

Social housing with interior public spaces

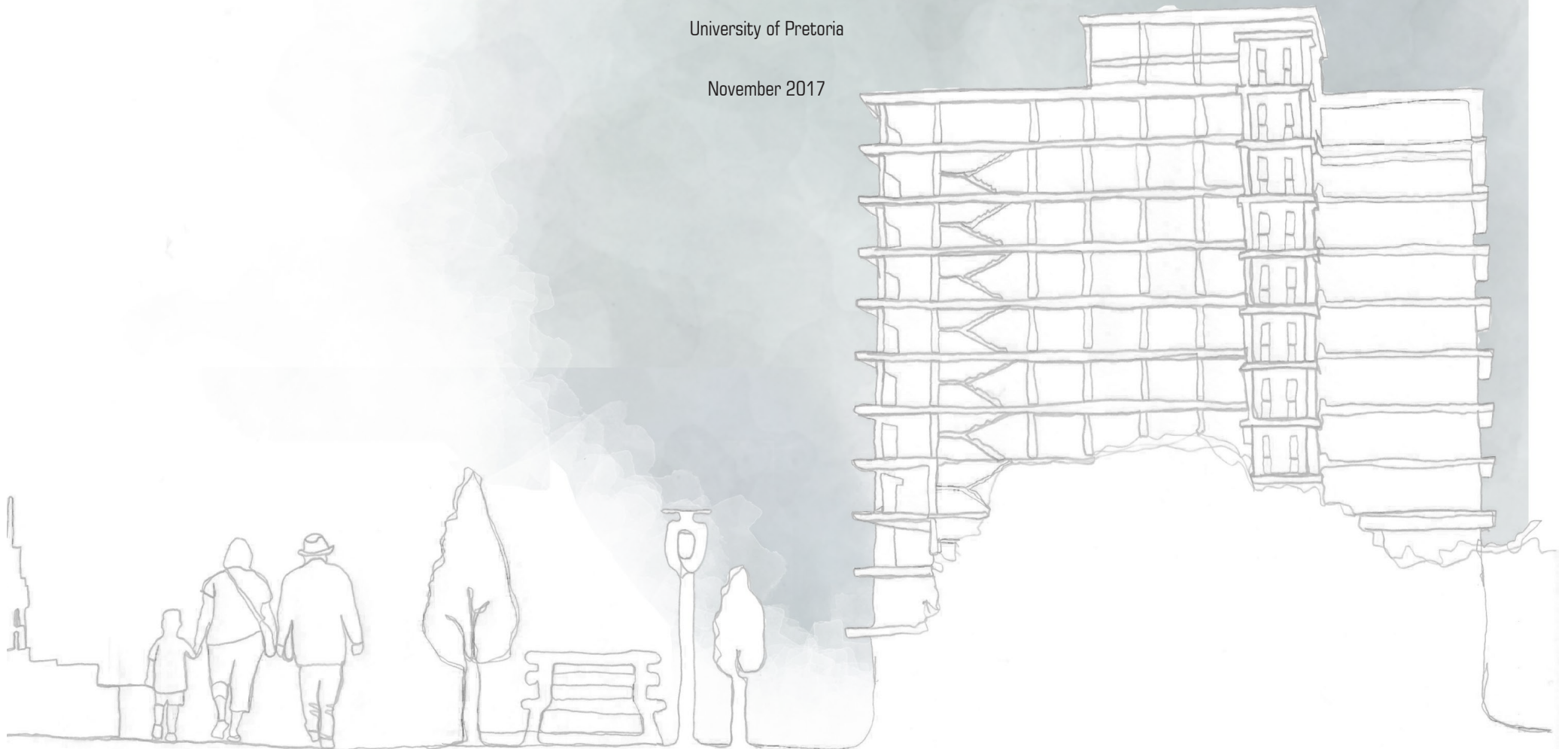
A new typology for the urban context of Pretoria

by Antonette Heijdenrych

Submitted in partial fulfilment of the requirements for the degree
Master of Interior Architecture (Professional) to the faculty of
Engineering, Built Environment and Information Technology.

University of Pretoria

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"I'd go hungry, I'd go black and blue
I'd go crawling down the avenue
There's nothing that I wouldn't do
To make you feel my love"

Bob Dylan, *Make you feel my love*

Vir Linda.



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Department of Architecture
University of Pretoria
2017

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In accordance with Regulation 4(e) of the General Regulations (G.57) for dissertations and theses, I declare that this dissertation, which I hereby submit for the degree of Masters of Interior Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution. I further state that no part of my dissertation has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this thesis is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Antonette Heÿdenrÿch

Project Summary

Dissertation Title	Social housing with interior public spaces: A new typology for the urban context of Pretoria
Project Description	The project is concerned with investigating the role of interior design in the design and development of social housing in the adaptive re-use of an abandoned building in Pretoria CBD. The focus is placed on developing shared public spaces to increase the interaction between residents and create a more fulfilling living environment.
Programme/Type of building	Adaptive re-use to introduce social housing
Site Description	Abandoned men's residence, currently known as Huis Potgieter
Site Location	South Eastern quadrant of Pretoria CBD
Address	268 Normaal Street, Nieu Muckleneuk, Pretoria, Gauteng, South Africa
GPS Coordinates	25°45'37.0"S 28°11'48.6"E
Research Field	Human Settlements and Urbanism
Keywords	Social housing, interior public spaces, public interior, adaptive re-use, urban, inclusive, wayfinding, attachment, identity, appropriation, public space, place-making
Chosen Client	YEAST City Housing, UNISA
Users	Medium Income Social Housing Recipients
Interior Architectural Theoretical Question	How can a spatially integrated social housing typology for the medium income market be developed through the adaptive re-use of urban buildings, with a focus on the interior public spaces?
Interior Architectural Approach	The adaptive re-use of a disused urban building to introduce social housing, with the focus on the public spaces between the units.

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Abstract

The project proposes the investigation into the adaptive re-use of abandoned and unused buildings in the Pretoria CBD to develop social housing that makes use of existing infrastructure, structures, economic activity and transport networks. This is done as a response to the need for social housing in the medium income market. Most developments for this market are built outside city limits and use precious resources and unnecessary new materials. This project focuses on what is currently known as Huis Potgieter, on the UNISA Sunnyside Campus, as a testing ground to develop theories and approaches that can be used in the development of future developments.

Throughout the research conducted into the project, the residents have been emphasised as the main design informant, specifically by the regulations set out by the national government. Considering the highly user-centred approach as identified by the regulations, it is appropriate to approach it from an interior design knowledgebase.

Looking firstly at the resident's needs, those in similar housing developments and income markets have identified and emphasised the need and importance of shared public spaces.

Other research has confirmed that public spaces are a large contributor to both the social and psychological well-being of the residents.

This project focuses on providing public spaces as integrated areas within the building, interspersed between living units, in an effort to provide comfortable, inclusive, and enjoyable public spaces that encourage a sense of place among the residents.

A design proposal to integrate interior public spaces into the daily lives of the residents was developed. Various public space theories were collated and synthesised to develop a set of theory-based guidelines for use in this and future social housing projects. The project aims to develop a proposal that considers all users in the development, both in their physical needs (in the form of an inclusive design approach), as well as their social and community needs, by providing public spaces that accommodate a wide range of users and activities. To benefit future studies and to contribute to the field of interior design, a new term, interior public spaces, was developed in order to describe the type of public spaces created.

In order to create a strong identity for the building, which

the users can relate and respond to in their own attachment and appropriation, the legibility of the intervention is large focus of the project. To increase the legibility of the building, the building identity – KwilaliCity - was developed to reflect strongly in the public areas of the building to create a common ground for all residents. The intervention ensures accessibility to its wide range of residents by introducing a strong inclusive design component, with a focus on wayfinding. Applying the wayfinding and inclusive approach early in the project allows for an integrated resolution that serves to strengthen the design approach.

The intention that residents are encouraged to develop an attachment to KwilaliCity and their fellow residents is evident in the encouragement to appropriate specific elements in and around their homes, in order to reflect their identities and give them some control over their housing environment.

Samevatting

Hierdie projek neem voor om die her-gebruik van verlate en ongebruikte geboue in die Pretoria besigheidsdistrik te ondersoek, met die doel om sosiale behuising wat gebruik maak van bestaande infrastruktuur, strukture, ekonomiese aktiwiteit en vervoernetwerke. Die projek het vorendag gekom as 'n reaksie op die nood vir sosiale behuising in die medium-inkomstemark. Ontwikkelings vir hierdie mark word dikwels geplaas buite die stadperke, en gebruik waardevolle hulpbronne en onnodige nuwe material. Die projek fokus op wat tans bekend staan as Huis Potgieter, te vinde op die UNISA Sunnyside-kampus, as 'n toetsarea waar teorieë en benaderings te ondersoek en wat in toekomstige uitbreidings gebruik kan word.

Tydens die navorsing wat afgelê is vir die projek, is die inwoners beklemtoon as die hoof ontwerpinformant, hoofsaaklik deur die regulasies uiteengesit deur die nasionale regering. Met hierdie hoogs gebruiker-geïntereerde benadering, soos geïdentifiseer deur die regulasies, is dit toepaslik om gebruik te maak van die interieurontwerp kennisbasis.

Eerstens word daar gekyk na die inwoners se behoeftes. Inwoners in soortgelyke behuising en inkomstemark het die

behoefte en belangrikheid van gedeelde openbare ruimtes uitgelig en beklemtoon. Verdere navorsing het bevestig dat openbare ruimtes 'n groot bydraende faktor is in die sosiale en sielkundige welstand van die inwoners.

Die projek fokus op die voorsiening van openbare ruimtes as integreerde areas binne die gebou, verweef tussendeur die leefeenhede, in 'n poging om gemaklike, toeganklike, en aangename openbare ruimtes te skep wat 'n gevoel van plek by die inwoners aanwakker.

'n Ontwerpvoorstel om die interieur openbare ruimtes te integreer met die daaglikse lewens van die inwoners is ontwikkel. Verskeie teorieë wat handel oor openbare ruimtes is versamel en saamgevat om 'n stel teorie-gebaseerde riglyne te ontwikkel wat gebruik kan word in hierdie en toekomstige sosiale behuisingskemas. Die projek poog om 'n voorstel te ontwikkel wat alle inwoners in ag neem, beide in hul fisiese behoeftes (in terme van 'n inklusiewe ontwerpbenadering), sowel as hul sosiale en gemeenskapsbehoefte deur inwoners van openbare ruimtes te voorsien wat 'n wye spectrum van gebruikers en aktiwiteite kan akkommodeer. Om toekomstige interieurontwerpstudies te baat, is 'n nuwe term, interieur

openbare ruimtes, ontwikkel om die soort openbare ruimtes, soos geskep in hierdie projek, te beskryf.

