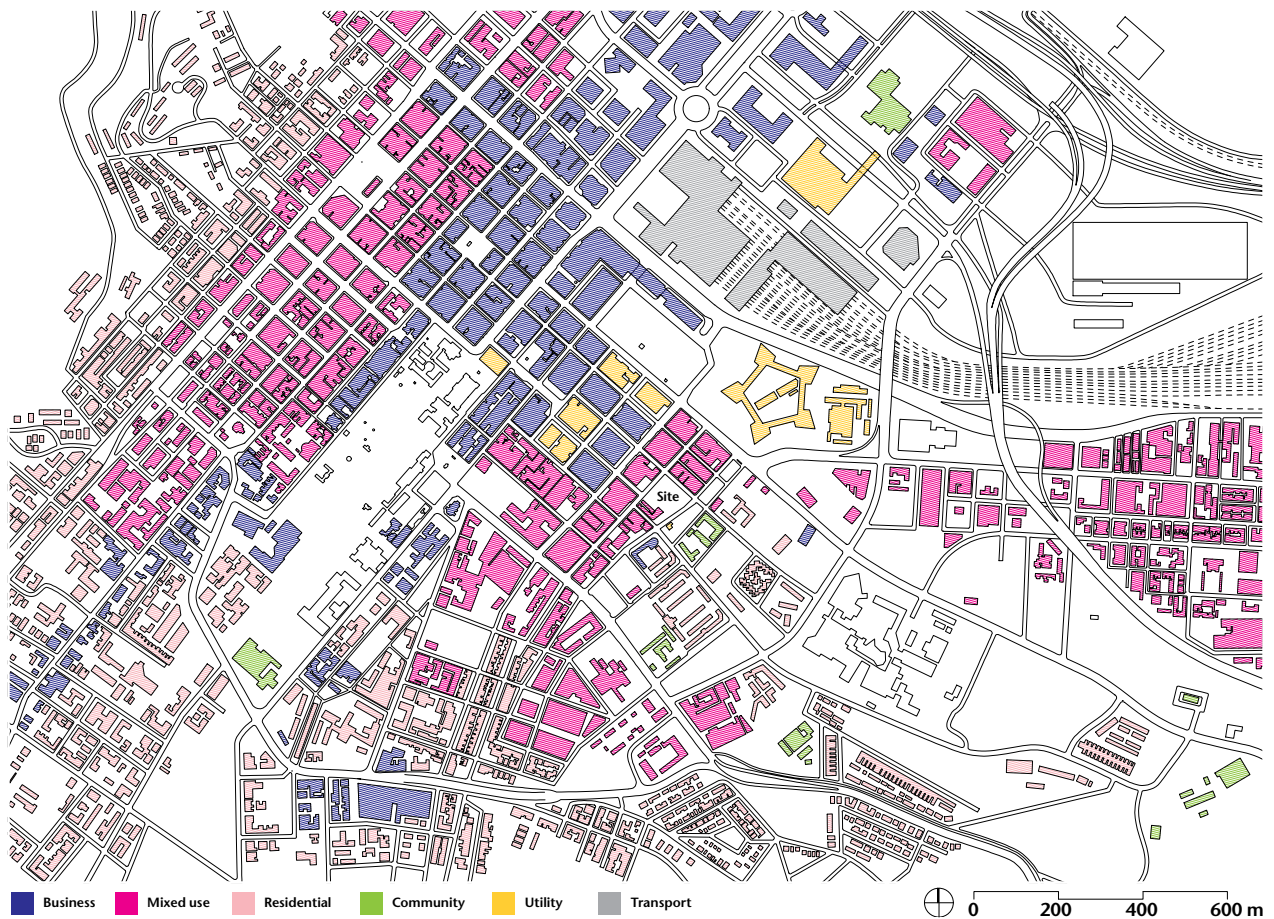


Figure 182 Map at the district scale showing zoning defined by regulation. (Source: Author, 2020)

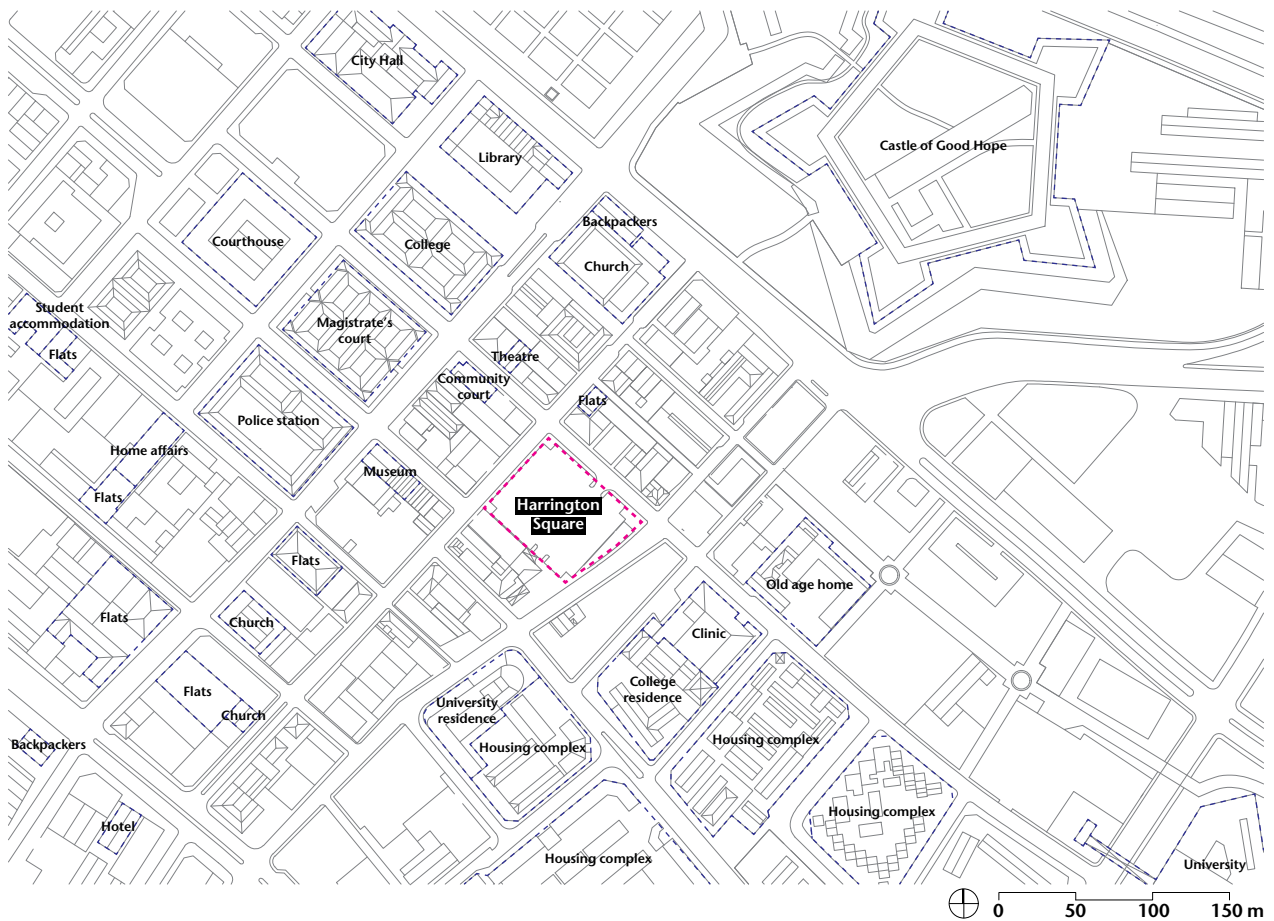


Figure 183 Map at the street scale showing important activity generating buildings. (Source: Author, 2020)

which contains significant vehicular movement and public transport routes, as well as the higher order pedestrian pathway of Longmarket Street which, as was discussed in the previous subsection, connects various open public spaces within the Cape Town city centre to the CPUT campus within District Six.

4.2.5. Activities

As illustrated in *Figure 182*, the East City Precinct is zoned by the city as a mixed use area, although Harrington Square itself is currently zoned as utility. As shown in *Figure 183*, a wide range of primary functions, i.e. buildings that generate activity, within the adjacent areas sustains a wide variety of secondary functions within the street neighbourhoods of the East City Precinct, as depicted in *Figure 184*. Primary functions include many educational facilities, governmental offices, religious buildings, student accommodation, a theatre, a clinic and an old age home. Secondary functions include many different stores, workshops and entertainment venues. It is evident, however, that there is a lack of housing as a primary function in to support assist in supporting secondary activities in this area compared to the rest of the Cape Town city centre. What is also noteworthy is that traffic in this part of the city is slow moving as both the streets that constitute it and the open spaces that it contains are primarily used for parking vehicles.

Furthermore, in comparing the activities found on the various streets surrounding Harrington Square in *Figure 184* to determine their civic hierarchy, it is clear that Caledon Street (2) is of the highest order as it stretches from Tennant Street which borders CPUT to Corporation Street within the city centre. This is followed by Albertus and Constitution Street (4), the former containing the District Six Museum and the latter running through the centre of the mostly empty District Six. Compared to Caledon, Albertus and Constitution Street, Harrington Street (1) is much more contained to the East City Precinct as only pedestrian movement can easily move across its intersection with Roeland Street into Gardens, although it contains the widest variety of secondary functions. Lastly, Canterbury and Primrose Street (3) contain a few primary and secondary functions, a large degree of parking space, some service yards and service entrances, hosts a power substation and is mostly used as a thoroughfare.

As was mentioned in subsection 4.2.1 of this study, the nearby Cape Town Central Station generates an enormous amount of activity which sustains a large amount of informal trading around the station and around the minibus taxi rank that is located on

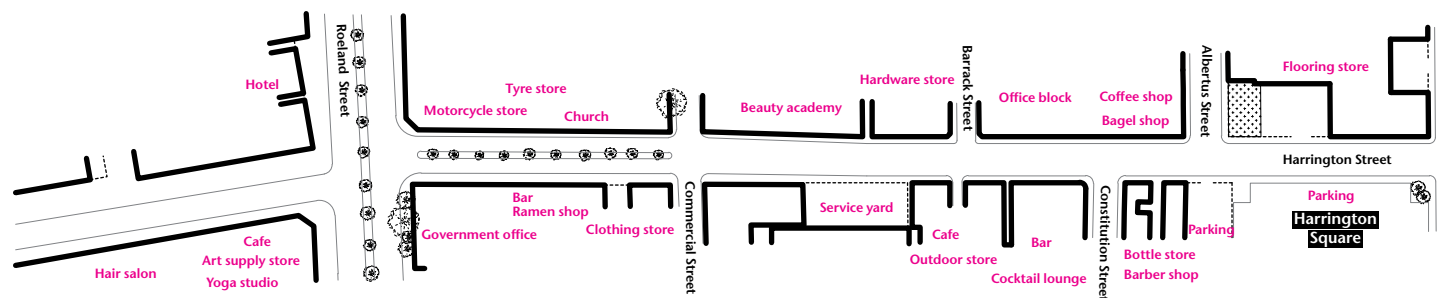
the station's roof. The highly productive informal economy can be found scattered throughout the Cape Town city centre, but it is most pronounced around the Cape Town Central Station and on the northern edge of the Grand Parade (number 4 in *Figure 171*) where it primarily caters to daily commuters, as well as in Greenmarket Square (number 2 in *Figure 171*) where it primarily caters to tourists.

Aside from people who commute in and out of the city centre for work everyday, the district around the East City Precinct is frequented by students from many different higher learning institutions, residents of the few apartment buildings and housing complexes in the area, tourists to the nearby District Six Museum and the Castle of Good Hope, patrons to the myriad shops and services within the neighbourhood, as well as those working in adjacent office buildings and who primarily use the streets in the East City District for cheap inner-city for parking. Notably, the area has many homeless residents, many of whom live on the green space surrounding the Castle of Good Hope. This is due to the fact that unlike in the periphery of the city, the Cape Town inner-city provides a plenitude of opportunities to earn some kind of income. However, as was discussed in subsection 2.3.1 of this study, a location near a job is often more important than a roof for many. Moreover, as was discussed in subsection 2.4.1 of this study, the precarious income that a large amount of Cape Town's residents is not enough to cover the cost of commuting between areas of economic opportunity, such as the Cape Town inner-city, and the geographies of disadvantage on the periphery of the city (which contain low-income housing opportunities – the most affordable of which being backyard shacks and illegal subdivisions).

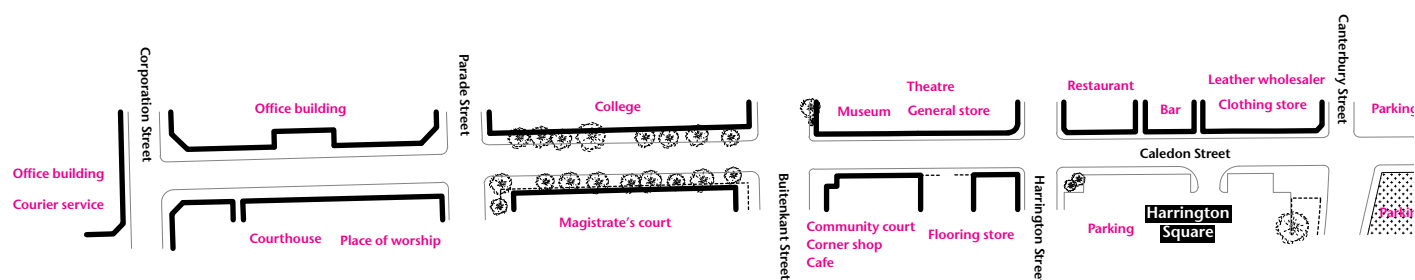
4.2.6. Special Conditions and Regulations

Because the surrounding buildings in the East City Precinct are zoned by the City of Cape Town as 'mixed use 3', it is reasonable to expect that Harrington square would also be rezoned as such. This particular zoning category carries with it a number of regulations, which include a maximum height of 38 m and a maximum coverage of 100 percent at a floor factor of 6 (City of Cape Town, 2012: 65). As shown in *Figure 185*, Harrington Square itself contains a number of consolidated erfs that are remnants of the buildings that were destroyed in the 1970s to make room for the parking lot that is still currently present on the site.

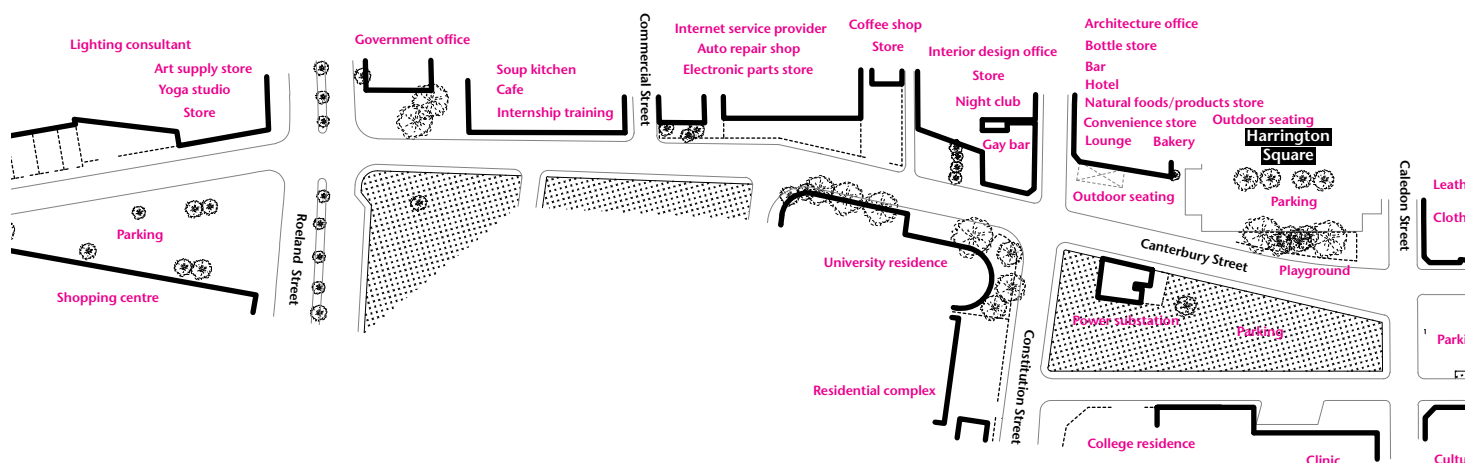
Furthermore, as depicted in *Figure 186*, one of the most obvious special conditions on Harrington Square is that the site has unobstructed views of both Table Mountain to the Southwest and Devil's Peak



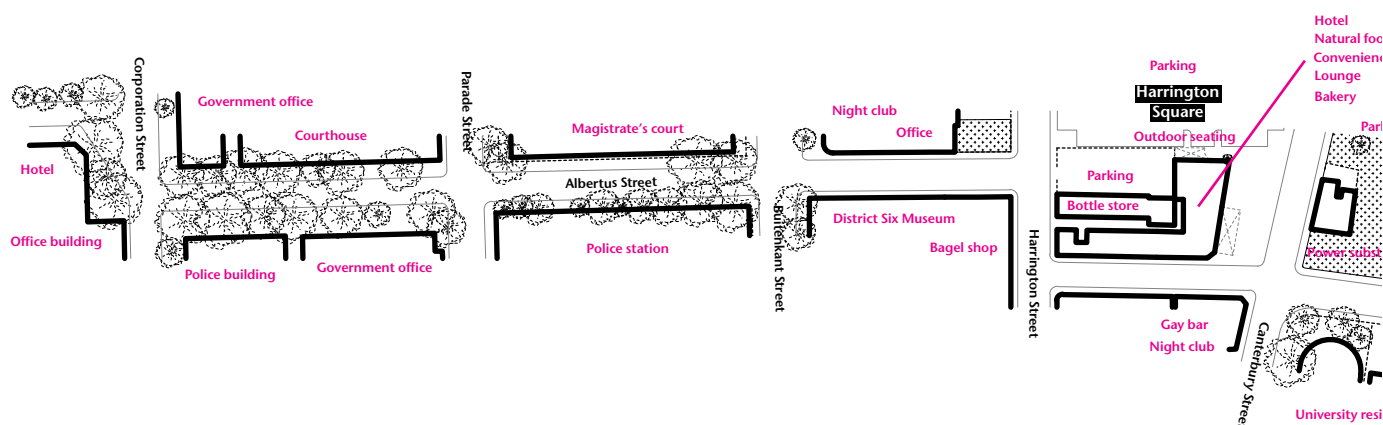
1. Harrington Street



2. Caledon Street

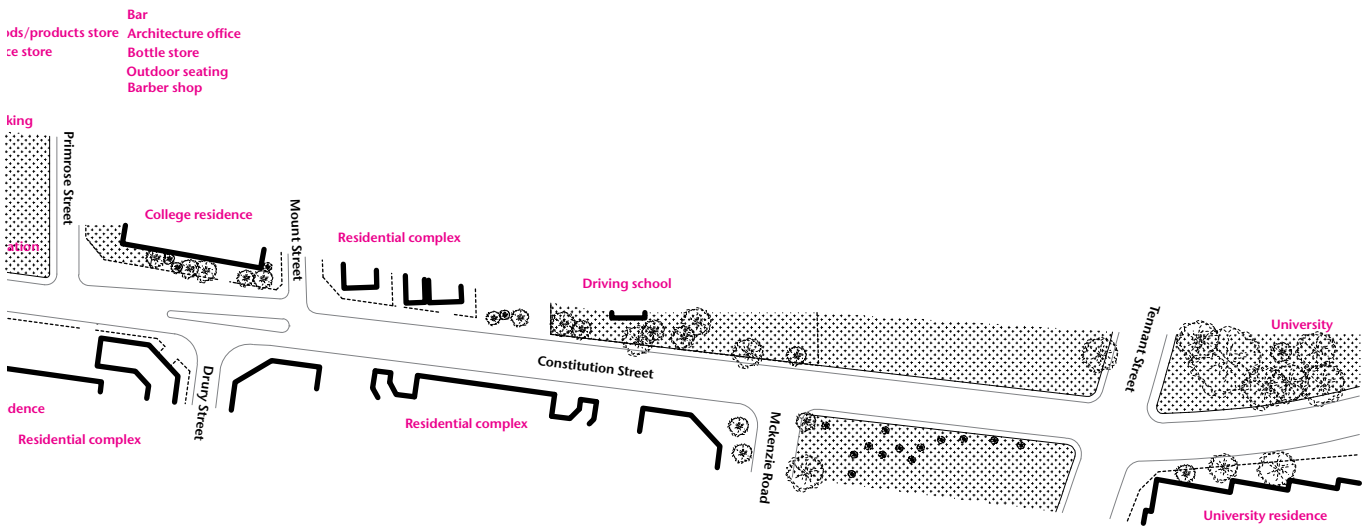
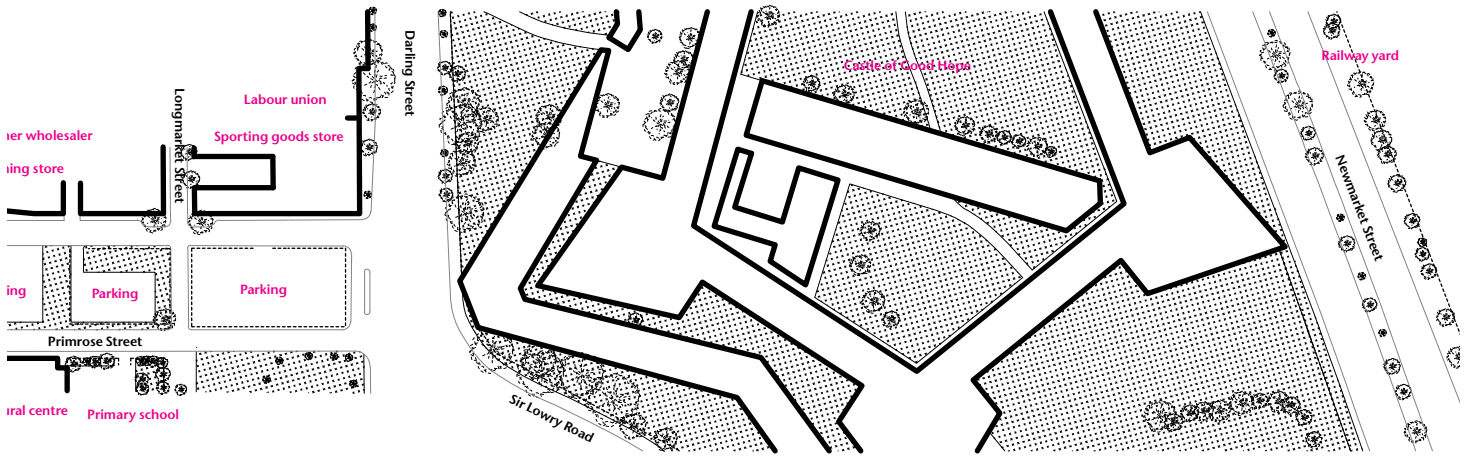
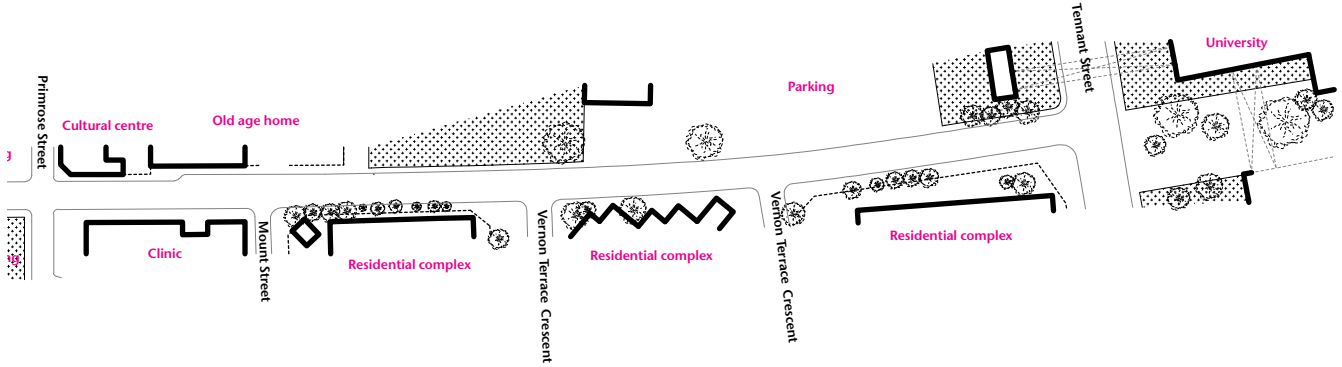
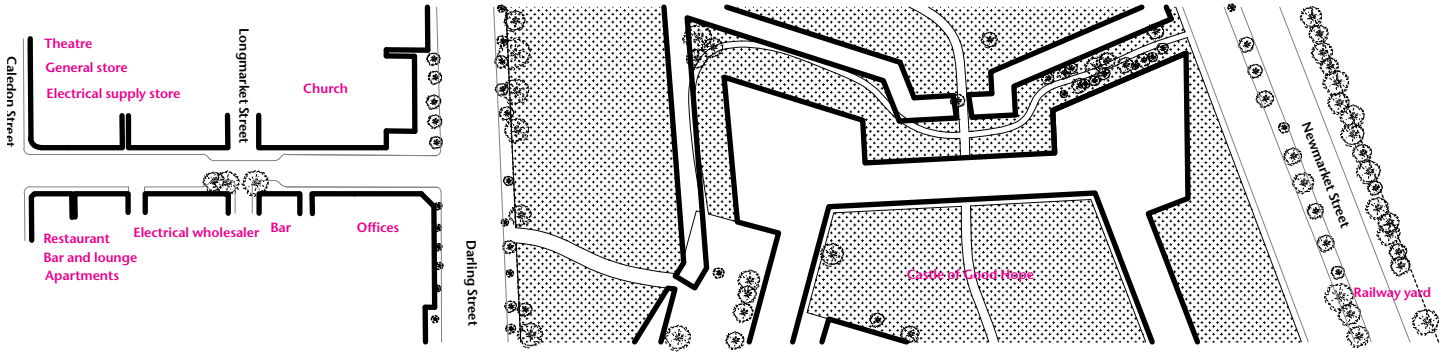


3. Canterbury/Primrose Street



4. Albertus/Constitution Street

Figure 184 Diagram of the streets surrounding Harrington Square showing activities. (Source: Author, 2020)



0 50 100 150 m

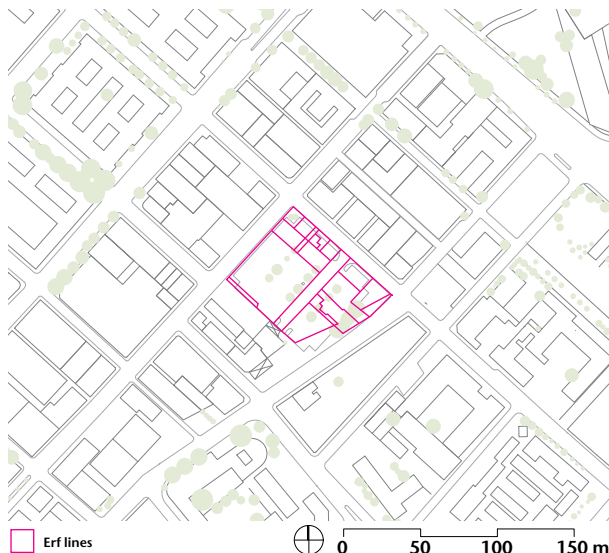


Figure 185 Map at the street scale showing erf boundaries on Harrington Square. (Source: Author, 2020)



Figure 186 View of Table Mountain (right) and Devil's Peak (left) from the site. (Source: Google Earth, 2020)



to the south. A second noticeable special condition pertaining to the East City Precinct in general is the presence of a wide variety of colourful street art and murals scattered throughout the neighbourhood. Examples of this can be seen in *Figure 187*, including the mural of Nelson Mandela on the power substation to the South of Harrington Square that was discussed in subsection 4.2.3 of this study.

As mapped in *Figure 188*, the site is also located next to the Camissa underground water system – a mostly forgotten network of subterranean tributaries carrying millions of litres of fresh water from the surrounding mountains and springs to the ocean on a daily basis. The word 'Camissa' refers to the original name for Cape Town (Khoi for 'Place of Sweet Waters') and this network has been studied extensively by researcher Caron von Zeil for the 'Reclaim Camissa' project (Gosling, 2013). As was discussed in subsection 4.2.1 of this study, this particular branch of the Camissa water system used to be a free flowing tributary running past the site before first being turned into a canal by early Dutch Settlers and subsequently completely bricked over by the British during the nineteenth century. Despite the growing water crisis in the city and many appeals to make this water available to the public, the millions of litres of water that this network transports daily basis is still currently going to waste.

Further, as shown in *Figure 189*, the East City Precinct and the areas to the north and north-west of it



Figure 187 Examples of street art in the East City Precinct. (Source: Google Earth, 2020)

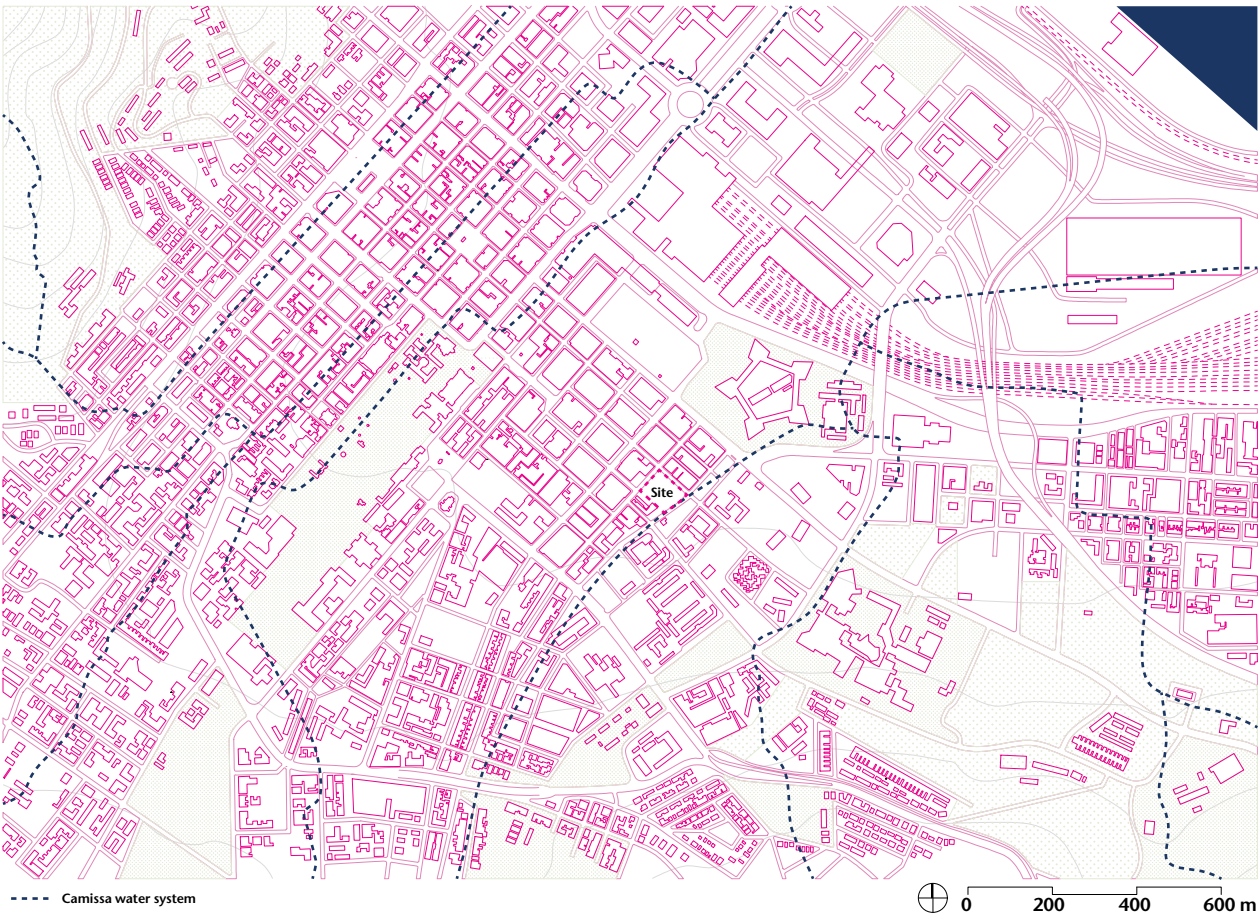


Figure 188 Map at the district scale showing the Camissa underground water system. (Source: Author, 2020)

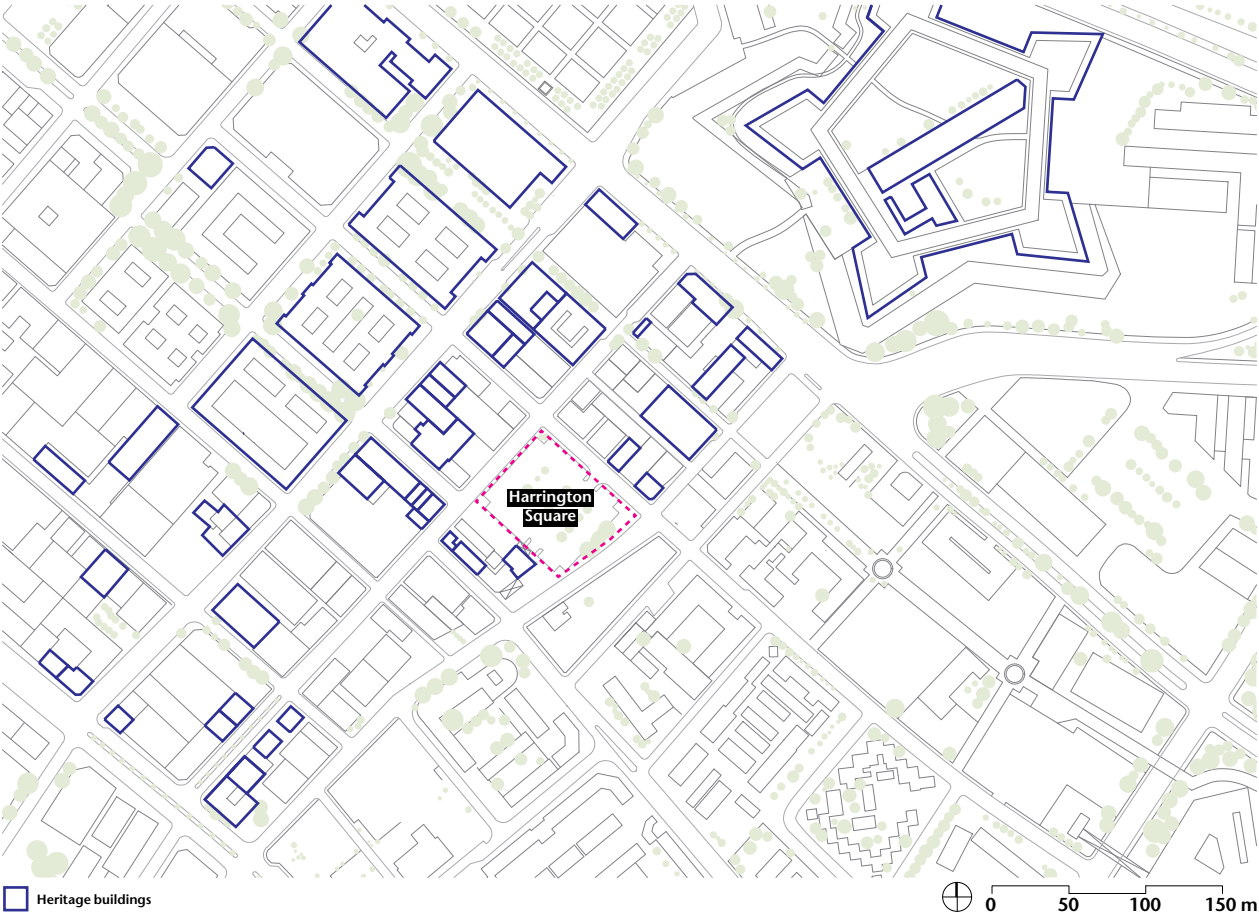


Figure 189 Map at the street scale indicating buildings with significant heritage value. (Source: Author, 2020)

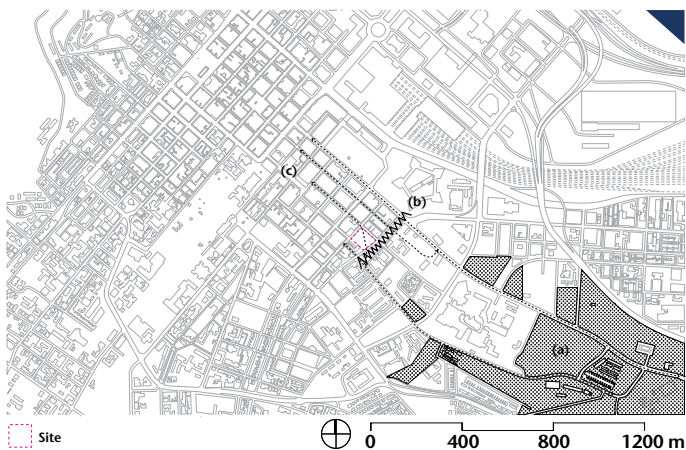


Figure 190 Constraints and opportunities diagram 1 at the district scale.
(Source: Author, 2020)

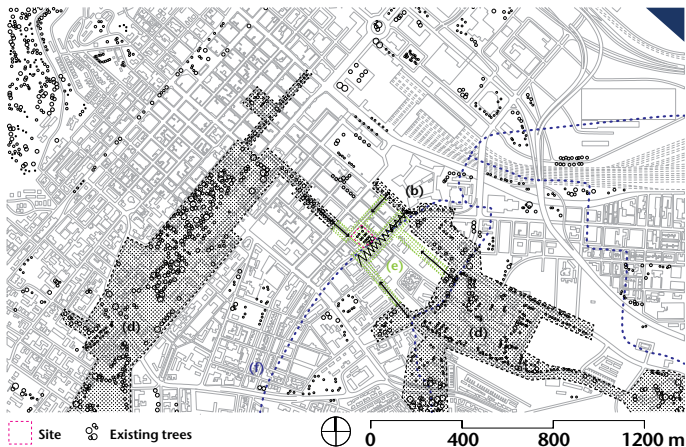


Figure 191 Constraints and opportunities diagram 2 at the district scale.
(Source: Author, 2020)



Figure 192 Constraints and opportunities diagram 3 at the street scale.
(Source: Author, 2020)

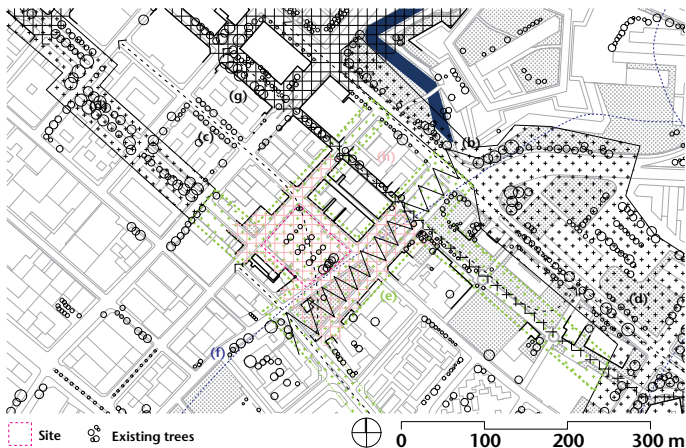


Figure 193 Constraints and opportunities diagram 4 at the street scale.
(Source: Author, 2020)

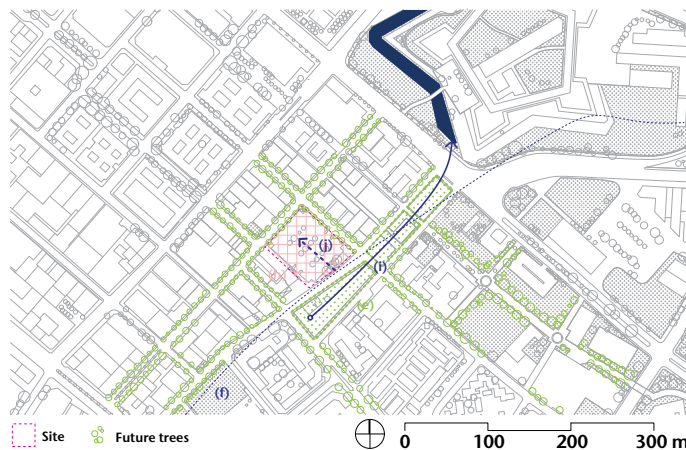


Figure 194 Constraints and opportunities diagram 5 at the street scale.
(Source: Author, 2020)

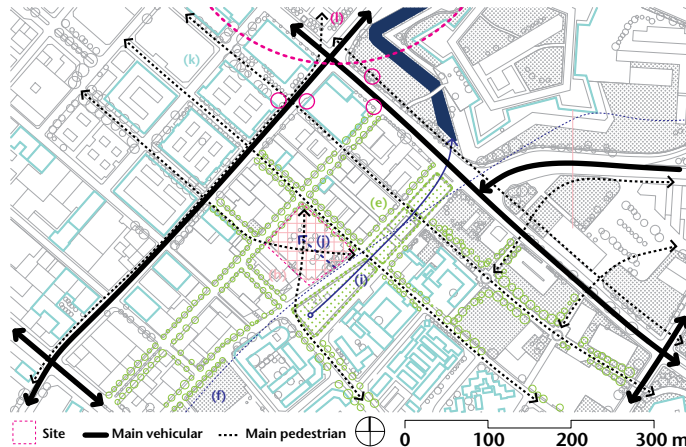


Figure 195 Constraints and opportunities diagram 6 at the street scale.
(Source: Author, 2020)

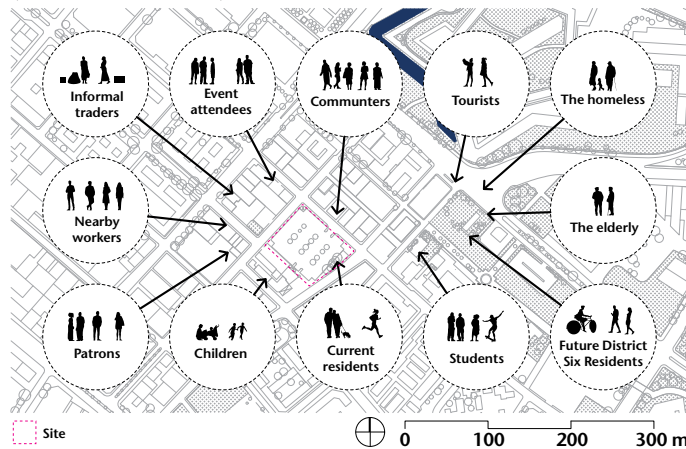


Figure 196 Constraints and opportunities diagram 7 at the street scale.
(Source: Author, 2020)

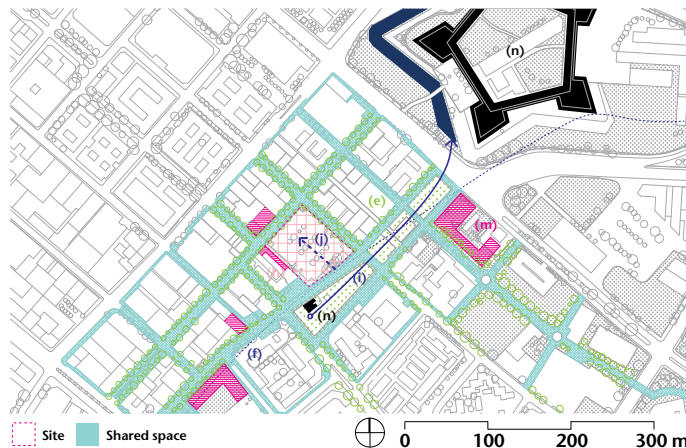


Figure 197 Constraints and opportunities diagram 8 at the street scale.
(Source: Author, 2020)

contains a large amount of buildings with significant heritage value. This is largely due to the fact that this area formed part of the earliest development of Cape Town, as was shown in *Figure 156* and *Figure 157*. Notably, most of the existing structures present on the same city block as Harrington Square are included in the list of buildings with significant heritage value.