Ten einde 'n sterk identiteit te ontwikkel vir die gebou, wat die inwoners in staat sal stel om verband te hou en te reageer daarop deur hul aanhegting en bewilling, is die leesbaarheid van die ingryping 'n groot fokus van die projek. Om die leesbaarheid van die gebou te verbeter, is 'n gebou-identiteit – KwilaliCity – ontwikkel. Dit kom sterk voor in die openbare areas van die gebou om 'n gelyke grondslag vir alle inwoners te skep. Die ingryping verseker die inklusiwiteit vir die wye reeks inwoners deur 'n sterk inklusiewe ontwerpkomponent in te bring, wat fokus op die navigasie en leesbaarheid van die ruimtes. Deur hierdie benadering toe te pas vanaf die begin, maak voorsiening vir 'n geïntegreerde oplossing wat help om die ontwerbenadering te versterk.

Die bedoeling is dat inwoners aangemoedig word om aanhegting met KwilaliCity en hul mede-inwoners, en is aangebring in die aanmoediging om spesifieke elemente om hul eenhede te bewillig, in 'n poging om hul identiteit te weerspieël en bietjie beheer te gee oor hul huislike omgewing.

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Introduction

Social housing with interior public spaces

“The pedestrian realm moves into the ... residential apartment complex. Atria, escalators, and corridors begin to articulate hierarchy in an exclusively pedestrian three-dimensional net form. These buildings possess the volume of neighbourhood; and what seems, on the outside, a coarsening of the city fabric becomes, inside, a lively and fine-grained intensification.”

NJ Habraken & J Teicher (1998:121)

1.1 Introduction

The study will investigate the interior designer's role in creating affordable housing through the adaptive re-use of existing buildings in an attempt to resolve the social housing need. This topic was brought about by an interest in interior designers being under-represented in the development of social housing. Similarly, existing buildings, which would be ideal to house residential developments, are left empty in the densely populated Pretoria CBD. On a spatial level, the designer found the public spaces between the existing social housing units are under-developed, while research has proven public spaces to be a highly important element of low-cost housing (Aziz & Ahmad 2009:270).

The chapter will introduce the background to the study and the clarification of the real-world problem. The problem statement is then defined as a precursor for the research questions. The aims of the proposal are defined next, and related to the objectives and outcomes, followed by the

contribution of the study to the field and significance of the project. The research methods will be outlined and the delineation and limitations defined. An overview of the rest of the study will be given before the chapter is concluded.

1.2 Background

Nearly a fifth (18%) of households in Tshwane live in informal housing, roughly 164 000 households (Housing Development Agency 2013:16). Considering the average household size of 3,1 people per household, it amounts to just over half a million people living in informal housing in Tshwane alone (Census 2011:56).

Most of the social housing provided, is built on large stretches of greenfield sites as single unit houses on individual plots, with little to no consideration for public and shared spaces between the units. The inhabitants of these developments are faced with barriers such as spatial segregation, lack of infrastructure and long waiting periods preceding occupation.

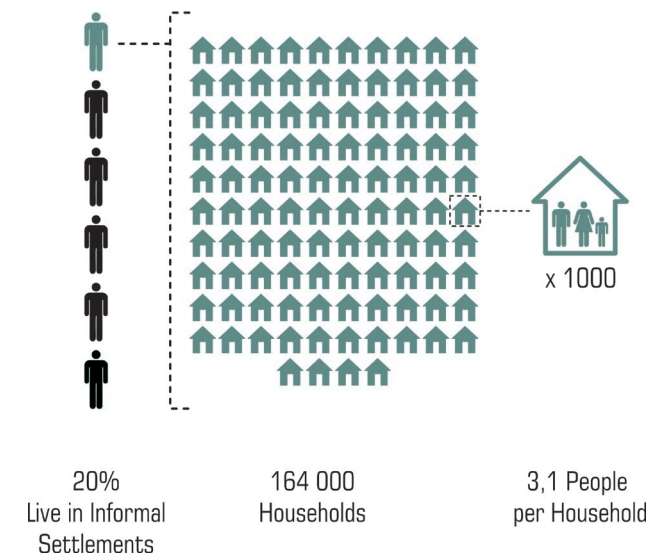


Figure 1 - Statistics of Informal Settlements (by Author, adapted from HDA 2013:16)



Figure 2 - Mapping of Social Housing Developments in 15 and 20 min driving radius

In stark contrast to the new developments built far from the country's urban centres (Figure 2), a variety of buildings in the city centre of Pretoria are empty and unused (Figure 3). These buildings are already well-established within reach of transportation, services, as well as employment infrastructure and various frameworks. The re-use of these buildings will cut down on initial construction costs and time, lower the cost of materials and allow users to make full use of the city's already established services, infrastructure, employment opportunities and support frameworks (Kincaid 2002:93-105).



Figure 3 - Mapping of abandoned buildings in Pretoria CBD (by Author)

Social housing with interior public spaces

The housing developments implemented by government and other institutions do not take the future adaptation of the units by the users or the public spaces between the units into consideration. This leads to families occupying isolated units in environments that do not match their individual needs (Muthmabi 2014; Sebake 2015). This trend will be expanded on in case studies in Chapter 4.

1.3 Problem Statement

The problem is the constant introduction of medium and low density housing in areas removed from the city, requiring new infrastructure and often increased travel time to amenities and jobs, while there is an abundance of disused buildings in Pretoria CBD. After a preliminary overview of existing social housing developments, it appears that these developments often only supply the utmost minimum in communal, shared public space – limiting the social and spatial interaction of the community within the spaces (Sebake 2015, Muthambi 2014). In a study by Landman and Du Toit (2014), a conclusion was made (summarised graphically in Figure 4 and Figure 5), that public outdoor spaces are of importance to most inhabitants in medium income social housing, and especially so for female headed households with children (2014:33). An in-depth analysis of Sebake, and Landman and Du Toit's research will be elaborated on in Chapter 4 in the form of case studies.

The project will focus on Gap Housing subsidy recipients. "Gap Market" is a term used to describe the market above the income required to receive RDP housing (R 3 500), but below the margin to afford private housing (R 7 500), also

known as medium income. The project will seek to develop spaces where communities can prosper, and where the limited communal spaces in social housing can be used more effectively to create shared communal spaces. These spaces are not only important in their own right to improve the quality of the development, but also serve as an extension of the home space (Aziz & Ahmad 2009:278).

1.4 Research Question

How can a spatially integrated social housing typology for the medium income market be developed through the adaptive re-use of urban buildings, with a focus on the interior public spaces?

1.4.1 Sub-Questions:

1. What opportunities exist in the adaptive re-use of a disused building in an urban context in terms of the creation a place-sensitive and integrated housing development?
2. How can interior design create shared public spaces that encourage community involvement and create a sense of place for all users within the housing development?
3. Can a new medium income social housing typology be developed to accommodate sustainable and resilient housing developments by focusing on high quality public spaces?

1.5 Aims

- Develop a new, contextually integrated social housing typology through the adaptive re-use of a disused building in an urban context.

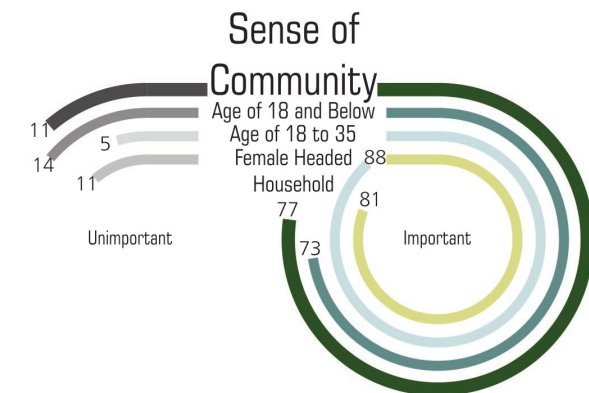


Figure 4 - Adapted from Landman & du Toit (2014:29-30)

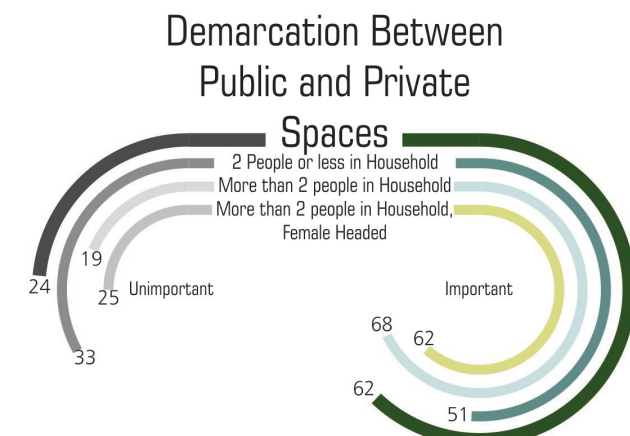


Figure 5 - Adapted from Landman & du Toit (2014:29-31)