4.3. Constraints and Opportunities

Having analysed the surrounding site context in terms of its general location and setting, climatic conditions, space defining elements, connectedness, activities and special conditions and regulations, it is now possible to generate a set of constraints and opportunities to inform the final design. These will assist in determining an appropriate urban design response particular to the site, as well as in the development of an urban design framework in Part II of this study. As can be seen in *Figures 190-192*, three major aspects of the surrounding site context at the district scale dominate the understanding of how the urban component in Part II needs to respond, namely the remnants and uncertain future of District Six, the disconnected green systems in the district and Harrington Square's role within the larger open public space network.

To be more specific, *Figure 190* shows the large area of District Six (a) that remains largely empty and which has an uncertain future. The destruction of the neighbourhood in the 1970s also left a visible schism in the urban fabric (b) adjacent to Harrington Square between the integrated urban fabric of the city centre and the fractured fabric of District Six. Because of these factors, this study maintains that the urban design response needs find strategies to assist in mending this schism, as well as plan for the increase in activity and movement generated from any future redevelopment of District Six (c).

Figure 191 shows the two existing green systems (d) which extend into the district, namely the system extending from Table Mountain to the Company's Garden and the one extending from Devil's Peak to CPUT and the Castle of Good Hope. As this figure illustrates, Harrington square is situated between these two systems which are disconnected in the same area as the schism left by the destruction of District Six (b). For this reason, this study has identified the opportunity to reconnect these two systems in the fabric surrounding Harrington Square by planting new trees and establishing a new green space (e) in the unbuilt area between the East City Precinct and District Six. This

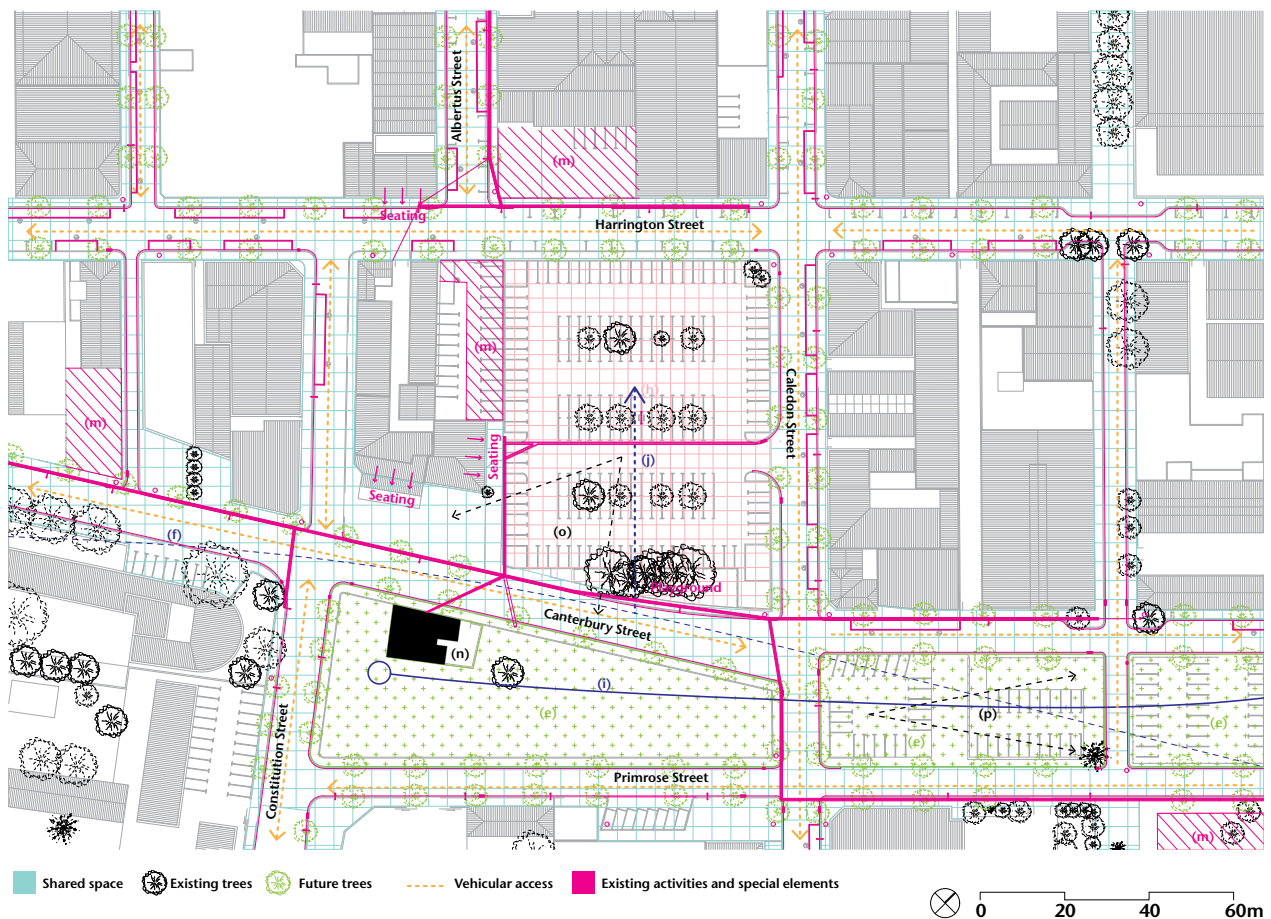
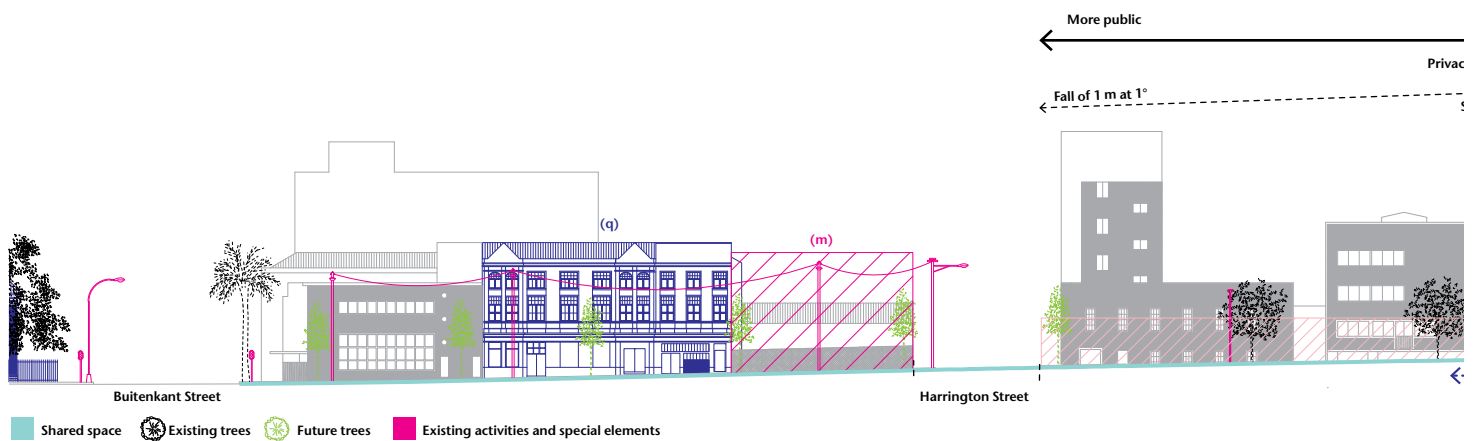
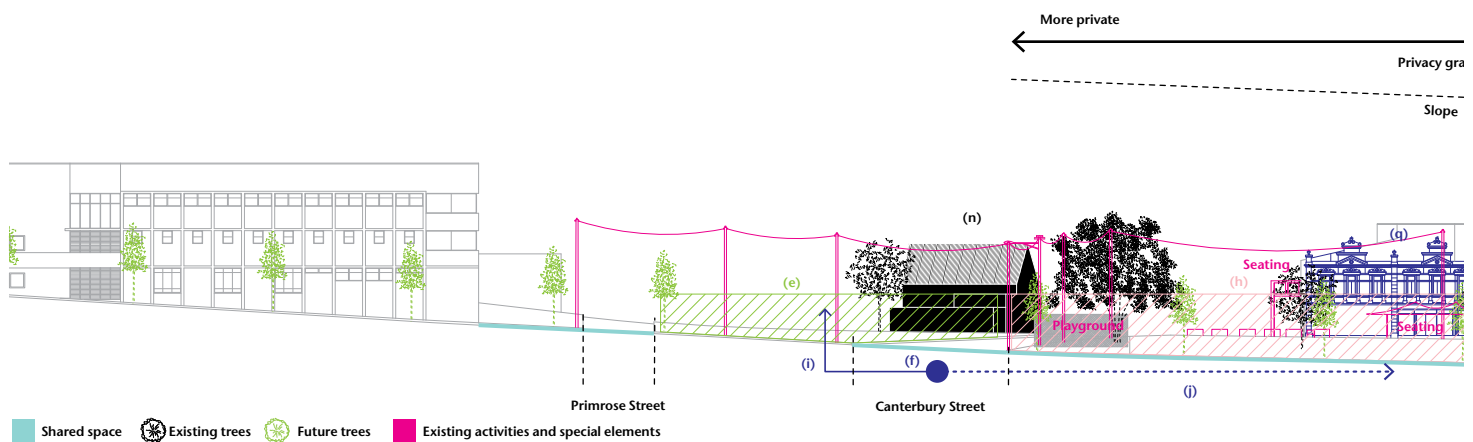
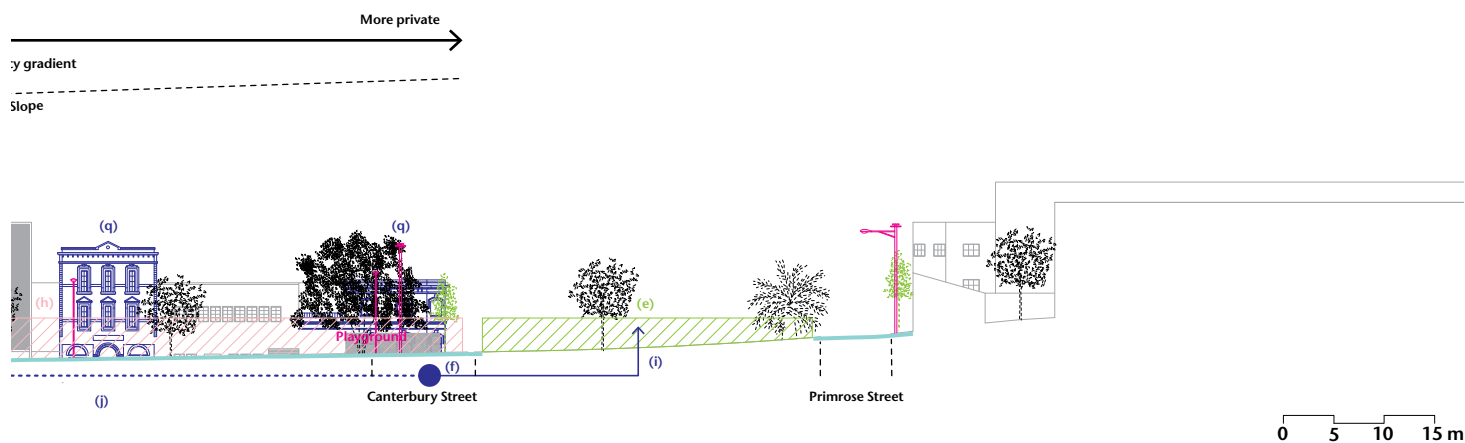
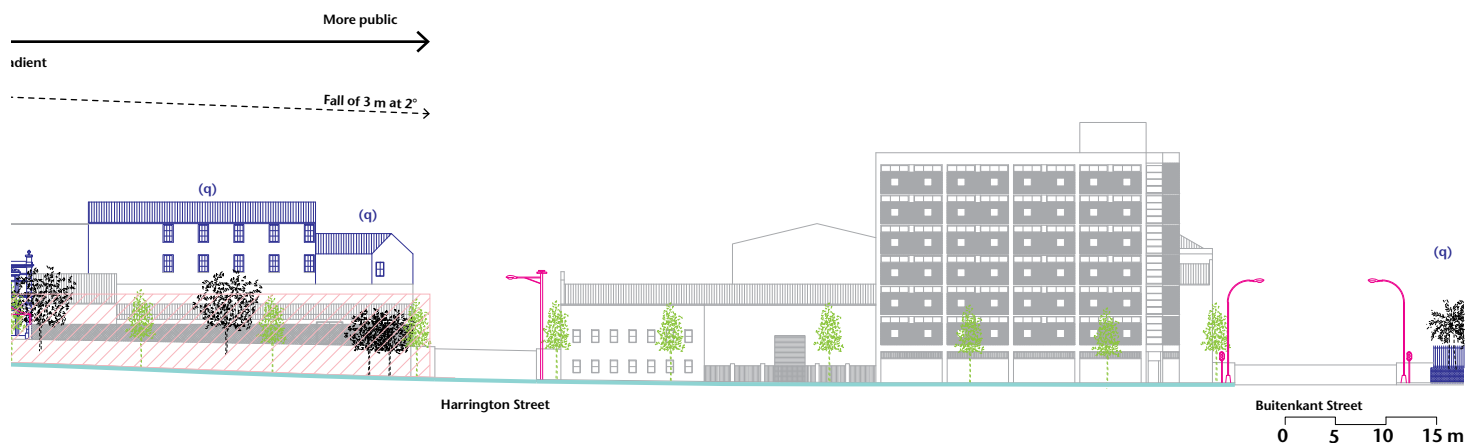
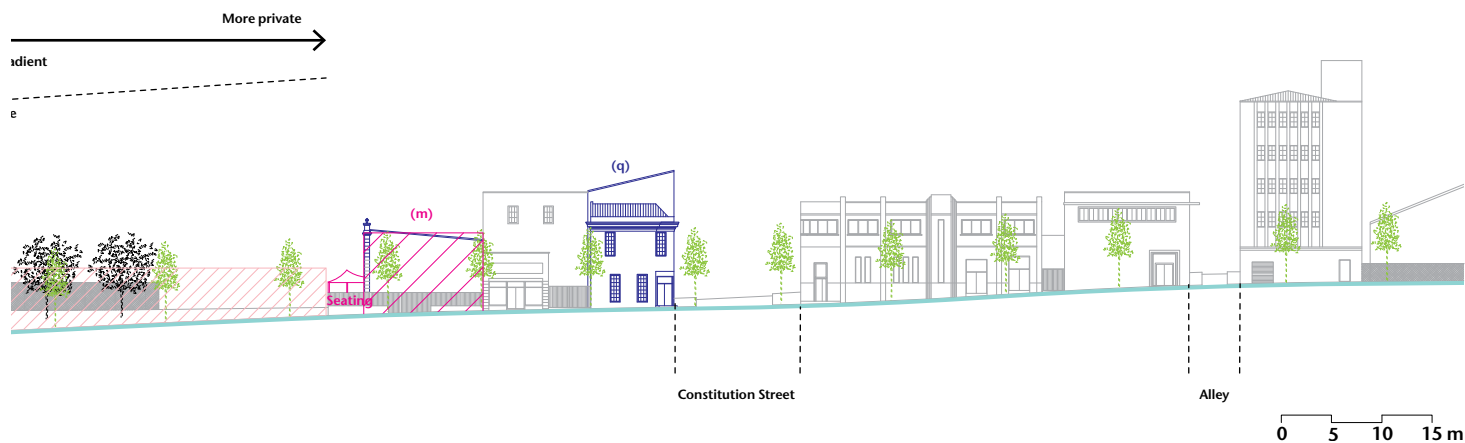


Figure 198 Site plan of Harrington Square showing constraints and opportunities. (Source: Author, 2020)





new green space could also serve as a starting point in mending the fractured urban fabric at the interface of these two neighbourhoods. Notably, this figure shows that the underground Camissa water system (f) presents additional opportunities for the urban design response as it flows directly through this proposed green space.

Figure 192 shows the location of Harrington Square in relation to the proposed green space (e), the Camissa water system (f) and the existing network of open public space in the city centre (g) which connects Bo-Kaap to District Six on its north-west-south-east axis and the Company's Garden to financial centre on its south-west-south-east axis. As was previously shown in *Figure 171*, the urban fabric in the East City Precinct and the rest of the city centre is very tightly packed with limited open public space. For this reason and because of its location in relation to the existing open public space network (g), there is an opportunity for the ground floor of Harrington square to be transformed into a public urban square (h) in addition to hosting the proposed low-income housing intervention. As discussed by Jacobs (1961: 98-111, 143-164), city parks and squares require a wide variety of primary uses around them to generate sufficient diversity and to sustain activity throughout the day. As was previously shown in *Figure 183* and *Figure 184*, the context surrounding Harrington Square contains an abundance of diverse primary uses, as well as a wide variety of secondary uses. Furthermore, the addition of the proposed housing project will establish an additional primary function around the proposed public square (h) and green space (e) to assist in generating diversity and activity. Additionally, it should be understood that unlike the Grand Parade to the north of it, Harrington Square would function as a lower order public square as it is located one block away from higher order movement routes.

Moving down to the street scale, *Figure 193* depicts the constraints and informants as discussed above, whereas *Figure 194* depicts the urban design decisions that can already be made in response to these. These decisions include establishing a new green space (e) to the south-east of the site at the interface of District Six and the East City Precinct and establishing a new urban square on the ground floor of Harrington Square (h). Additionally, *Figure 194* shows two specific opportunities presented by the Camissa water system (f). Firstly, this includes bringing this water source to the surface at the highest point of the proposed green space (e) and incorporating it into the design of this space (i). The effect will be that wider attention will be drawn to this valuable but largely forgotten source

of water and the fractured urban fabric (b) will be addressed by bringing people together from both sides of the divide around the newly established presence of water. Secondly, by tapping into the Camissa water system that flows past the site and making it available (j) to the future community who will inhabit the low-income housing intervention on Harrington Square, this currently wasted resource could be used to meet the community's water needs, increase their self-sufficiency by allowing them to pursue urban farming and to enable them to generate additional income through the sale of surplus produce from these urban farming activities. Ultimately, both making the Camissa system visible to the public (i) and making it available to the community (j) will be both productive and supportive in nature, as well as advance social, economic and environmental sustainability, as was discussed throughout Chapter 2.

Moreover, as illustrated in *Figure 195* and *Figure 196*, the nature of the movement through and around the site, the large variety of primary uses in the surrounding context (k) and the wide range of different user groups who move through the neighbourhood are important factors to consider in the urban design response. As can be seen in *Figure 195*, Harrington Square is located close the largest public transportation node in the city (l), and the larger East City Precinct is characterised by slow moving vehicular movement and significant pedestrian movement through its streets, mainly between District Six and the rest of the city centre. As can be seen in *Figure 196*, the user groups who can be expected to make use of the proposed green space (e) and urban square (h) include current residents in the area, children from the surrounding schools, patrons to secondary use buildings in the neighbourhood, nearby workers at office buildings and businesses, informal traders, attendees of special events at any of the primary use buildings surrounding the site or at protests that are common in the area, commuters, tourists to the surrounding museums and landmarks, the homeless residents of the neighbourhood, elderly residents of the nearby old age home, future residents of District Six and students at the various institutions of higher learning and student accommodation in the vicinity.

Consequently, the slow moving vehicular traffic flow, significant pedestrian movement, wide range of user groups and large variety of primary and secondary uses in and around the East City Precinct present the optimal preconditions necessary for establishing a new shared space in the neighbourhood, as depicted in *Figure 197*. The term shared space refers to an urban design approach that minimises the segregation

between different types of users of a street, i.e. those traversing the space by foot, bicycle, public transport or personal vehicle, by removing features such as kerbs, road surface markings, traffic signs and traffic lights (Moody & Melia, 2014: 384-392). In addition to depicting the possible extent of this proposed shared space (determined by only including streets without high vehicular traffic flows), *Figure 197* also indicates the location of possible future development (m) and existing landmarks (n) around proposed shared space, green space (e) and urban square (h). These landmarks include the Castle of Good Hope to the north-east and the power substation to the south-east of Harrington Square that has become an icon in the East City Precinct.

The site plan of Harrington Square depicted in *Figure 198* and the elevations of the streets surrounding the site depicted in *Figures 199-202* shows the extent of the proposed shared space and the locations of the proposed green space (e) and urban square (h) at a smaller scale. These figures also display constraints and informants that have already been discussed above, namely making the Camissa water system visible (i) and accessible (j), possible future development around the site (m) and the location of landmarks (n), as well as a range of additional constraints and informants that are critical to take into consideration when

developing the urban design response. These include the dramatic views of Devil's Peak and Table Mountain from the site (o), the visual connection between the proposed green space and the Castle of Good Hope (p), segments of the proposed shared space that require vehicular access, important existing activities and elements to consider around the site such as playgrounds, seating areas, loading zones, drains, power lines, lighting, manholes and rainwater channels, the privacy gradient on the site, the magnitude and direction of the slope on each edge of the site, and the location of heritage buildings (q).

As a consequence of the urban design decisions already made in this subsection through an understanding of the constraints and opportunities presented by the site and its surrounding context, further research will be conducted in the next chapter into principles behind the design of urban green spaces, urban squares and shared spaces. In addition to this, research into urban farming methods that could make use of the water made available from the Camissa water system will also be conducted in the next chapter. Ultimately, the understandings gained in both Chapter 4 and Chapter 5 will be implemented in generating an appropriate urban design framework in Part II of this study, as well as in generating the final design for the proposed low-income housing intervention.

5 Principle Exploration

5.1. Exploration of Possibilities for Co-operative Organisation in Low-Income Housing

According to researchers Je Ahn, Olivia Tusinski and Chloe Treger in their publication *Living Closer: The Many Faces of Co-housing* (2018: 12), communities across the globe have been ‘living closely together from time immemorial’ and history is ‘riddled with examples of highly collaborative settlements offering new models for living together’ that are often in response to ‘deep desires for greater security and protection, as well as spiritual, economic and even sexual liberation’. Many of these examples include heterotopic spaces such as monasteries, kibbutzim, communes, survivalist compounds and, of particular significance to this study, co-operative housing schemes. Such housing schemes, of which Urban Forest (discussed in subsection 3.1.2), Centraal Wonen (discussed in subsection 3.3.1), La Borda (discussed in subsection 3.3.2), iLinge Labahlali Housing Co-operative (discussed in subsection 3.3.3), Narkomfin (discussed in subsection 3.4.1) and Communal Villa (discussed in subsection 3.4.2) serve as examples, challenge normative societal structures by embracing ‘other’ ways of living.

According to the *International Co-operative Alliance Statement on the Co-operative Identity* (United Nations, 2020), a co-operative can be defined as an ‘autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise’, based on the values of ‘self-help, self-responsibility, democracy, equality, equity and solidarity’, and that believe in the ‘ethical values of honesty, openness, social responsibility and caring for others’. Moreover, seven principles can be distinguished that act as guidelines by which co-operatives put their values into practice (United Nations, 2020). These are voluntary and open membership, democratic member control member economic participation, autonomy and independence, education, training and information, co-operation among co-operatives, and concern for commu-

nity.

Ahn, Tusinski and Treger (2018: 33) also provide insight on the differences between conventional homes and shared living schemes in terms of how they manage the ‘spheres of sharing’, as diagrammed in *Figure 203*. These spheres relate to the ‘different spaces and daily routines that generate intimacy, with certain activities and spaces closer to our common perception of what is considered “private”’ (ibid.). In shared living schemes, there is more room to negotiate a balance between intimacy and privacy, with the most intimate and ‘formal’ spheres of sharing being around daily communal meals as this requires considerable coordination and effort. Equally important to building a sense of community are more informal or chance encounters, i.e. in the communal laundry room. Apart from the differences within individual co-operative housing schemes in terms of how they manage the spheres of sharing, a large range of variation in the overarching organisational structure, nature of tenure (whether rental or owned, individual or collective), ways of initiating the co-operative and methods for

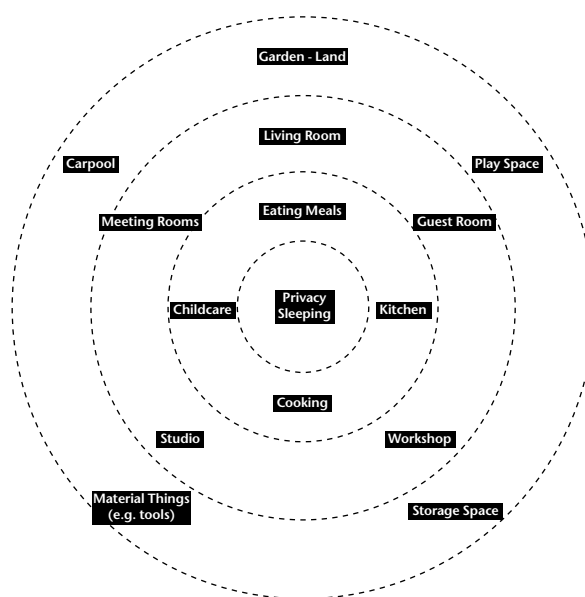


Figure 203 Diagram depicting the ‘spheres of sharing’. (Source: Je Ahn, Olivia Tusinski and Chloe Treger, 2018)

securing and managing finances can be found. These are wholly dependent on the socio-economic context of each example and it is clear that successful housing co-operatives depend on adopting strategies in dealing with each of these components that are appropriate to their individual contexts.

Within South African legislation, the term 'co-operative' is used to refer to 'an autonomous association of persons united voluntarily to meet their common economic and social needs and aspirations through jointly owned and democratically controlled enterprise organised and operated on co-operative principles' (South Africa, 2005). Further, legislation distinguishes between primary housing co-operatives, i.e. where the main objective is to provide housing for its members and where the members will have the right to occupy the allocated housing units for as long as they remain members of the co-operative, and secondary housing co-operatives, i.e. where the main objective is to provide services to primary housing co-operatives and to undertake housing developments on behalf of existing or proposed housing co-operatives (ibid.; Herbst, 2010: 86). As discussed in great detail by researcher Adriana Herbst in her thesis titled *An Assessment of South African Housing Co-operatives – The Case of iLinge Labahlali Housing Co-operative*,

Nyanga, Cape Town (2010: iii-v), co-operatives as a form of business have a long history in South Africa, but housing co-operatives remain a relatively unfamiliar concept. However, it is evident that co-operative forms of housing accord with the literature reviewed in Chapter 2. This is because such settlements provide the opportunity for new collaborative organisations and social innovations to emerge over time – concepts that are central to sustainable development and that were discussed in subsections 2.2.1 and 2.2.4 of this study. Moreover, as shown in *Figure 204*, co-operative forms of organisation are characterised by prioritising people over profit.

As the idea of *ubuntu*, i.e. the complex form of solidarity embedded in African cultures (Manzini, 2015: 87), is deeply engrained in South African society and in the way space is organised in many parts of the country, the reason for housing co-operatives being such an unfamiliar concept is not because co-operation is a foreign idea. Rather, as determined by Herbst (ibid: iv) in her study in which she interrogates the reasons why only a handful of housing co-operatives that have been established in South Africa since 1994 have been successful, this is primarily due to a lack of support from current legislation and from the three spheres of government, i.e. the local, provincial and

Co-operatives	Private corporations/companies
Service motive	Profit motive
Principle of mutual benefit	Principle of profit first
Earn income through its member owners who are part of the services and processes of the enterprise	Earn income from remote investors and not the owners of the company
Capital return limited	Capital return unlimited
Do not have access to financing instruments available to companies	Have access to a variety of financing instruments
Shares can only be held by members of the co-operative	Shares can be held by anyone who can afford to buy shares
Distributions made by the co-operative are usually treated as a mutual benefit i.e. to benefit from rebates or increase living standards	Shareholders receive higher returns on better share prices
Democratic control: one member, one vote	Control of the company is in the hands of the person with the most shares
Members take advantage of the services the co-operative provide	Share holders take advantage of share prices
Member's volunteer efforts help to keep overall costs down	Share holders do not play a role in everyday, overall costs

Figure 204 Table listing the differences between co-operatives and private organisations. (Source: Adriana Herbst, 2009)

national levels.

In the case of the iLinge Labahlali Housing Co-operative, which consists of 274 member families who successfully applied for a governmental institutional subsidy to develop 274 family units (ibid: 104) and whose co-operative model is diagrammed in *Figure 205*, success and sustainability is largely due to support from the City of Cape Town and various key role players (listed in Appendix 1). This particular example of co-operative housing is centred around a housing support centre office within the housing scheme that is well equipped to enable the co-operative to provide a support system to co-operative members and labourers. The housing support centre office is in charge of administration and management of the construction process and employs a construction manager, and administrator/bookkeeper and a material/tools manager (ibid.). Furthermore, to be able to assist with everyday queries and maintenance issues, the housing support centre office requires a range of tools (listed in Appendix 2). As discussed by Herbst (ibid.: 111-2), iLinge Labahlali also has a tool-library for use by construction teams (listed in Appendix 3) which can be used as an example of a typical tool-library.

As shown in *Figure 206*, housing co-operatives in

South Africa can either be developer built or built using the People's Housing Process (PHP), and can either make use of project linked subsidies or institutional subsidies. iLinge Labahlali makes use of the PHP, which is not a subsidy, but rather 'an agreement between a group of qualified people who use their combined resource (labour and savings) to secure their own homes' and that receives subsidies, grants and funding for housing support from the government (ibid.: 77). PHP projects have the added benefit of having more simple co-operative structures that do not require complicated housing management companies and are effective for poverty alleviation in urban areas (ibid.: 2). Complicated mother/daughter or secondary/primary housing co-operatives that require such housing management companies have proven to be inappropriate to the specific socio-economic context of South Africa for a variety of reasons that include high start-up costs and the need for ongoing income (Wilson, 2013: 15). Furthermore, iLinge Labahlali makes use of institutional subsidies as opposed to project linked subsidies, resulting in a property that is owned by the housing co-operative with the option of changing to individual ownership over time.

In terms of its organisational structure, one person from each household within the iLinge Labahlali

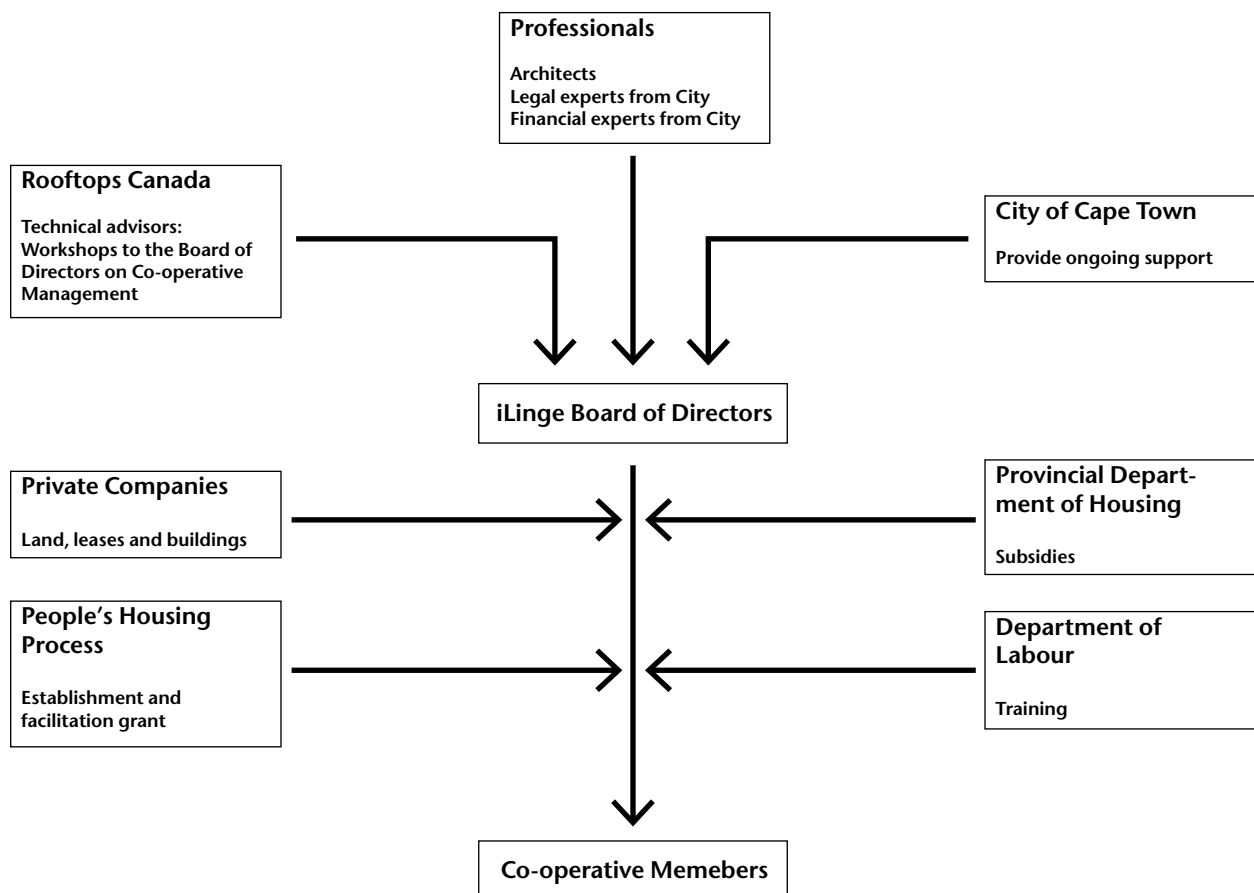


Figure 205 Diagram of the co-operative model used in the iLinge Labahlali Housing Co-operative. (Source: Adriana Herbst, 2009)

Subsidy Type	Developer built	People's Housing Process (PHP)	Ultimate tenure
Project linked subsidies	A developer (municipality, non-profit company, etc.) decides on the design and construction of the housing units. The beneficiaries are expected to save R2 479 to get access to a unit. The developer sells the house to the beneficiary for R0,00 if the house construction costs equals the subsidy amount. This is the most common form of subsidy type used in South Africa.	The people through their representative body decide on the design of the houses. Beneficiaries must provide some form of contribution (sweat equity). A support organisation is used to help the people arrange for the construction of the houses. Individuals do not have to save R2 479. (Sometimes developers changed to this, it is then referred to as "managed PHP").	Individual ownership (Example Masizame Housing Co-operative)
Institutional subsidies	The co-operative together with a developer/architect of their choice decides on the design of the house. Additional funds are usually required to add to the Government subsidy. The co-operative allocates the houses to individuals.	Similar to above, except that the property is owned by the co-operative and not sold to individuals immediately.	Co-operative tenure with an option to change to individual ownership after a period of time. (Example iLinge Labahlali Housing Co-operative)
Ultimate decision-making authority	The developer	The people	

Figure 206 Table listing the subsidies available for housing co-operatives in South Africa. (Source: Adriana Herbst, 2009)

Housing Co-operative is a registered co-operative member and the co-operative committees meet on a regular basis (these include general meetings and board meetings) to keep members informed and to deal with the development of the co-operative (Herbst, 2010: 103). Decisions about site development, land use and house planning were implemented through a participatory design process with each family identifying their needs, and 84 members were trained and received accreditation in a number of building skills (ibid.: 106). Members were given three options for implementing the design decisions made depending on their individual financial capacities, construction competencies and time constraints. These include mutual labour teams (where families combine to provide voluntary work teams to implement stages of each others houses), family labour (where family members provide voluntary labour) and paid labour (where specialist and general teams made up for the vocational trainees conduct the staged contracts for payment) (ibid.). Herbst (ibid.: 120) importantly notes, however, that when implementing construction stages and using labour provided by its members, housing co-operatives following the PHP route need to make sure they always

comply with the Occupational Health and Safety Act (South Africa, 1993).

5.2. Exploration of Methods for Participation, Engagement and Building a Programme

As discussed demonstrated by Hamdi in his books *Housing Without Houses: Participation, Flexibility, Enablement* (1995) and *Small Change: About the Art of Practice and the Limits of Planning in Cities* (2004), by Manzini in his book *Design, When Everybody Designs: An Introduction to Design for Social Innovation* (2015) and by South African Architect Carin Smuts in her PowerPoint presentation titled 'Why Listen' (2020), participatory design and the empowerment of ordinary people to produce space is the central component to truly sustainable development practice. As Smuts (2020) argues, such a development practice rests on three critical components, namely social sustainability (i.e. working towards cultural preservation, preventing oppression, encouraging human creativity and restoring human dignity), economic sustainability (i.e. ensuring economic survival, empowerment, training, job creation and ownership) and economic

sustainability (i.e. minimising of carbon footprints, using local materials and skills, incorporating natural light and ventilation, using renewable energy and recycling material). Furthermore, where unsustainable development, i.e. non-participatory development is top-down in nature, sustainable development, i.e. participatory development, is bottom-up in nature (ibid.).

As Hamdi (1995: 75) asserts, participation is something that gets in the way of professional freedoms, of building houses and making architecture when all is said and done. However, he also argues that community participation should not be viewed as a substitute for professional or governmental interventions or for formal planning or design, but rather as an ‘intrinsic part of both processes’ (ibid.: 86). Hamdi (ibid.) further contends that design should not be viewed as the result of the process of community participation, but rather the means to it. In this way, design becomes a form of enablement and community empowerment. Within the various examples of using design to enable community participation cited Hamdi throughout *Housing Without Houses: Participation, Flexibility, Enablement* (1995) and *Small Change: About the Art of Practice and the Limits of Planning in Cities* (2004), it is evident that the hosting of a series of programme building workshops on site in which the various stakeholders involved in that project (which include families, professionals, community groups and government officials) can negotiate and make decisions on a level playing field is critical component. Furthermore, most collaborative planning work within such workshops entail one or a combination of role playing games that are designed to stimulate potential outcomes, teach skills or build awareness (Hamdi, 1995: 153).

As was discussed in subsections 2.2.1 and 2.2.4, the housing problem in South Africa is extremely complex and require the cultivation of social innovations and the design of collaborative organisations to address it in a way that is sustainable, resilient and sufficiently complex. This requires establishing what Manzini (2015: 151-7) calls an ‘enabling ecosystem’, i.e. creating the preconditions necessary to make some ways of being more probable than others. As Manzini (ibid.: 161) asserts, ‘collaborative organisations are living entities whose life depends on the quality of their enabling ecosystem’. It is clear that within housing projects that rely on a high degree of participation, both the physical organisational structure and the invisible organisational structure (as was discussed in section 5.1) are important components of such an ecosystem. On way of imagining such an ecosystem is through

the setting up of an ‘enabling infrastructure’ – a term that refers to a complex, structured platform capable of sustaining many autonomous but connected initiatives. In terms of methods for generating creative and experimental responses within such an ecosystem, Manzini (2015) makes use of examples to elaborates on a wide variety that exist. For example, scenario building is a method that facilitates collaboration by allowing people to ‘share a similar vision of what to do and how to do it’, and what Manzini (ibid.: 129-331) refers to as ‘design-orienting scenarios’ specifically refer to:

[...] generating ‘a set of motivated, structured visions that aim to catalyse the energy of the various actors involved in the design process, generate a common vision, and hopefully cause their actions to converge in the same direction. They consist of three fundamental components: a *vision*, a *motivation*, and a *strategy*. These three components constitute the scenario in architecture.

Another method involves setting up prototypes, which could take the form of small-scale experiments or even full-scaled pilot projects (ibid.: 133-4). According to Manzini (ibid.), a distinction can be made between concept solution prototypes, which are intended mainly to spark conversation, and final solution prototypes, which are very close to the final results. It is evident, however, that any method employed for using design to enable community participation in experimental low-income housing should be open-ended enough for creative and unexpected solutions to emerge over time in a highly collaborative and bottom-up manner.

5.3. Exploration of the Urban Design Response

As was discussed in section 4.3, the urban design response in Part II will consist of three main components that require further research, namely the design of an urban public square, a shared space and a new urban public green space around a reclaimed water source. This section will briefly discuss design principles around each by citing existing research and referring to a range of examples.

5.3.1. Public Urban Square Design

Public urban squares (also referred to as plazas and piazzas, amongst other names) are vital components of city public space networks and form an integral part of urban social and cultural life, hosting both formal and informal activities and changing with according

to the contemporary demands of people. Such spaces are typically defined at each edge by either buildings or edges overlooking the city or a water body. In their 2019 research project titled *Field Guide to Life in Urban Plazas: A Study in New York City* in which they observed the behaviours of people within ten different public squares in New York City, researchers Emily Schlickman and Anya Domlesky found twenty-five distinct observations which provide insight on the social effects of various public urban square design decisions.

Figure 207 depicts observations one to five made by Schlickman and Domlesky (ibid.: 34-43). This includes the following:

1. It is noted by the researchers that ‘the donut effect’ is an unavoidable aspect of life in urban squares, i.e. the phenomenon where people tend to occupy the edges of a public square before filling the middle areas. Because of this, the donut effect should be embraced and design tactics such as designing for the edge by providing places for people to rest and congregate on the edge and activating the central space through programming food vendors or making interactive art pieces could be employed in response.

2. It was also found that people sought out views of the city in both highly trafficked tourist areas and areas with less traffic. Design tactics such as building up, creating view portals, making perches enjoyable to inhabit and creating wind protection are suggested by the researchers to capitalise on these views.

3. Furthermore, when pathways are straight and undifferentiated, people tend to walk faster. Creating more variation in the edges of these pathways by modifying the form and changing the pathway material, as well as creating eddies by breaking up walls, providing off-ramping opportunities and creating entries to linger in the urban square are useful design tactics according to the researchers.

4. It was also noted by the researchers that people do not dissipate evenly throughout the space, and thus designing for clustering and creating heterogeneity should be employed.

5. Lastly, people tend to perch in plazas to observe activity. Developing a series of platforms, providing opportunities to roost, offering a range of heights and providing audience seating are potential design tactics in response to this observation.

Figure 208 depicts observations six to ten made by

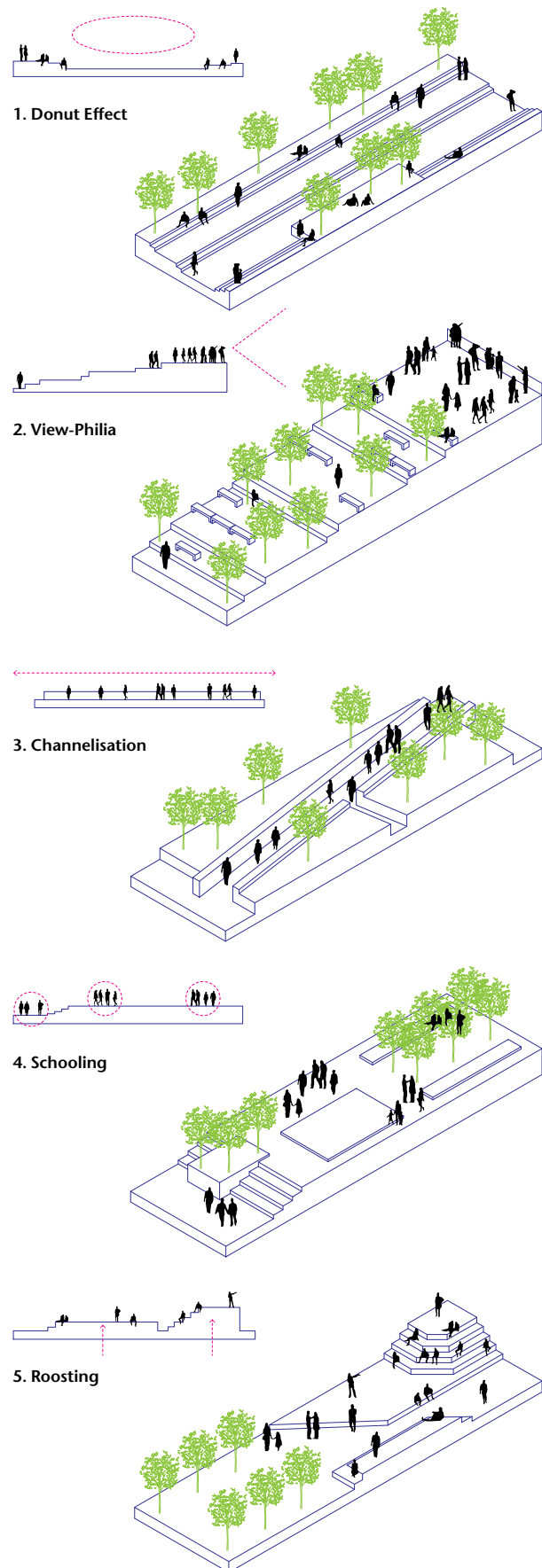


Figure 207 Observations 1 to 5 in (Schlickman & Domlesky, 2019). (Source: Emily Schlickman and Anya Domlesky, 2019)

Schlickman and Domlesky (ibid.: 44-53). This includes the following:

6. The researchers found in their observations that people tended to recline in urban squares when there was sun exposure and a soft surface. According to the researchers, creating areas with full sun exposure offering a variety of opportunities for these 'lizarding' activities from turf areas to furniture can capitalise on this phenomenon.

7. Second, people in urban squares tend to seek more private spurs with good visibility with clear backings and clear views onto the square. According to the researchers, creating smaller, visually connected 'outdoor rooms' sprinkled within the plaza can accommodate this tendency.

8. The researchers also found that public urban squares with bi-directional platforms encouraged informal performances, and that using tactics such as designing spaces flexibly, ensuring that users can face a number of directions and creating informal platforms for spontaneous activity can capitalise on this.

9. Furthermore, it was found that people tend to occupy well-protected in-between or liminal spaces.

10. Lastly, people tend to sit in areas with a strong sense of backing (10) where there is no high traffic flows between seating and the physical barrier.

Figure 209 depicts observations eleven to fifteen made by Schlickman and Domlesky (ibid.: 54-63). This includes the following:

11. First, the researchers observed that people tended to shift their positions in an urban square to face the sun. In response to this, the researchers suggest design tactics such as offering moveable seating, creating spaces with full exposure to the sun and ensuring areas can be inhabited over time.

12. Second, it was noted that urban squares that contained areas surrounded by low elements attracted people as these offer refuge from busy areas whilst still having views of pedestrians.

13. Additionally, urban squares with a wide variety in seating types in terms of materiality, form and height had high dwell times.

14. The researchers also found that when well-used existing pathways were extended through the middle of an urban public square, people would often take short

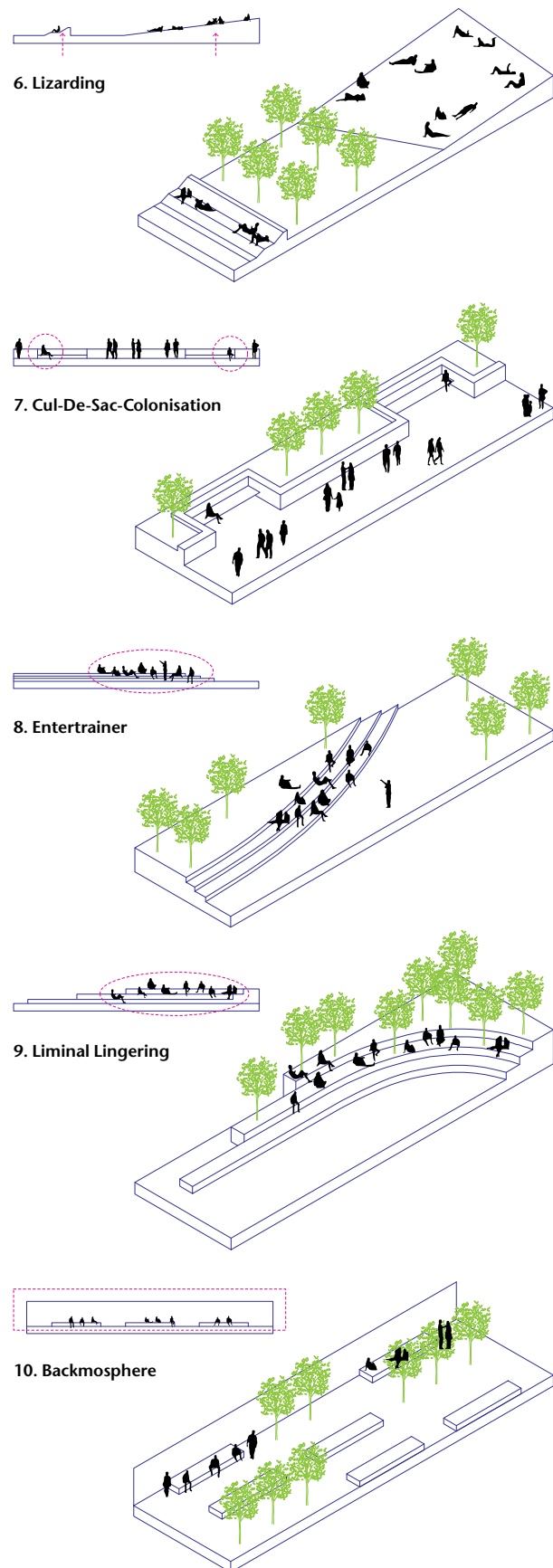


Figure 208 Observations 6 to 10 in (Schlickman & Domlesky, 2019). (Source: Emily Schlickman and Anya Domlesky, 2019)

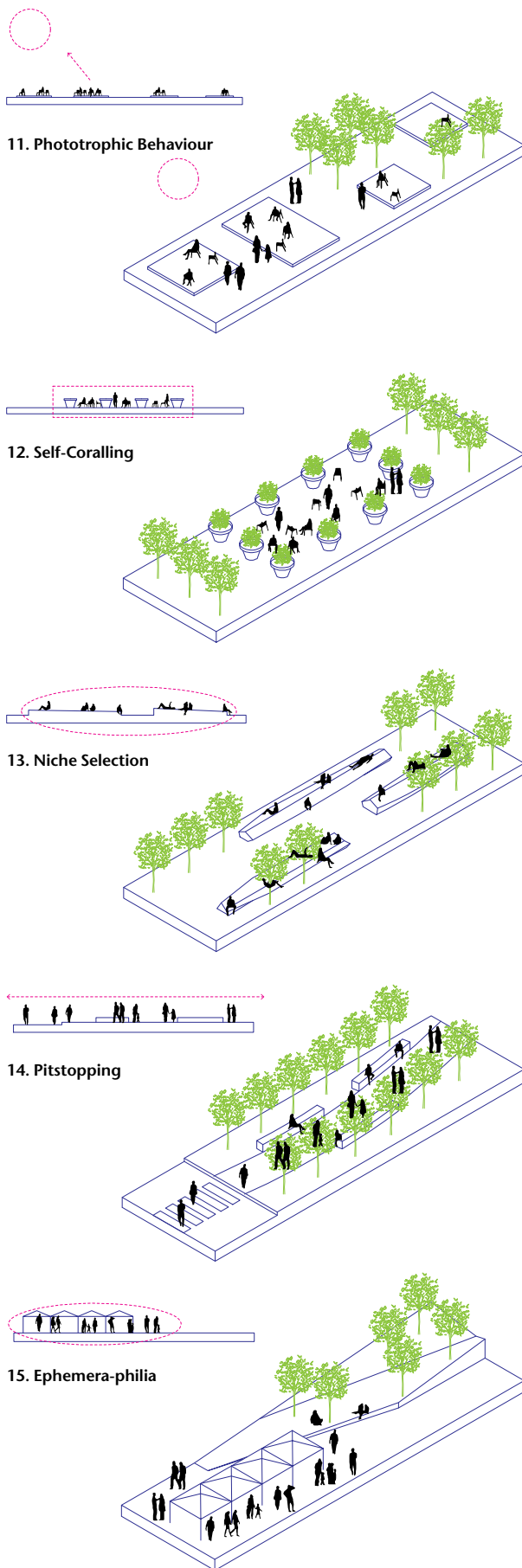


Figure 209 Observations 11 to 15 in (Schlickman & Domlesky, 2019). (Source: Emily Schlickman and Anya Domlesky, 2019)

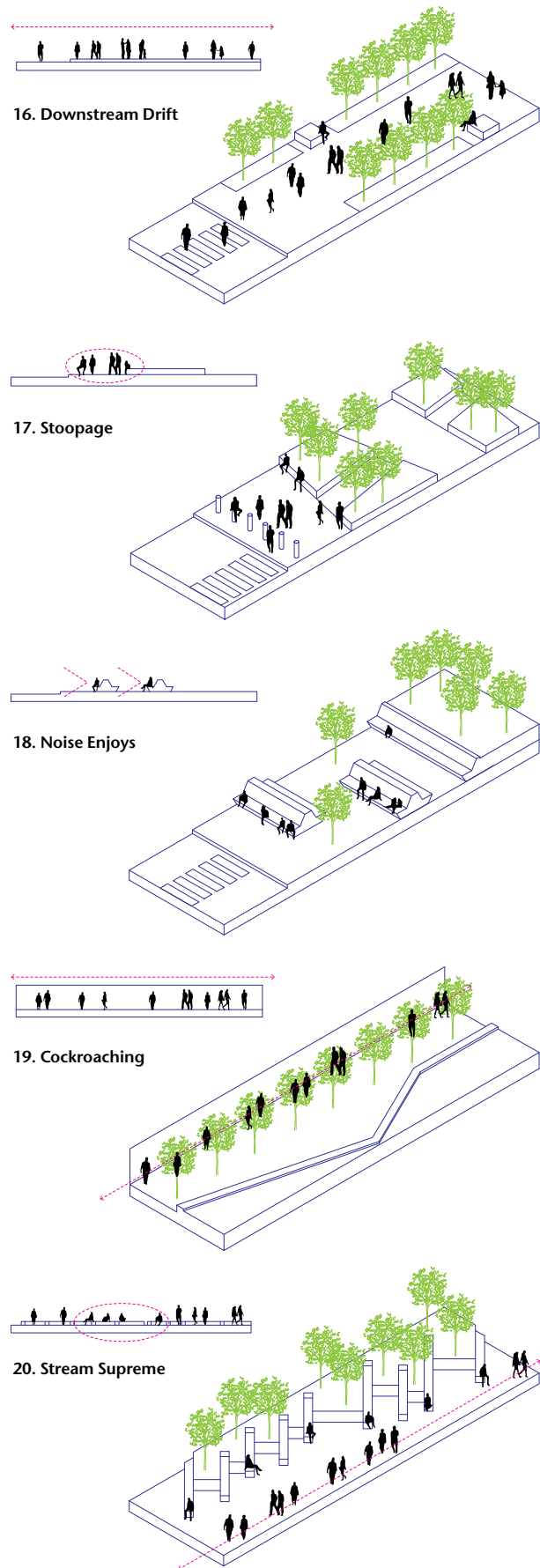


Figure 210 Observations 16 to 20 in (Schlickman & Domlesky, 2019). (Source: Emily Schlickman and Anya Domlesky, 2019)

breaks and linger more compared to pathways on the edge of the urban square. This provides the opportunity to prioritise pathways through the central area and extend well-used pathways into the urban square as a potential design tactic. Lastly, urban squares containing activities with a limited lifespan (15) were found to attract more locals.

Figure 210 depicts observations sixteen to twenty made by Schlickman and Domlesky (ibid.: 64-73). This includes the following:

16. The researchers observed that people tended to drift into urban squares with wide and open entrances at cross streets or transverse paths – the wider the entrance, the greater the flow. Potential design tactics to make the most of this tendency include making urban squares inviting, designing wide entrances, minimising pinch points and maintaining views into and out of the urban square.

17. The researchers also found that people, while waiting for the bus or to meet up with a friend, made use of taller elements at the edges of urban squares. To respond to this, it is necessary to design for edges where people gather and wait in a way that makes the act of waiting comfortable and to design these edges for short breaks by incorporating taller walls or planters.

18. Third, people were often observed to sit facing the street traffic but were not often watching traffic. The researchers thus recommend providing seating where the urban square meets the street or near the edge of the urban square.

19. Furthermore, the researchers found that people liked to move along building edges even if the pathway was narrow. Possible design tactics such as maintaining a consistent building buffer, maintaining sight lines and incorporating lighting are suggested by the researchers in response to this observation.

20. Lastly, people were observed to enjoy sitting faced towards active pathways, even if there were other choices present.

Figure 211 depicts observations twenty-one to twenty-five made by Schlickman and Domlesky (ibid.: 74-83). This includes the following:

21. Reflective surfaces in urban squares were found to be major attractors of people within the researchers' observations.

22. The researchers also found that groups of people

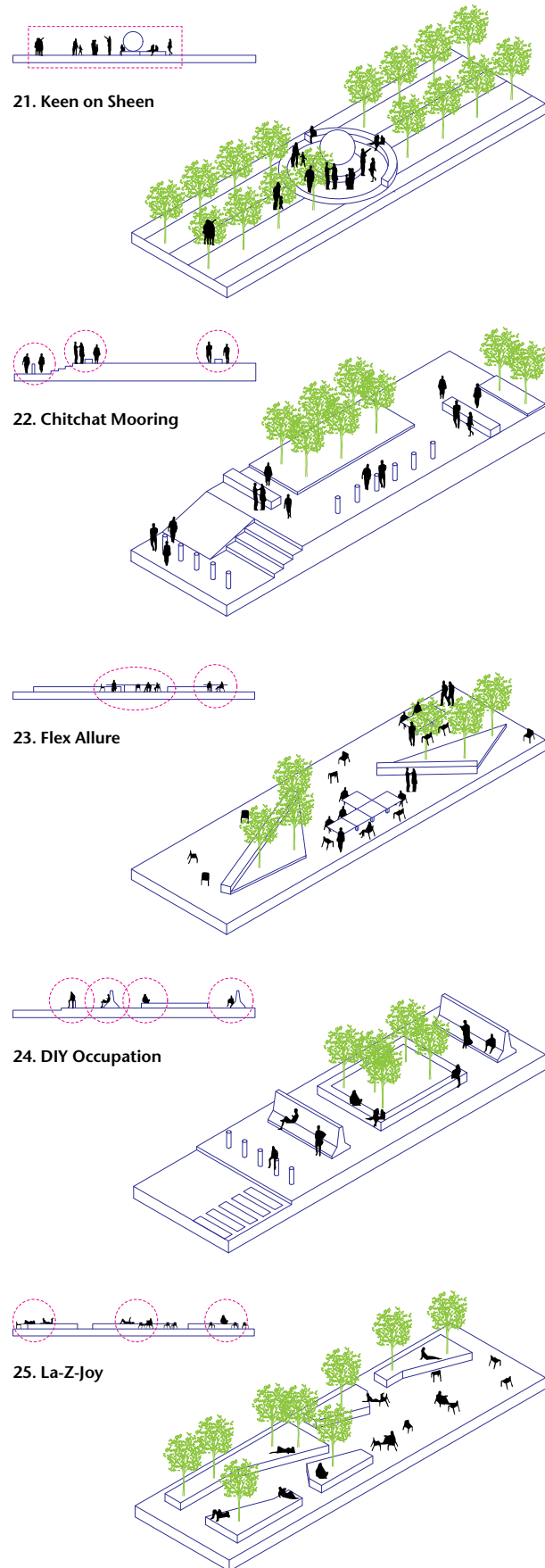


Figure 211 Observations 21 to 25 in (Schlickman & Domlesky, 2019). (Source: Emily Schlickman and Anya Domlesky, 2019)

tended to congregate around objects when conversing, even when those objects were not being used. This provides the opportunity to focus on physical focal points in designing social seating and to experiment with different objects.

23. Additionally, groups of people in urban squares were noted by the researchers to prefer flexible seating and movable furniture. This allows people to rearrange furniture according to their needs. As a result,

the researchers propose possible design tactics such as offering a range of moveable furniture, prioritising modularity and offering furniture that can cluster easily together.

24. Furthermore, the researchers found that groups of people tended to make use of many urban square elements as furniture in a do-it-yourself (DIY) manner. This includes elements such as peaked curbs, security bollards with flat tops, jersey barriers and electrical

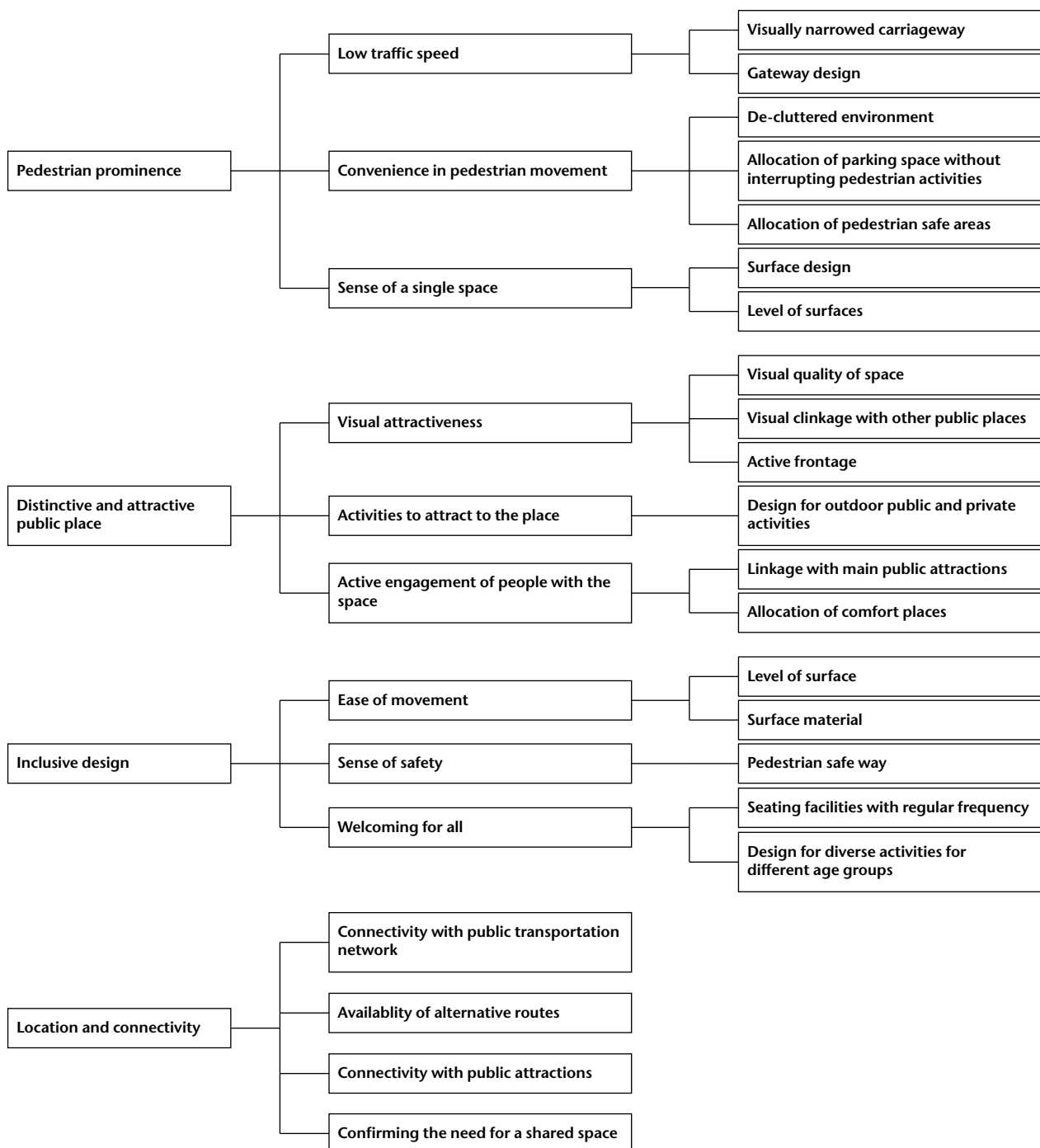


Figure 212 Diagram listing the design factors of a successful shared space street. (Source: Ranmalsingha Jayakody, Kaushal Keraminiyage, Mark Alston and Nuwan Dias, 2015)

boxes.

25. Lastly, the researchers observed that people often looked for the opportunity to prop their feet up.

5.3.2. Shared Space Street Design

The second component of the urban design response is that of transforming a section of the surrounding site context into what is referred to as a shared space. According to researchers Ranmalsingha Jayakody, Kaushal Keraminiyage, Mark Alston and Nuwan Dias in their 2018 article titled *Design Factors for a Successful Shared Space Street (SSS) Design* (2018: 278), the concept of shared space design 'promotes the notion of sharing a single space by both pedestrians and vehicles while the prominence is given to pedestrian movement'. Researchers Simon Moody and Steve Melia concluded in a 2014 article titled *Shared Space: Research, Policy and Problems* (2014: 1-2) that many of the claims made by advocates of shared spaces have overstated the evidence behind the benefits of such spaces in terms of reducing road accidents and improving pedestrian movement, but that such spaces have been implemented for a variety of other reasons. These include improving the urban environment, giving people freedom of movement rather than instruction and control, improving the ambience of places, enhancing social capital and enhancing the economic vitality of places (ibid.). The researchers note in particular that caution should be exercised when implementing such spaces on streets or junctions with high rates of vehicular traffic.

Furthermore, Jayakody, Keraminiyage, Alston and Dias (2018: 282-88) identify four main design factors of a successful shared space street derived from their observations and depicted in *Figure 212*:

1. The key objective of street space design should be pedestrian prominence. This means that one level surface between buildings that is de-cluttered should be maintained, but some elements of conventional streets that advance safety and viability such as road signs, median lines and divisions can be left as long as they are arranged in a such way that the key objective of pedestrian prominence is maintained. Other factors which reduce vehicular speed and promote pedestrian prominence include narrowing the carriageway (possibly by indicating the narrowed carriageway through the use of a slightly different paving colour) and allocating parking spots (ideally located between the carriageway and the pedestrian safe area within a transitional area that also hosts street furniture and bicycle racks). Additionally, when designing the surface texture of the shared space, the aim should be

to achieve a feeling of it being one single surface in which pedestrians feel that the space is entirely theirs. Attention should also be given to designing the gateways into the shared space in such a way that vehicles are slowed down and a sense of entering a different zone is experienced by drivers of vehicles. Lastly, the provision of pedestrian safe areas and pathways are an essential component of successful shared spaces. Such spaces, which are defined by being completely off limits to vehicles and bicycles, are especially important to guarantee the safety of older people or people who are unable to hear or see traffic.

2. The second main design factor is maintaining a distinctive and attractive public space. An important factor in doing so is maintaining active frontages throughout the shared space, i.e. the availability of publicly accessible ground floors and the provision of doors and windows onto the street to increase public footfall. In particular, the researchers found that places where shopping, cafés and restaurants were placed were especially attractive to pedestrian activity and that the movement between these spaces enlivened the non-active frontages of buildings such as museums and institutions. It is also important to allocate comfort places that contain seating facilities and that act as resting places for shoppers. Such places can be located both within and outside of pedestrian safe zones. The researchers also emphasise that designing for outdoor public and private activities, e.g. allocating semi-public areas between shops and the pedestrian way, has significant potential to contribute toward achieving a distinctive and attractive public space. Additionally, focusing on the visual quality of lighting, street elements and surfaces is important. Apart from these design factors, the researchers also noted that maintaining visual linkages with adjoining public and semi-public places had a significant impact on achieving this main design factor.

3. In response to the main criticism of shared space design, namely that older people and people with special needs encounter major difficulties within such spaces, it is important to design shared space streets in a way that is inclusive. The researchers note that the level surface of shared space streets are beneficial to those in wheelchairs or with walking difficulties, but that these spaces can be especially dangerous for blind and partially sighted people, as well as those with hearing difficulties. For this reason, it is important to provide tactile /corduroy paving which divides the carriage way and the pedestrian way or different paving materials with more grip. Similarly, different coloured paving can be used for those with hearing difficulties to identify pedestrian safe zones and path-

ways.

4. The last main design objective cited by the researchers is that of location and connectivity. In order to provide access to the shared space to the majority of visitors to the place, it is important that shared space streets are well connected to the public transportation network. Furthermore, it is critical that alternative routes for vehicles to move freely exist and that the streets being transformed into shared space streets do not serve as main thoroughfares. Lastly, successful shared space schemes depend on the existing need for such an transformation to take place. Areas with high rates of pedestrian movement, access to public attractions, a wide variety of commercial activities and comparatively low rates of vehicular traffic are good candidates for such a transformation. However, the researchers warn that when such a need does not exist, the shared spaces scheme is likely to be unsuccessful.

An example of a successfully implemented shared space scheme can be found in the town centre of Drachten, Netherlands. The location and extent of this scheme in can be seen in *Figure 213*. As can be seen in *Figure 214*, a number of critical elements around this shared space scheme are critical to its success. These include being well connected to the town's public transport network, being in close proximity to major public attractions and institutional buildings, making use of active frontages, ensuring alternative routes for uninterrupted vehicular traffic, the strategic provision of parking space and managing gateway spaces at the interfaces between traditional streets and shared space streets.

Additionally, the images depicted in *Figures 215-222* (the positions of which are indicated in *Figure 213*) show various important elements to the shared space

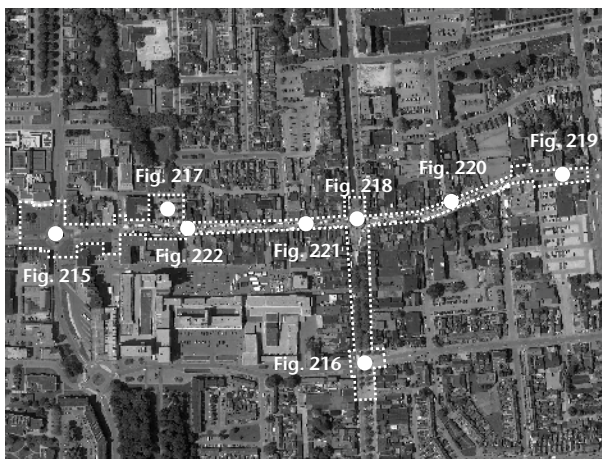


Figure 213 Aerial photograph of Drachten, Netherlands showing the location and extent of its shared space scheme and the positions of *Figures 215-220*. (Source: Author, 2020)

design. *Figure 215* and *Figure 216* show the approach taken in creating gateway spaces at two of the entrances into the shared space. Various strategies are used here to slow traffic and signal the start of the shared space, including making use of traffic circles, pavement texture design and gradual adjustment of surfaces. *Figure 217* depicts another important element of the scheme, namely the urban public square between the library and the museum. This square celebrates these institutions while providing a flexible space to people. Further, *Figure 218* shows the installation that was set up in the middle of the shared space scheme where the four movement routes that constitute it meet. This installation serves as a landmark, a gathering space and a traffic calming measure simultaneously. Lastly, a range of important design strategies employed by this particular scheme can be seen in *Figures 219-222*. These include the use of planters to separate pedestrian safe zones from the carriage way at parts of the scheme where frontages are not very active, incorporating comfort places (in this example, a tree with seating around it) outside of the pedestrian safe zone, narrowing the carriageway and setting up transitional spaces, allowing for semi-public spaces between the transitional zone and pedestrian safe zone where activity from shops, cafés and restaurants can spill out, and using demarcations for safe pedestrian crossing at busier vehicular intersections.

5.3.3. Urban Green Space Design

The final component of the urban design response the design of a new urban green space. As was discussed in section 4.3 of this document, this green space would incorporate water from the Camissa water system flowing underneath it. The reason for this is to draw attention to this currently wasted water source, as well as to make use of as a way of encouraging people to gather and linger in the proposed green space which

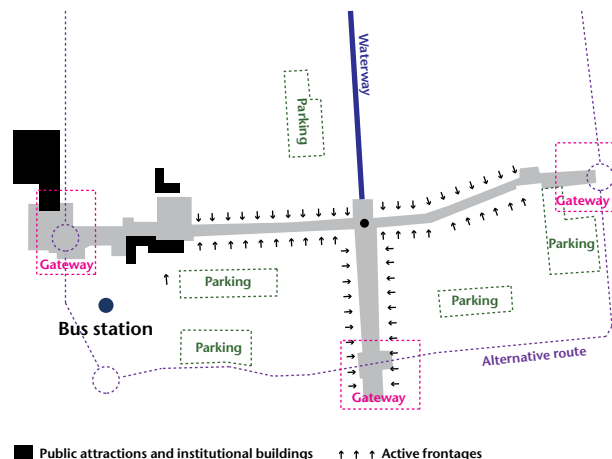


Figure 214 Diagram showing important elements around the shared space scheme in the town of Drachten, Netherlands. (Source: Author, 2020)



Figure 215 Use of a traffic circle as traffic calming method at the start of the shared space. (Source: Google Earth, 2020)



Figure 216 Use of level changes, transitional zones and surface textures at a gateway to the shared space. (Source: Google Earth, 2020)



Figure 217 Establishing of a public urban square in front of the library within the shared space. (Source: Google Earth, 2020)



Figure 218 Use of an installation as a focal point and gathering space at the central junction of the shared space. (Source: Google Earth, 2020)



Figure 219 Use of planters to separate pedestrian safe zones from carriage way. (Source: Google Earth, 2020)



Figure 220 Incorporation of seating acting as a comfort place outside of the pedestrian safe zone. (Source: Google Earth, 2020)



Figure 221 Narrowing of the carriage way and creation of transitional and pedestrian safe zones on each side. (Source: Google Earth, 2020)



Figure 222 Use of demarcations for pedestrian safe pathways across busier vehicular intersections. (Source: Google Earth, 2020)



Figure 223 Cheonggyecheon, Seoul before the Cheonggyecheon Restoration Project (CGC Project, 2003–2005). (Source: globaldesigningcities.org, 2020)



Figure 224 Cheonggyecheon, Seoul after the Cheonggyecheon Restoration Project (CGC Project, 2003–2005). (Source: globaldesigningcities.org, 2020)

sits at the interface between the Cape Town city centre and District Six. The Cheonggyecheon Restoration Project in Seoul is a well-known project that dealt with similar objectives in that its intention was to remove heavy infrastructure, restore a forgotten tributary (the Cheonggyecheon river) and transform the space around this tributary into a public urban green space. The dramatic effects of this restoration can be

seen in *Figure 223* and *Figure 224*. As noted by urban planner Jaime Lerner in his book *Urban Acupuncture: Celebrating Pinpricks of Change that Enrich Urban Life* (2014: 26-9), this particular intervention removed the ‘spaghetti-like tangle of elevated highways’ and salvaged the river which has historically been an important element of the city. Through doing so, a new area was created where people and nature could interact again (ibid.).

As can be seen in a cross section of the project in *Figure 225*, the Cheonggyecheon Restoration Project demonstrates useful design principles in managing the interface between the city, green space and a restored water source and demonstrates the importance of green spaces for urban life. However, there are clear concerns in the lack of public participation and democratic decision making processes that was employed in this project which, according to researcher Eun-Seon Park (2014), had the consequences of displacing many of the city’s street vendors. Park (ibid.) argues that this is not surprising as the project was not primarily driven by concerns with sustainability, but rather neoliberal concerns of increasing surrounding property values. The consequences of this was large scale gentrification and, as Park (ibid.) notes, barely any goals in terms of the historical restoration were reached.

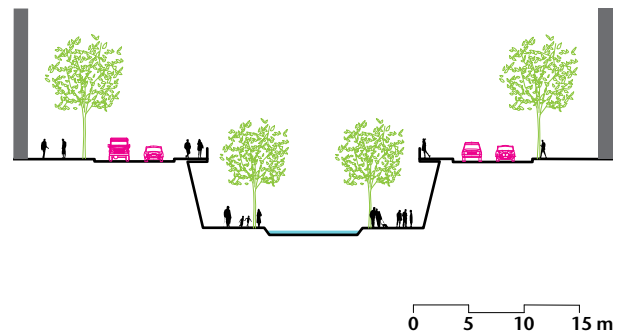


Figure 225 Section through the restored Cheonggyecheon tributary showing interface with water and space for different users. (Source: Global Designing Cities Initiative, 2020)

6 Conclusion

Before generating the design brief, urban design response and the final design, it is important to tie up the research that has been conducted in Part I of this study. This research primarily dealt with attaining various understandings needed for the abovementioned processes to occur. These included gaining an understanding of the theoretical underpinnings of this treatise, the ways in which various housing precedents express spatial agency, the constraints and opportunities presented by the selected site and its context, as well as a range of additional principles needed for the design development process. As was discussed in Chapter 1, each of these understandings correspond to individual research objectives and were dealt with in separate chapters. This was done keeping in mind the overall research aim of investigating how the idea of productive heterotopias can be used as a conceptual basis to identify a practical architectural design strategy for the development of a socially, environmentally and economically sustainable low-income housing intervention on an appropriate site in the Cape Town inner-city – one that advances the right to the city of the urban poor and effectively functions as a counter-project to the reductive and normalising tendencies of mainstream development practice. In this chapter, a summary of the findings from each chapter up until this point will be presented in addition to the main conclusions that were drawn.

Research Objective 1 involved examining various texts in order to compile a comprehensive theoretical underpinning to the treatise to guide further research into finding practical design strategies. The first component in achieving this objective involved exploring the way in which the ideas of space, place and time and their links to power and meaning have been conceptualised by Lefebvre and Foucault throughout their writings, as well as by a range of more recent authors who have made use of Lefebvre and Foucault's writings as a foundation for their contributions to critical feminist, queer and postcolonial thinking around these ideas. At the heart of this conceptualisation is a rejection of the Cartesian view of space, which views it as being absolute and

place as being fixed and opposed to time, in favour of a view of space as being composed of ever-shifting networks of social relations and place as moments within these networks. Furthermore, what is evident is that it is not only possible but imperative to critically analyse spatial production and the dynamics of power in space. Importantly, this includes analysing how different social groups and individuals are placed in relations to these networks. It was also clear that two concepts developed by Lefebvre are particularly useful for this treatise, namely that of abstract space and differential space. Abstract space can be seen as brutally reducing the differences inherent to the social realities of ordinary people and sacrifices the room for 'otherness' to emerge over time, whereas differential space is a type of space that is in harmony with the complexities of life, accentuates difference and has great importance in conceptualising feminist, queer and postcolonial space.

Further exploration was carried out into the links between twentieth century modernity and the widespread production of abstract space that we find today. This exploration reinforced the need to address the innumerable contradictions produced by the space of modernisation through the envisioning of counter-projects that advance differential space and, in particular, the importance of such projects for cities in the Global South. What also became evident through this exploration is the inherent social, economic and environmental unsustainability of the abstract space produced by modernisation. In working towards identifying an approach to housing that is rooted in the understandings discussed above, the idea of heterotopias was subsequently investigated to act as a conceptual basis for this process. This idea was found to be particularly useful in conceptualising the design of a counter-project. This is because as opposed to utopias, the idea of heterotopias specifically refers to real spaces that are somehow 'other' and that disrupt the normative modes of spatial production that dominate the contexts in which they are embedded. Moreover, it is clear that in working towards 'other' ways of producing space that are sustainable in the

holistic sense of the word and that are more in line with feminist, queer and postcolonial thinking, a shift in the responsibilities of the architect is required. The idea of the architect as a spatial agent developed by Awan, Schneider and Till in their book *Spatial Agency: Other Ways of Doing Architecture* (2011) was found to be particularly helpful in conceptualising this shift and refers to the empowerment of others through finding a balance between structure and agency.