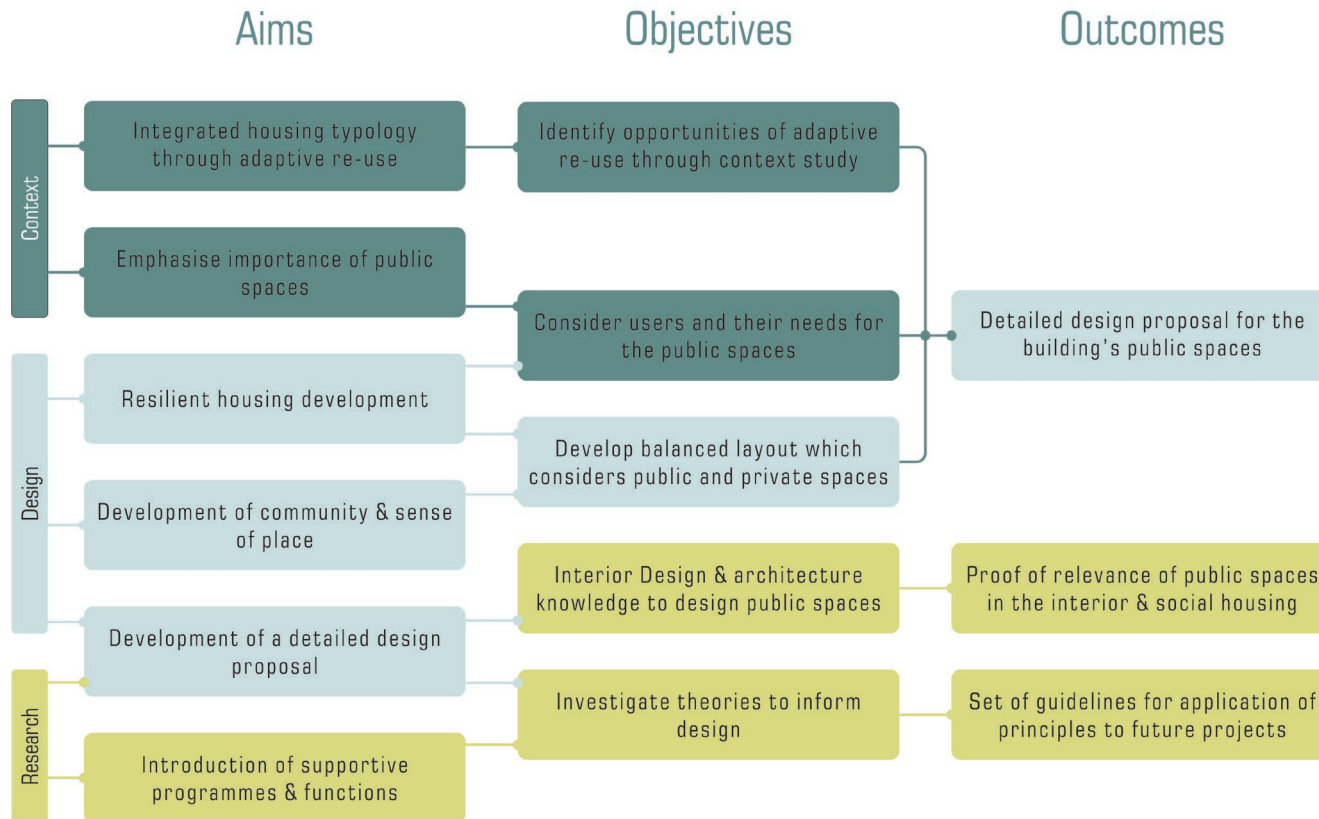


Figure 6 - Diagram indicating relation of aims, objectives and outcomes (by Author)

- Place the issues regarding shared and social spaces within a medium income environment at the forefront and emphasise the importance of public spaces.
- Create a resilient housing development which implements elements where appropriation is encouraged and can adapt to changing user needs, urban profiles and the growth of the community.
- Encourage the development of community and sense of place.
- Introduce supportive programmes, functions and activities where necessary.
- Develop an in depth design proposal for the public spaces.

1.6 Objectives

- Identify the opportunities within the adaptive re-use of a disused building in an urban context through a context study.
- Use interior design- and architecture-based knowledge to create shared public spaces that encourage community involvement and create a sense of place for all users in the development, through the design and development of considerate, inclusive public spaces.
- Develop a balanced layout which considers the spaces and services required for living units versus the development of the public spaces.
- The investigation of various theories to inform the design decisions, as well as confirming the relevance of interior design as applied to and focused on social housing and the public spaces within.

Social housing with interior public spaces

1.7 Outcomes

- A detailed design proposal for the building's public spaces.
- A set of guidelines, developed from the theory, to indicate future considerations and methods for applying the principles in future adaptive re-use projects.
- Proof of the relevance of public spaces in social housing developments.

1.8 Contribution

This project will contribute to the field of interior design through the thorough investigation of social housing from an adaptive re-use and interior design perspective. The definition of a term for these spaces, based on current knowledge, will broaden the existing field of knowledge.

1.9 Significance of Study

- The investigation of and focus on the design of public, shared spaces within a housing development
- The investigation of the viability of an adaptable housing development which provides for future changes in demographics and user needs
- The identification of elements to be provided in a permanent scenario versus elements more likely to require adaptability and appropriation
- The use of urban and public space theories in the development of community spaces

1.10 Research Method

The study will apply a mixed-method approach by using both qualitative and quantitative methodologies for various areas of the design and research process. A quantitative methodology will be used to gather and analyse survey data from existing research. A qualitative approach will be followed to identify and develop the architectural theories supporting the design, as well as in the design development and the technical resolution. The research process and the various methods used will be discussed below.

The methods aim to minimise the weaknesses of the various methods and put each to its best use with a combination of approaches. The different methods that will be used are case studies, logical argumentation, and simulation and representation research. The various elements and sections of the methods will be discussed individually; their relation is described in Figure 7.

The development of the theory for the project will use a logical argumentation approach, mainly focused on a literature review. This approach is generally used as a method of understanding some aspect of human interaction with the built environment (Groat & Wang 2002:304), in this case the use and relevance of shared public spaces. The aim of the method is to develop an argument with theoretical clarity and rhetorical power. The systematic analysis will be enhanced through a literature review and precedent studies. Logical argumentation is also a way to root the theory's claims to a larger transcendental realm (Groat & Wang 2002:304). In this

project, the focus will be on the development of sustainable housing and the encouragement of community involvement and the creation of a sense of place.

Logical argumentation can also lead to paradigmatic innovation, in this case the proposal of a new housing typology. This method provides a framework to which priori arguments (arguments that have no basis in current theory, revolutionary ideas, such as Venturi's Pillars of Architecture) can be linked. The arguments can be linked through the argumentation method, leading to a new normative stance (Groat & Wang 2002:309). The arguments identified will be used to create a well-substantiated argument and theoretical base.

The refinement of the design problem and the specific area of intervention (in the larger Interior Design discourse) will be determined by case- and precedent studies. This method

is often used to develop the theory in the design phase of a project by aiding in the definition of a hypothesis or the development of a blueprint for the study. The case study itself is an empirical enquiry that investigates a contemporary phenomenon within its real-life context (Groat & Wang 2002:346). It will focus on multiple cases. In this project case studies will be used to discuss and investigate the strengths and weaknesses of existing housing projects. Surveys done and data acquired by other researchers (Landman & Du Toit 2014, Sebake 2015) among residents in existing local housing examples will provide guidance on the requirements inhabitants have regarding public spaces.

Lastly, simulation and representative research will be used to develop the design solution itself, using the logical argumentation and case studies as basis.

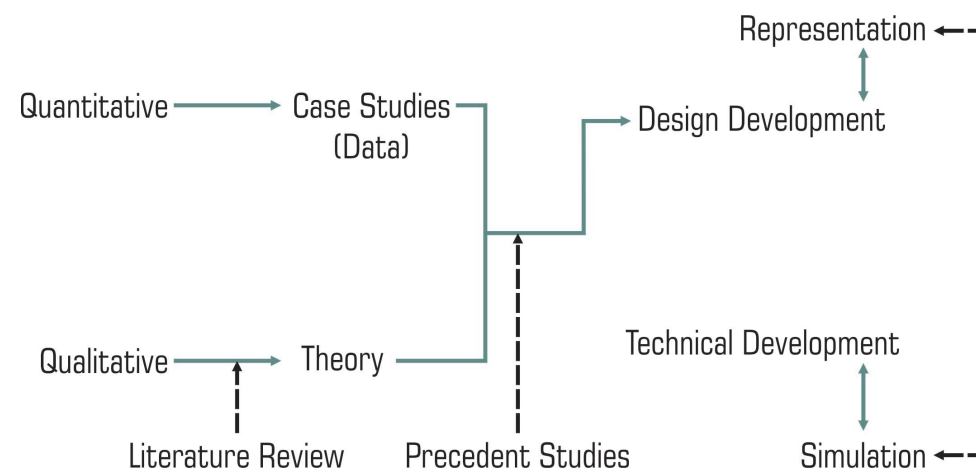


Figure 7 - Research process and approach (by Author)

Social housing with interior public spaces

Simulation is used to develop and test theory in the form of controlled replications of real-world contexts for the purposes of studying dynamic interactions within that setting (Groat & Wang 2002:278). This will be applied first via modeling the site and building in its current state within their physical context for a full analysis. The investigation of possible solutions will be investigated through representations of possible design solutions. The representations (fixed images/models that stand for the real object, drawings, visual investigations) could next be introduced into simulations in order to determine the success of the representational design proposals from an environmental and practical approach (Groat & Wang 2002:280). To ensure the proposals comply with South African building standards, these requirements will be adhered to in the representation phase and tested in the simulation phase. In order to test and iterate the design and technical proposal, an audit will be used to measure the efficacy of the proposed design solution.

In the development of the research used, logical argumentation is used to identify a series of arguments through literature reviews. The case studies will be used to refine the initial design proposal. The theories are applied through the simulation and representation research, which will develop the design resolution.

1.11 Delineation and Limitations

Thorough interviews with users in the medium income market will not be possible due to ethical constraints, though various published surveys and research will serve as substitutes.

Due to the time scale and nature of the project, it will be impossible for the design proposal to address all the issues of the proposed housing development. The proposal will focus on the public spaces between the units only, but will provide adequate space allocation and services for proposed units. The units will be considered as far as the infrastructure they require, the need for adaptability (the provision for a certain amount of permutations of different layouts) and the transitions required into the public spaces. They will not be considered up to a conceptual or detail design level.

Of the additional amenities provided within the building, spaces will be strategically selected for further development, and will be chosen to adhere to the aims of the proposal. They will be designed in full detail to achieve a fully resolved design. The remaining areas will be areas which can be developed in future studies, or by specialists.

The dissertation will include a context study, theoretical analysis, precedent and case studies, concept development, design development, development of a building brand and identity, and technical resolution, as well as the documentation of each segment. The context study will range from a macro (city-wide) to micro scale analysis of the building and its surroundings. The literature review will investigate a series of theories which will serve as base for the selection of precedents and the development of the concept and design. The technical resolution will identify a technical approach through which a select series of design details will be resolved.

1.12 Overview of Study

Chapter 2 will contain a contextual study to provide an insight into the existing conditions in and around the city. Chapter 3 will introduce the theoretical investigation and develop a base for the design intervention. Chapter 4 will analyse the research case studies and precedent studies to provide extra guidance on the design development. Chapter 5 will deal with the concept, design development, brand and identity, and technical development of the proposal and the study will be concluded in Chapter 6. Appendices will further elaborate on the theories consulted and access audits.

1.13 Conclusion

This project deals with the adaptive re-use of a building in the urban context of Pretoria in an effort to develop centrally-located, socially responsible medium income social housing. This is possible due to the abundance of abandoned buildings in the CBD in contrast to the social housing developed outside of the city. The focus on public spaces has been emphasised after a preliminary study of user requirements and preferences. The project will identify the opportunities of adaptive re-use for this application and in this context, investigate the viability of public spaces to encourage community attachment and create a sense of place, and develop a new typology for medium income social housing.

The aim is to focus on the interior designer's involvement in social housing. The importance of social spaces in the building is emphasised and investigated. The methods for the design development will have both qualitative and quantitative

elements in order to achieve a balanced approach to the research for the project.