The next area that investigated was the link between the idea of socially, economically and environmentally sustainable development practice and concepts such as the right to the city, spatial justice, critical urban theory and assemblage urbanism. This also included an investigation into what a truly sustainable practice should advance, namely positive urban environments. The main conclusion that could be drawn from this investigation is that for cities in the Global South and African cities in particular, forwarding a type of practice that advances the right to the city (i.e. the right to have a hand in co-creating and to express differences spatially – a right that is usually reserved for a small percentage of people with material power) of the urban poor and that allows ordinary people enough room to self-organise is critical for the sustainable development of cities that are sufficiently complex and resilient to sustain the countless productive networks of individual and collective subjects that constitute life in these cities. Such a development practice that works toward disrupting the current hierarchical power dynamic between the core and the periphery in which top-down development plans that impose abstract space onto ordinary people are favoured can be seen as being truly sustainable. In other words, it is evident that a socially, economically and environmentally sustainable development practice is one that focusses on creating a dispersed network of enabling environments mainly through the design of bottom-up and participatory initiatives.

Subsequently, this understanding was applied in specifically looking at theoretical concerns around low-income housing. In particular, it could be concluded that the unsustainable development practice that increasingly puts profit over people (or, alternatively, exchange value over use value) and that constitutes the mainstream can be seen as ignoring the complexities of the housing process. This is because this type of practice primarily makes use of the provider paradigm in generating housing initiatives. Through the research, however, it became evident that sustainable development practice that leads to the cultivation of productive, equitable and positively performing urban environments should

rather rely on the support paradigm in generating such initiatives. Whereas the provider paradigm largely results in unsustainable housing projects and the imposition of abstract space that is incongruent with the complex social realities of people in cities across the Global South in particular, the support paradigm makes use of participation, flexibility and enablement as key components and results in housing projects that allow for improvisation, spontaneity and incremental development – key components in socially, economically and environmentally sustainable urban development and urban landscapes that are sufficiently complex and resilient. In applying this understanding to low-income housing in South Africa, it was found that most low-income housing projects in the country are rooted in unsustainable development practice and more often than not result in the perpetuation of colonial and patriarchal spatial patterns that have much larger social, economic and environmental consequences.

Research Objective 2 involved analysing a series of housing precedents that express spatial agency in one or more sites of spatial agency, i.e. social structures, physical relations, organisational structure and producing knowledges. Through conducting this analysis, an understanding of a wide variety of spatial and organisational strategies were identified that could potentially be employed in generating supportive housing and cultivating productive urban environments, as well as in empowering ordinary people through finding a balance between structure and agency:

The first three precedents that were analysed included the occupation of Zuccotti Park, New York City (2011), by Occupy Wall Street, 'Urban Forest' (2015), by Atelier Bow Wow and Kolabs, and 'Gando Teacher's Housing', Gando, Burkina Faso (2004), by Kéré Architecture. Each of these precedents demonstrated a particular understanding that underlying systems of the production of space can be challenged by both ephemeral and more permanent housing interventions.

The next three precedents that were analysed included 'Quinta Monroy', Iquique, Chile (2003), by Elemental, 'Pelip Housing', Port Elizabeth, South Africa (1999), by Noero-Wolff Architects, and the SuperAdobe housing (1984), by Nader Khalili. The way in which these precedents were conceived, produced and occupied particularly demonstrated the importance of using time as a building material, allowing for self-building activities and incorporating building skills and resources that are already present in the community.

The next three precedents that were analysed included 'Centraal Wonen', Hilversumse Meent, Netherlands (1977), by Leo de Jonge and Pieter Weeda, 'La Borda', Barcelona (2018), by Lacol, and 'iLinge Labahlali Housing Co-operative', Cape Town (2002), by iLinge Labahlali. In particular, these three precedents demonstrated the productive and supportive nature of co-operative forms of organisation in housing and the importance of community participation as driving force behind the design.

The last three precedents that were analysed included 'Narkomfin', Moscow (1930), by Moisei Ginzburg and Ignaty Milinis, 'Communal Villa', Berlin (2015), by Realism Working Group and Dogma, and 'Manufactured Sites', San Diego/Tijuana, U.S./Mexico Border (2005), by Estudio Teddy Cruz. These precedents most clearly demonstrated how the sharing of spatial knowledge and exposing invisible networks can be important tools for the empowerment of ordinary people and especially in enabling them to propose 'other' ways of living.

Research Objective 3 involved analysing a range of possible sites within the Cape Town inner-city based on their physical characteristics, level of urbanity, proximity to services, level of integration into surroundings and access to public transportation in order to select an appropriate site for the intended housing intervention, as well as analysing the selected site in terms of its general location and setting, climatic conditions, space defining elements, connectedness, activities and special conditions and regulations in order to generate a composite of constraints and opportunities. The site that was selected is Harrington Square in the East City Precinct of Cape Town, which is a large publically owned piece of land that currently hosts a paid parking lot and has received attention from various grassroots social movements and civil society groups for being currently unjustly used and for being appropriate for low-income housing. After analysis of the site was completed, it was concluded that an opportunity exists for the site to host both a public urban square in addition to the housing intervention, as well as the opportunity to make the nearly Camissa water system available to residents for urban farming and to make this largely forgotten water source visible by incorporating it into a new urban green space adjacent to the site at the interface between the East City Precinct and District Six. It was also found that an opportunity exists to transform some of the surrounding streets into shared space streets due to the large variety of primary and secondary uses, significant pedestrian movement, proximity to public transportation and slow moving

vehicular traffic in the neighbourhood.

Research Objective 4 involved exploring a range of design principles needed for the design process, which include co-operative organisational possibilities, methods for enabling participation and the urban design response. After investigating possibilities for co-operative organisation, it became clear that co-operative forms of organisation have many benefits for low-income urban residents, are in line with the philosophy of *ubuntu* that is deeply engrained in South African society and fit the underlying theme of this treatise, namely the prioritisation of people/use value over profit/exchange value. In particular, the co-operative model used by the iLinge Labahlali Housing Co-operative in Nyanga, Cape Town was found to be the most appropriate model for adoption in the proposed housing project. Key components of this model include making use of the People's Housing Process (PHP), making use of institutional subsidies, making use of a co-operative tenure, establishing a housing support centre, establishing a tools library, training a number of co-operative members in basic construction skills and establishing a number of options for implementation of designs based on the resources and time available to individual members. It was also found that the proposed housing intervention would need to provide space for conducting workshops to facilitate community participation in generating building programmes and architectural prototypes. Lastly, an understanding was gained of the principles behind how people use public urban squares and, subsequently, how to design around this behaviour, the principles behind shared space street design and the necessity to be sensitive and have participatory processes in mind when designing urban green spaces in areas of the city.

Having completed this research, it is possible to expand upon some recommendations. First, the idea of 'productive heterotopias', which specifically refer to counter-projects that disrupt the widespread imposition of abstract space and instead advance differential space by establishing enabling environments, can be a useful tool in conceptualising holistically sustainable housing interventions that advance feminist, queer and postcolonial conceptualisations of space. Second, the main architectural issue in designing such housing interventions should be seen as finding a good balance between structure/control and agency/emergence through the use of various organisational strategies that are both visible (e.g. provision of basic services) and invisible (e.g. the setting up of a co-operative organisational structure) in nature. To be

regarded as successful, such a balance needs to be open-ended enough for processes of self-organisation to take place and for complexity to emerge over time. Third, it is imperative that the complexities

of the housing equation and the various forces that constitute it be respected when designing for low-income housing for such a design to contribute productively to the city and to people's lives.

Part II Design

7 Design Development

7.1. Generation of the Design Brief

7.1.1. Design Approach

In generating the final design for a holistically (i.e. socially, economically and environmentally) sustainable low-income housing intervention on the Harrington Square site within the Cape Town inner-city, finding an appropriate relationship between what is provided at the beginning of the intervention's lifespan (i.e. infrastructure and 'invisible' organisational structures) and the amount slack space left available for processes of improvisation, spontaneity and incremental development to occur can be regarded as the principle architectural issue. In the situation where too little is initially provided, the community has nothing or too little to work with and thus opportunities are significantly limited. Conversely, in the situation where too much is initially provided, the ordinary building activities and processes of self-organisation that are central to supporting the complex order found within positive urban environments are inhibited and opportunities for people to express their differences spatially are significantly limited. However, as was seen in the precedent analysis in Chapter 3 of this study, there is no 'correct' approach in finding this balance and each precedent found its own way of empowering ordinary people by finding a balance between structure and agency, as well as to generate a supportive housing project that contributes more broadly the cultivation of a productive urban environment.

The specific design approach intended to guide the design process within this treatise with the goal of achieving an appropriate relationship between what is initially provided and the amount of slack space left available for appropriation by the community essentially rests upon two 'visions'. More specifically, it rests upon a broader vision for the project and a more focussed one. The broader vision entails using the idea of productive heterotopias (i.e. 'other' spaces that essentially function as coater-projects or counter-spaces that disrupt the widespread imposition of abstract space and instead advance the production of differential space) to imagine an inner-city low-income

housing project rooted in the support paradigm (i.e. a housing project that makes use of flexibility, participation and enablement) and that establish an enabling ecosystem that enables social innovations and collaborative organisations to emerge over time. The more focussed vision is to find a suitable and realistic design for an enabling infrastructure/support structure alongside an appropriate urban design response and an idea for an appropriate co-operative organisational strategy, as well as to demonstrate these within a design scenario. Furthermore, a number of facilities can be identified that need to form part of the design. These include:

1. The design of a housing support centre that contains the necessary facilities for the permanent staff which include a construction manager, administrator/bookkeeper and material/tools manager, as well as a large flexible space in which workshops, community meetings and gatherings can be held.
2. The provision of a large temporary storage space for construction materials that is connected to a tools library (the contents of which are listed in Appendix 2 and Appendix 3).
3. A plant room which contains equipment necessary for providing building services (i.e. fresh water management, grey water management, waste water management, rain water management, telecommunications and electricity supply and management) to the enabling infrastructure/support structure.

What is more, the proposed housing intervention's response to its context can be divided into a broader vision and a more immediate vision. The broader vision for the urban design response involves working towards a low-income housing intervention that contributes towards the cultivation of a productive urban environment by being rooted in sustainable development practice as opposed to the unsustainable practice of mainstream approaches to low-income housing in South Africa today. The more immediate vision for the urban design response is to enhance the

relationship between the housing intervention and public space (i.e. the street, the proposed urban public square and the proposed public urban green space) through the design of the enabling infrastructure/support structure. To do this, it is envisioned that this design would focus on creating the necessary physical and spatial conditions for a wide variety of unexpected uses to emerge over time at ground level in response to contextual forces. For instance, these could include commercial uses, small scale manufacturing or even primary uses such as childcare facilities. Additionally, it is important that the proposed housing project does not become an urban island, but rather makes the most of the important interface between public space and private space.

In terms of material choice, it is imperative that building materials such as concrete and steel that are environmental hazards be minimised in favour of more sustainable materials. These materials should also allow for simple construction techniques and advance the flexibility of the enabling infrastructure/support structure. It is also important that the incorporation of future urban feminine activities form part of the vision for this structure as this is a vital component to enhancing self-sufficiency and providing supplemental income to those who have precarious forms of income or no income at all. Lastly, managing building services will form a central part of the design and priority should be given to finding a strategy for servicing the proposed housing intervention in such a way that is efficient and that overall consumption is minimised. These concerns over material choices and resource management form part of a larger ethical imperative towards minimising the impact that our building activities have on the planet and that should form part of every architectural undertaking today.



Figure 226 Picture of a contextual model showing Harrington Square and its immediate surroundings from the west. (Source: Author, 2020)

7.1.2. Design Aim

Within this treatise, the aim of the design process is to reflect the conceptual understandings that were gained, the inferences that were drawn from studying various precedents and the understanding of the constraints and opportunities presented by the chosen site that were identified in Part I of this study within the final design.

7.1.3. Design Objectives

In order to achieve the design aim, it is necessary to differentiate between a number of research objectives that will be dealt with interchangeably throughout the design process:

1. Deciding on an appropriate 'invisible' organisational strategy (i.e. how the proposed co-operative will work, how different types of spaces are intended to be layered, etc.) for the project.
2. Generating the urban design response.
3. Generating a design for the enabling infrastructure/support structure.
4. After completing the design objectives mentioned above, illustrating the design within a design scenario.

7.2. Generation of an Urban Design Framework

In generating an urban design framework for Harrington Square (*Figure 227* and *Figure 228*), three main components can be differentiated which have been informed by the constraints and opportunities presented by the chosen site as discussed in Chapter 4 of this study. *Figure 228* depicts the proposal to transform



Figure 227 Picture of a contextual model showing Harrington Square and its immediate surroundings from the east. (Source: Author, 2020)

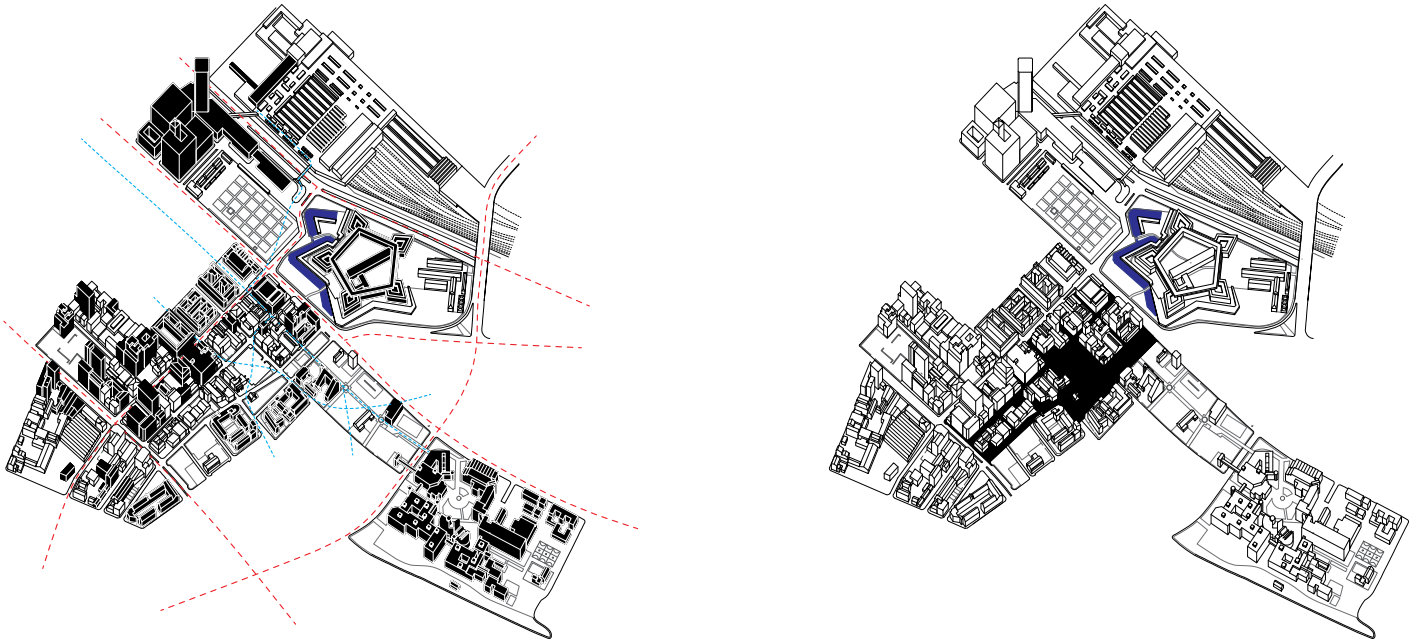


Figure 228 Urban framework diagram 1 showing factors (left) that justify establishing a new shared space (right). (Source: Author, 2020)

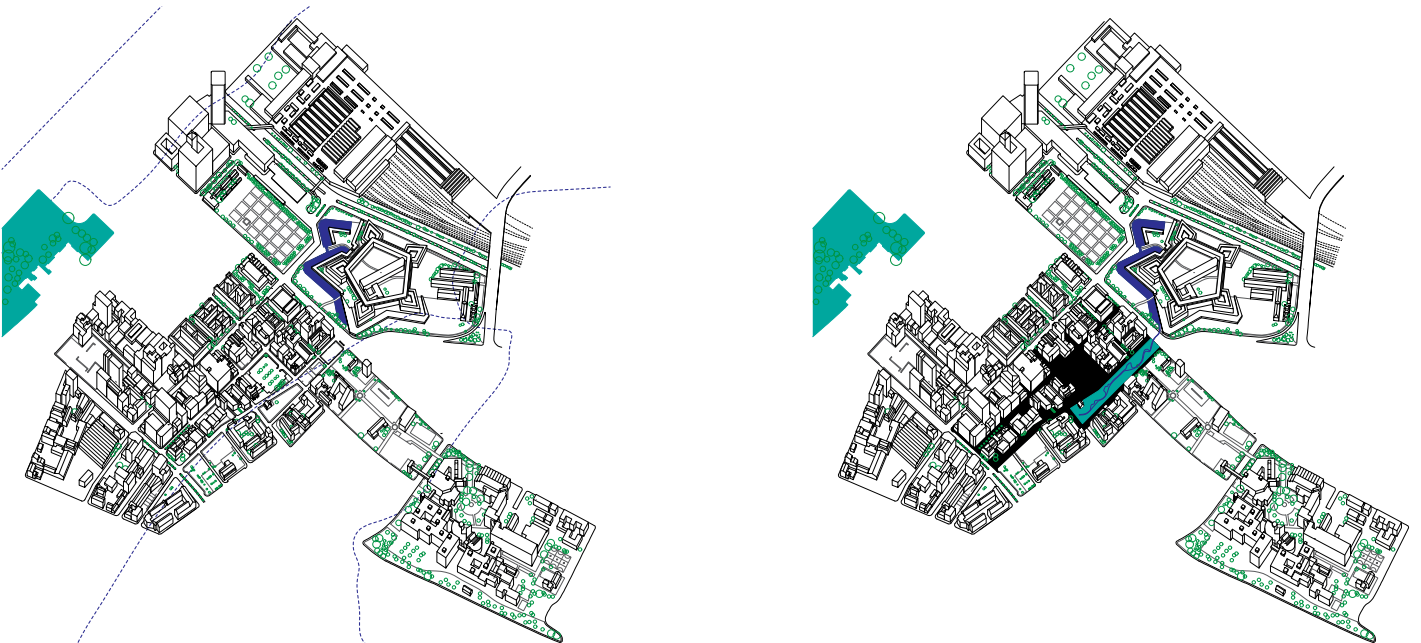


Figure 229 Urban framework diagram 2 showing factors (left) that justify establishing a new green space (right). (Source: Author, 2020)

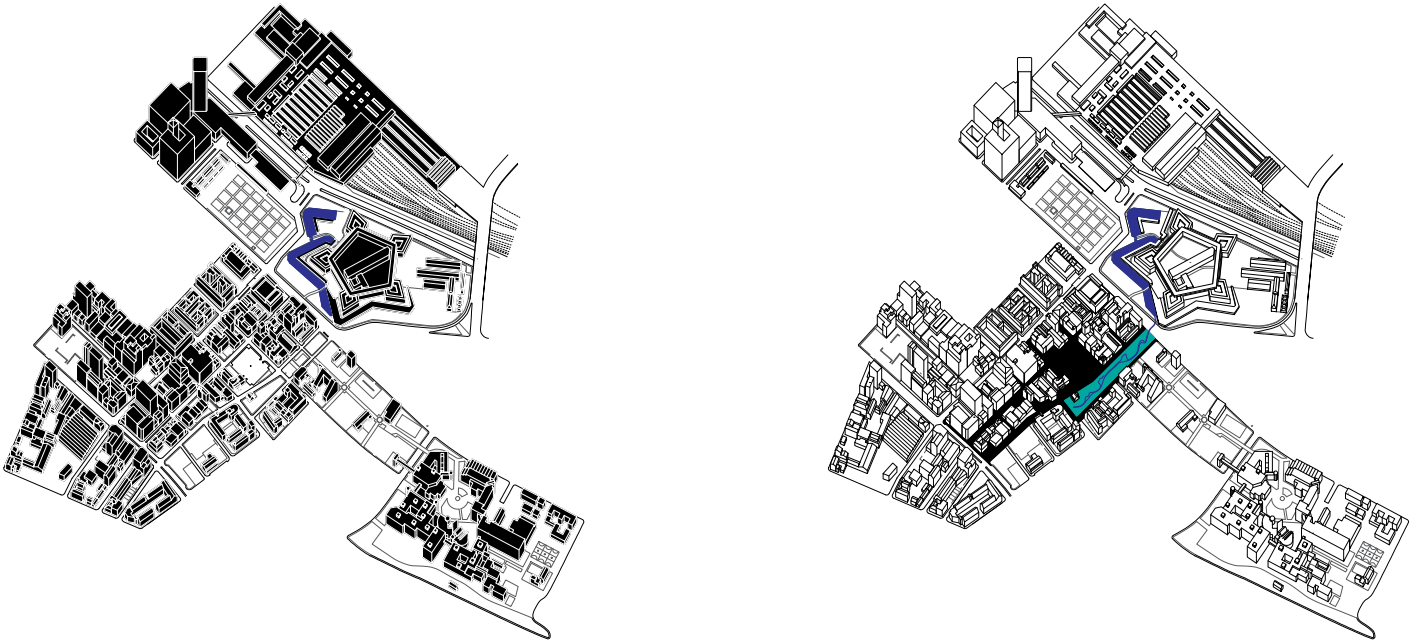


Figure 230 Urban framework diagram 3 showing factors (left) that justify establishing a new urban square (right). (Source: Author, 2020)

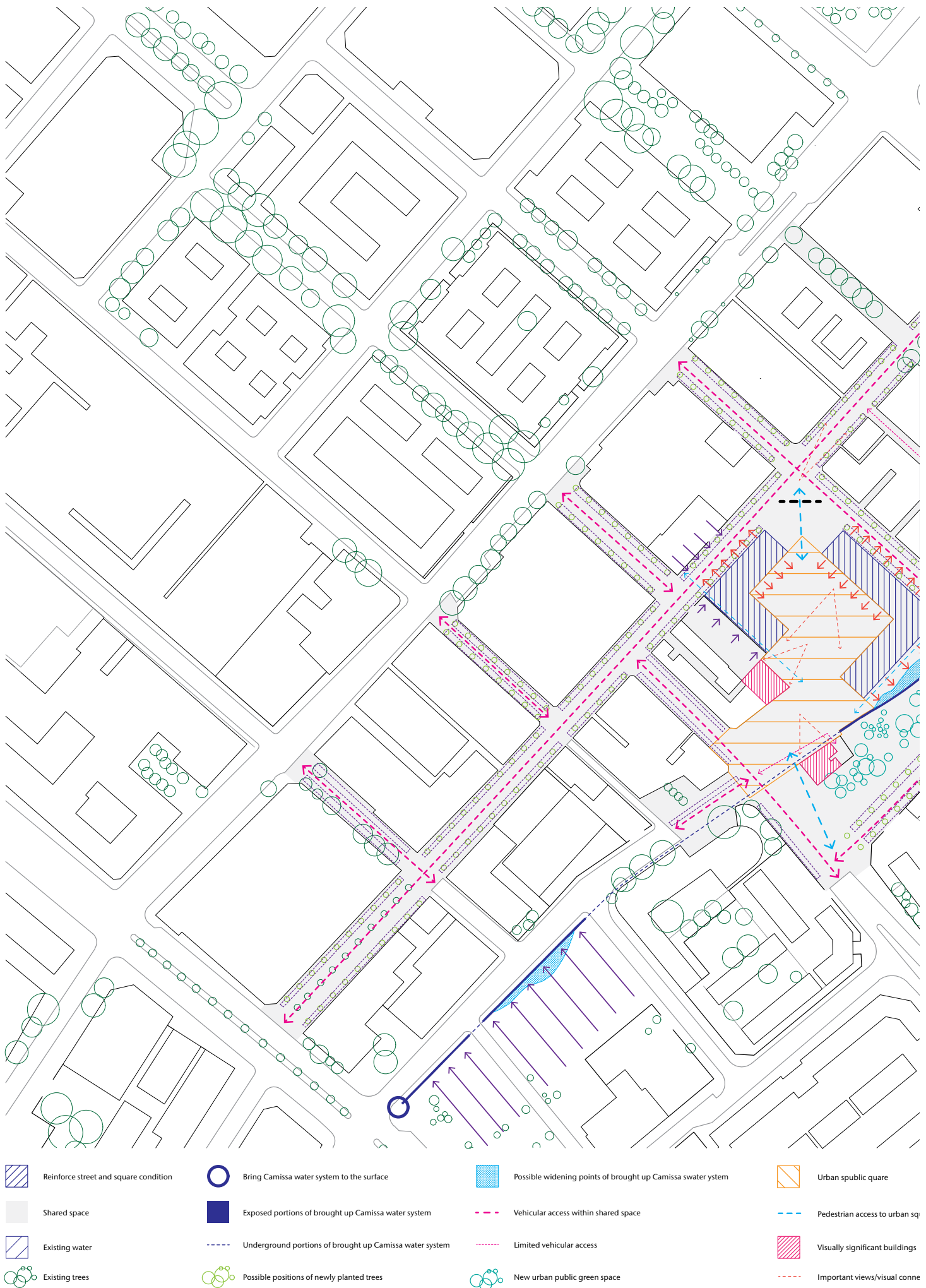
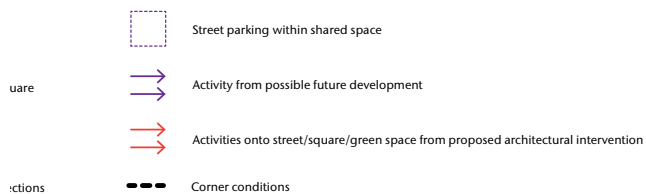


Figure 231 Urban framework diagram showing the various aspects to the proposed urban design response in greater detail. (Source: Author, 2020)



some streets within the East City Precinct into shared space streets depending on their appropriateness for such a transformation. This proposal was primarily informed by the nature of the movement through the district which is primarily pedestrian with slow moving vehicular traffic, as well as by the easy access to multiple forms of public transportation and the vast range of primary and secondary uses within the surrounding context. *Figure 229* depicts the proposal to introduce a new public urban green space into the district and to incorporate the largely forgotten Camissa water system into the scheme to make it more visible. Because it is located between two distinct green systems and at the interface of the city centre and District Six, the proposed green space is envisioned to act as both a connector of natural systems and of people in a very fractured part of the city. Lastly, *Figure 230* depicts the proposal to establish a new public urban square on the ground floor of the site. This decision was taken due to the lack of open public space within the city centre and due to the site's proximity to the existing open space network in the city. A more detailed representation of the urban design scheme can be found in *Figure 231*.

7.3. Documenting the Design Development

As can be seen in *Figure 232* and *Figure 233*, both the earliest conceptual sketches exploring different possibilities for designing a support structure and the earliest conceptual model for the project that explored the idea of incremental growth around a base infrastructure through processes of negotiation and appropriation drew considerable inspiration from the writings of Yona Friedman (1975; 2006). Throughout the process of further developing the design, a concerted effort was maintained not to lose the spirit of these utopian visions for the proposed housing intervention. However, it was important that the design development work towards an end product that grapples with the existing constraints and forces that exist within the context of low-income housing design in South Africa in order to stay true to the idea of establishing a space that has the characteristic of a productive heterotopia.

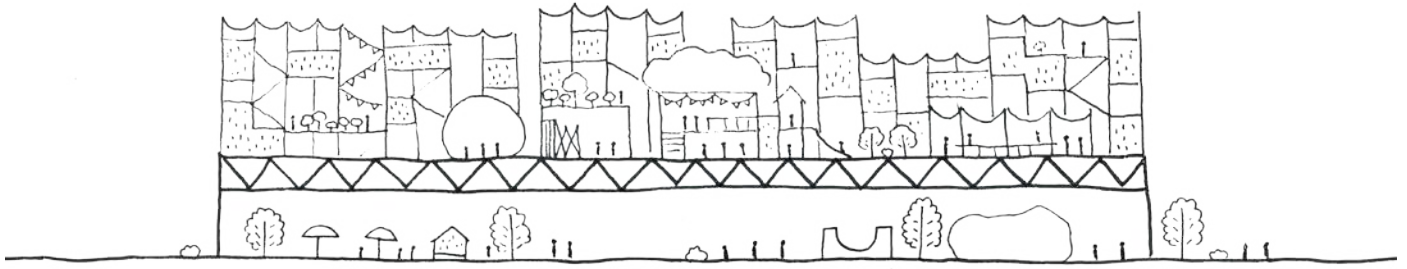
Depicted in *Figure 234* is an exploration of various uses for the ground floor of Harrington Square which, as discussed in the previous subsection on the urban design framework, is envisioned to remain largely open to function as an urban square. These uses include occasional markets and informal trading, allowing nature to permeate the square through the planting of new trees and vegetation, the hosting of events

and gatherings, as well as allowing space for protests as the site is located near the administrative centre of Cape Town.

Figure 235 and *Figure 236* depict an early exploration into the layering of different spaces and the possibility of setting a number of important parameters to guide the growth of the housing scheme. Various types of spaces were distinguished based on whether they can be seen as being opaque (i.e. the most intimate and private spaces), translucent (i.e. less intimate spaces but that are more private than those at a public privacy gradient) or transparent (i.e. more public spaces). Moreover, the spectrum of opaque spaces to transparent spaces can be seen as corresponding to the spectra of deep spaces to shallow spaces, more domestic spaces to more urban spaces and more cellular spaces to more communal spaces. Exploration was also done into how many individuals could potentially form smaller clusters centred around opaque spaces within the larger community. In terms of the proposed parameters, factors such as allowing sufficient light infiltration into domestic spaces and onto the ground floor of Harrington Square, making sure access is not obstructed to units, maintaining a certain occupancy pattern and making sure the growth responds appropriately to the surrounding context were found to be important.

Figure 237 depicts further development in terms of finding a technical strategy for the design of the enabling infrastructure/support structure and for providing building services to the proposed housing intervention. In terms of the technical strategy, research was conducted into using mass timber as the primary building material, as well as how such a mass timber support structure could be organised on site. Growth around this base support structure is also depicted. In terms of providing building services, research was conducted into the necessary services that need to be provided (i.e. fresh water supply, grey water management, waste water management, rain water management and electricity supply), their individual requirements and their interconnections. The understanding gained from this investigation allowed for a more informed exploration into what the final design could look like.

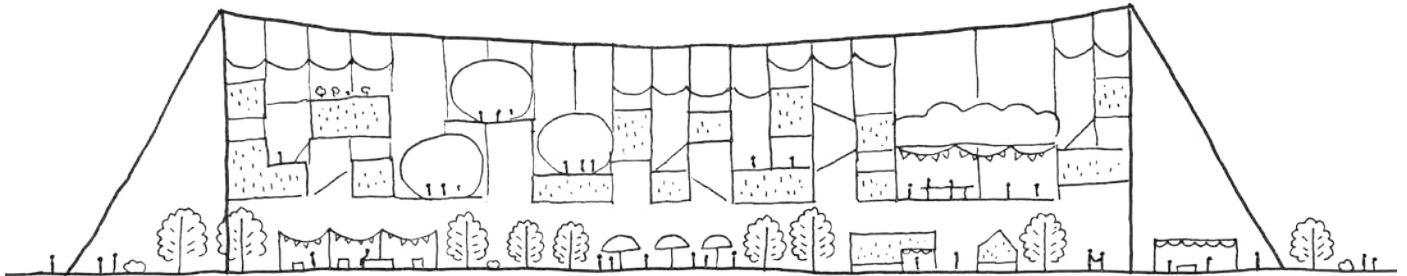
Finally, *Figure 238* depicts the two diagrammatic cross sections that illustrate the final concept for the enabling infrastructure/support structure and its response to the surrounding context. Important decisions made include arranging the floor levels in such a way that there is a single semi-public elevated pedestrian street serving as the main horizontal circulation



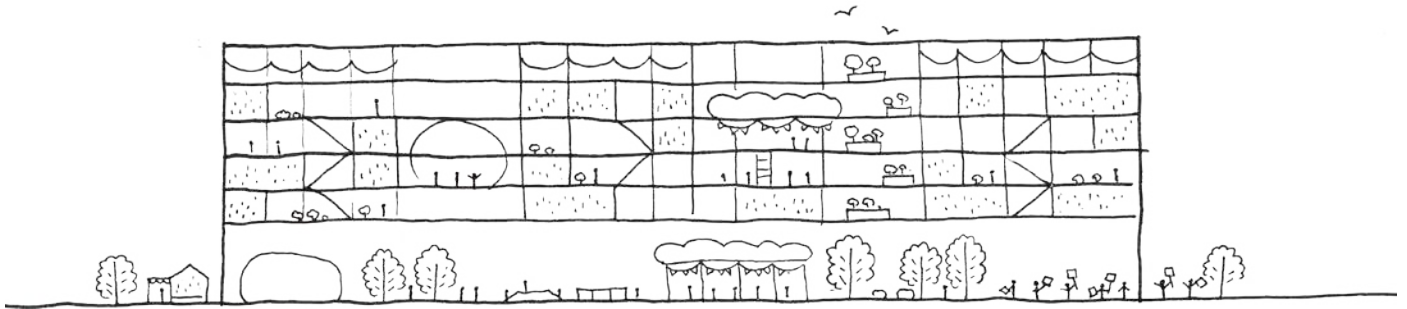
SUPPORTING PLATFORM



SUPPORTING FRAME



CABLE SUSPENSION



MULTILEVEL SPACE FRAME

Figure 232 Initial conceptual sketches exploring the different approaches to designing a support structure. (Source: Author, 2020)

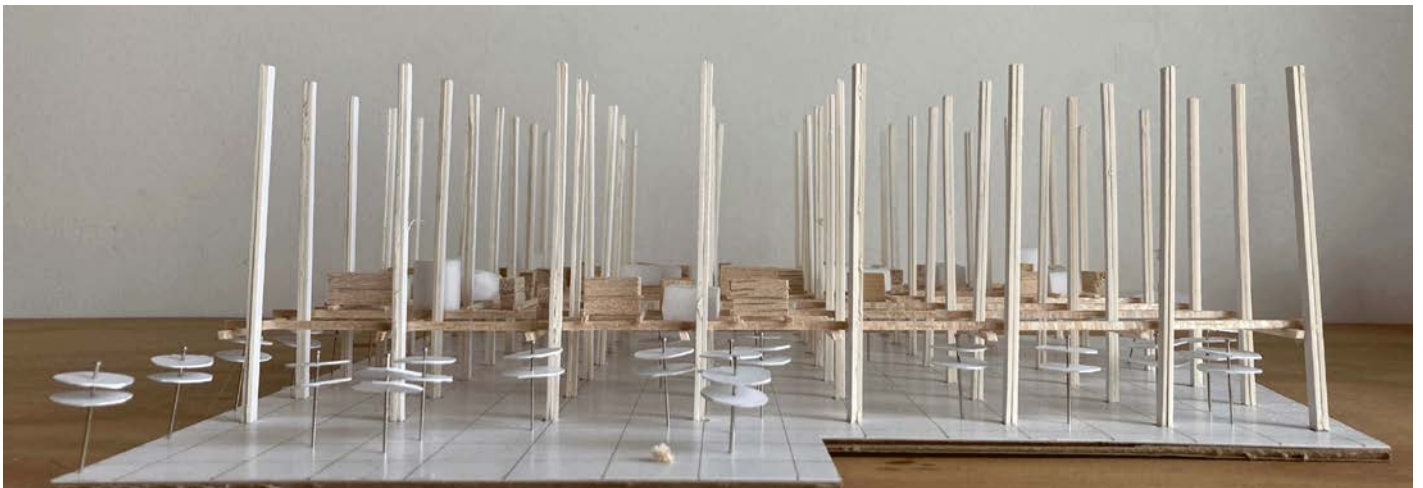
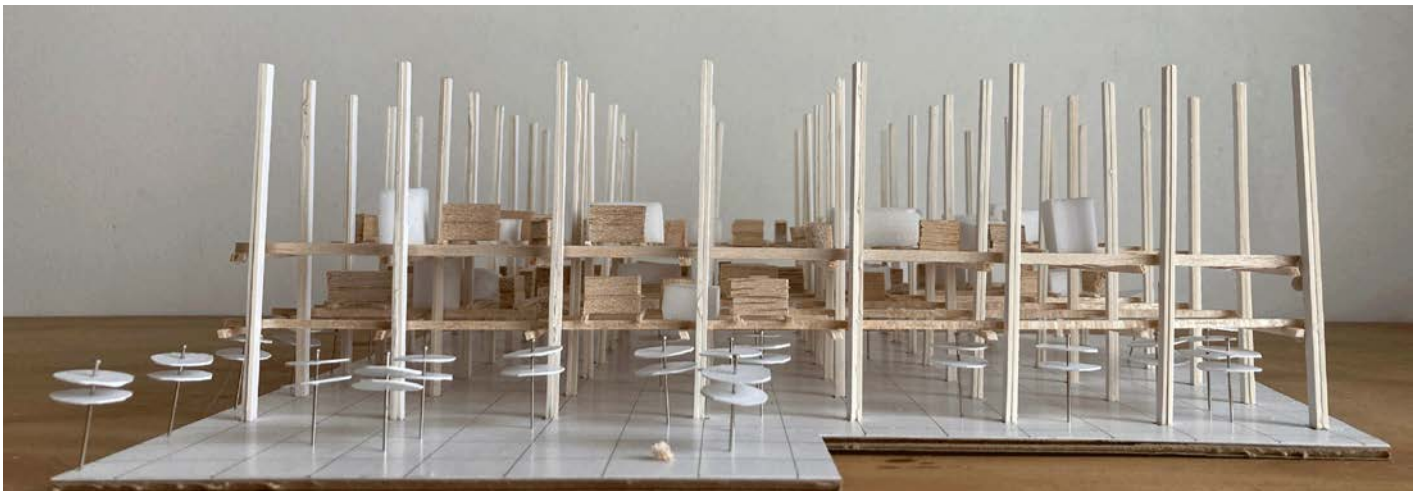
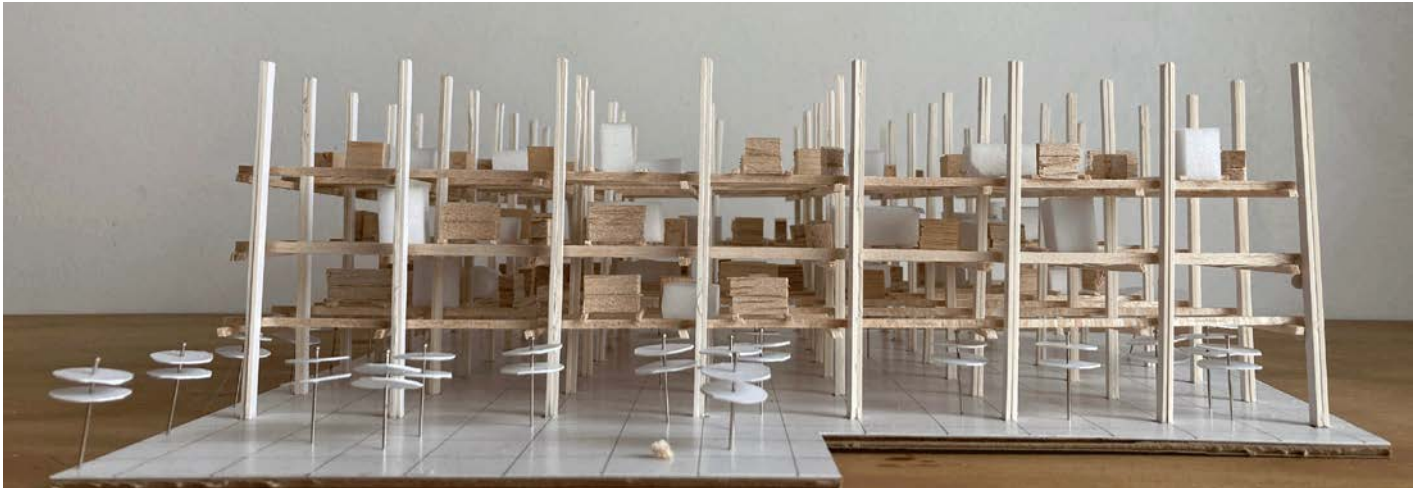
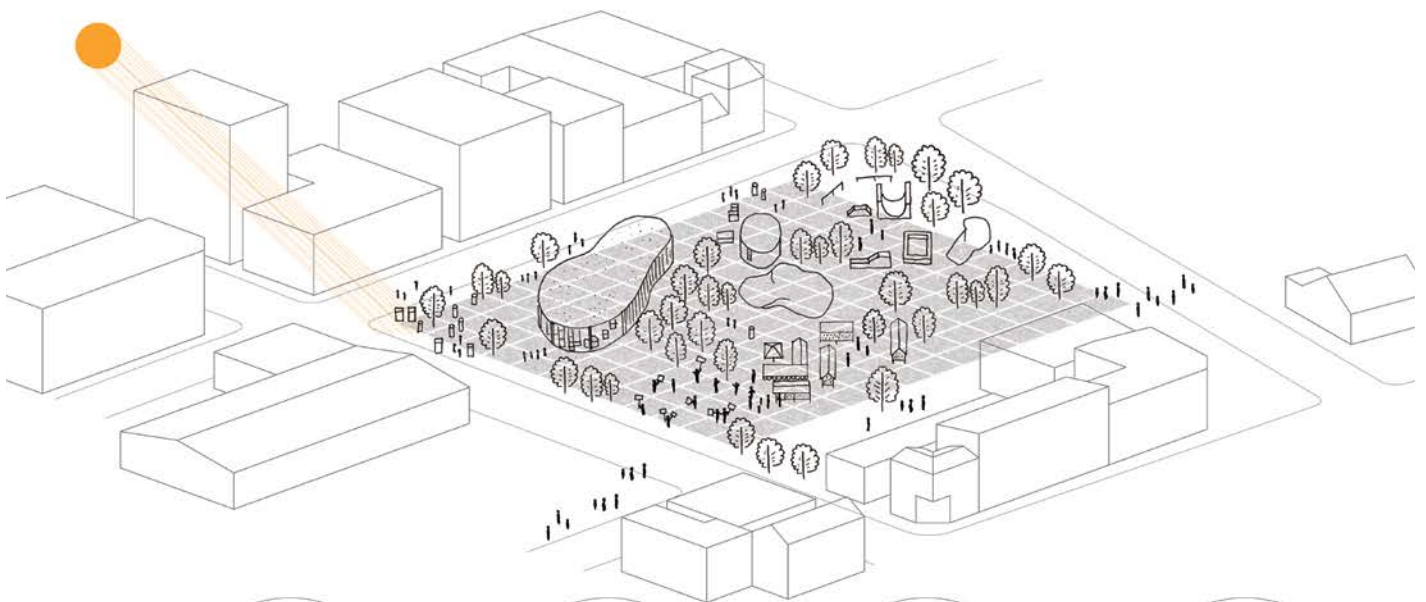
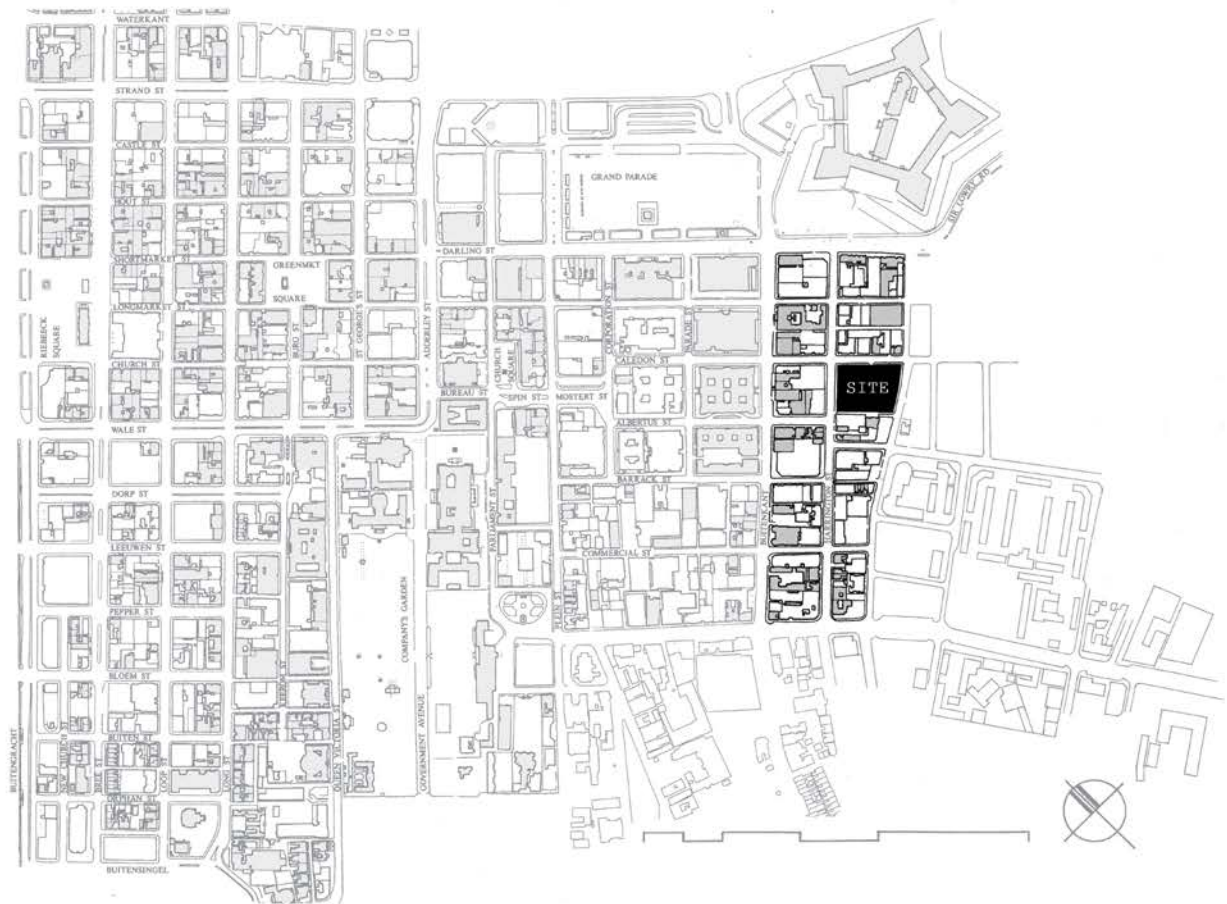


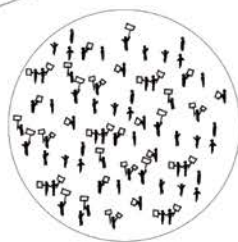
Figure 233 Conceptual model depicting the central design concept, i.e. growth over time around an enabling infrastructure. (Source: Author, 2020)



SPACE FOR MARKETS AND INFORMAL TRADE



PERMEATION OF NATURE



SPACE FOR PROTEST



SPACE FOR EVENTS AND GATHERINGS

Figure 234 Drawing exploring the possible public uses for the ground floor of Harrington Square. (Source: Author, 2020)

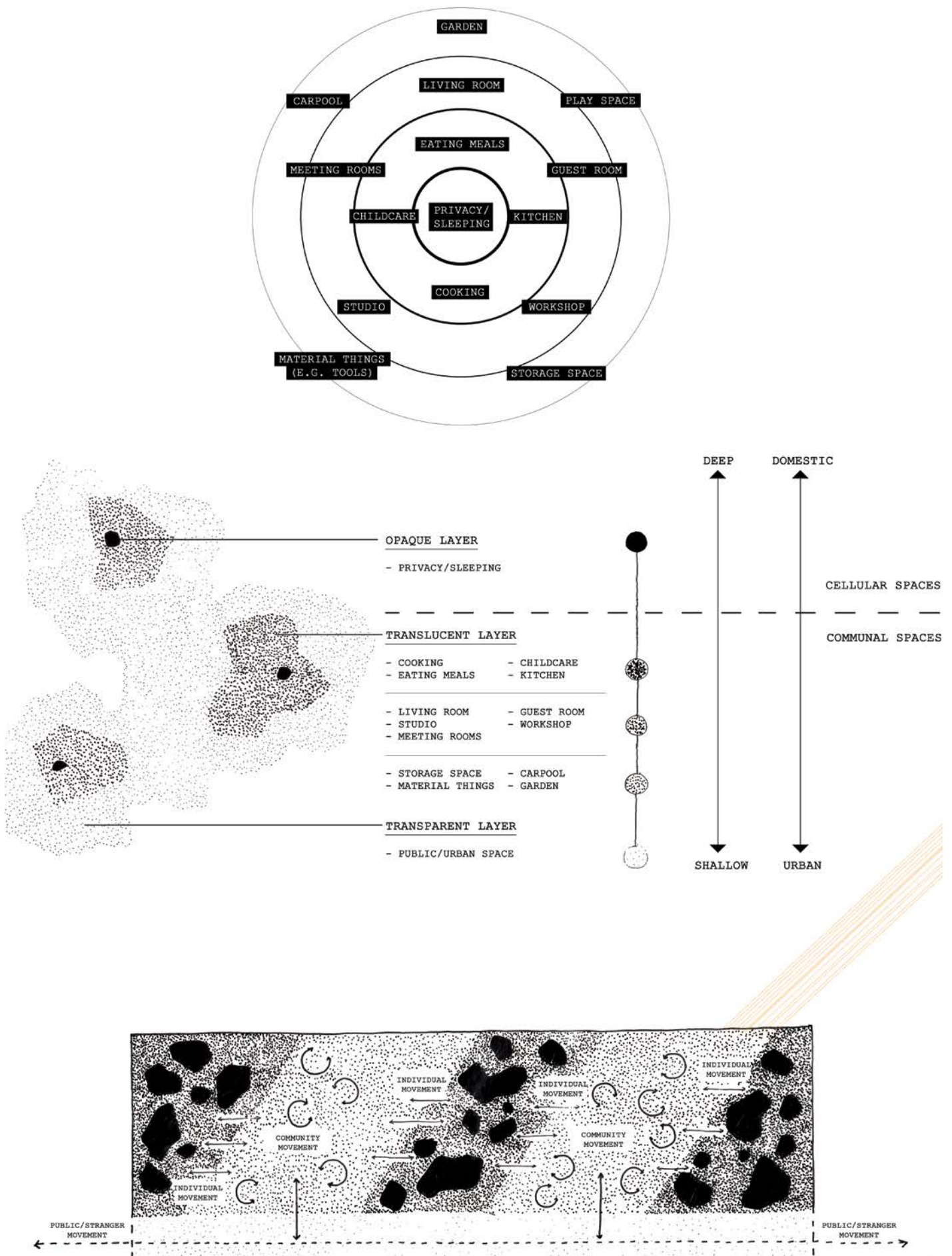
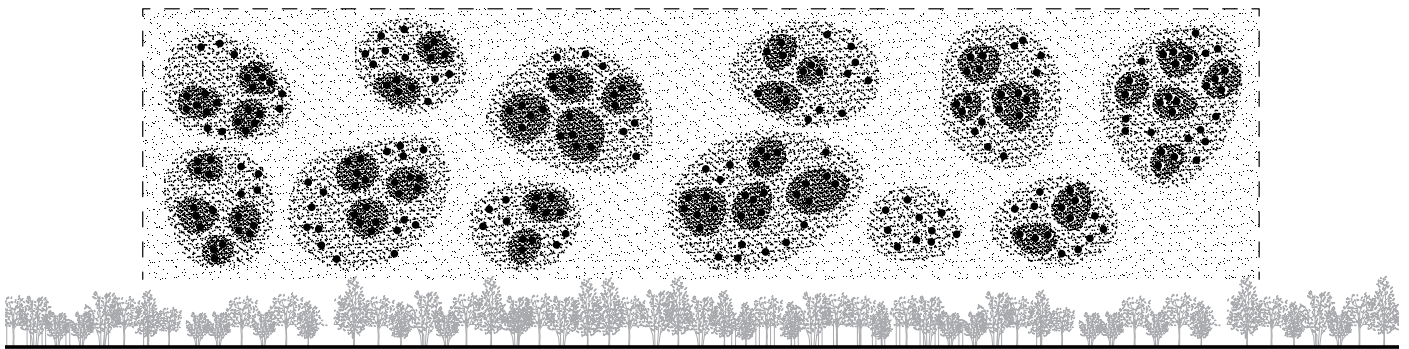
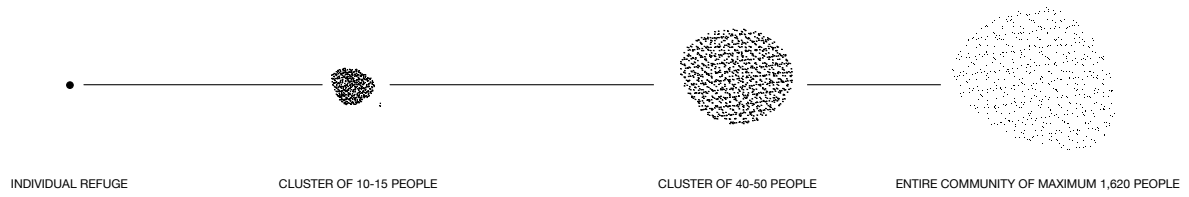
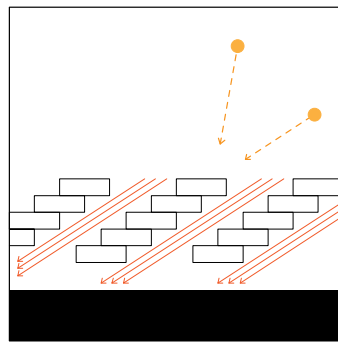


Figure 235 Drawing exploring the possible distribution of different layers of space within the project. (Source: Author, 2020)

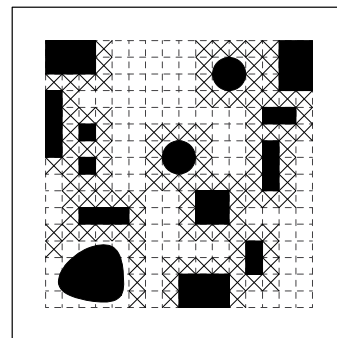
CLUSTERING OF SPACES



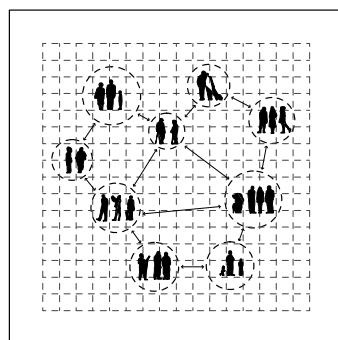
PARAMETERS



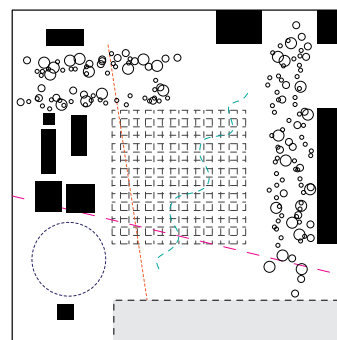
LIGHT INFILTRATION



MAKE SURE ACCESS IS NOT OBSTRUCTED



OCCUPANCY PATTERN



RESPOND TO CONTEXTUAL FORCES

Figure 236 Further exploration of spatial layers and possible paramaters to the project. (Source: Author, 2020)

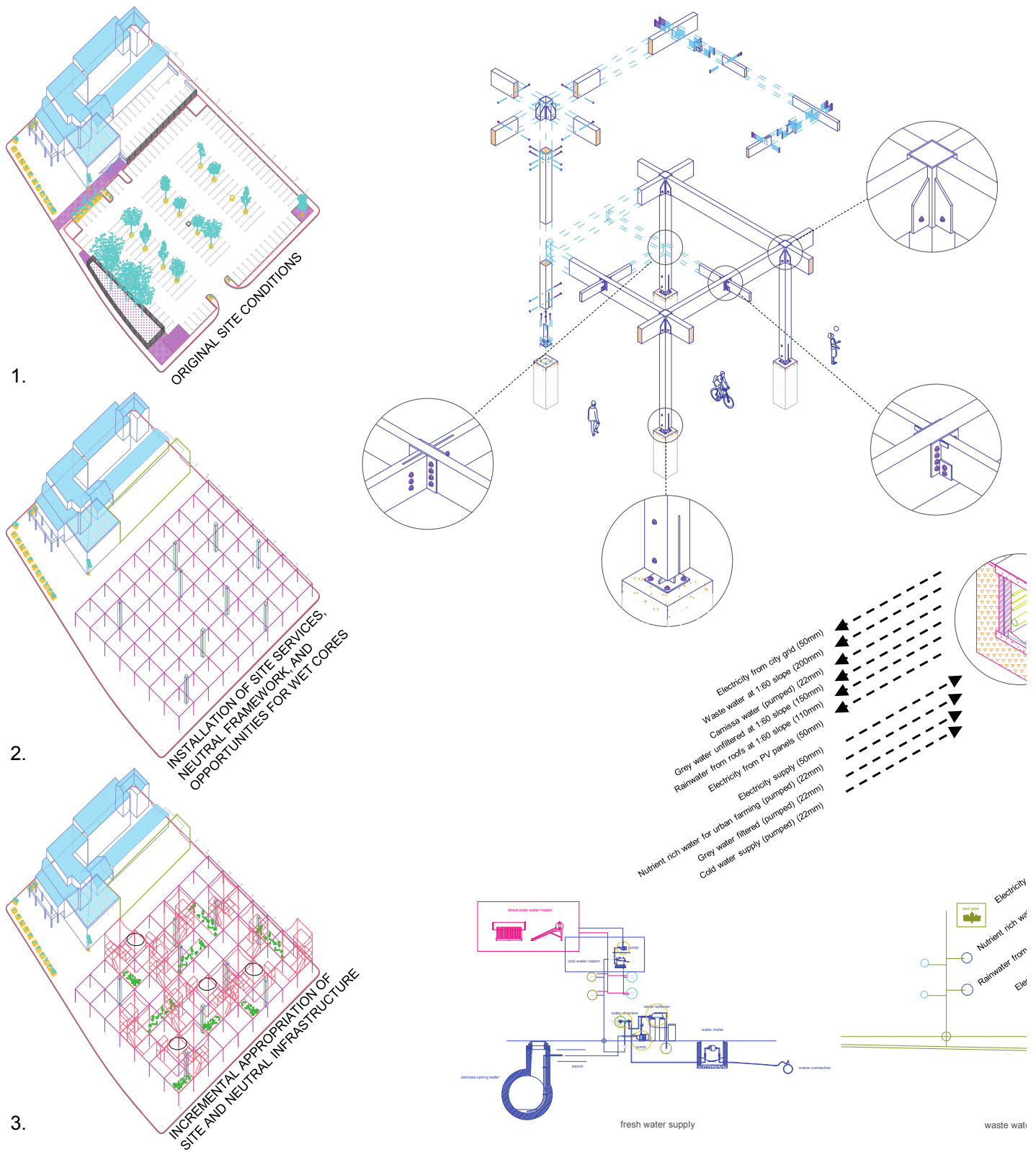
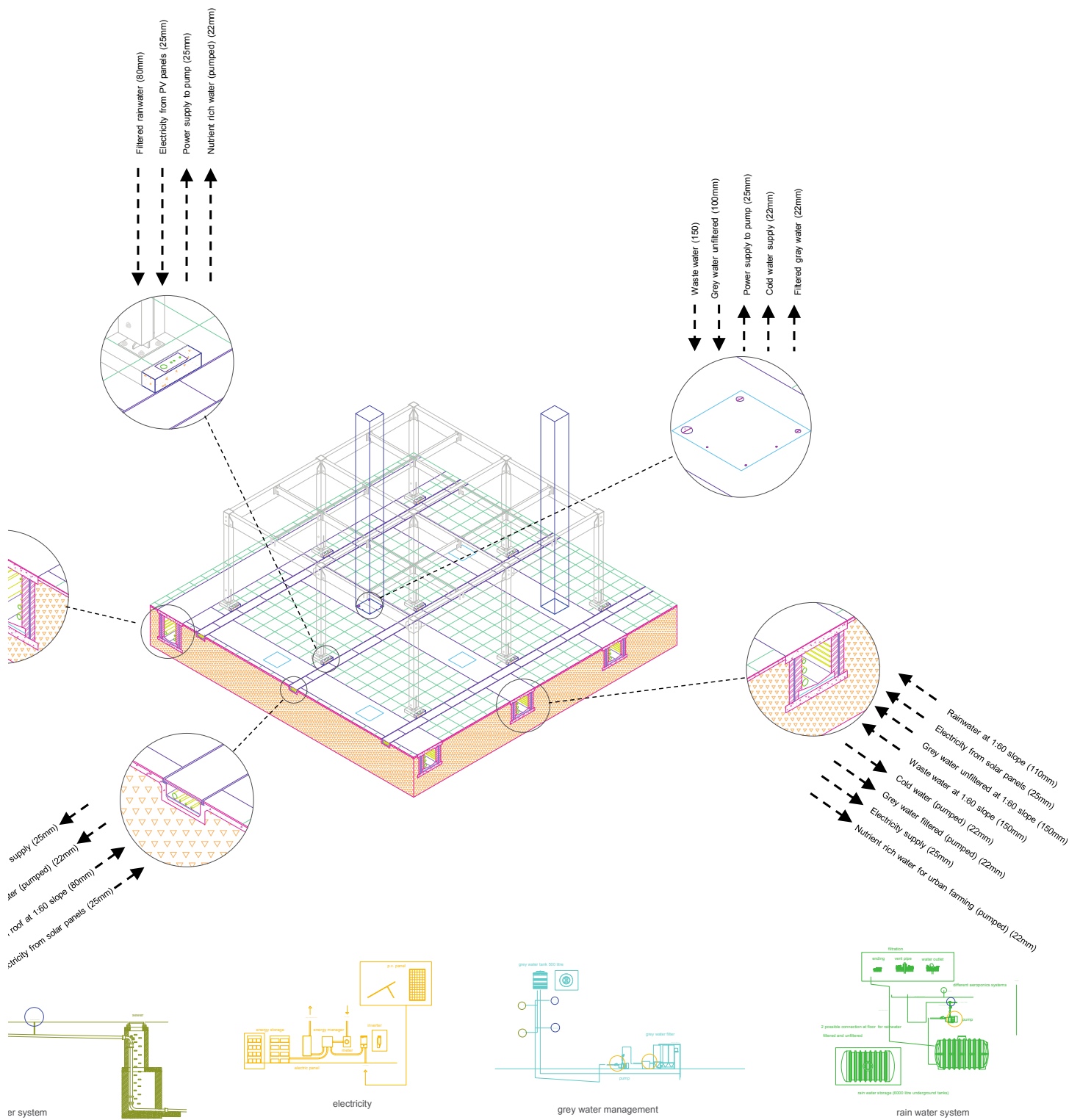


Figure 237 Exploration of an overall organisational strategy for the site, a strategy for servicing the project and the technical strategy for constructing the project



element. This element in addition to the series of wet cores arranged on the edges of the site and the provided staggered floor levels that create double volume spaces can be regarded as the fixed components to the design around which processes of appropriation is allowed to occur over time. A large green roof provides

shelter from the elements, room for urban farming activities and fulfils an important urban function by absorbing excess rainwater. Emphasis is given to maintaining a close relationship to the street and to keep the visual connection between the new urban public square and the mountain.



Figure 238 Diagrams showing further design development of the proposed low-income housing intervention. (Source: Author, 2020)

8 Final Design

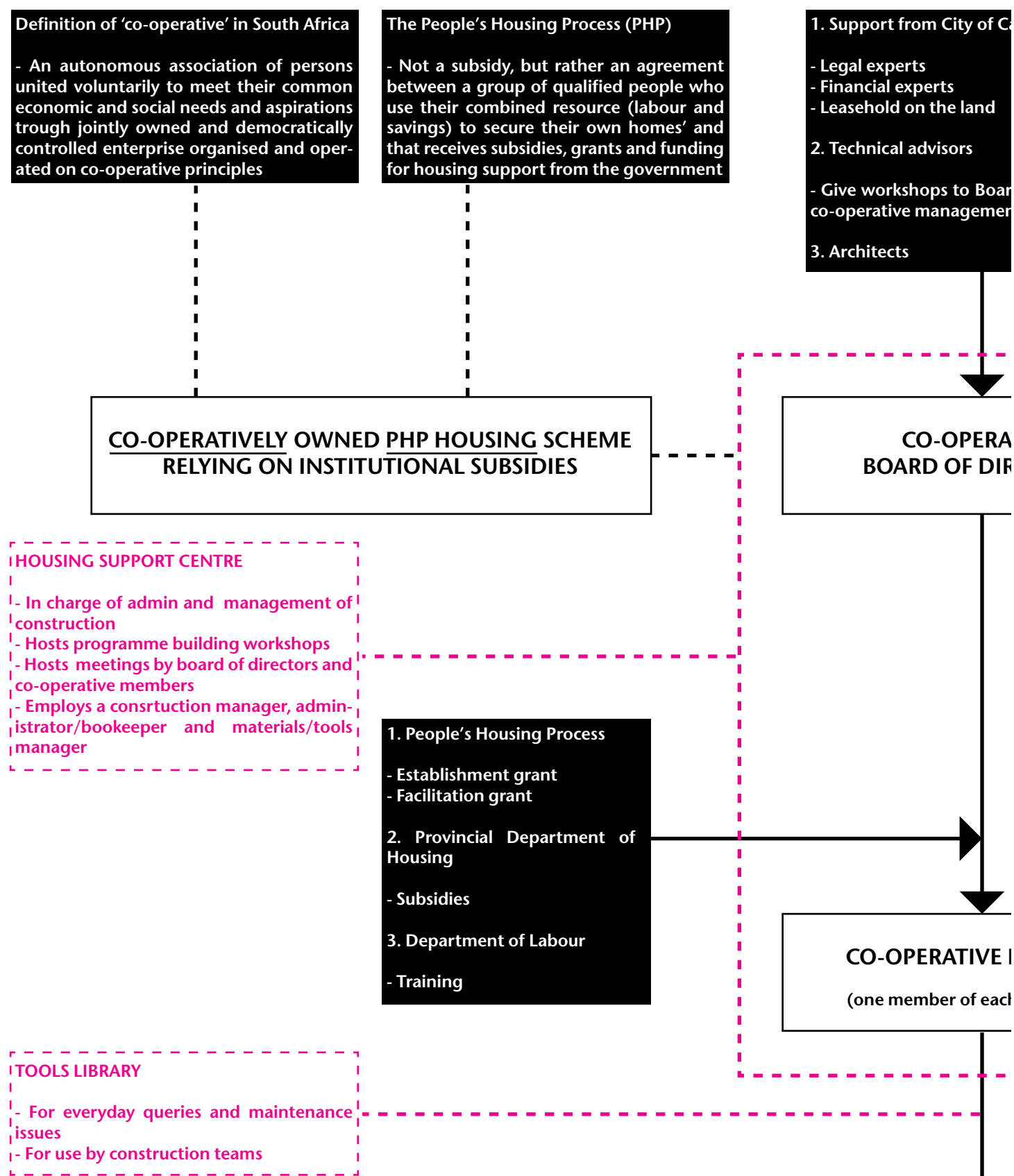


Figure 239 Diagram showing the invisible organisational structure based on similar diagrams in (Ahn, Tusinski & Treger, 2018: 33) and (Herbst, 2010: 33)

ape Town

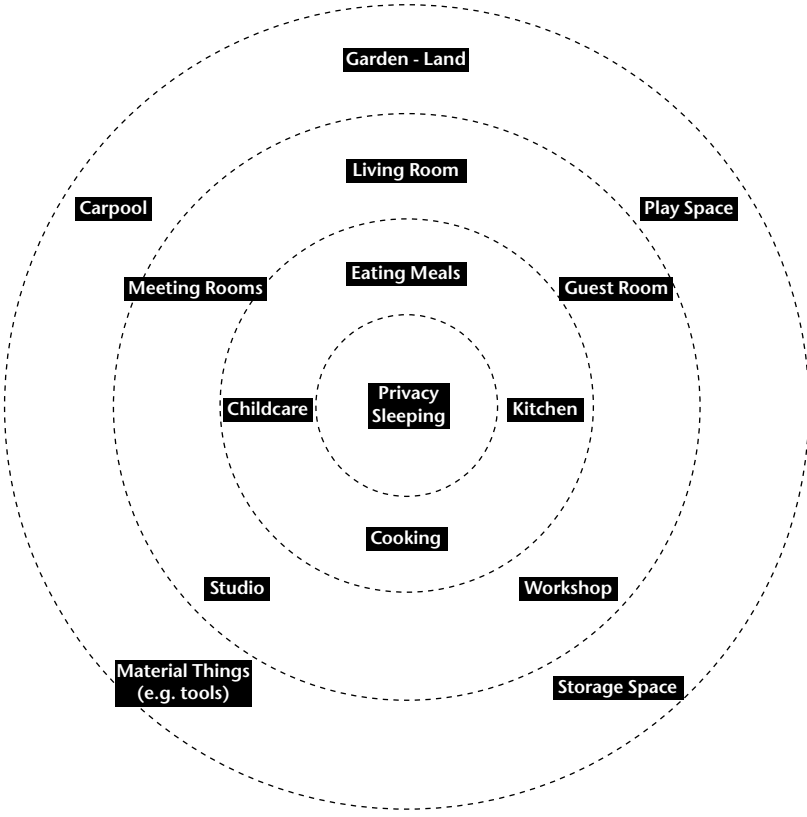
rd of Directors on
nt



OPTIONS FOR IMPLEMENTATION

(Depending on individual financial capacities, construction competencies and time constraints)

1. Mutual labour teams (where families combine to provide voluntary work teams to implement stages of each others houses)
2. Family labour (where family members provide voluntary labour)
3. Paid labour (where specialist and general teams made up for the vocational trainees conduct the staged contracts for payment)



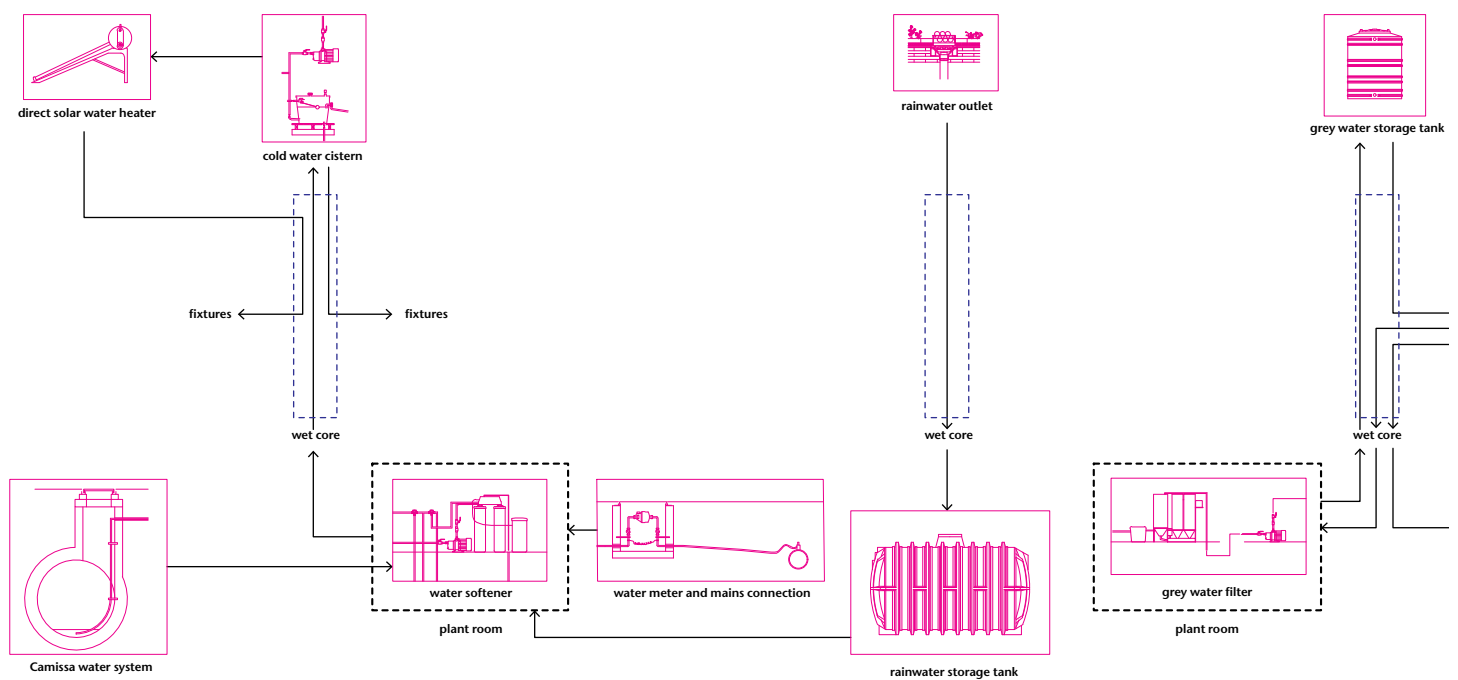
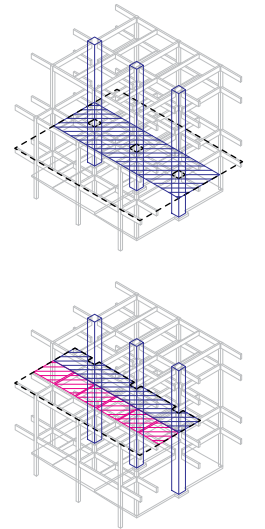
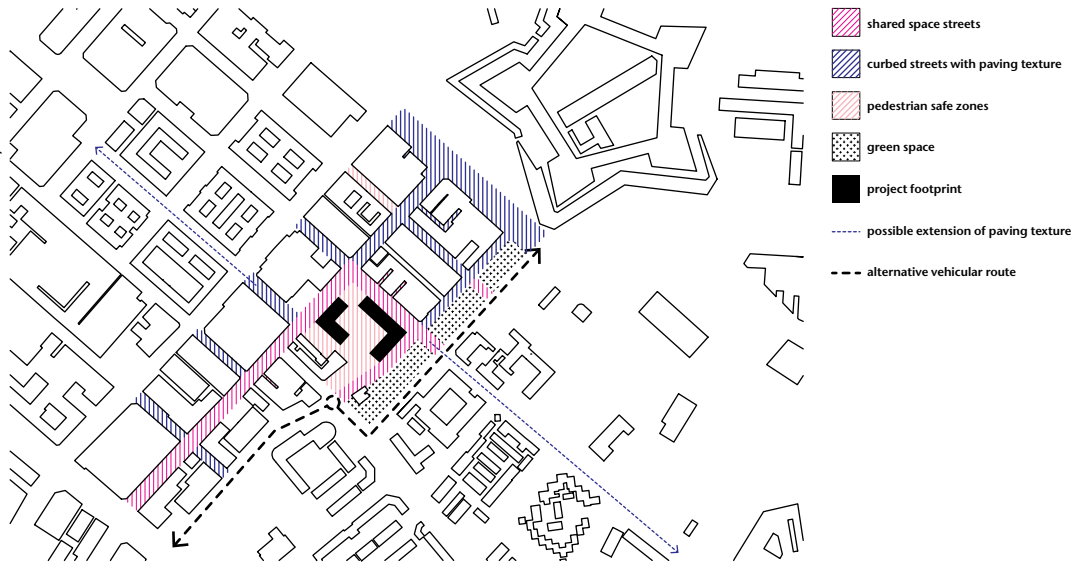
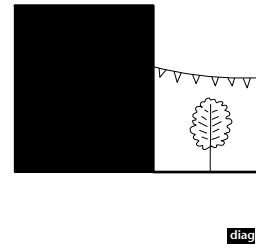
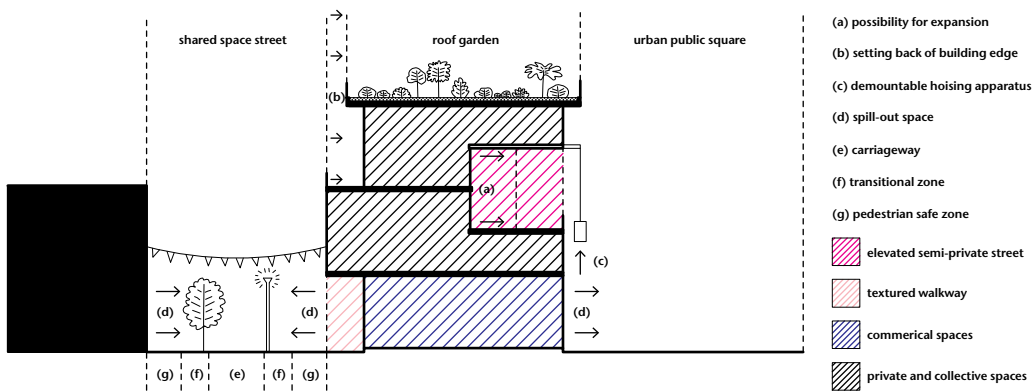
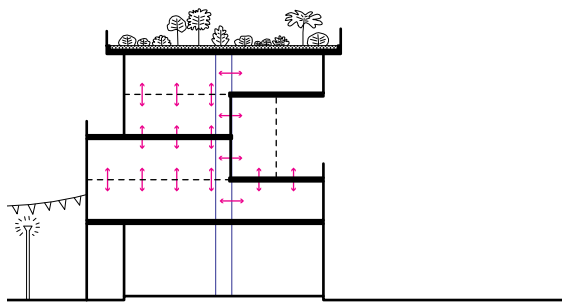
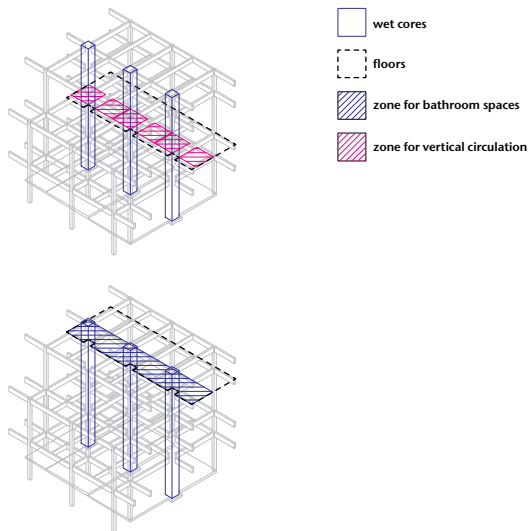