A comprehensive and detailed design resolution of the whole building is not the purpose of this study. This project will focus on the public spaces in between the living units and provide detailed designs for these areas. The living units will be considered only as far as workable options for rental and the reticulation of services to the units.

This concludes Chapter 1, outlining the study. Chapter 2 investigates the context of the study, both physical and regulatory, as well as the building itself. Chapter 3 outlines the theoretical approach to the project, with Chapter 4 investigating various precedent and case studies. Chapter 5 introduces the design and technical development of the project. The study will be concluded in Chapter 6 by discussing the contributions of the study to the field of interior design and recommendations made for future studies.

Social housing with interior public spaces



Social housing with interior public spaces

2.1 Introduction

This chapter deals with the context study surrounding the site chosen for this project. The study will investigate various levels of context, from physical informants such as the location within the larger city down to the building itself, to the regulatory context and the needs of the inhabitants. The chapter is divided into the macro context, meso-context and the micro-context. The macro context deals with the project's location within Pretoria and the social issues surrounding it, as well as the regulations followed by the chosen client that influence it. The meso-context considers the physical context within a smaller radius and looks at the needs of the client (who will maintain and run the building) and its inhabitants. The micro context looks at the building itself, its relationship to its immediate environment, and the structure and characteristics of the building itself.

2.2 Context

2.2.1 Physical (Macro)

As a manner to test the validity of the claim that there is a variety of buildings left unused and abandoned within Pretoria Central Business District (CBD), a mapping exercise was undertaken to represent these buildings (Figure 3). These have been found to be spread across the central area of Pretoria. However, a cluster of buildings located within a couple of blocks was identified on the UNISA Sunnyside campus, in the south eastern quadrant of Pretoria, just to the north of the east-west train line.

Upon closer inspection, the proposed site was located in



Figure 8 - Layout of suburbs surrounding site and points of interest nearby (by Author)

the broader city context and was identified to be located in the Muckleneuk suburb of Pretoria, although the campus is known as the Sunnyside Campus of UNISA. It is reasonably close to Burgers Park, City Hall and the main UNISA campus (Figure 8).

The Sunnyside campus of UNISA is located amidst a variety of commercial activity and residential buildings. The campus is surrounded by very busy roads both to the east and west, Nelson Mandela Drive and Elandsport Road, respectively. These roads provide easy access to public transportation such as taxis, bus routes and trains (Figure 9).

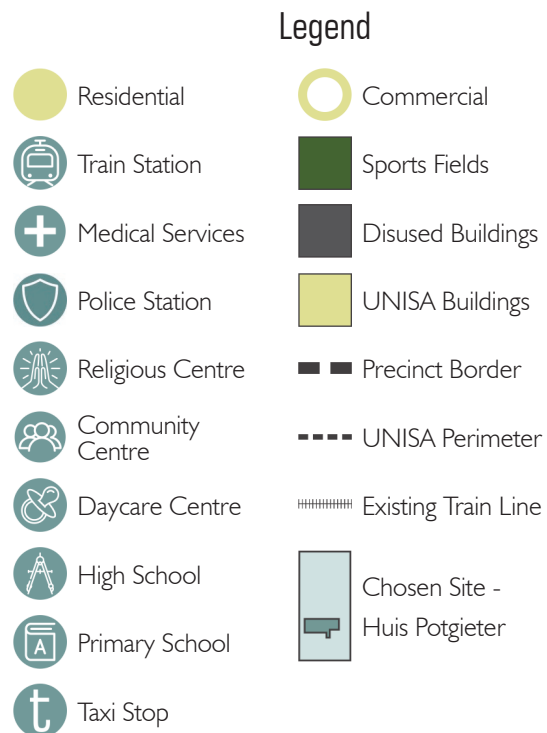


Figure 9 - Map of train stops, abandoned and used UNISA buildings, commercial, and residential activity (by Author)

Social housing with interior public spaces

The abandoned buildings identified earlier all lie to the south of the campus. These were all abandoned roughly in 2007, when UNISA bought these properties in order to establish the Sunnyside Campus. The proposal is to separate the blocks, divided by Piet Uys Street to the north, Preller Street to the west, and Berea Street forming the second northern boundary, in order to create a defined social housing precinct.

2.2.2 Physical/Historical (Meso)

Through a study of historic satellite images obtained through Google Earth, significant changes in the area regarding infrastructure and use changes have been observed. These changes have been highlighted and described per image (Figure 10 - Figure 15).

2001



Figure 10 - Satellite images taken in 2001 shows cars parked both at Huis Potgieter as well as the single family residences in the area (Google Earth 2001).

2007



Figure 11 - 2007 Images shows the absence of cars where they were visible in the previous image (Google Earth 2007).

2009



Figure 12 - 2009 Images show the development of the Gautrain station, the new bridge to Elandsport Road, and the new construction of the UNISA Es'kia Mphahlele Hall (Google Earth 2009).

2.2.3 History (Meso)

The following timeline was compiled by using a variety of sources regarding Normal College Pretoria, University of Pretoria, and the various regulatory documents that were consulted. The timeline emphasises the strong history of community in the area. It originated as a residential area, but developed into a dedicated area of Pretoria focused on education and training. After having been active for quite some time, roughly 57 years, the inactivity of the area has only been for the past 10 years (see next page, Figure 16).

2011



Figure 13 - 2011 Images show the completion of the Gautrain Station, as well as new construction (commercial) at the southern end of the block (Google Earth 2011).

2014



Figure 14 - 2014 shows the deterioration of the overall precinct, with plants beginning to grow wild in the previously defined gardens (Google Earth 2014).

2016

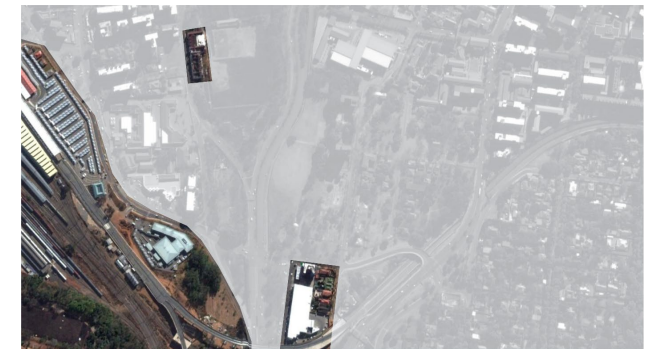


Figure 15 - Most recent images show the inactivity in the southern side of the campus, with cars only parked in the streets (Google Earth 2016).

Social housing with interior public spaces

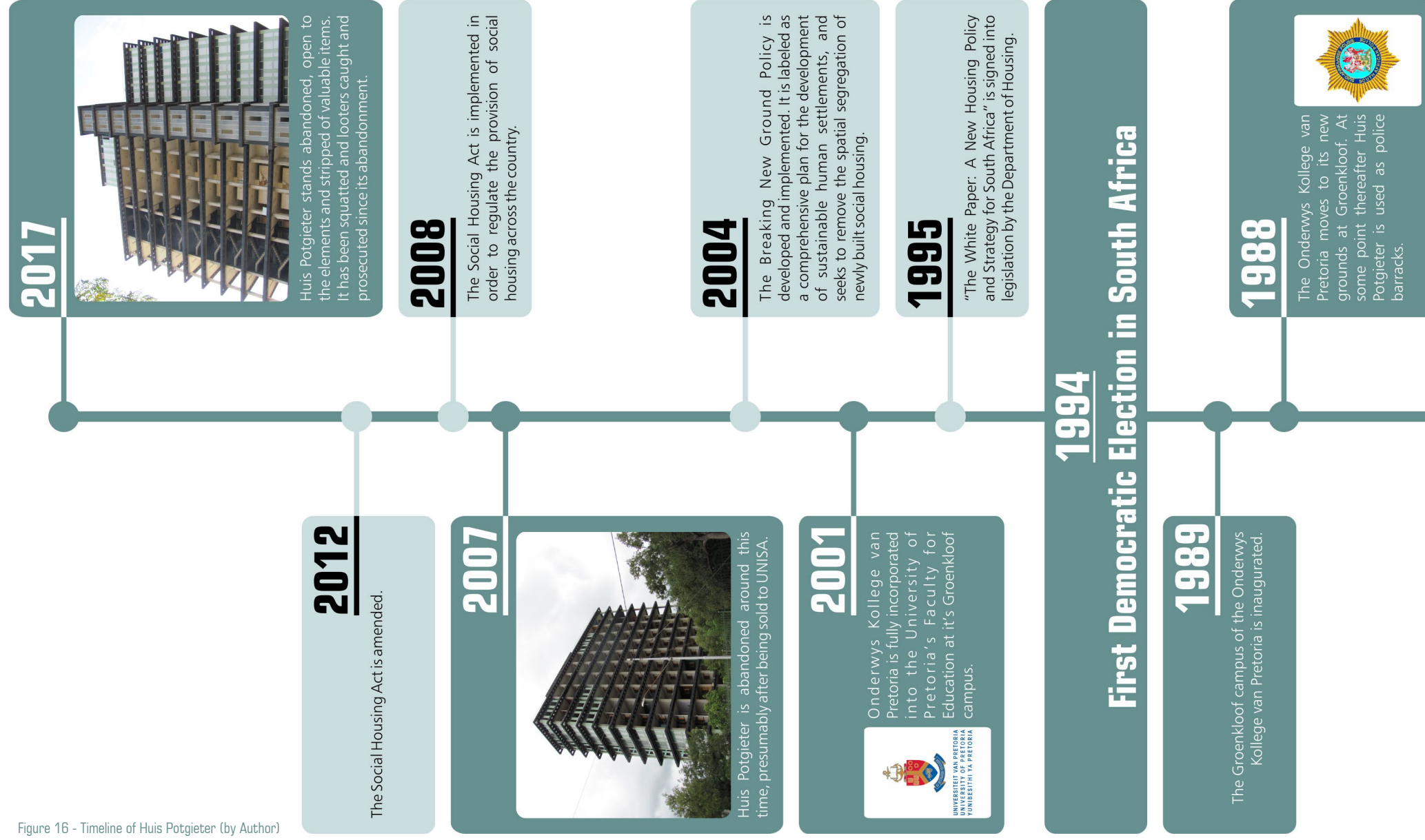


Figure 16 - Timeline of Huis Potgieter (by Author)

1975

The Onderwys Kollege van Pretoria purchases additional grounds at Groenkloof.

1968

The Huis Potgieter men's residence and a women's residence is taken into use on 1 March. The residences were commissioned by the rector, Dr GJ Potgieter, in an effort to relieve the housing crisis due to a steadily rising number of students.

1964

Dr G.J. Potgieter, previously the headmaster of Pretoria Boys High, is appointed as rector of the Onderwyskollege van Pretoria.