Figure 240 Diagrams showing the physical organisational structure. (Source: Author, 2020)



ram 3: room for growth around wet cores and elevated street



gram 4: zones for vertical circulation elements and wet spaces

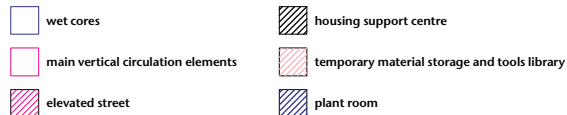
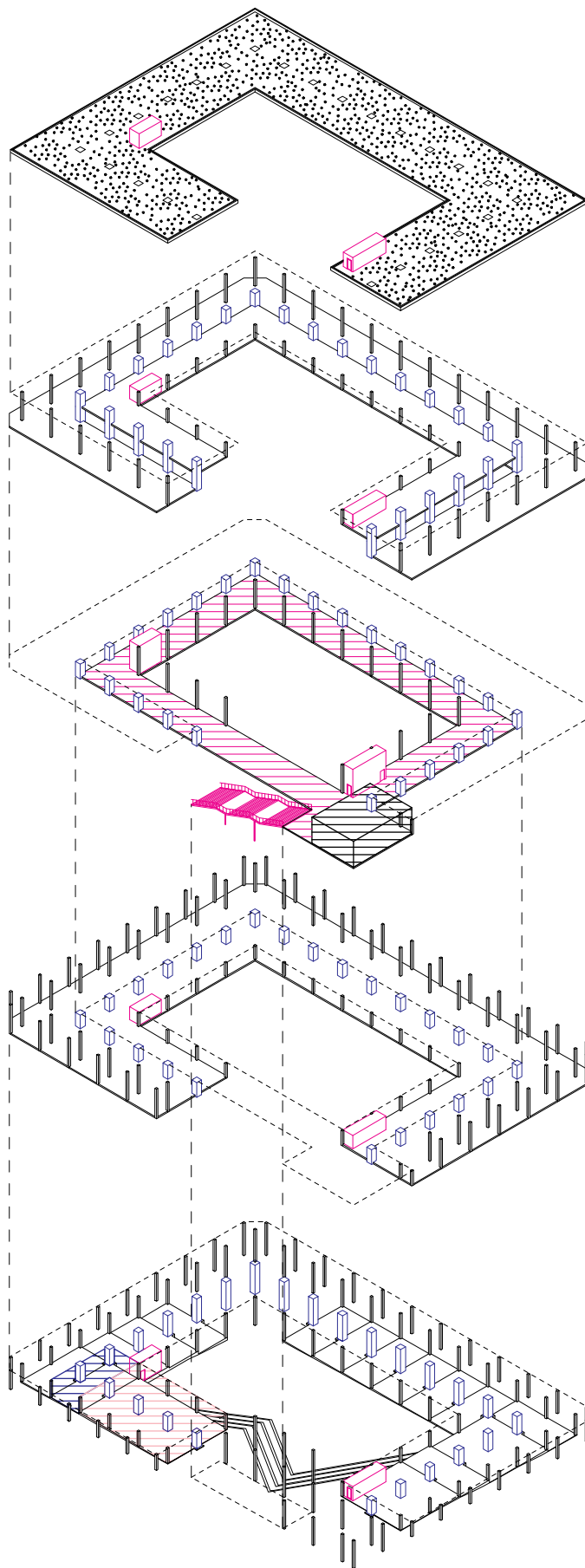
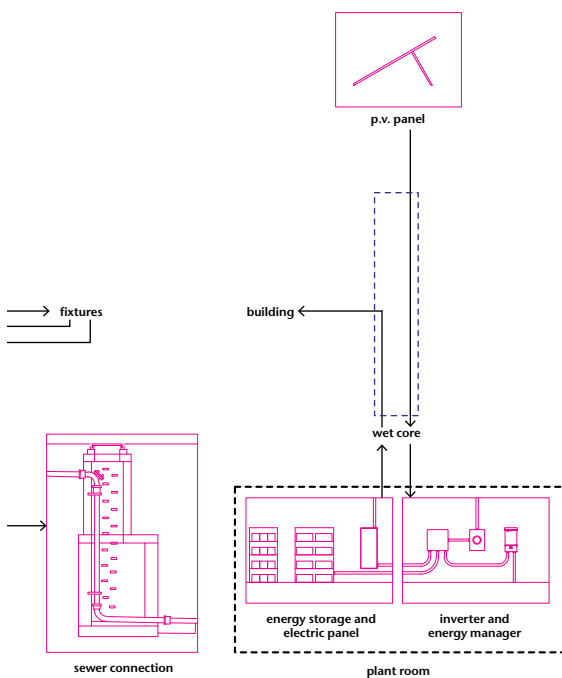


diagram 6: exploded isometric showing overall scheme

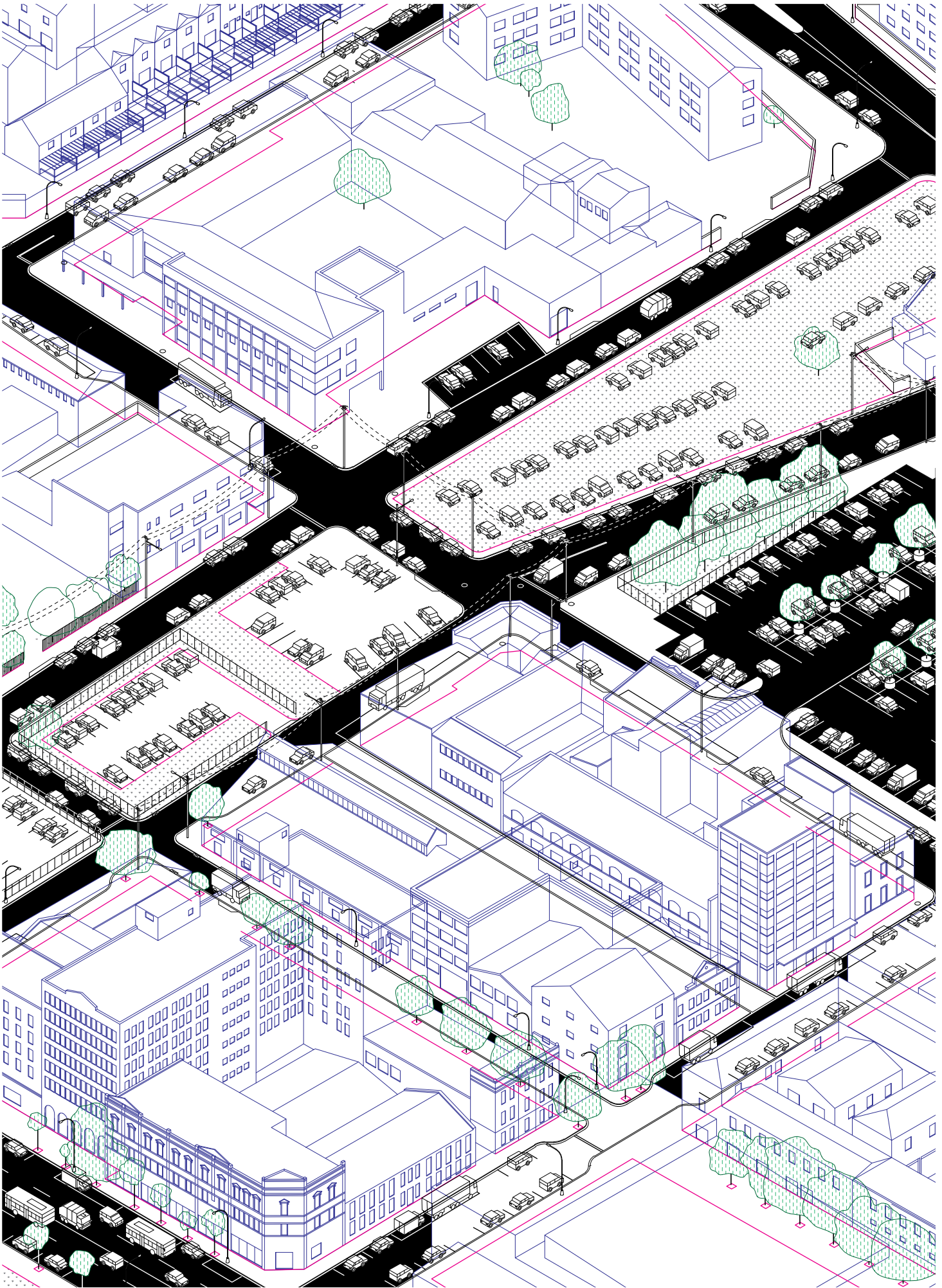
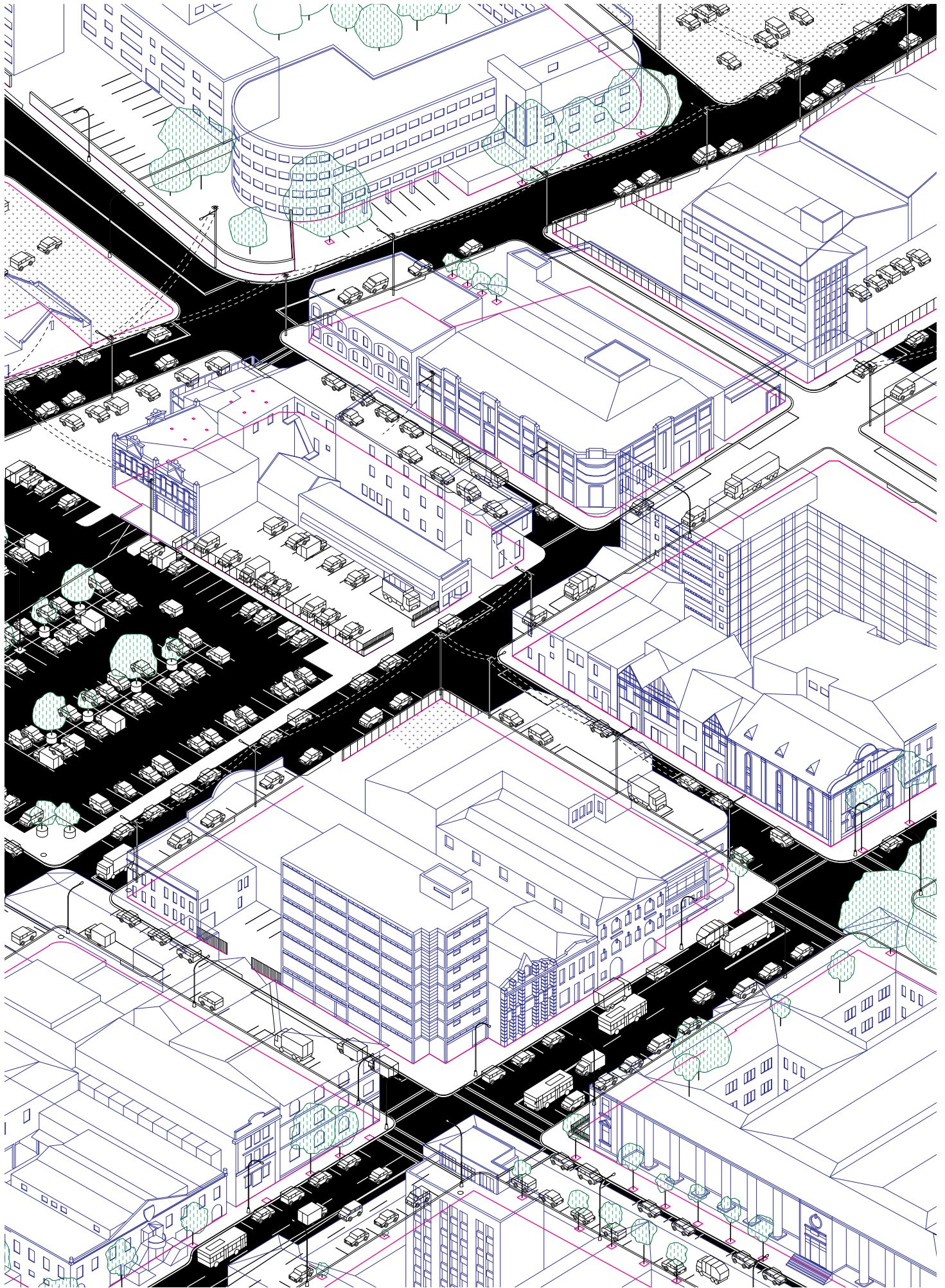


Figure 241 Isometric projection showing the existing site condition from the north. (Source: Author, 2020)



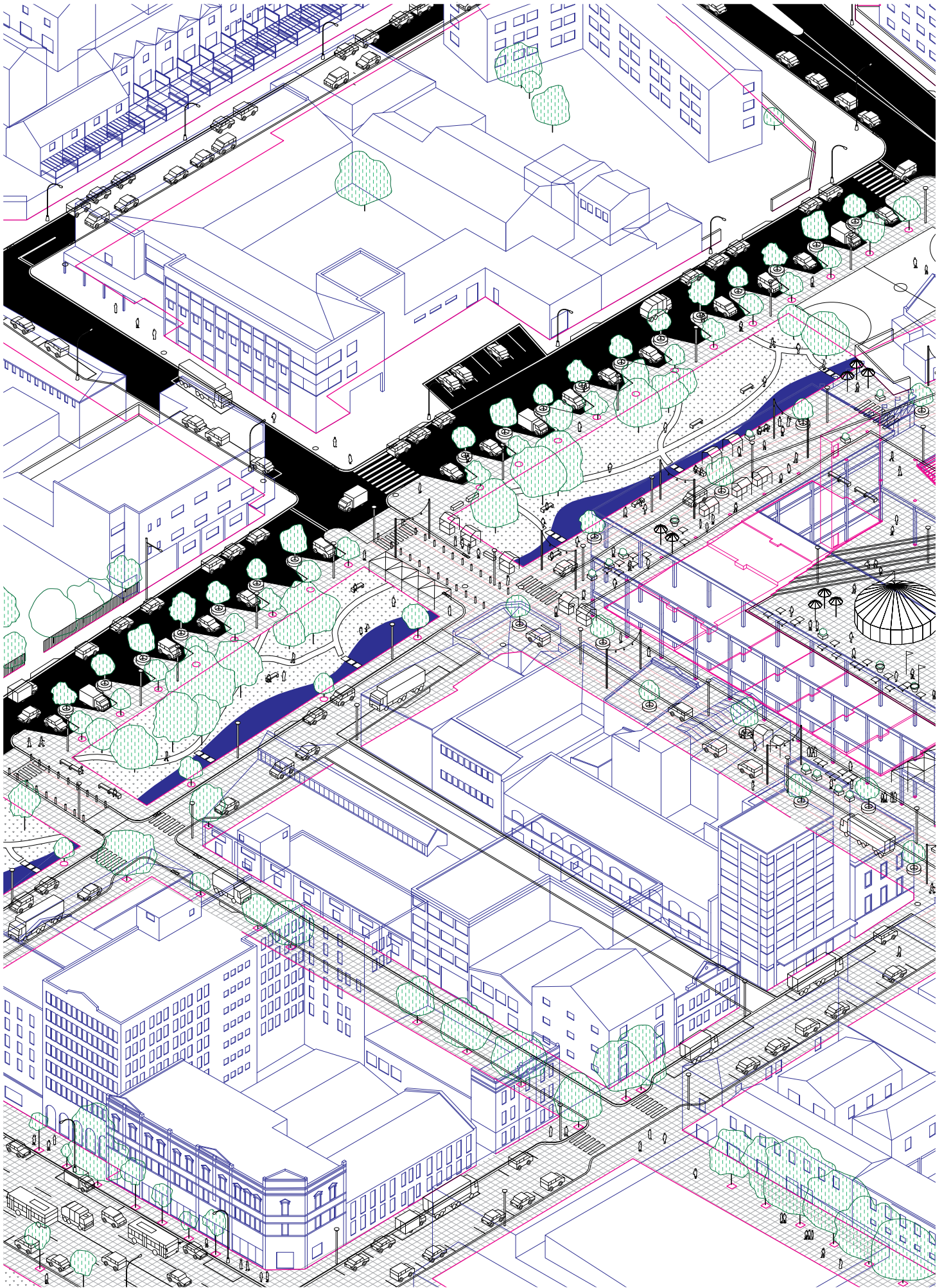
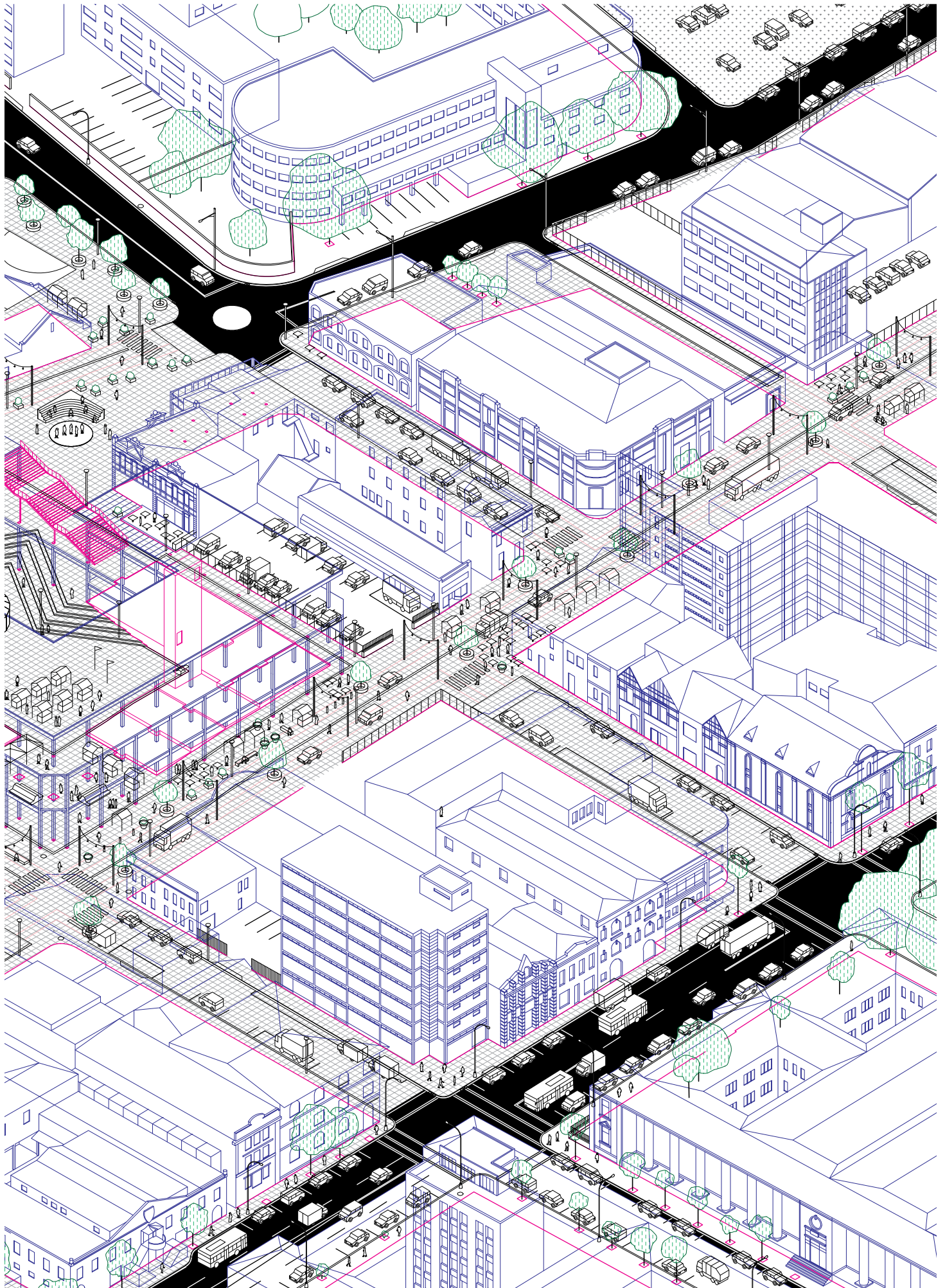


Figure 242 Isometric projection showing the proposed urban design response from the north. (Source: Author, 2020)



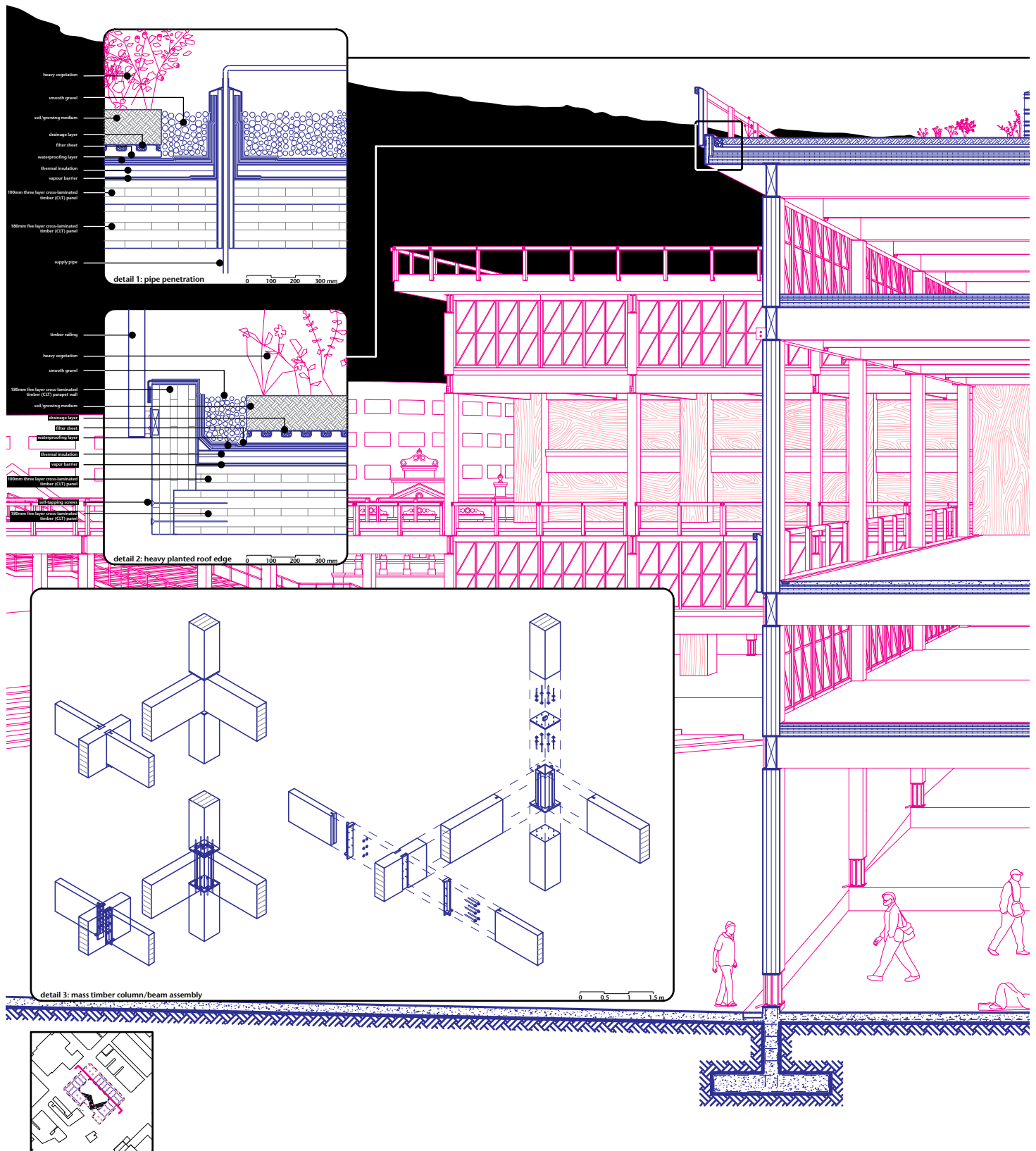
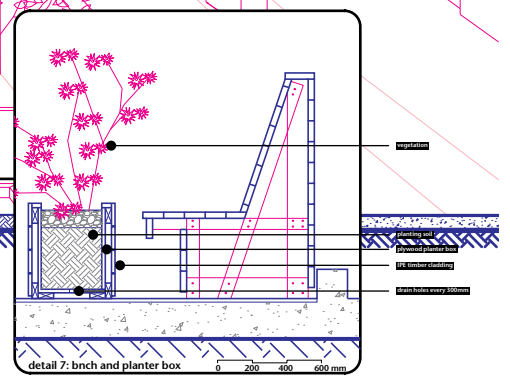
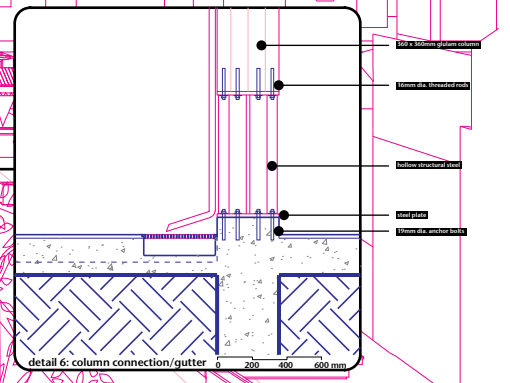
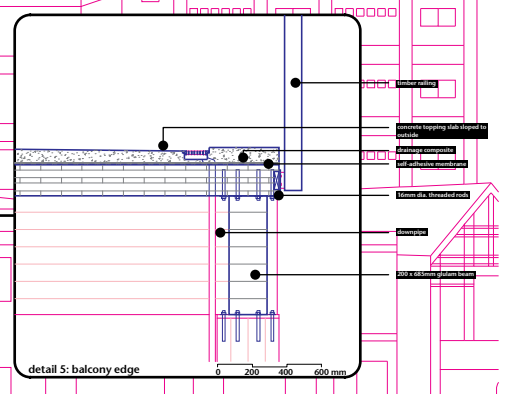
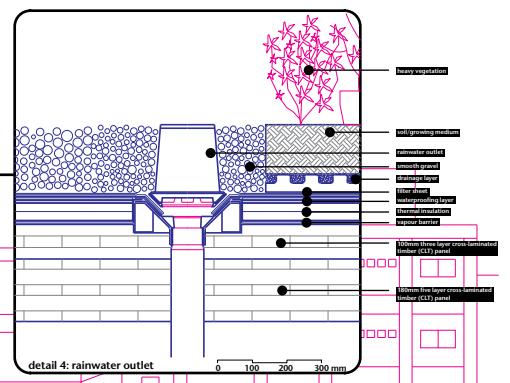
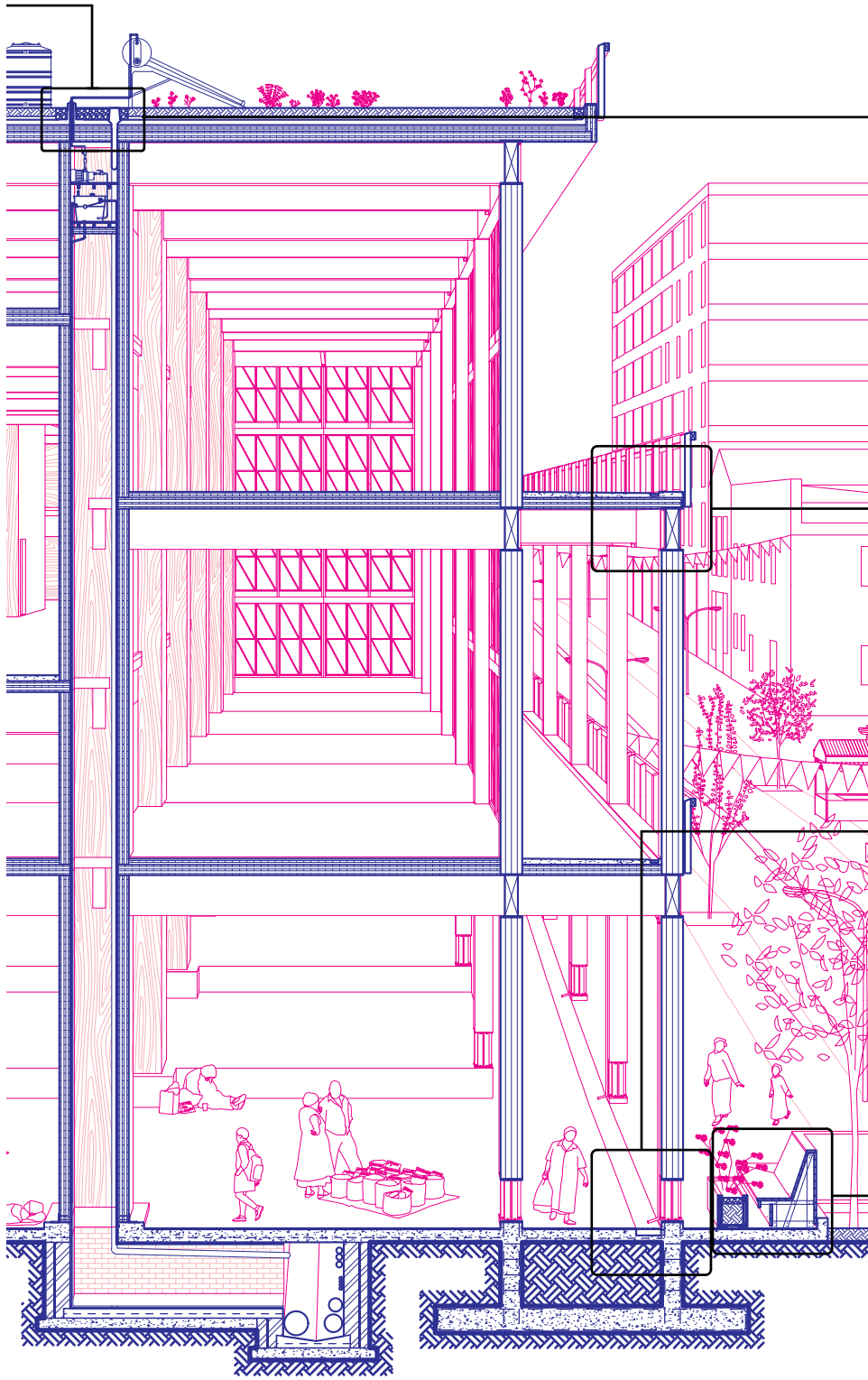


Figure 243 Overview of Section 1 that shows the support structure before appropriation. (Source: Author, 2020)



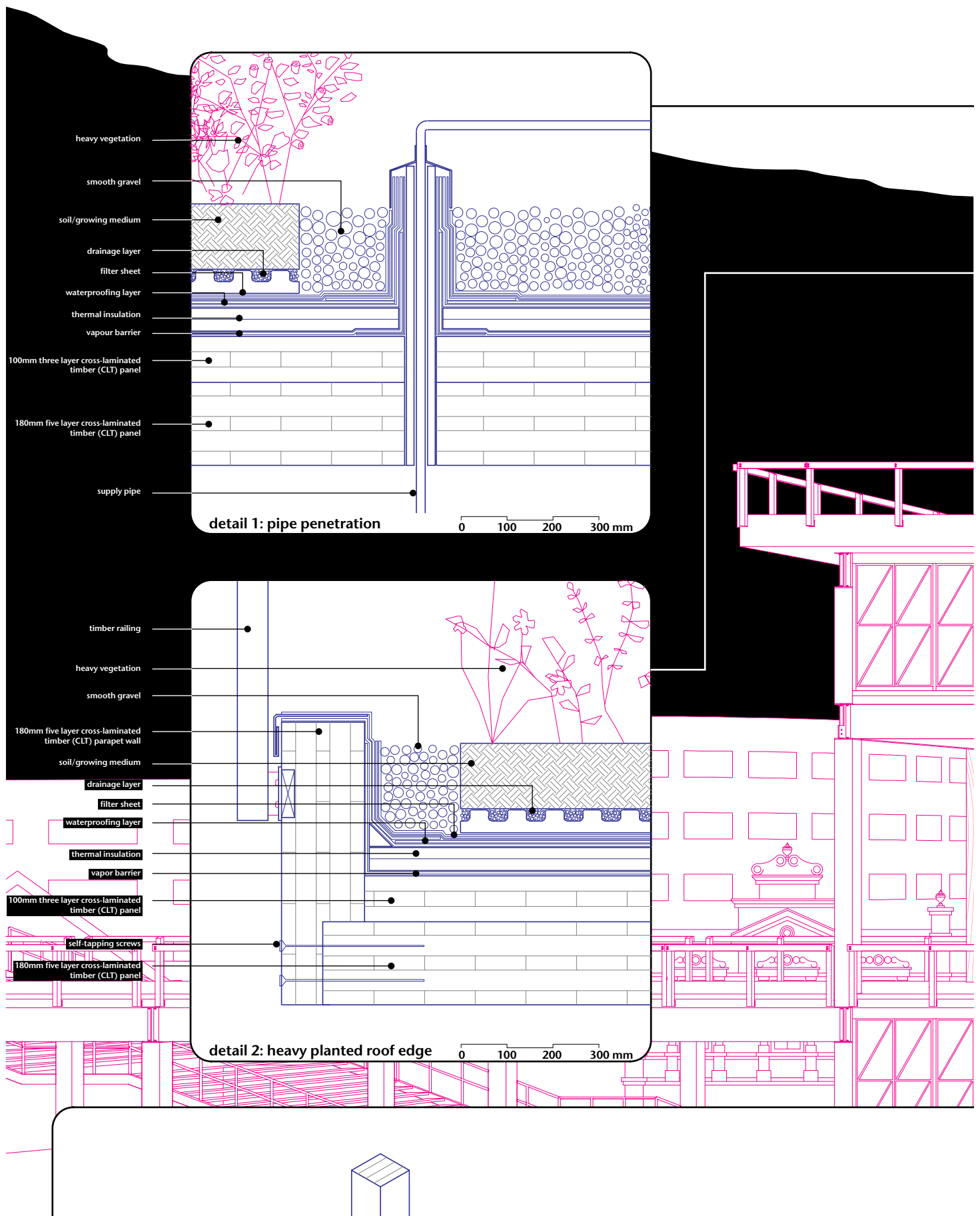
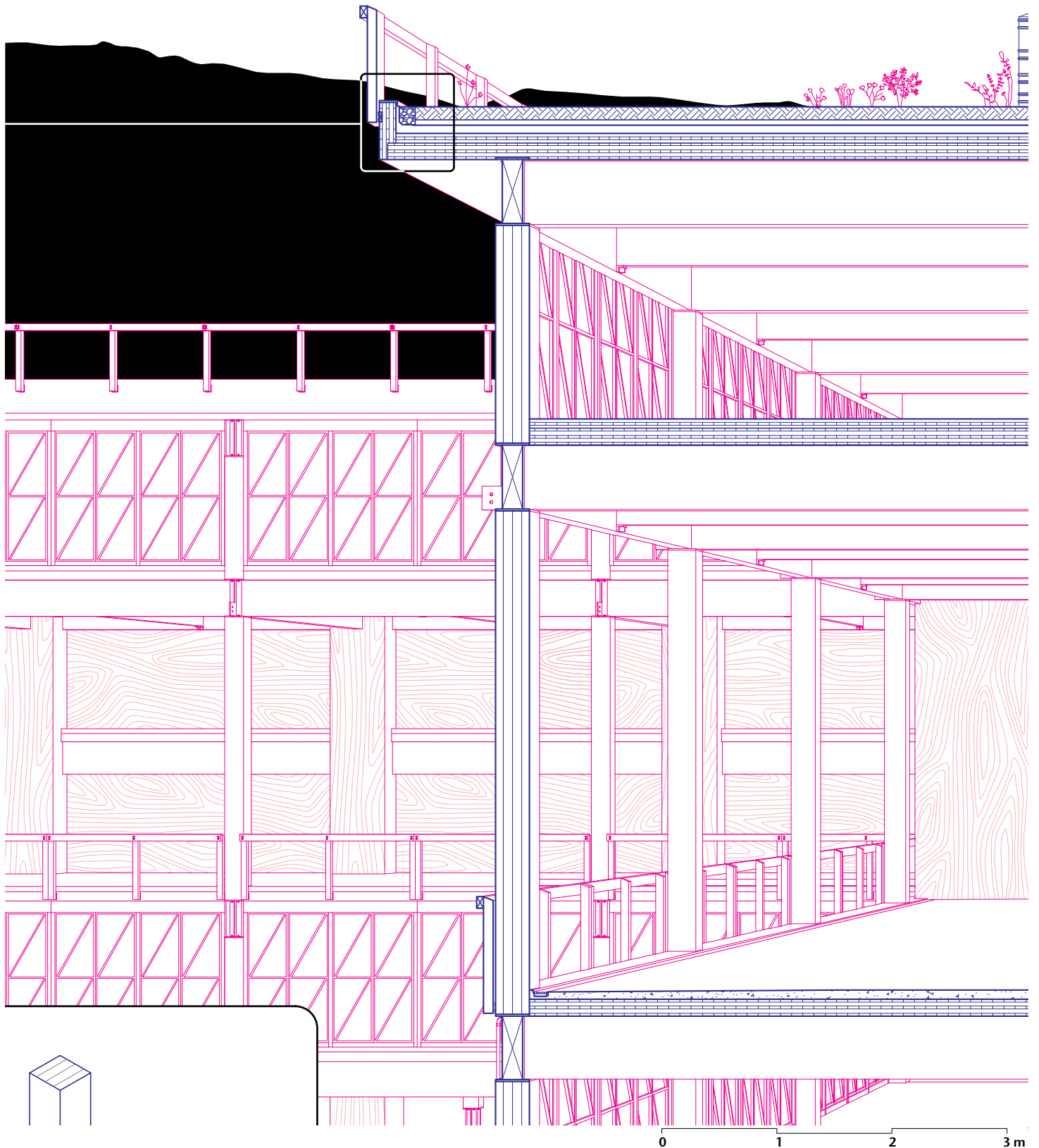


Figure 244 Top left section of Section 1 that shows the support structure before appropriation. (Source: Author, 2020)



0 1 2 3 m

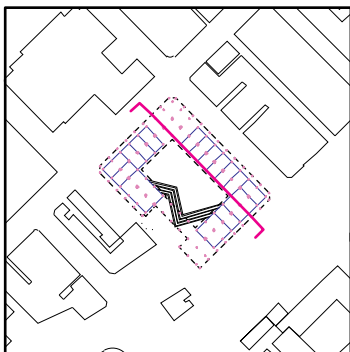
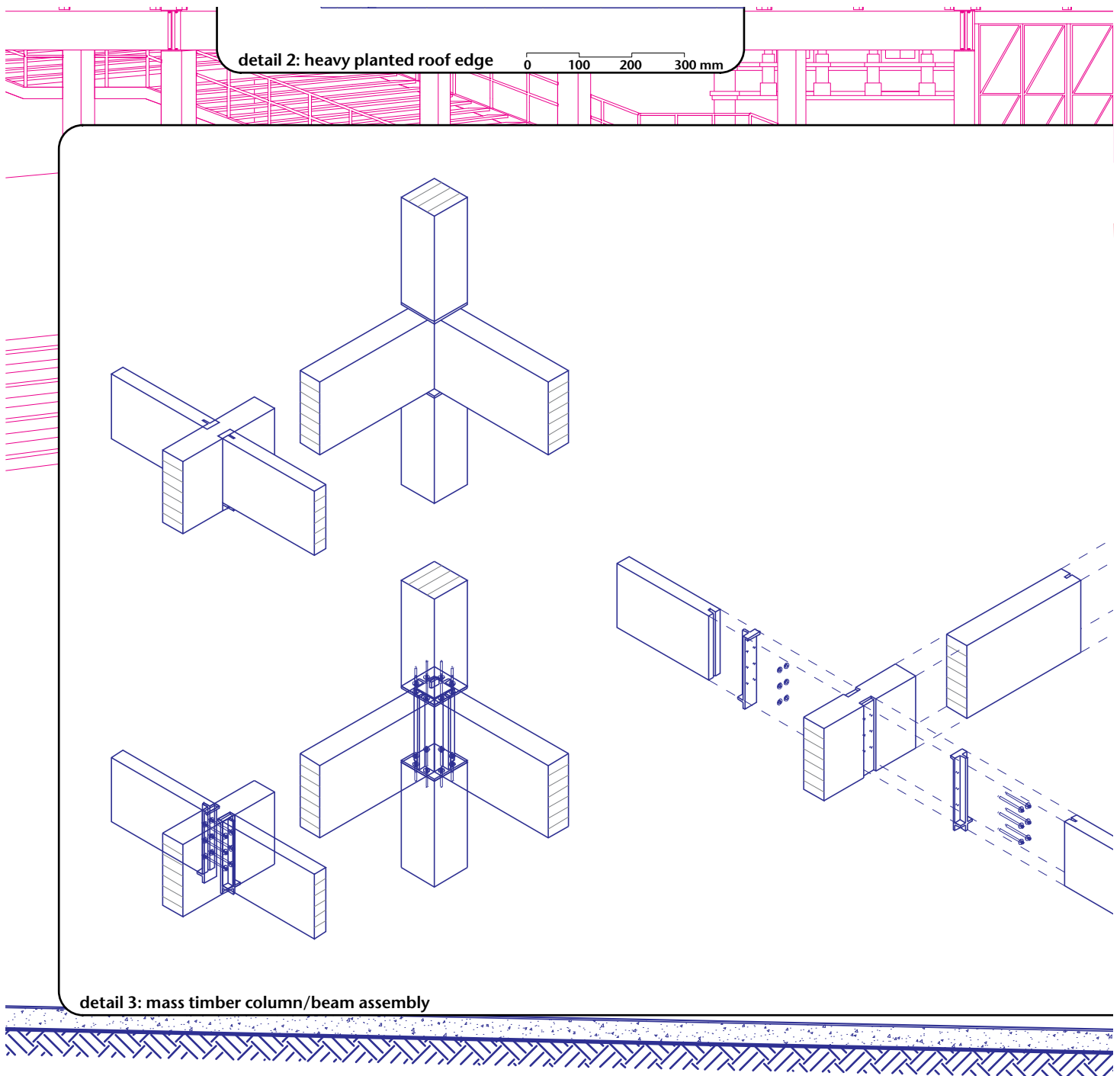
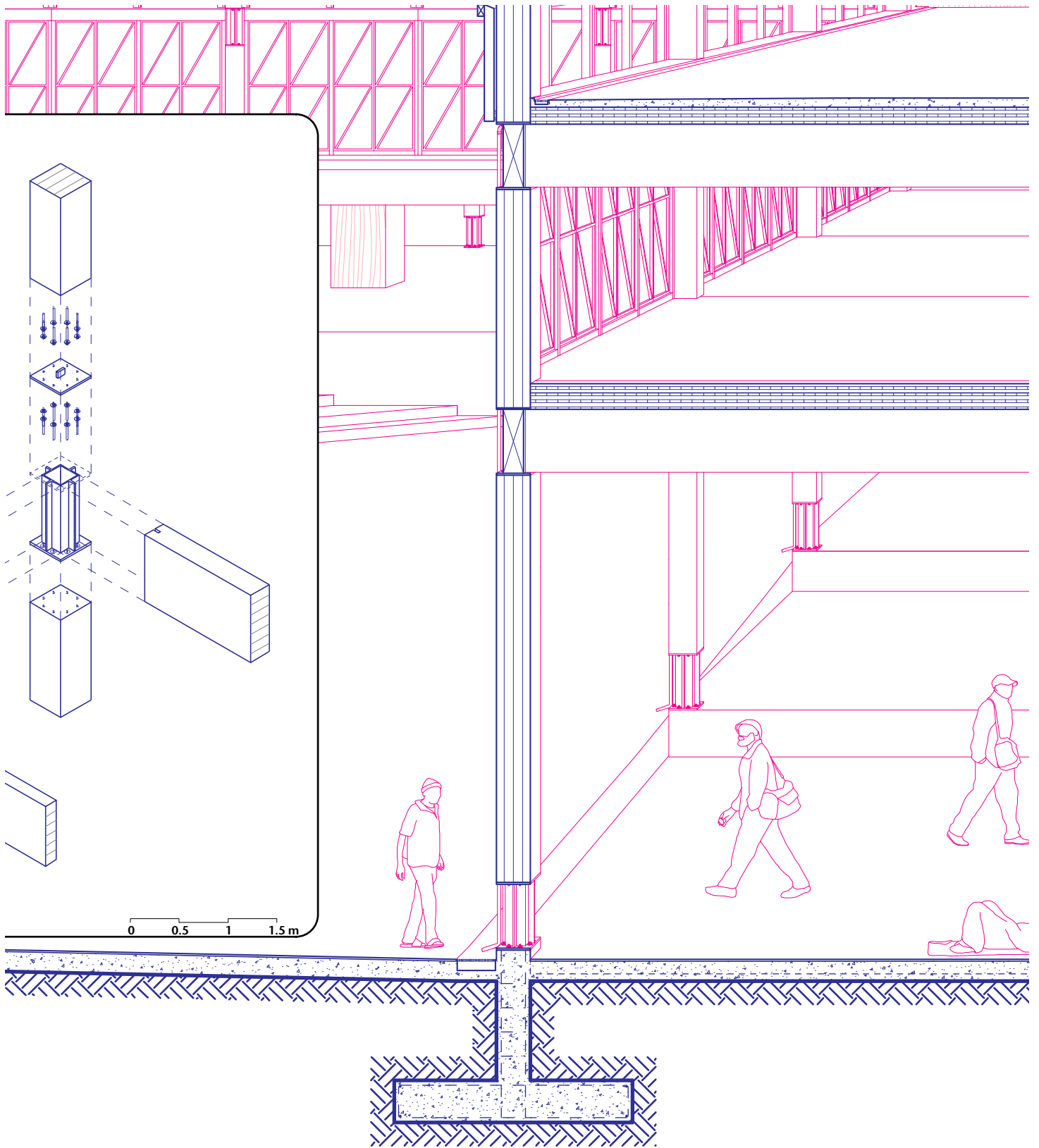