1954

Normaal Kollege Pretoria's name is changed to "Onderwyskollege van Pretoria".

1949

Picture of south eastern quadrant of Pretoria in 1949. Area where precinct is located fully residential at this time.

1909

The Transvaal Normal Kollege changes its name to Normaal Kollege Pretoria, also known as NKP.

1908

The Transvaal University College, later to become University of Pretoria, is established at Kya Rosa.

1903

Pretoria and Johannesburg's Normaal Kollege's merge to become Transvaal Normaal Kollege

1902

Normaal Kollege vir Onderwys is established at 126 Rissik Street, Sunnyside

Social housing with interior public spaces

2.2.4 User Needs (Macro)

Landman and Du Toit (2014) conducted surveys among residents of local social housing developments to investigate their perceptions of the importance of various outdoor elements and neighbourliness. The graphs in Figure 17 to Figure 24 indicate the overall level of importance per sub-category as indicated by all respondents, followed by the responses of specific groups, (i.e., households with children, female headed, male headed, heads of household between the ages of 18 and 35, over 35, etc.). This initial analysis was done as precursor. An in depth case study will be conducted in Chapter 4 (c.f. 4.6) to analyse the spaces provided to the residents who participated in the survey.

Importance of Outdoor Design

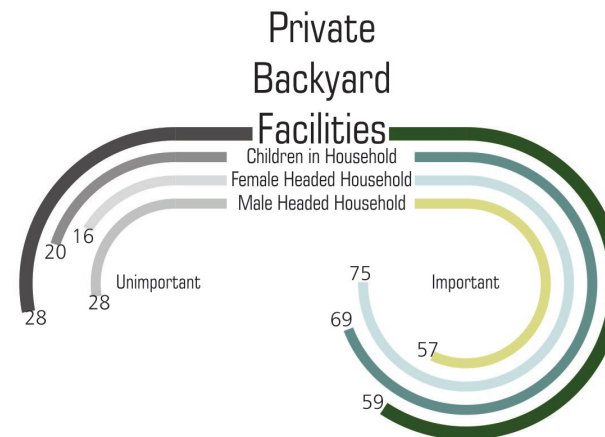


Figure 17 - The importance of private backyard facilities (Adapted from Landman & Du Toit 2014:29)

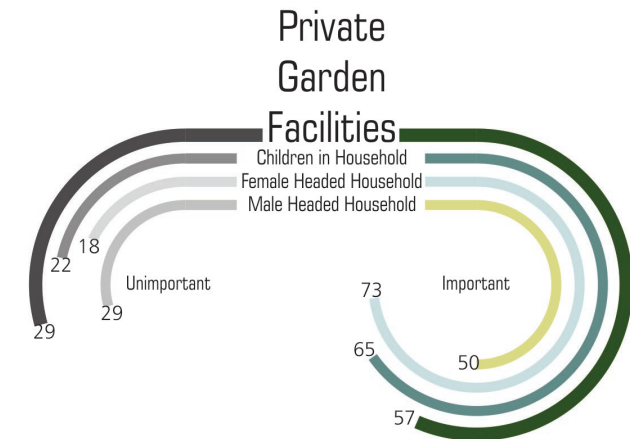


Figure 18 - The importance of private garden facilities (Adapted from Landman & Du Toit 2014:30)

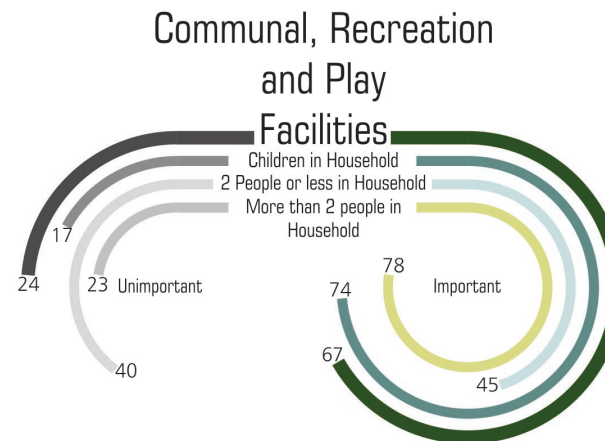


Figure 19 - The importance of communal, recreation, and play facilities (Adapted from Landman & Du Toit 2014:30)

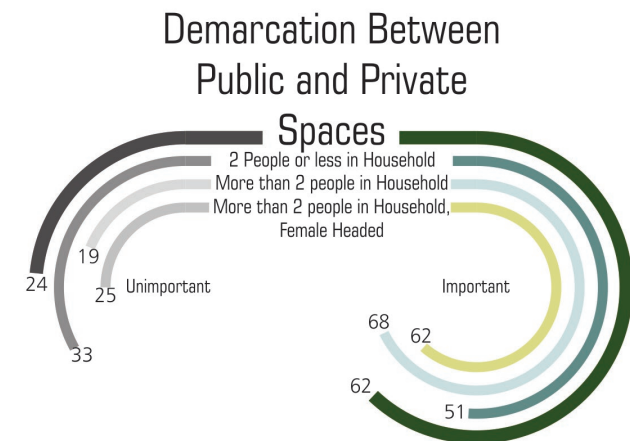


Figure 20 - The importance of the demarcation between public and private space (Adapted from Landman & Du Toit 2014:31)

Importance of Neighbourliness

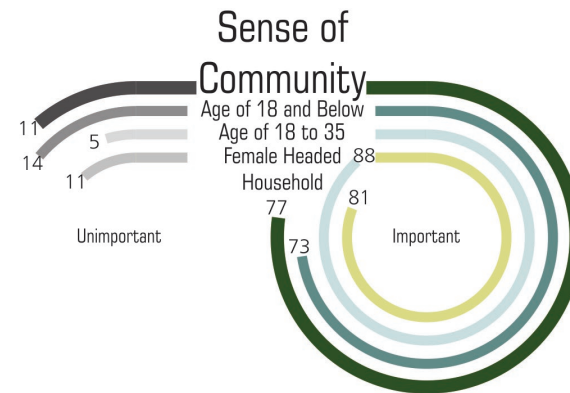


Figure 21 - The importance of sense of community (Adapted from Landman & Du Toit 2014:31)

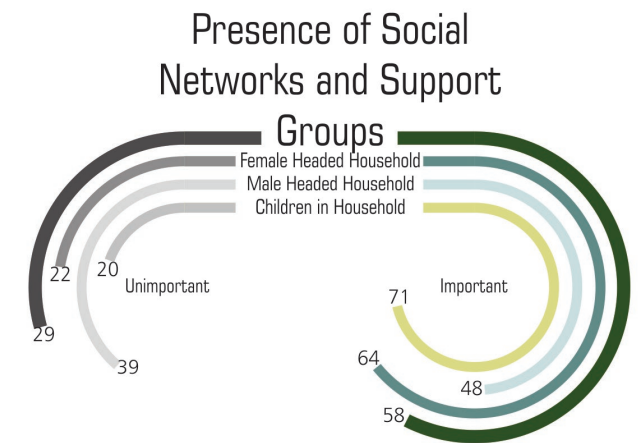


Figure 22 - The importance of the presence of social networks and support groups (Adapted from Landman & Du Toit 2014:32)

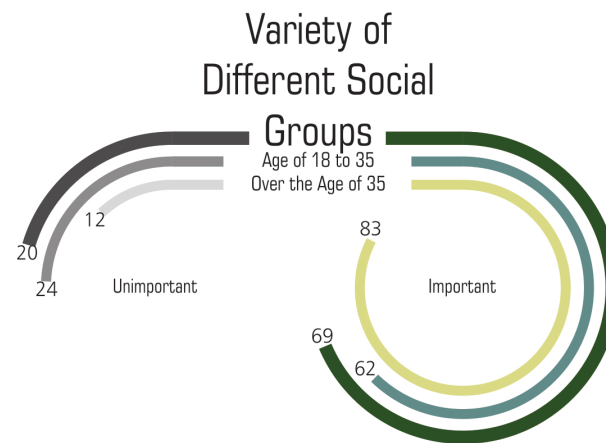


Figure 23 - The importance of the presence of a variety of different social groups (Adapted from Landman & Du Toit 2014:32)

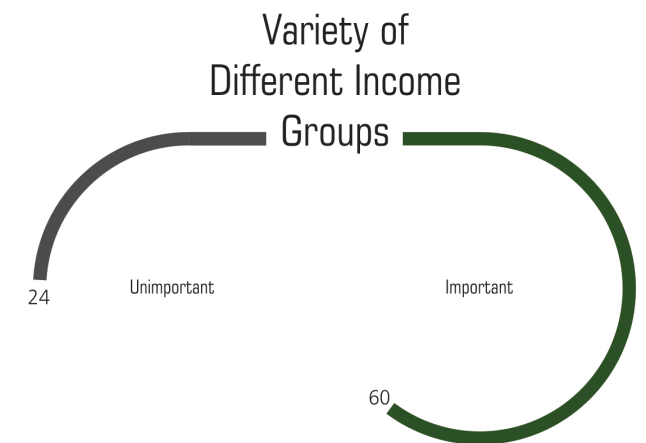


Figure 24 - The importance of the presence of a mix of income groups (Adapted from Landman & Du Toit 2014:32)

Social housing with interior public spaces

2.2.5 Regulatory Context (Macro)

After a thorough investigation into the regulations that would influence the implementation and design of the housing, the following summary was compiled. The legislation consulted includes the Breaking New Ground policy (2004), the Housing Code (DHS 2009) and the Social Housing Act (DHS 2012). The regulations were analysed in terms of their applicability to the location, appropriation of land, the type of housing, the source of funding, ownership, the management, maintenance, design, and costs. They have been summarised graphically below.

Location

The regulations state that unused state-owned land as well as parastatal land should be handed over to the relevant municipality at no cost. The regulations also promote densification, as well as location of new housing developments within urban environments. The new developments should also be located close to primary municipal facilities such as parks, playgrounds, sport fields, crèches, community halls, taxi ranks, transport routes, satellite police stations, municipal clinics, and informal trading facilities (Figure 25).

Type

Newly implemented housing should be medium density and should allow for various persons of different income levels to receive housing in the same development to allow for social integration and financial cross-subsidisation. A new subsidy mechanism providing for the income group of R3 500 to R7 000 to accommodate a wider bracket of the South African population was introduced. This type of housing intervention

should make a strong contribution to urban renewal and integration. Social housing interventions may also be used to facilitate the acquisition, rehabilitation and conversion of vacant office blocks and other vacant/dilapidated buildings as part of a broader urban renewal strategy (Figure 26).

Ownership/Source of Income

The partnership with public-private enterprises is encouraged to enhance income and increase the engagement of the private sector in social housing developments. Furthermore, the policies promote removal of barriers within the housing trade by reducing the amount of time after which social housing stock can be transferred to the inhabitants themselves (Figure 27).

Management/Maintenance

The policies and regulations impose strict rules on the social housing institutions to ensure that their management of developments is sustainable and places the inhabitants at the forefront of their attention. The institution is also responsible for specifically maintaining the buildings to ensure they retain their value. These institutions are also responsible for insuring that the building stock is prepared for both planned and unplanned maintenance, as well as services failure.

Design

By using alternative technology and design, and in an effort to change the perception of the stereotypical “RDP” houses, the housing design should be enhanced within the urban context. The design of the housing units must comply with land use rights and take cognisance of future tenure upgrading. The

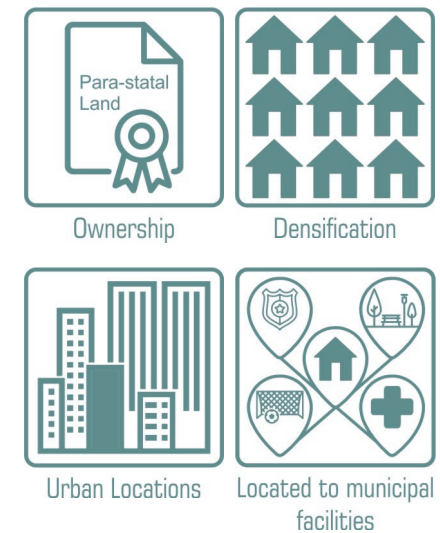


Figure 25 - Graphic representation of regulations influencing location of developments (by Author)



Figure 26 - Graphic representation of regulations influencing the type of social housing development (by Author)



Figure 27 - Graphic representation of regulations influencing the ownership of social housing developments (by Author)

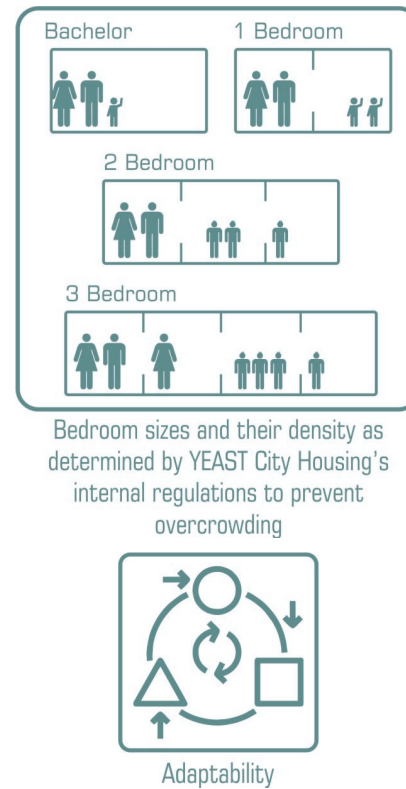


Figure 28 - Graphic representation of regulations influencing the design of social housing developments (by Author)

housing sizes should range from bachelor units to 3 bedroom units; this mix should be determined from market research and be adaptable during the project to respond to the needs of the population. In addition to the residential units, related social facilities and amenities must accommodate recreational and other needs related to higher density residential living. The housing should take its role in social and spatial restructuring into consideration, and must enable social stability. The internal housing environment is also just as important as its immediate environment. The development encompasses the unit design, common areas such as walkways and staircases, as well as amenities that contribute to the social environment such as play areas, landscaping, parking bays, laundry and drying areas, and community meeting rooms. The move to a project-based approach means that the public environment can be made integral to the project design. Retrofitting should be allowed and planned accordingly (Figure 28).

Cost

The gross rentals/levies must cover the unit operating costs and cannot exceed a third of the monthly household income. A third of the housing units must be rental units for households earning less than R 3 500 per month, and a maximum of 70% units must support households earning between R 3 501 and R 7 500 per month.

Social housing with interior public spaces

2.3 Huis Potgieter

Huis Potgieter, the chosen site, was built between 1967 and 1968 and was taken into use on 1 March 1968, as seen in Figure 29). The building was built as a men's residence for the Normaal Kollege Pretoria, where teachers were trained from 1902 to 1988. In the late '50s and during the '60s (Oberholzer 1977:80), Normaal Kollege experienced a high need for student housing, as the influx of students was too great for the existing residences to handle. Dr GJ Potgieter, appointed rector in 1964 (Oberholzer 1977:83), commissioned this men's residence and another women's residence to be built during his leadership of the college, before ending his tenure at the end of 1968, the building name a legacy of his contribution to the school (Oberholzer 1977:84).

Total Floor Surface Area
4 416 m²

Footprint
684 m²

Property Size
5 950 m²

Floor to soffit height
2,8 m



Figure 29 : Photograph of southern facade of building (by Author)

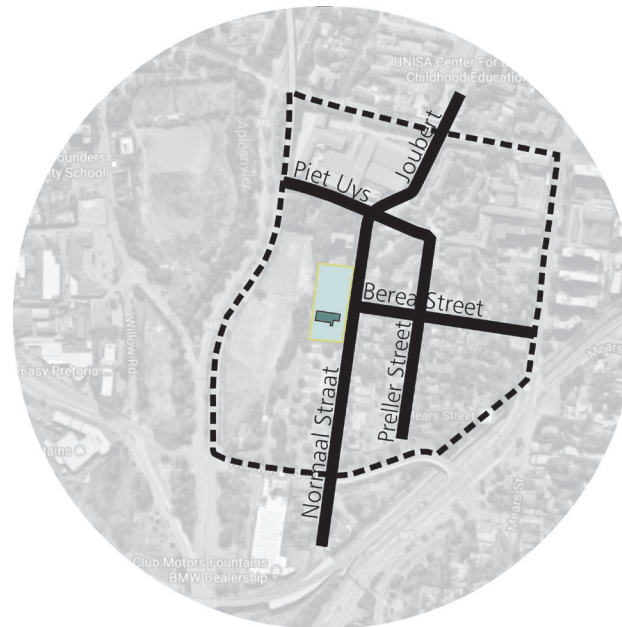


Figure 30 - Location of building within precinct (by Author)

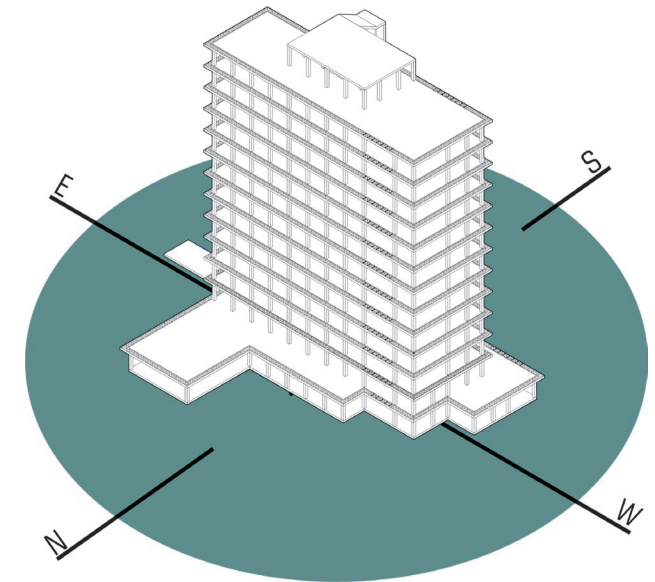


Figure 31 - Axonometric indicating orientation of building (by Author)

Figure 30 indicates the building's location (blue blocks) on the Sunnyside campus of UNISA (indicated by the dashed line). Joubert and Berea Streets both lead from very busy roads (Justice Mahomed and Elandspoort Roads respectively), creating an ideal situation for the building – it is close to feeder routes into the city without unsafe fast-moving traffic right in front of the building.

The building's orientation is ideal for residential living, with the main axis of the building lying on the East-West line with a large northern exposure, as shown in Figure 31.

Social housing with interior public spaces

2.3.1 International Style

Huis Potgieter was designed using the International Style. Although there might be many similarities to the Modern Movement, the International Style focused more on the aesthetic principles of the design rather than the social concerns surrounding the building. The style is known for its rectilinear form, the use of light, taut plane surfaces and a visually weightless quality, often shown in the use of cantilevered elements. Huis Potgieter complies to this style in all of the above categories, as illustrated in Figure 32 and Figure 33). The shape of the building is highly rectilinear, with minimal decoration. The light façade system allows for a thin skin, maximising the available floor space on the interior of the building (Encyclopaedia Britannica, 2005). This effect was made possible in this particular building through the use of a concrete column and slab construction.

2.3.2 Materials

The materials used in Huis Potgieter were most likely selected for their durability. The internal walls were built from brick, which were plastered and painted. The walls surrounding the service core was built from a solid gypsum-based material, and painted. The floors are reinforced concrete. The soffits were painted and the floors were finished with linoleum tiles. The columns were also painted in the living areas, but covered in linoleum in the bathrooms and tiled in the kitchen area. The glazing is either clear wired glass or rolled blue glass. The façade is finished with medium density fibre (MDF) panels covered in a mint-green metal sheet.

The rooms were built to be highly robust with plastered and painted walls and linoleum flooring, as shown in Figure 35. The façade consists of metal and glass panels. The mint green colour on the exterior of the building is the effect of these metal panels. The windows were fitted with small louvre panes for ventilation.

The window frames are aluminium. The wired glass provides a fine textured view outwards. The aluminium frames conceal the vertical lines of the frames from the exterior of the building. Most of the wired glass has been removed by vandals and looters (Figure 39).

The walls surrounding the service shafts appear to have been constructed from a gypsum-based material, as seen in Figure 36. The material is light and powdery to the touch, and does not appear to have aggregate or sand as one would expect from a concrete-based material. It appears to be easily altered (once a weak spot was created, other pieces broke off easily).

In the areas where the façade is still intact, the construction of the façade and brise soleil can be seen clearly (Figure 38). The façade consists of a compressed wood panel sandwiched between two metal sheets, and installed in a lightweight aluminium frame. The frame is lightly fixed to the columns, floor slab and soffits. The transparent glass panels are either clear, wired glass (Figure 37) either in solid panes or louvre windows, and rolled blue glass.

The brise soleil slab edging appears to have been coated



Figure 32 - Image indicating taut plane surface used in the original facade (by Author)



Figure 33 - Image emphasising the rectilinear shape of the building (by Author)



Figure 34 - Linoleum Flooring (by Author)



Figure 39 - Northern façade with missing cladding (by Author)

in a spray-on finish, as deduced by the texture of the finish and the evenness of the colouring. The finish appears to be cement-based as it still adheres to the slab very well and has maintained its colour from its original installation.