Figure 245 Bottom left section of Section 1 that shows the support structure before appropriation. (Source: Author, 2020)



0 1 2 3 m

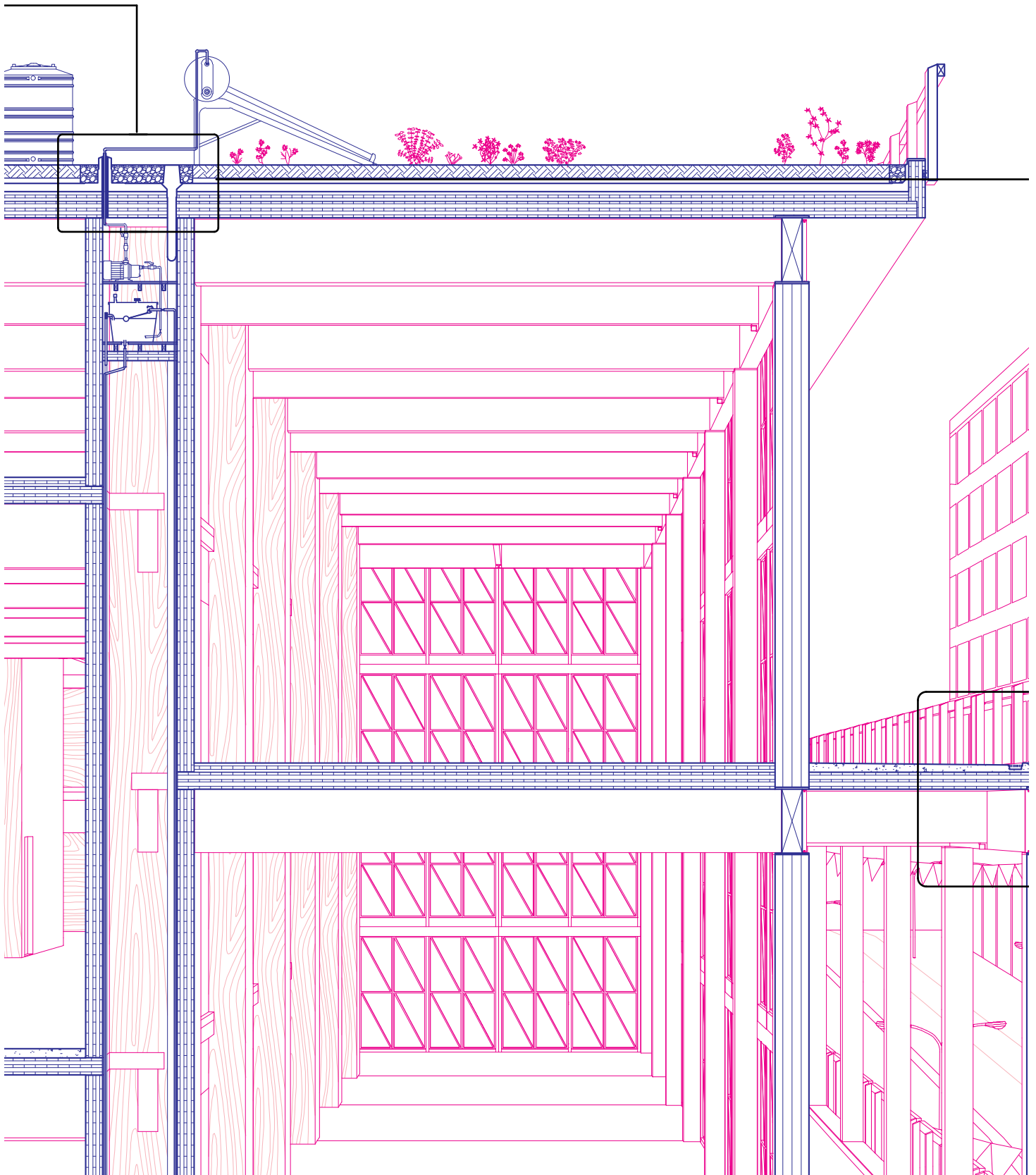
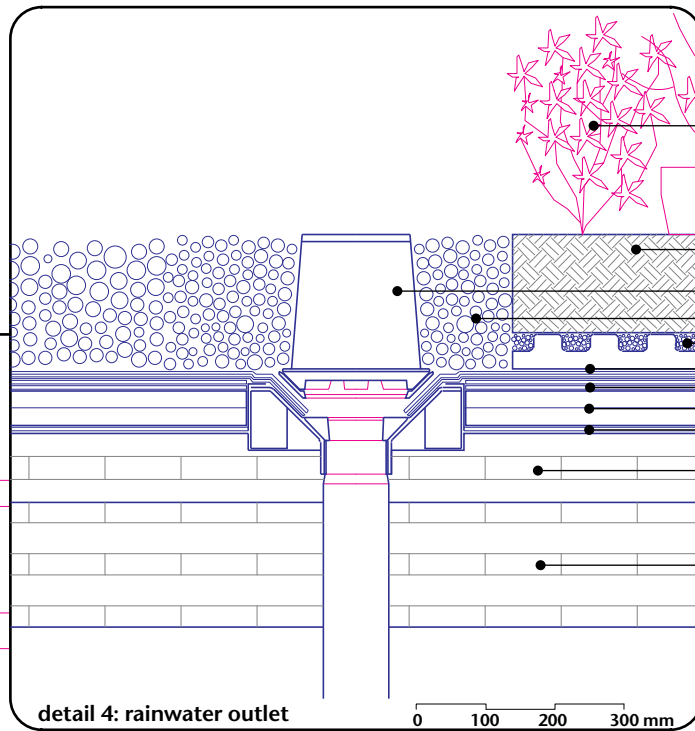


Figure 246 Top right section of Section 1 that shows the support structure before appropriation. (Source: Author, 2020)



heavy vegetation

soil/growing medium

rainwater outlet

smooth gravel

drainage layer

filter sheet

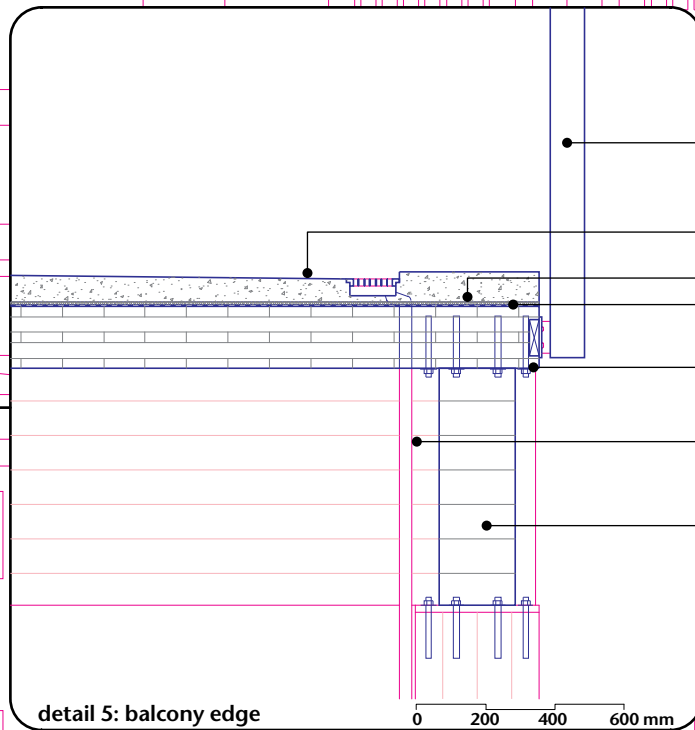
waterproofing layer

thermal insulation

vapour barrier

100mm three layer cross-laminated timber (CLT) panel

180mm five layer cross-laminated timber (CLT) panel



timber railing

concrete topping slab sloped to outside

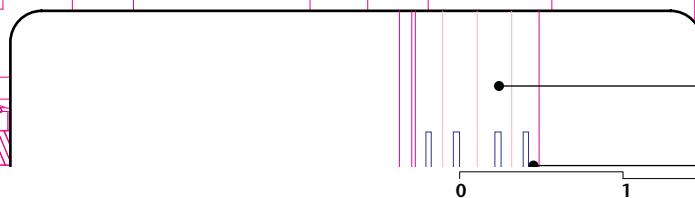
drainage composite

self-adhesive membrane

16mm dia. threaded rods

downpipe

200 x 685mm glulam beam



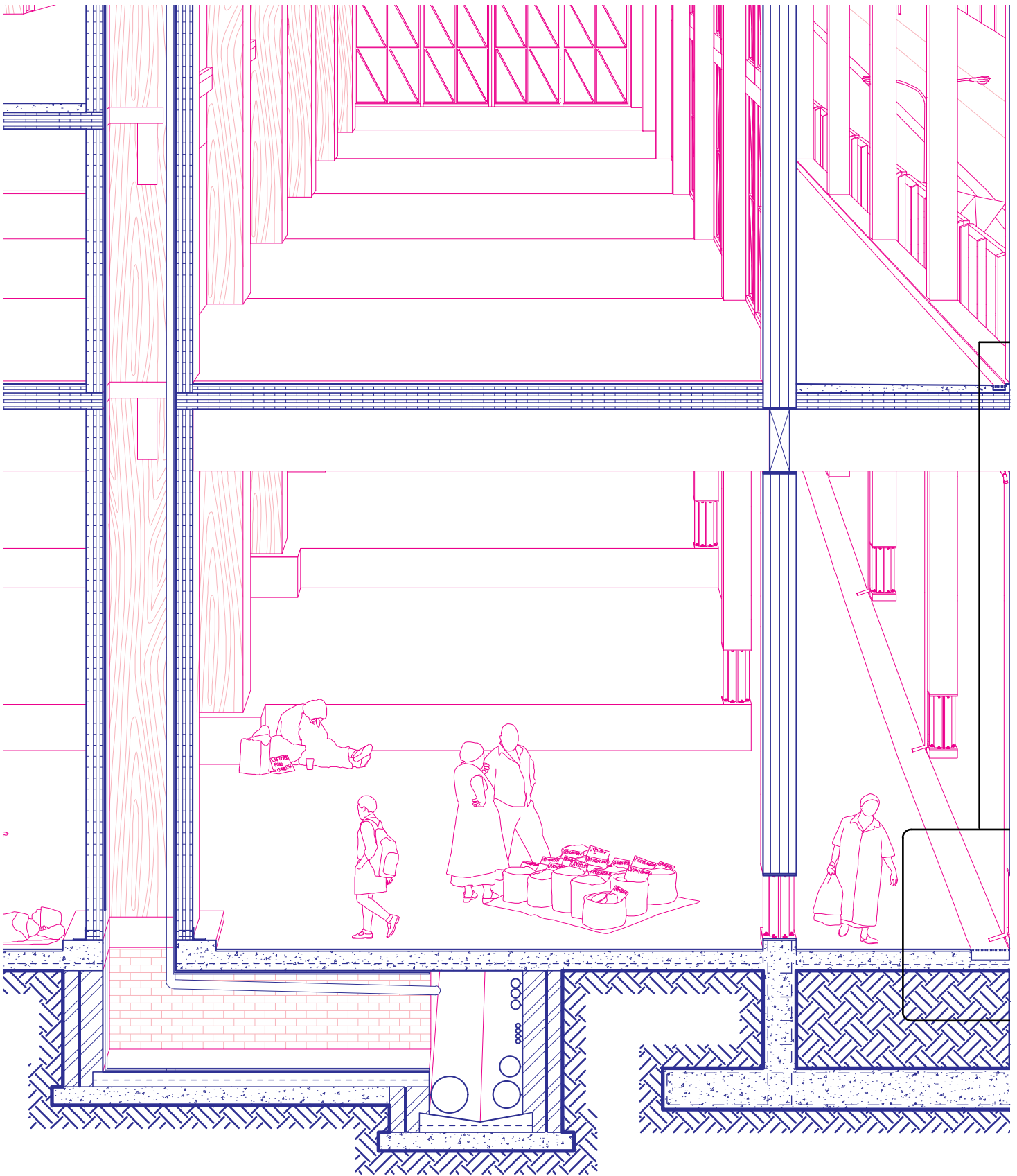
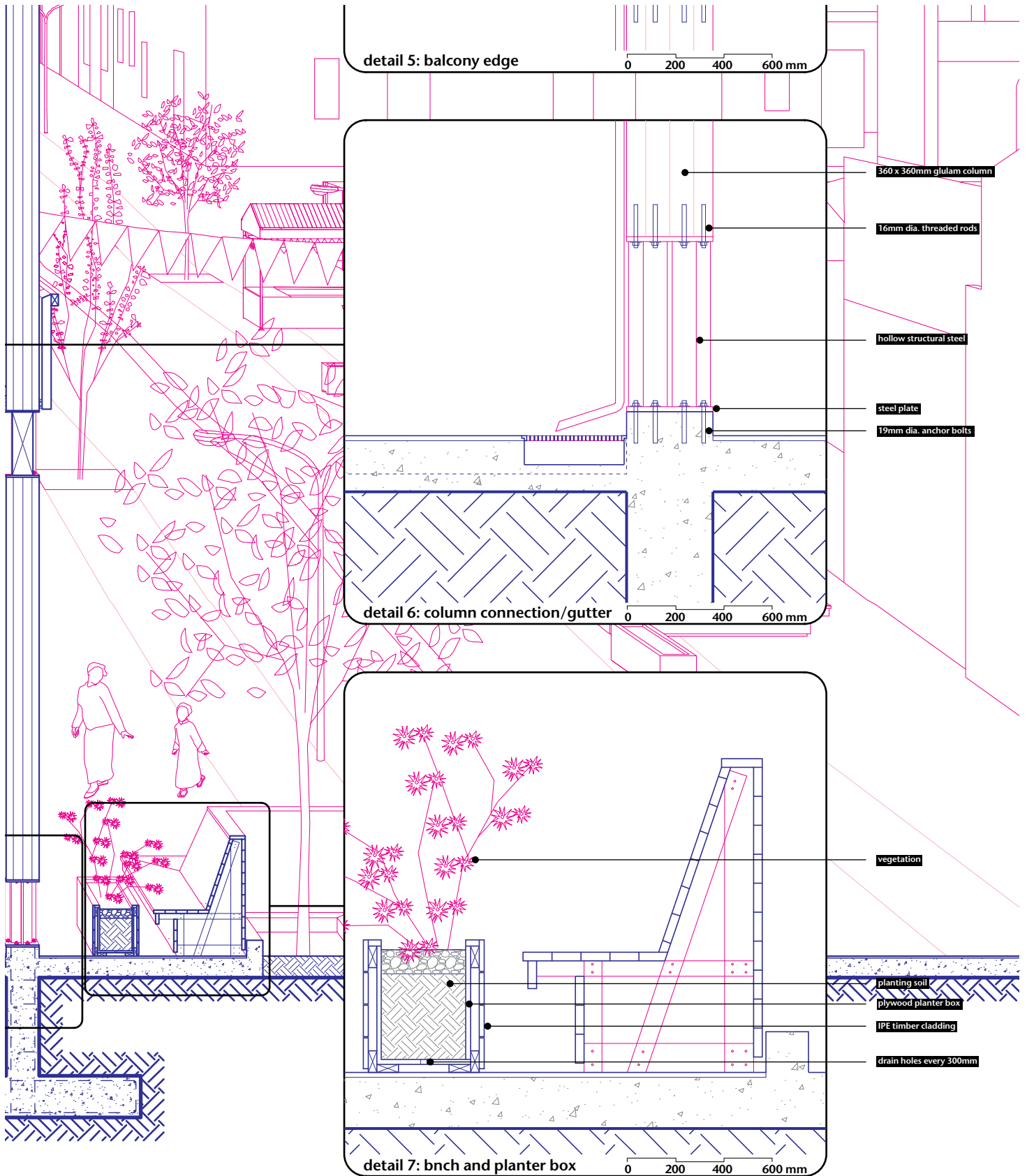


Figure 247 Bottom right section of Section 1 that shows the support structure before appropriation. (Source: Author, 2020)



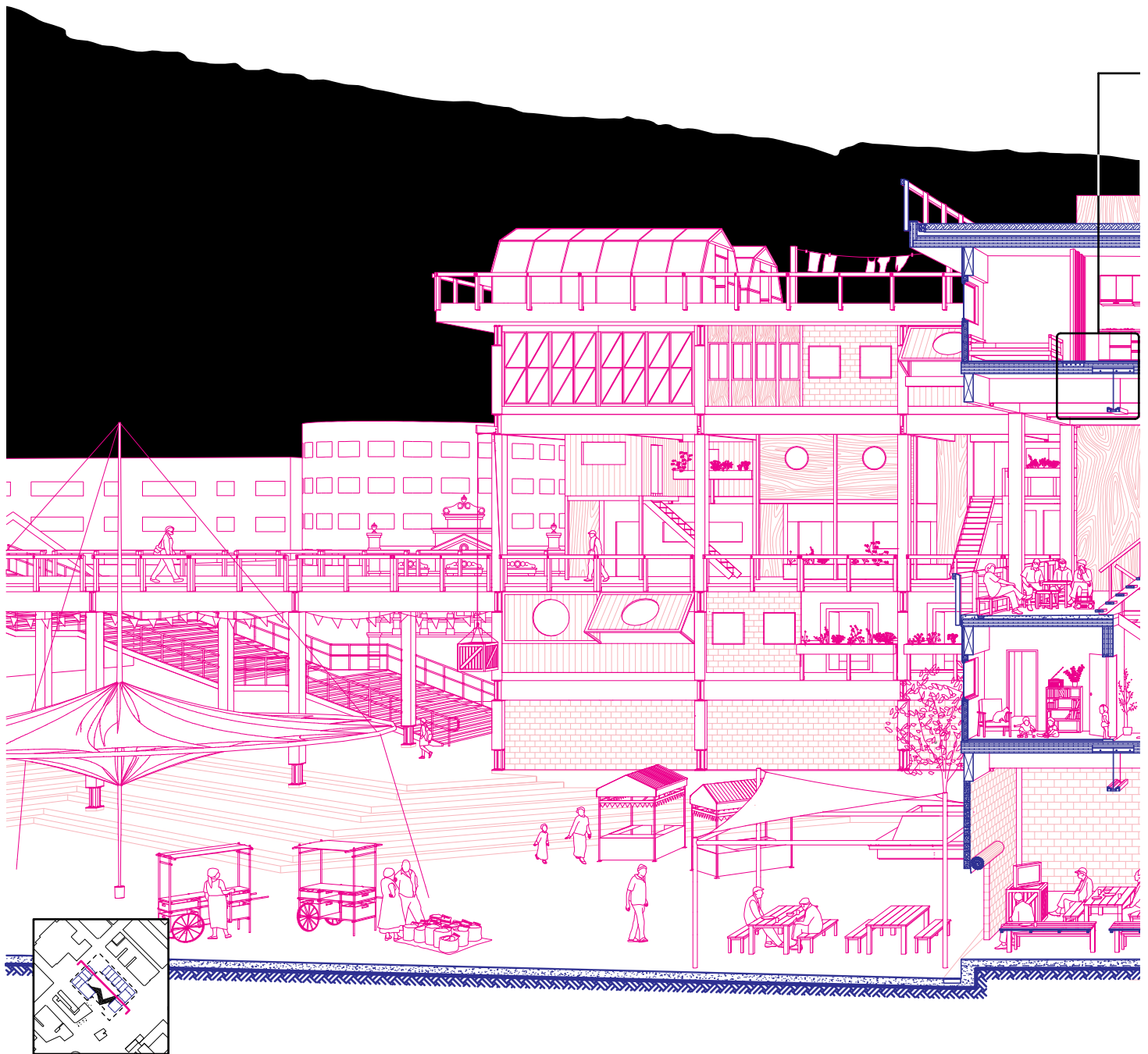


Figure 248 Overview of Section 2 showing a design scenario in which the support structure has been appropriated. (Source: Author, 2020)

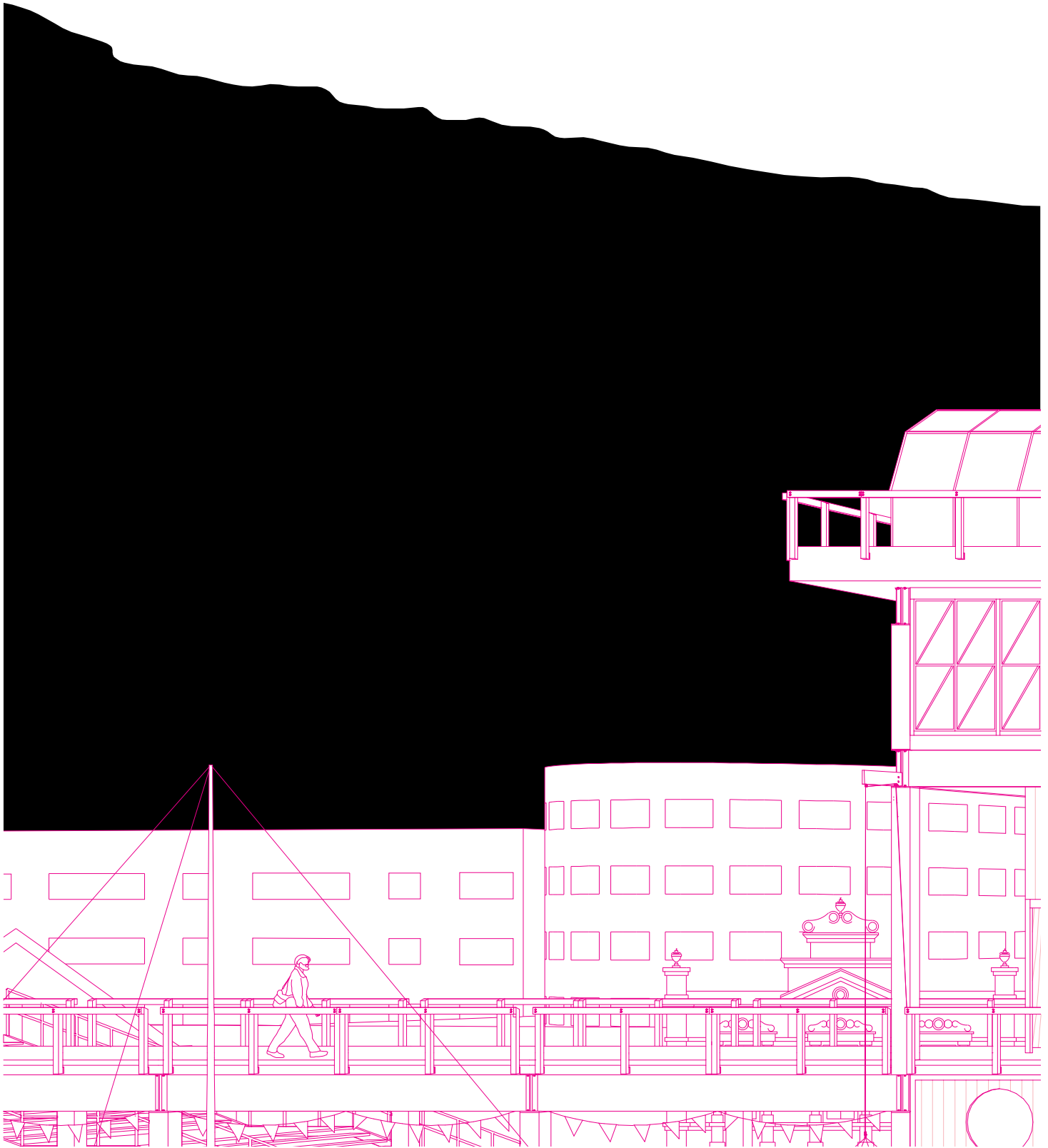
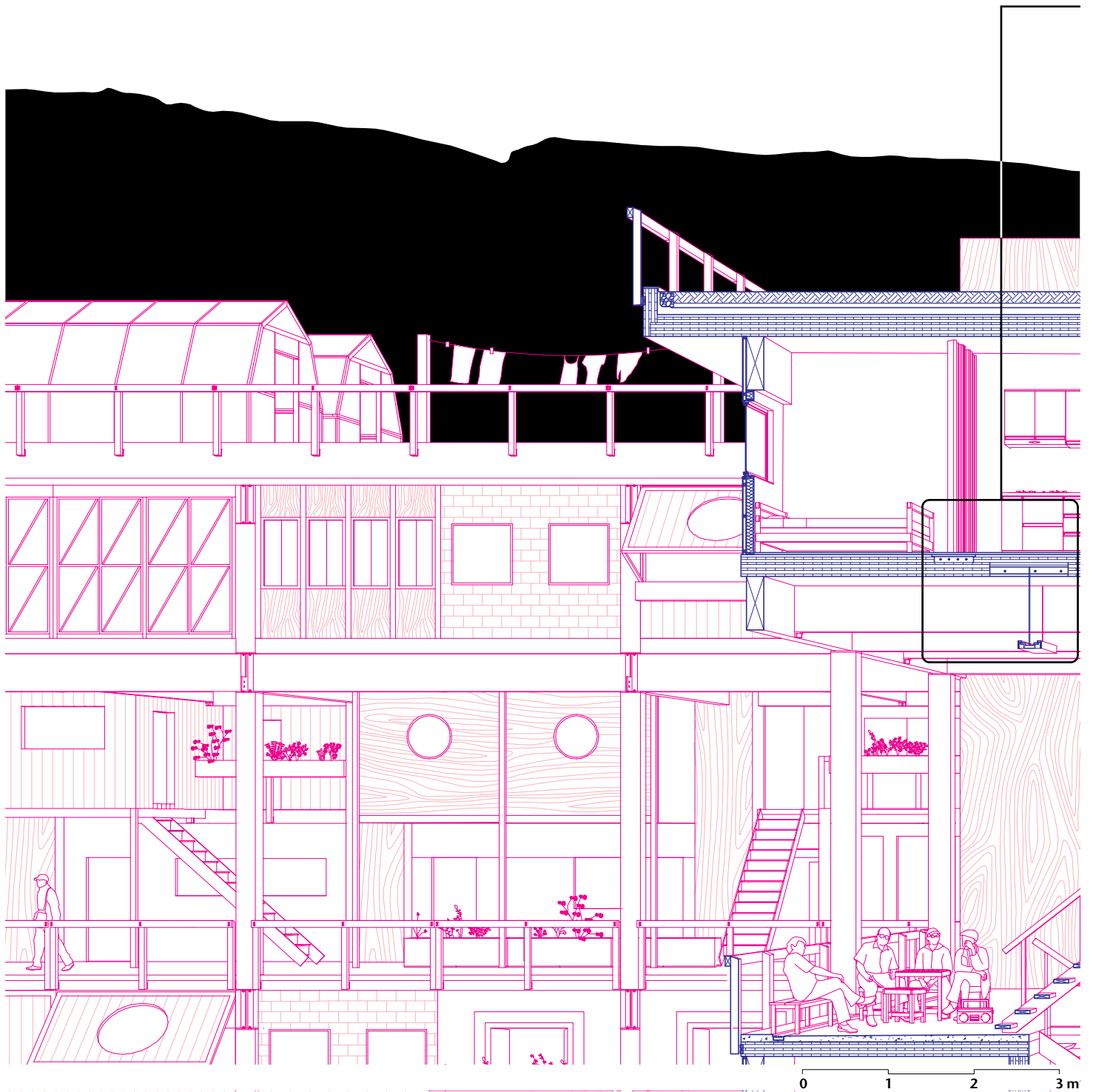


Figure 249 Top left section of Section 2 showing a design scenario in which the support structure has been appropriated. (Source: Author, 2020)



0 1 2 3 m

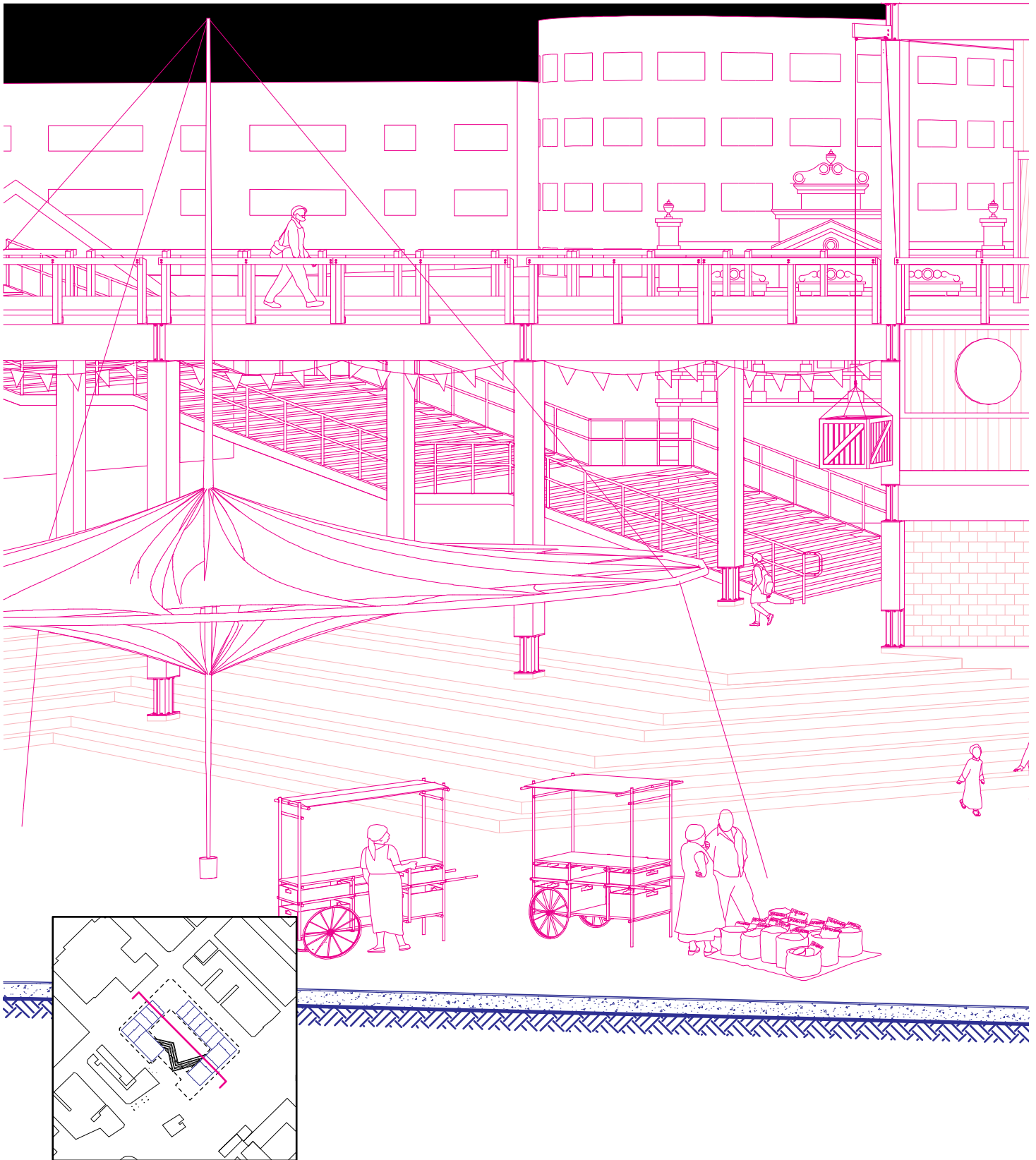
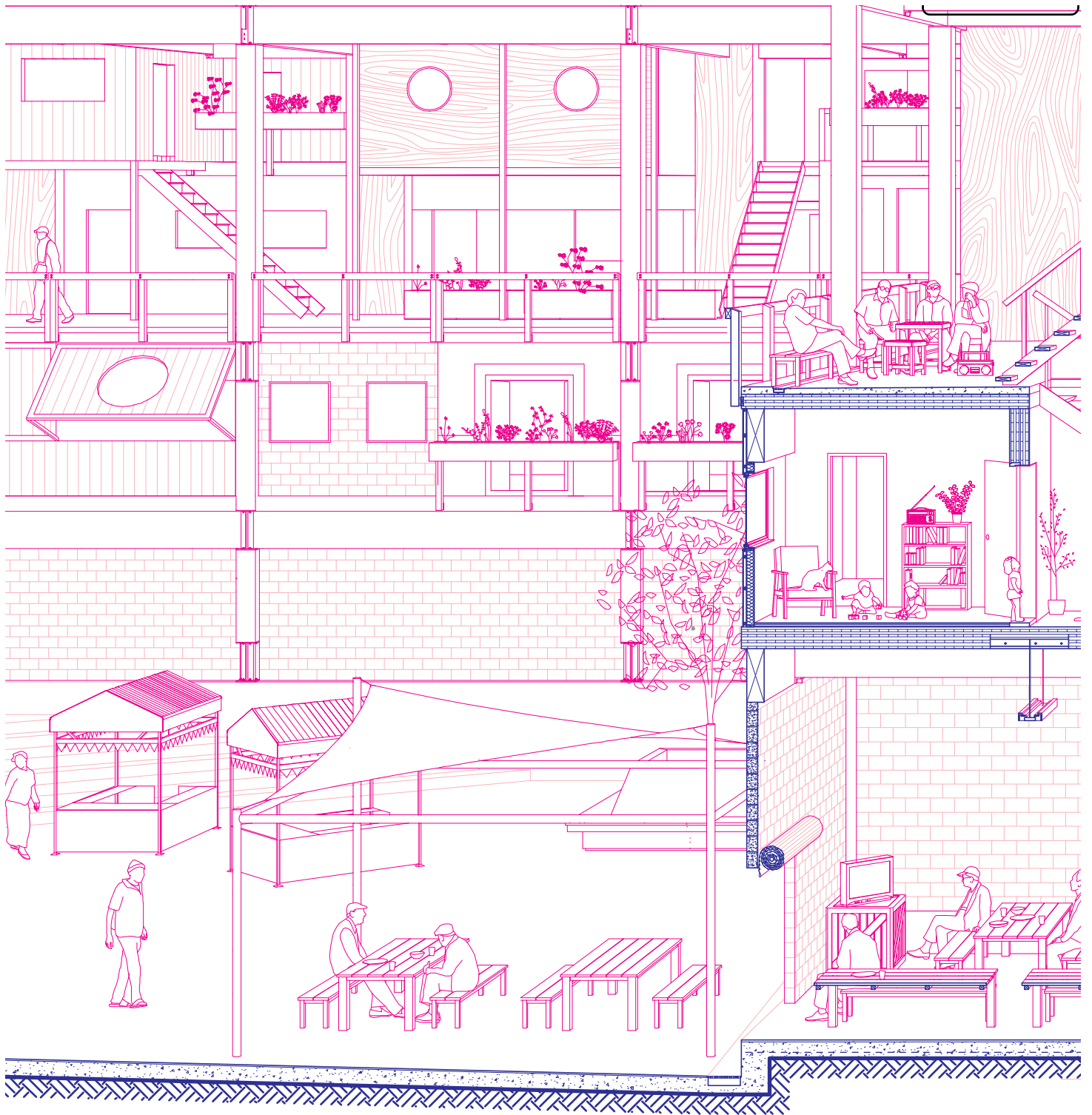


Figure 250 Bottom left section of Section 2 showing a design scenario in which the support structure has been appropriated. (Source: Author, 2020)



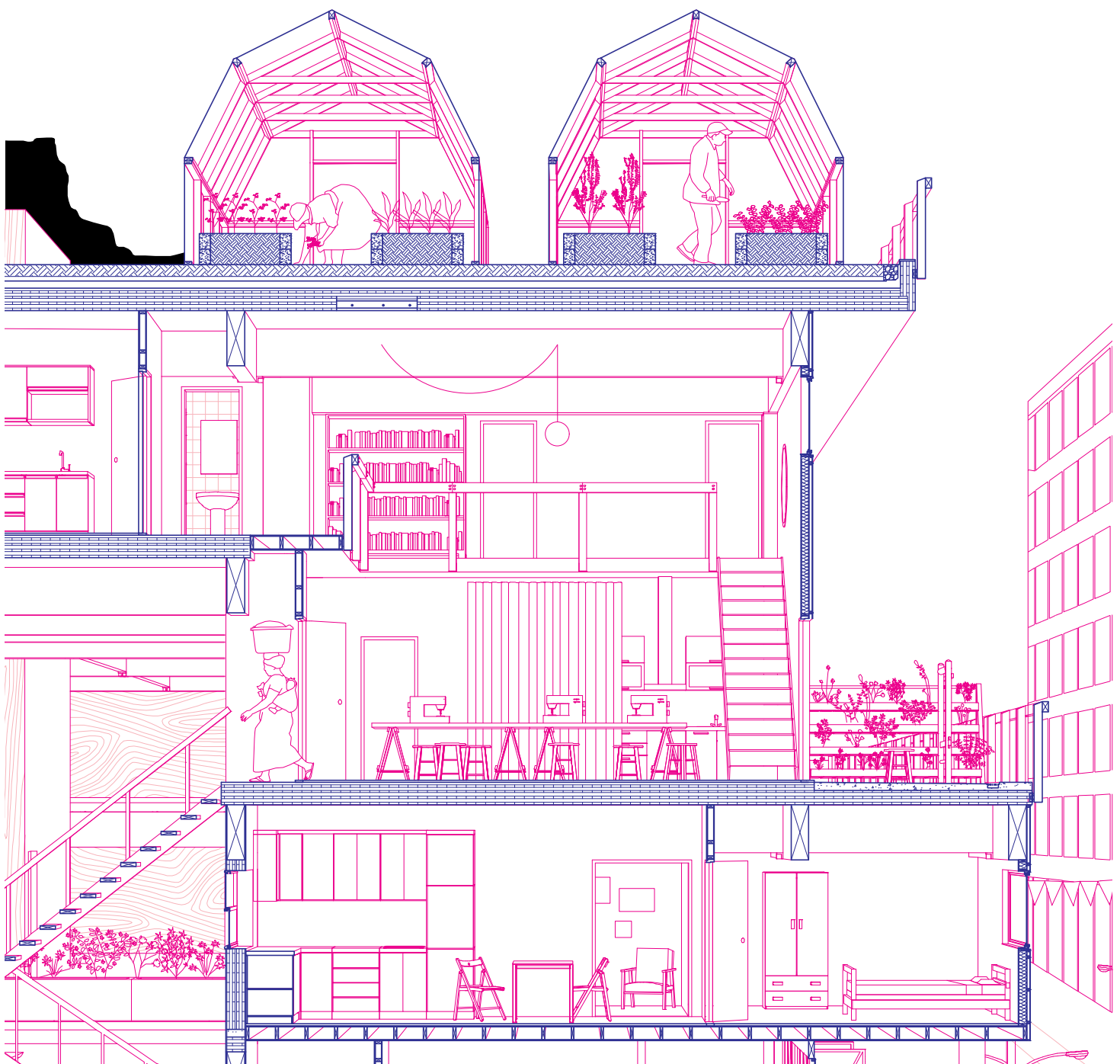
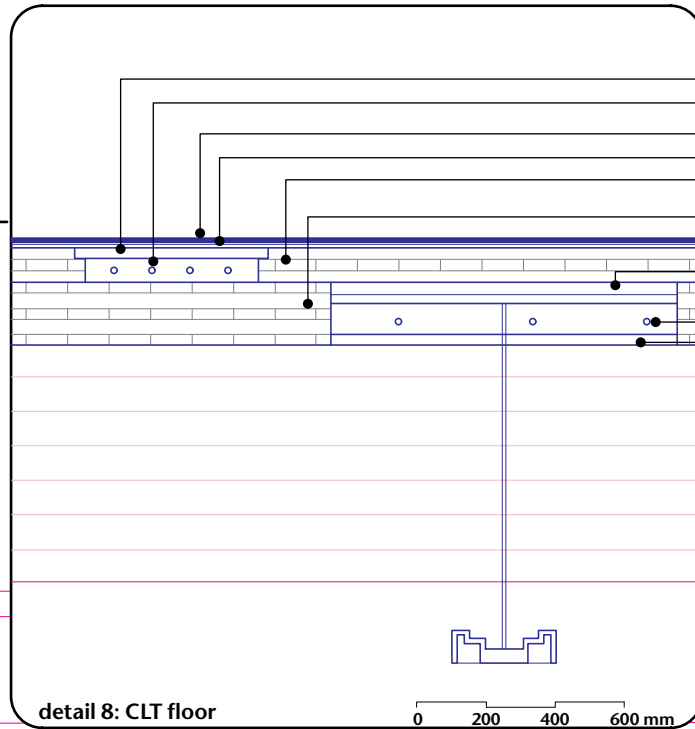
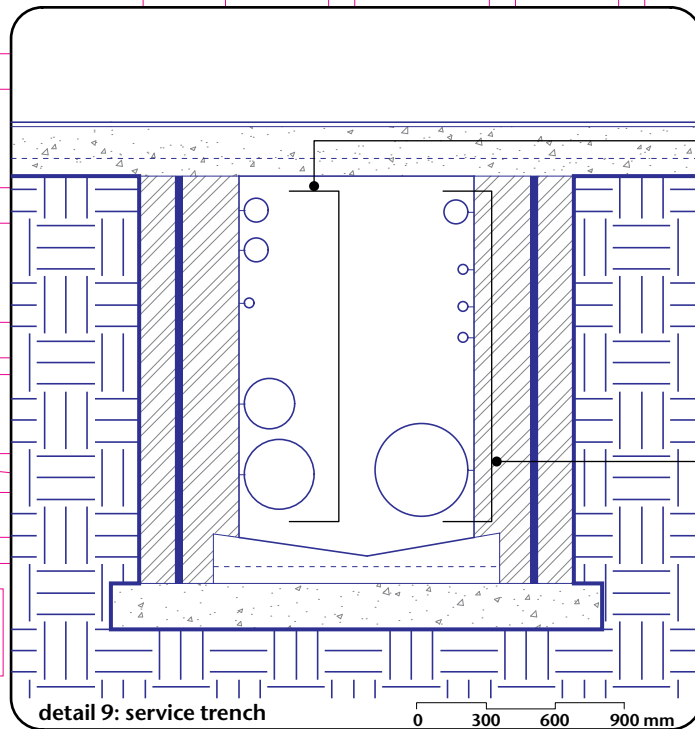


Figure 251 Top right section of Section 2 showing a design scenario in which the support structure has been appropriated. (Source: Author, 2020)



- 13mm plywood
- services through floor
- carpet
- acoustic underlayment
- 100mm three layer cross-laminated timber (CLT) floor
- 180mm five layer cross-laminated timber (CLT) floor
- acoustic insulation
- EMT conduit
- timber slats

detail 8: CLT floor



- electrical supply from city grid to plant room (50mm dia. conduit)
- power from p.v. panels to plant room (50mm dia. conduit)
- unfiltered water from Camissa water system to plant room (22mm dia. pumped)
- filtered rainwater from heavy planted roof to storage tank (110mm dia. @ 1:60 slope)
- filtered rainwater from heavy planted roof to storage tank (110mm dia. @ 1:60 slope)
- unfiltered grey water to plant room (150mm dia. @ 1:60 slope)
- electrical supply to wet cores (50mm dia. conduit)
- water supply to wet cores for urban farming (22mm dia. pumped)
- filtered grey water to storage tanks (22mm dia. pumped)
- filtered grey water to storage tanks (22mm dia. pumped)
- cold water supply to wet cores (22mm dia. pumped)
- waste water to sewer (200mm dia. @ 1:60 slope)

detail 9: service trench

0 1 2 3 m

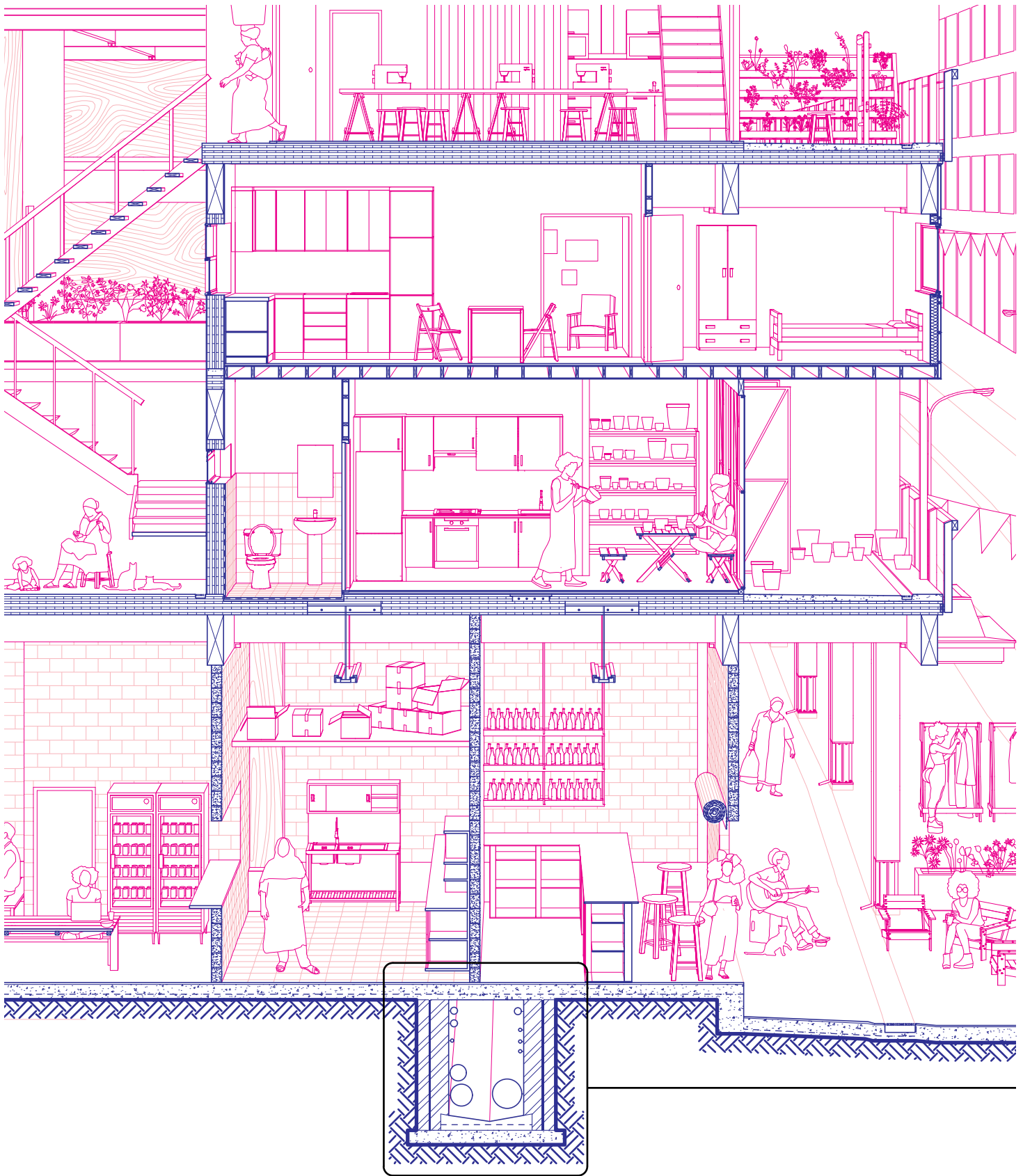


Figure 252 Bottom right section of Section 2 showing a design scenario in which the support structure has been appropriated. (Source: Author, 2020)

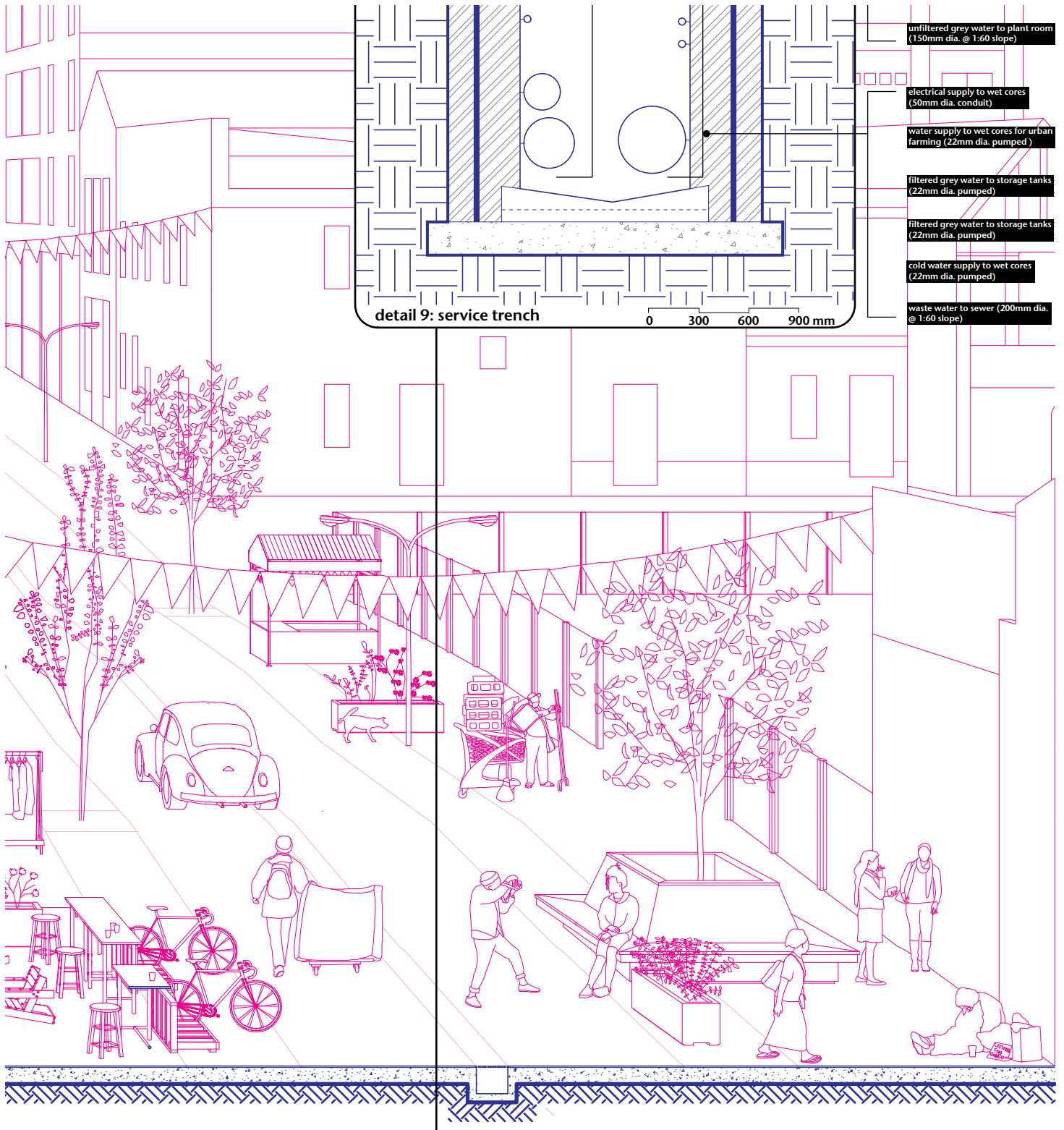




Figure 253 Harrington Street north-west elevation showing the support structure before appropriation. (Source: Author, 2020)



Figure 254 Albertus/Constitution Street south-west elevation showing the support structure before appropriation. (Source: Author, 2020)



Figure 255 Canterbury Street south-east elevation showing the support structure before appropriation. (Source: Author, 2020)

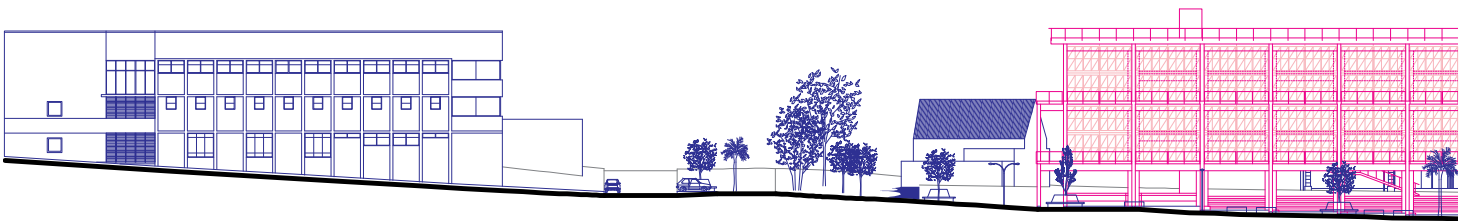


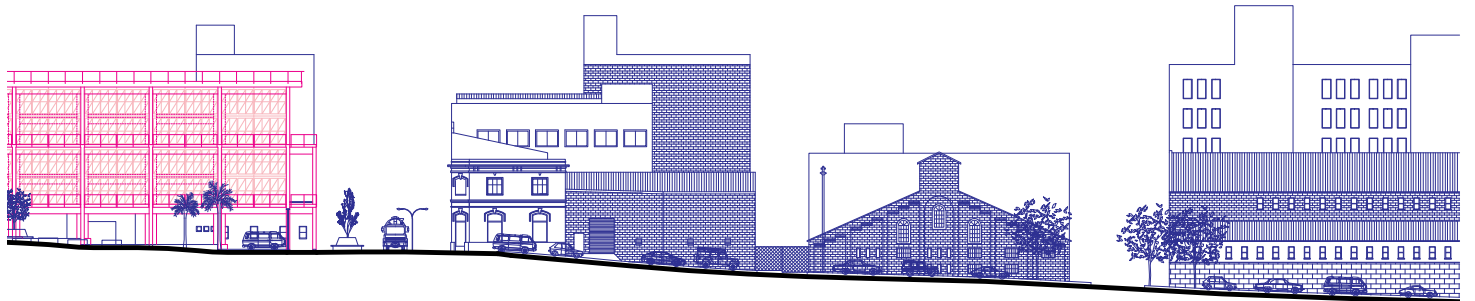
Figure 256 Caledon Street north-east elevation showing the support structure before appropriation. (Source: Author, 2020)



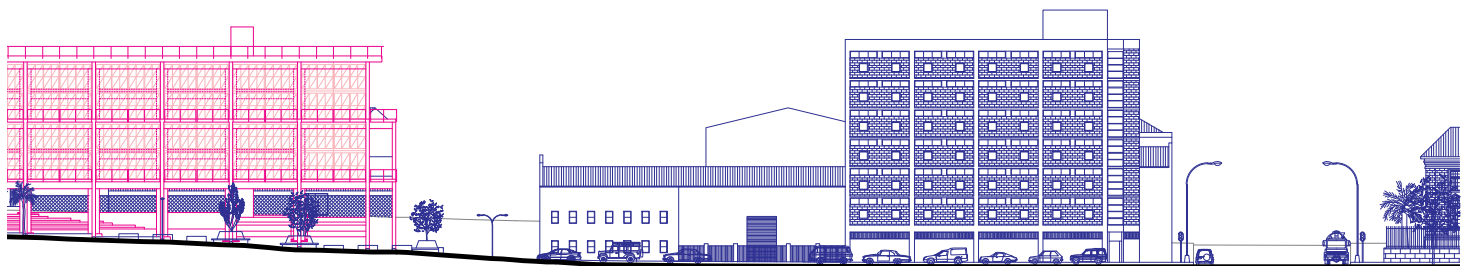
0 10 20 30 m



0 10 20 30 m



0 10 20 30 m



0 10 20 30 m

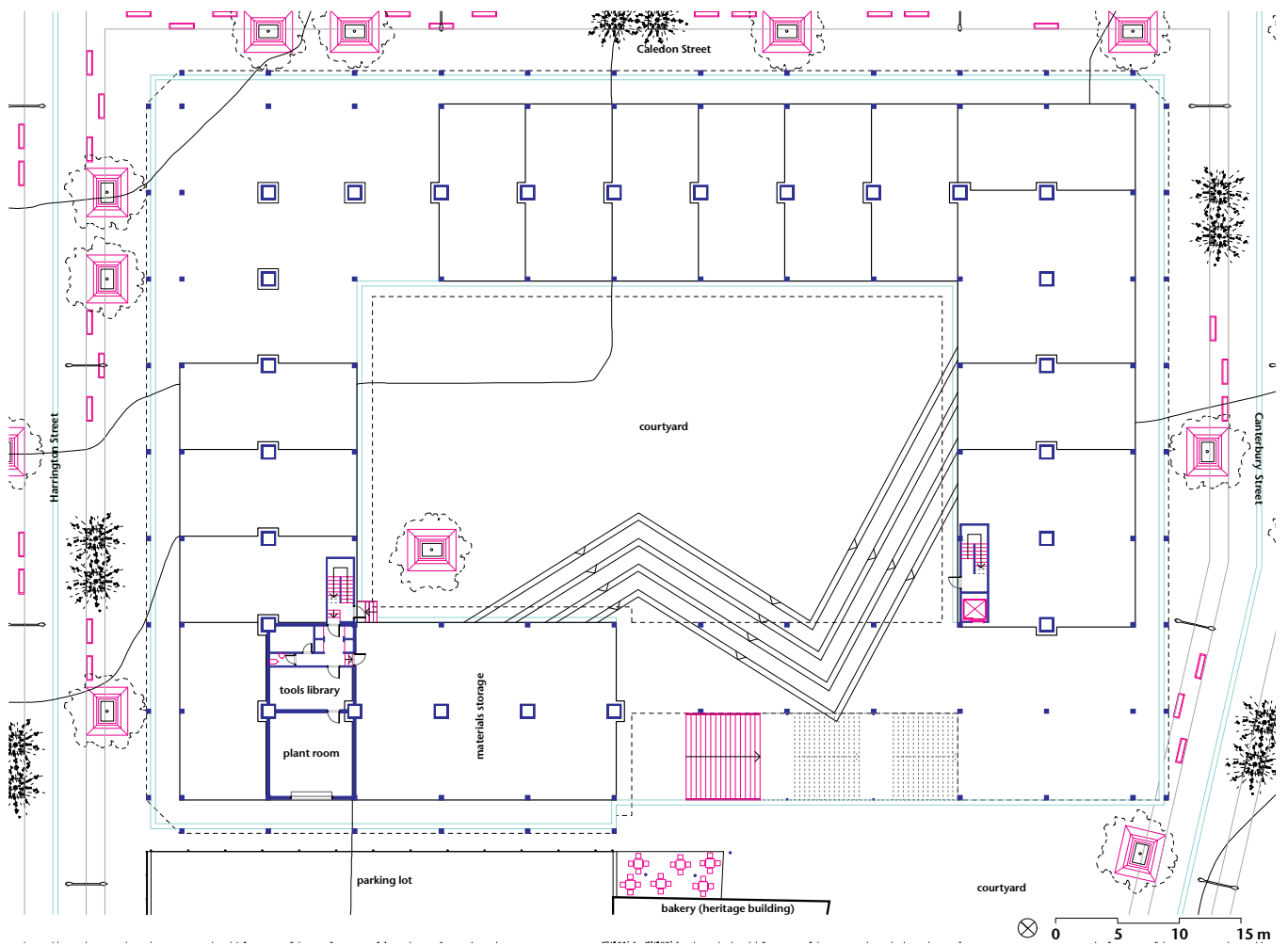


Figure 257 Ground floor plan before appropriation of the support structure. (Source: Author, 2020)

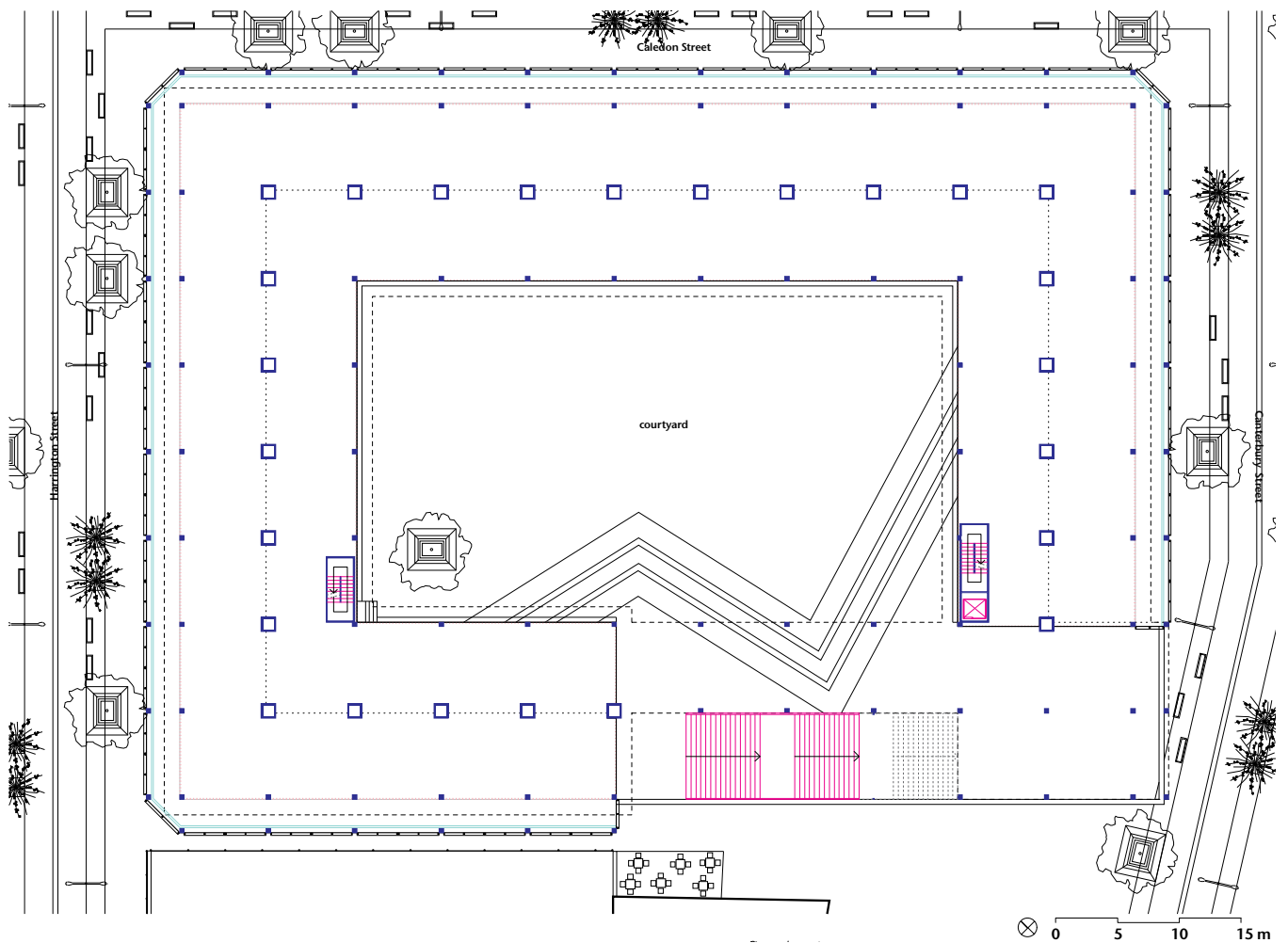


Figure 258 First floor plan before appropriation of the support structure. (Source: Author, 2020)

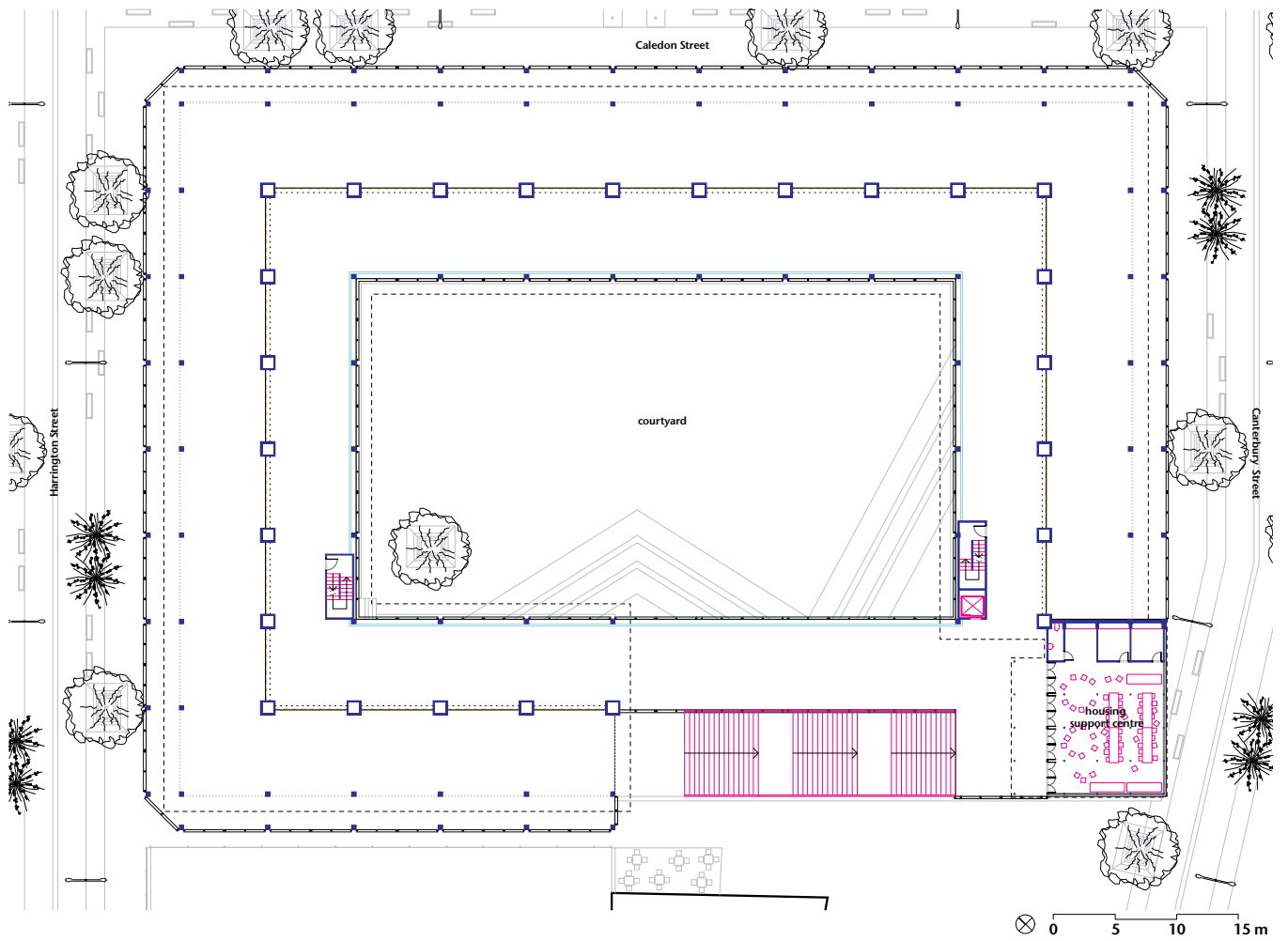


Figure 259 Second floor plan before appropriation of the support structure. (Source: Author, 2020)

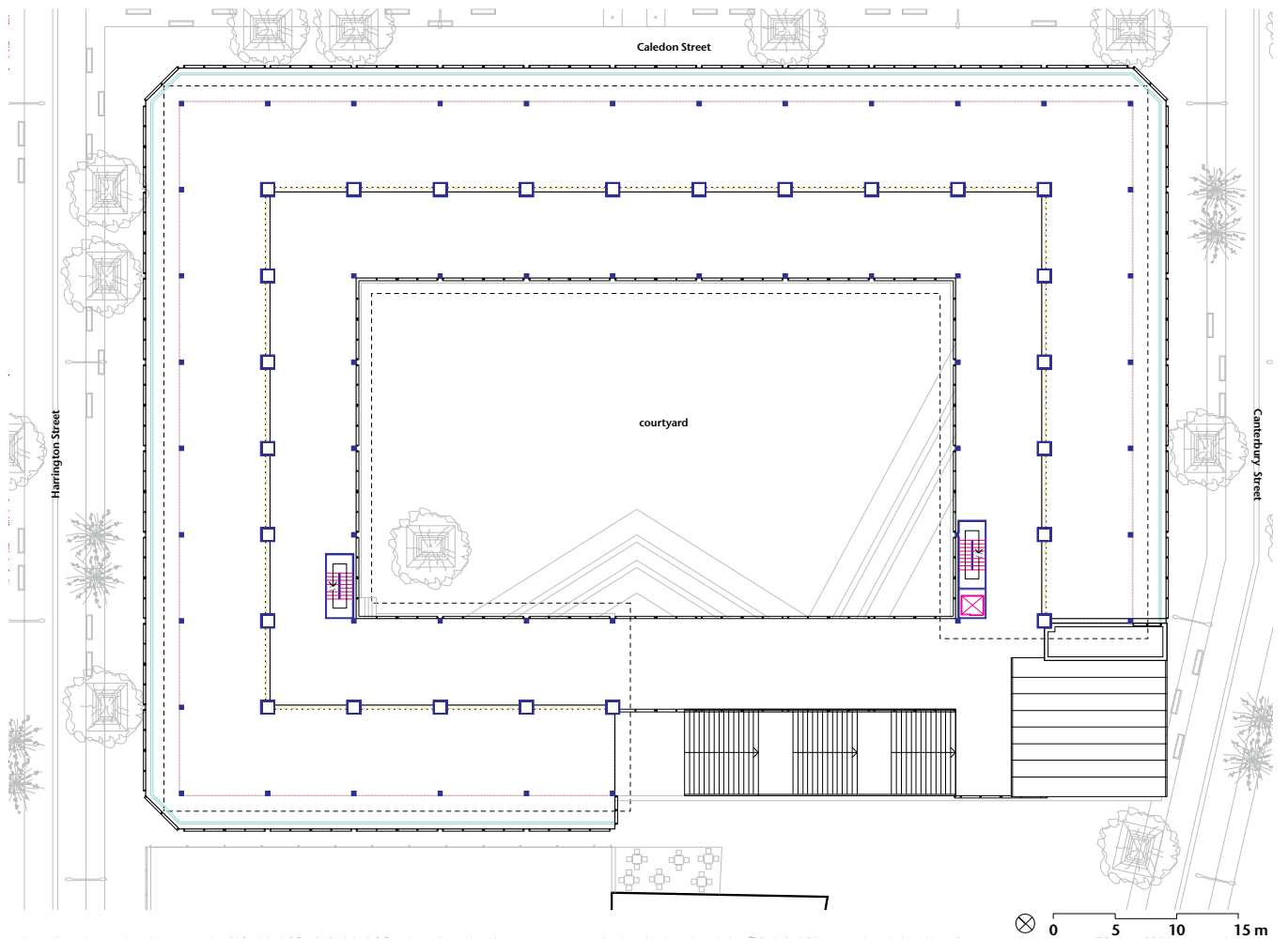


Figure 260 Third floor plan before appropriation of the support structure. (Source: Author, 2020)

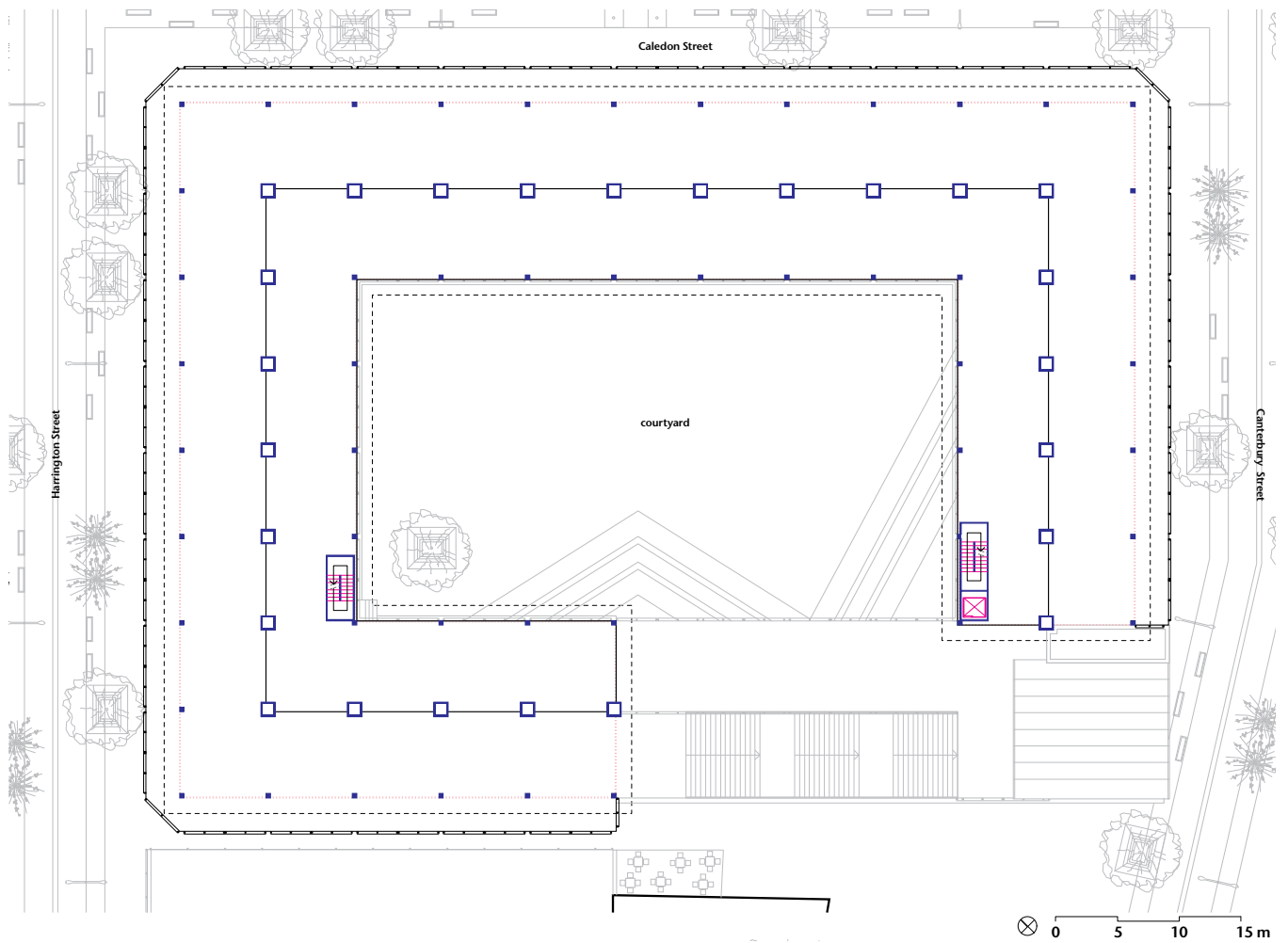


Figure 261 Fourth floor plan before appropriation of the support structure. (Source: Author, 2020)

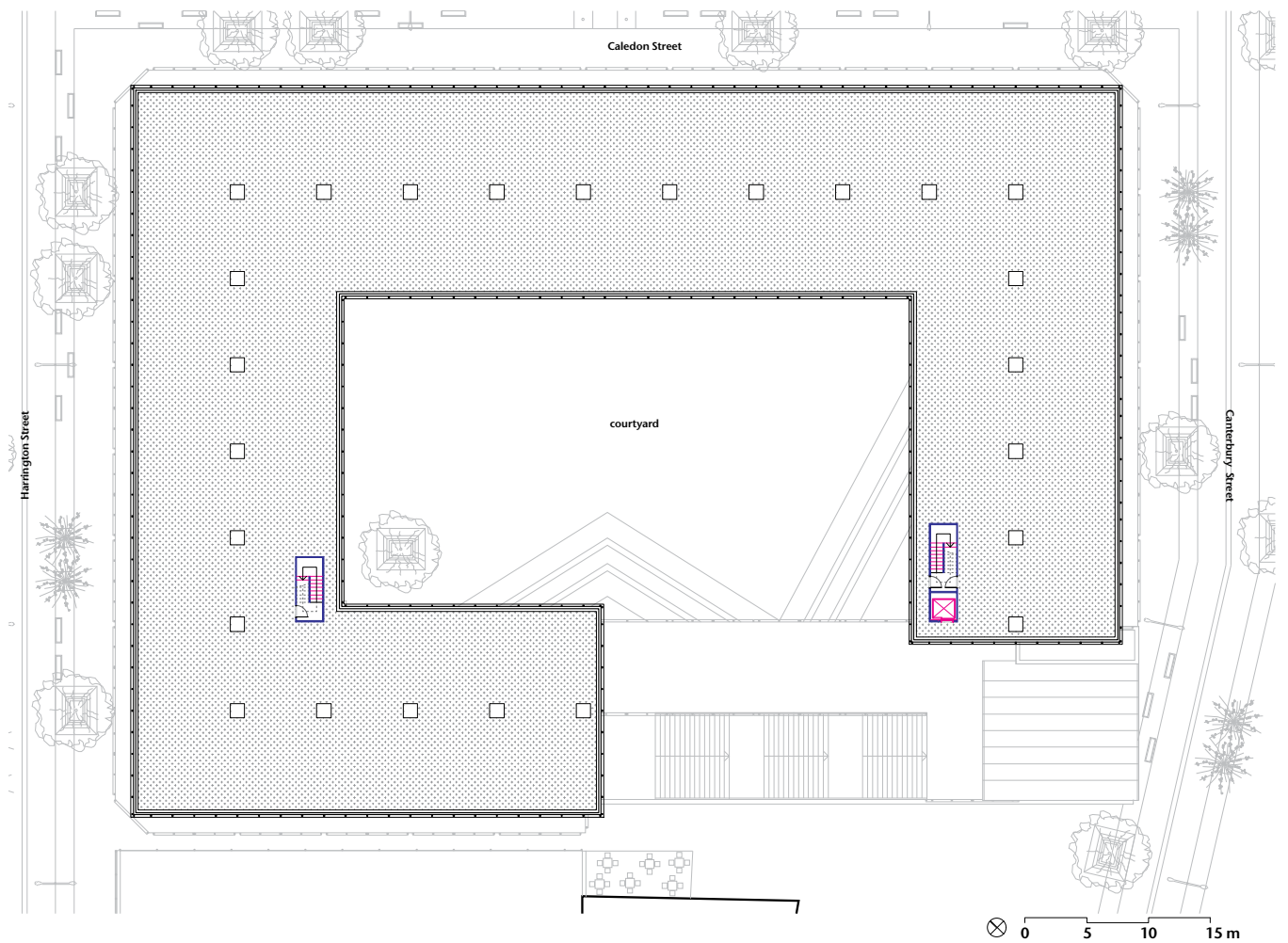


Figure 262 Roof plan before appropriation of the support structure. (Source: Author, 2020)

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- Figure 8.* 'Cape Town – Manenberg/Phola Park' (2018), by Johnny Miller. [Source](#): Johnny Miller, 2018. [In](#): Miller, 2018b. 2
- Figure 9.* 'Pietermaritzburg – Otto's Bluff Area' (2018), by Johnny Miller. [Source](#): Johnny Miller, 2018. [In](#): Miller, 2018b. 2
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Appendix 1: List of Role Players and Responsibilities in the iLinge Labahlali Housing Co-operative

Role player	Designation	Function
Rooftops Canada	Technical Advisors	Capacity-building of the Social Housing Unit of the City of Cape Town.
City of Cape Town	Social Housing Unit	Consulting with local community structures and organisations; Consulting with hostel residents; Assistance with registration of co-operative; Developing co-operative statute; Called for technical advisors; Provided free staff hours from Legal and Housing Finance Department; Act as VAT Registered Account Administration to receive and disburse subsidy funds for construction (Free of charge); Setting up of accounts for co-operative rates, services and water; Termination of co-operative members tenancies and leases as council tenants; Selling of land from the City to the co-operative; Setting up of Related Performance Monitoring Agreement; Setting up Installment Purchase Agreement for transfer after five years of operation; Ongoing support for operation and management of co-operative after construction phase.
City of Cape Town	Post Transfer Support programme	Provide funds to service providers to support and capacity-building of co-operatives during the first three years of operation.
Provincial Housing Board		Approve capital grant and institutional subsidies; Release of subsidies.
Architects	Architects	Prepared the financial and design information; Act as facilitators and advisors beyond their duties as architects.
Local community		Elect committees for decision-making in co-operative management.
Private companies	Management	Donated building or sell land at lowest price; Transfer of hostels and their rights under their leases/land to the co-operative.
Department of Labour	Trainers	Provided training to co-operative members in plastering, bricklaying, plumbing and carpentry.
CETA		Issue National Vocational Qualification Certificates upon completion of training.
Council	Council officials	Eviction of non co-operative members.
People's Housing Process		Disbursing Establishment- and Facilitation Grant.

Appendix 2: Housing Support Centre Tool Requirements

Tools	Quantity
30cm Tape Measures	2
NT Cutters	1
Spades	4
Picks	4
Wheelbarrows – concrete inflatable wheel	4
Scaffold Bokkies - pairs	4
Scaffold Planks – 3m x 38 x 228mm treated SA pine	8
Setting out profiles – 6m x 38 x 38 x 2mm tubular steel (cut in half 8 per two houses)	40
Settin out profile props and window/door frame props (cut in half 16 plus ten per two houses)	80 + 100
Gumboots (pairs)	4
Compactors – 1.2m x 50mm diameter pine pole	4
Pliers	1
30m Hose Pipe and tap connections	8
Step Ladders – 2.4m	3
Wheelbarrows	4

Appendix 3: List of Trade Tool Requirements for a Typical Tools-Library

Tools	Quantity
Hard hats	52
5m Tape Measure	3
Spirit Levels – 900mm	14
Trowels	14
Fish Lines	14
Chalk Lines	1
Chalk Powder	1
Hammers	6
Pliers	4
Screwdrivers - flat	11
Screwdrivers - star	11
Masonry chisels	2
Bolsters	6
4lb Hammers	6
Water Levels	4
Rubber Hammers	14
Builders Squares – 600mm	4
NT Cutters	8
Spades	12
Hand Hawks	12
Plastering Trowels	12
Cross Cut Saws	1
Claw Hammers	3
Wood Chisels to fit lock sets – 25mm	1
Combination Squares	2
Hand Planes	1
Spanners – 13mm	3
Vise Grips	1
Resetting Tools	2
Bending Machines	2
Soldering Irons	2
Blow Torches	2
Hack Saws	2
Pipe Cutters	2
Mitre Squares	2
Sleeve Punches	2
Sanding Blocks	12
Scrapers	12
Palette Knives	12

Source: iLinge Labahlali Housing Co-operative, 2008. In: Herbst, 2010: 111-2.