The floors were finished with a standard colour and finish linoleum glue-on tile, which has started to lift after being exposed to the elements for too long (Figure 34). The original colour is similar to the green cladding on the exterior of the building. The linoleum tiles added to the cold institutional feeling of the interior of the building, and was most likely chosen for its durability and robustness.



Figure 35 - Typical Room (by Author)



Figure 36 - Service shaft wall (by Author)



Figure 37 - Wired Glass (by Author)



Figure 38 - Facade and Brise Soleil (by Author)

Social housing with interior public spaces

2.3.3 Characteristics

The building has various highly recognisable elements, both on the exterior of the building as well as in the interior (Figure 40). The slab edging, which acts as a brise soleil, gives the building strong horizontal lines. The openings in the edging reduces its visual mass when viewed from close by, and within the building itself. The strong horizontal lines of the edging are offset by the mint-coloured panels which enhance the verticality of the design. The main staircase protrudes from the southern façade and is glazed, providing views of the main UNISA building towards the south. It also ensures ample natural lighting in the main circulation areas.



Figure 40 - Collage of unique characteristics of the building, with hierarchy shown in size of images. The brise soleil, vertical circulation, glazing and views are the main features of the building.

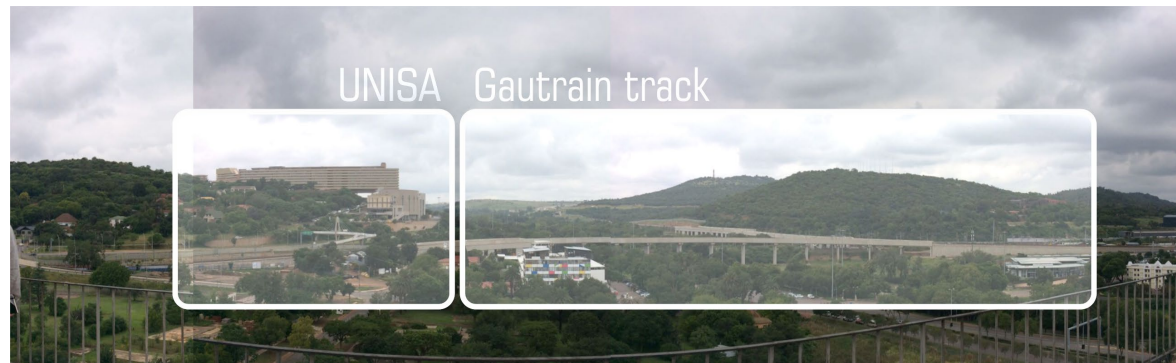


Figure 41 - View towards the South (by Author)



Figure 42 - View towards the North (by Author)

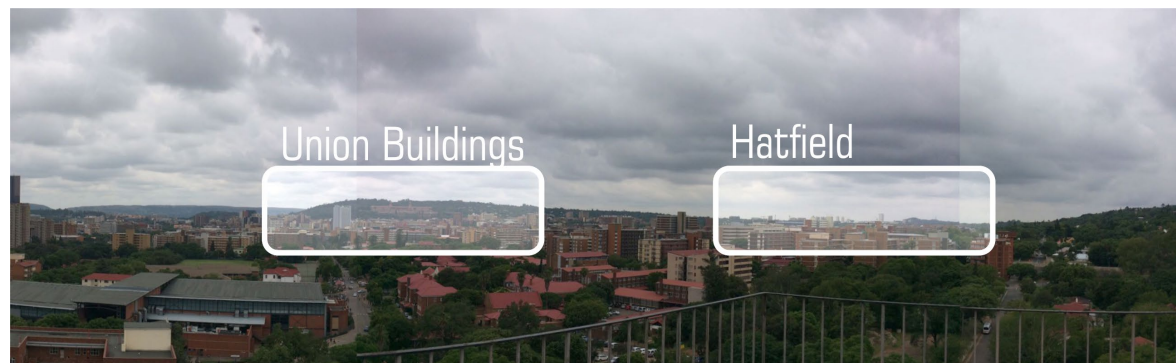


Figure 43 - View towards Northeast (by Author)

2.3.4 Views

Huis Potgieter is the highest building in the area, its 12 storey height dwarfing the surrounding single, double, and triple storey buildings.

It has a 360 degree view over its surroundings - from the CBD to the north around to the UNISA main building to the south. This also means that the building is visible from far away – such as from the Gautrain bridge to the south of the building (Figure 41), as well as from the surrounding houses to the east (Figure 43). This should be considered in a possible façade intervention and the privacy of inhabitants will also have an impact on façade considerations.

To the north the Pretoria CBD is visible, including all the surrounding koppies. This view places the building's height into context as one of the taller buildings in Pretoria (Figure 42).

To the south the main building of the UNISA campus can be seen, as well as the N14 highway leading into the city. Freedom Park and the Gautrain track can be seen to the southwest (Figure 41). The building is clearly visible from the Gautrain.

Towards the northeast there is a clear view of the Union Buildings. Areas like Hatfield and Arcadia can be seen through the koppies, with the Humanities Building of the University of Pretoria also visible in the distance (Figure 43).

Social housing with interior public spaces

2.3.5 Building Layout

The most public functions within the building, such as the eating hall and recreational areas, as well as the service areas, are located on the ground and lower ground level of the buildings (Figure 44). The main pedestrian entrance of the building is on street level, the ground floor (Figure 46). There is a small bridge from the sidewalk to the entrance. On this level, there was a reception, sitting room, pool room and phone booth. The lower ground floor (Figure 45) housed the communal eating hall, kitchen and other service areas. On the first floor there were two large apartments, one for the house father and his family, as well as a second, smaller apartment for another member of staff. The student's rooms were located on floors 3 to 12. Figure 47 illustrates the 4 rooms on the corners of the buildings were double rooms, usually assigned to the first year students. The other north-facing rooms were smaller, single rooms. The southern side of the building contains the communal bathrooms and showers, as well as a small area for drying laundry, main circulation and fire escape.

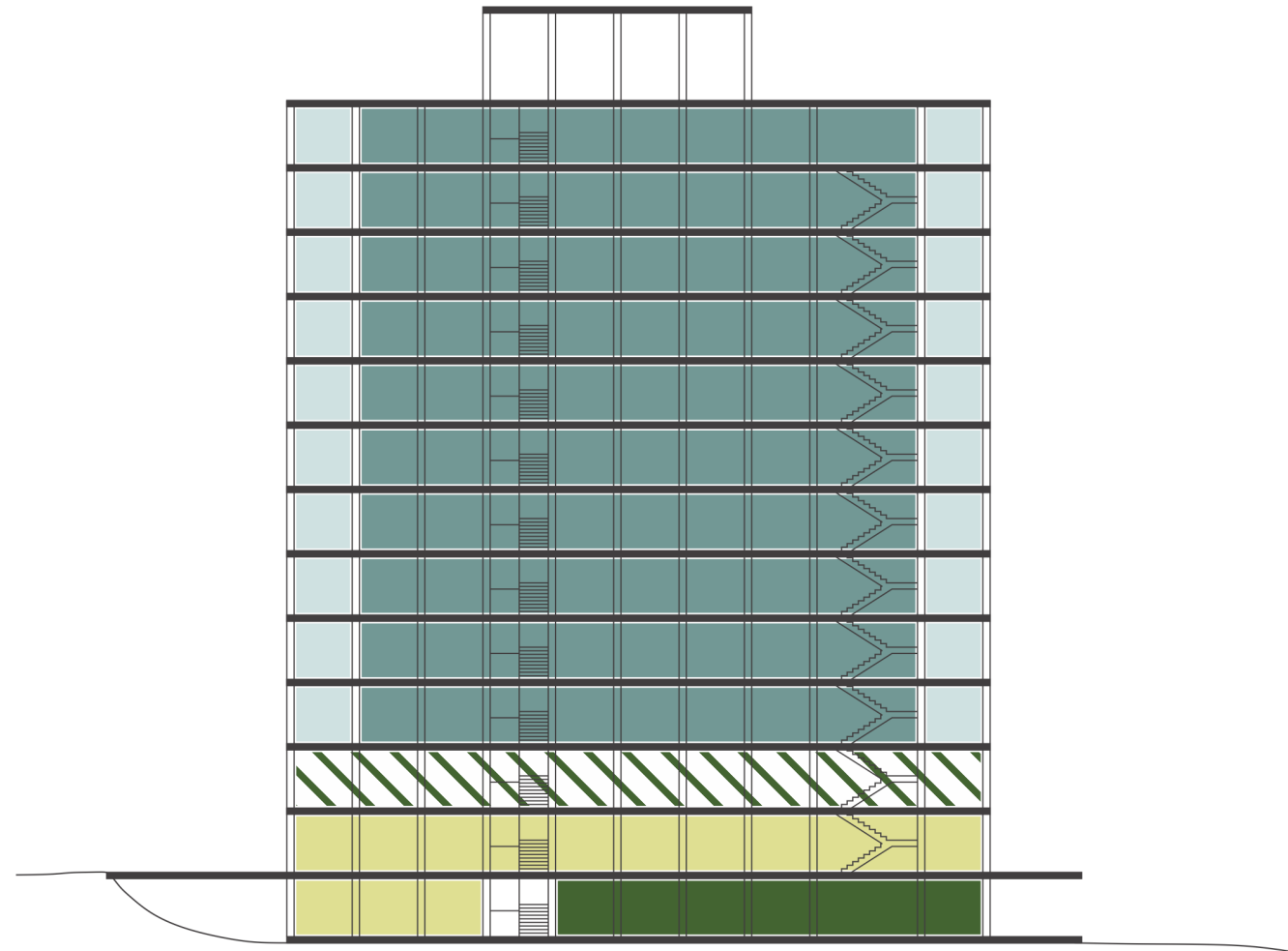


Figure 44 - Northern elevation of building indicating previous use (by Author)



Figure 45 - Layout of the lower ground floor (by Author)

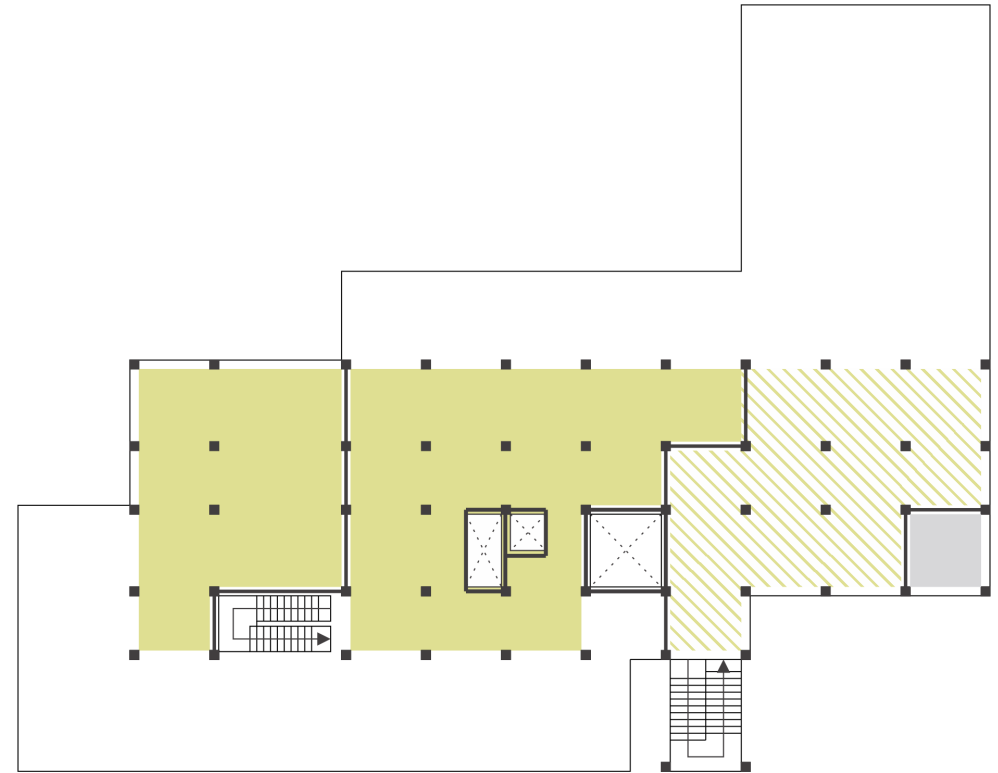


Figure 46 - Layout of Ground Floor level (by Author)

Social housing with interior public spaces

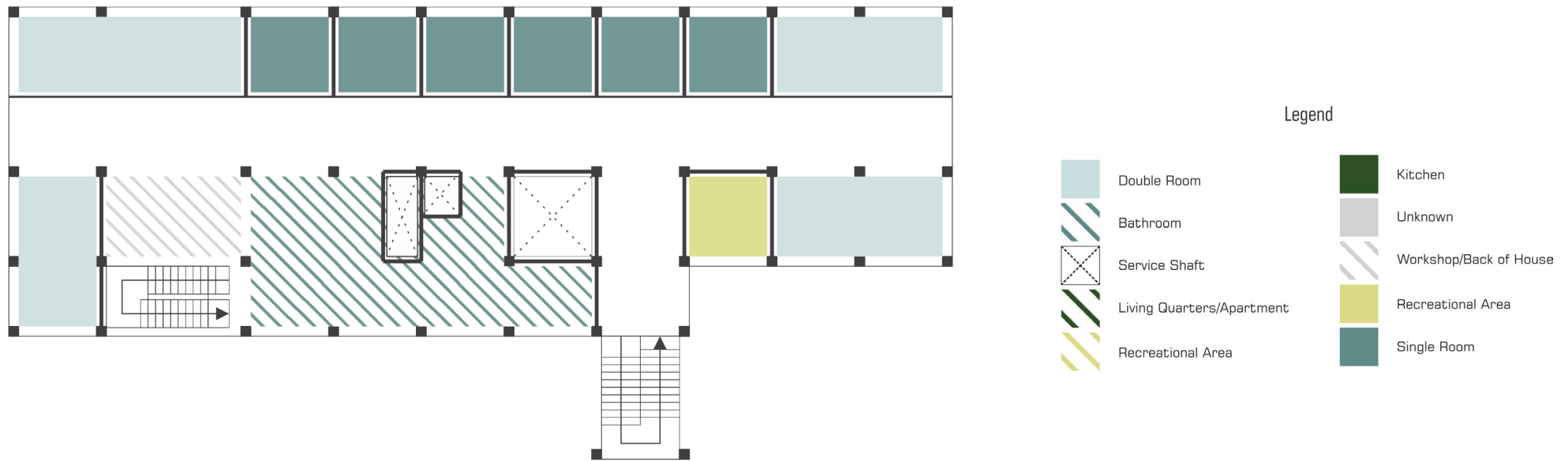


Figure 47 - Layout of typical floor (by Author)

2.3.6 Relationship to street

The building's basement is located one level below street level, creating a lower ground floor (Figure 48). In order to access the building, the user crosses a small bridge to reach the entrance lobby, which is on the same level as the street. This bridge is the only physical connection of the building to the street. From the entrance lobby a reception area as well as the lift lobby is visible. This progression is shown in Figure 49.

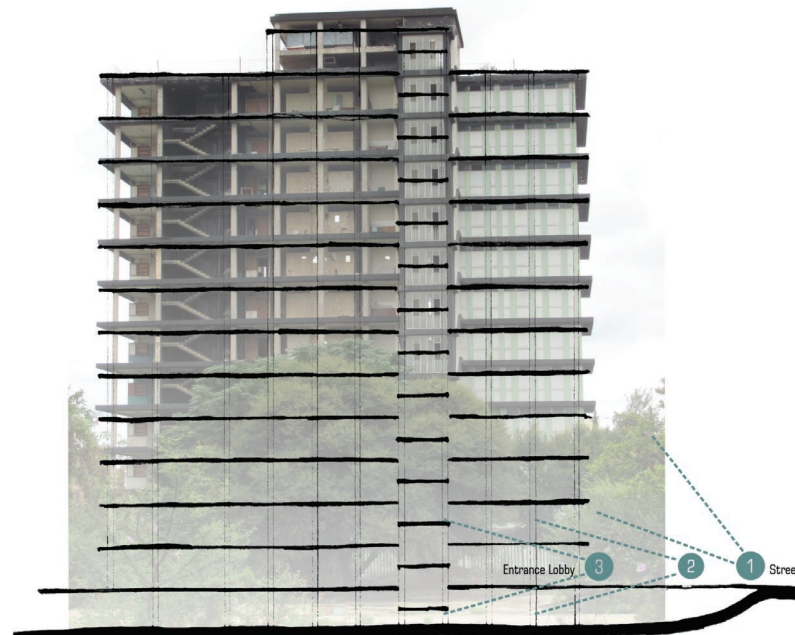
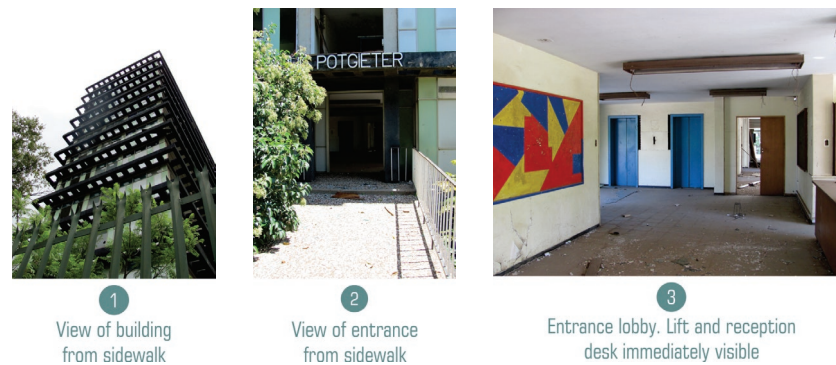


Figure 48 - Elevation of building indicating change in level and views from street (by Author)



1
View of building from sidewalk

2
View of entrance from sidewalk

3
Entrance lobby. Lift and reception desk immediately visible

Figure 49 - Typical views on approaching and entering the building (by Author)

Social housing with interior public spaces

2.3.7 Parking

The parking is accessed via a concrete ramp from street level in the southernmost corner of the site. There are still some remnants of shaded parking bays (now deteriorated). This area is largely undefined apart from the previous shade ports. There appears to be access to workshops on the lower ground level on the south-western corner of the building.



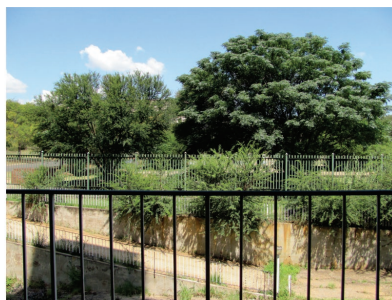
1

View from parking towards street. Height difference between parking and street visible



2

View towards west of parking. Area is overgrown.



3

Southern balcony overlooks parking entrance but aligns more with abandoned lots on next plot



4

View of shadeports from third floor

Figure 50 - Images indicating views as seen from points indicated in parking areas (by Author)

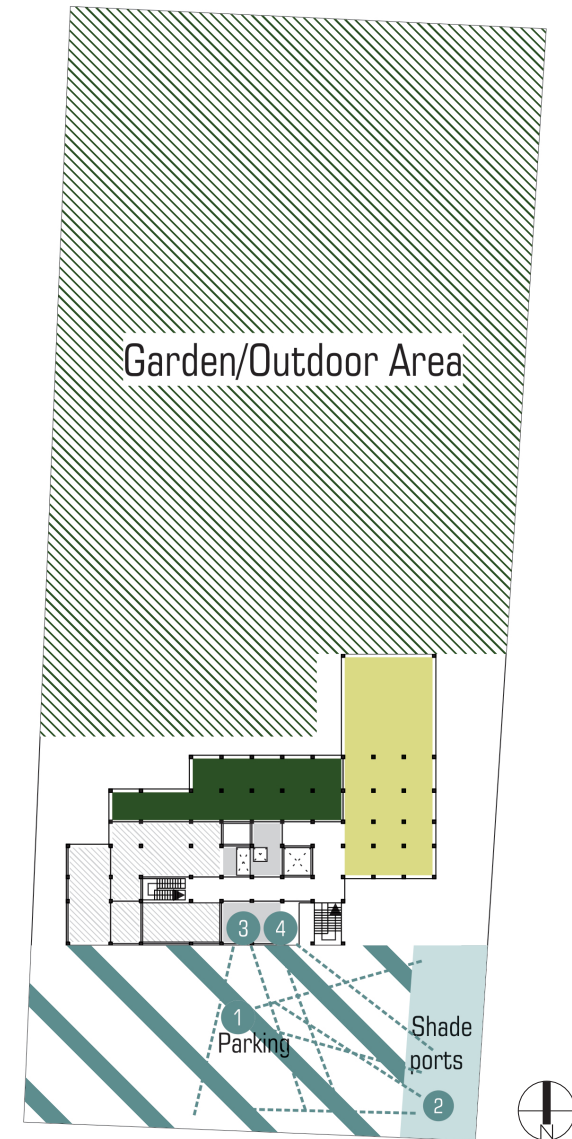


Figure 51 - Diagram of existing parking layout (by Author)

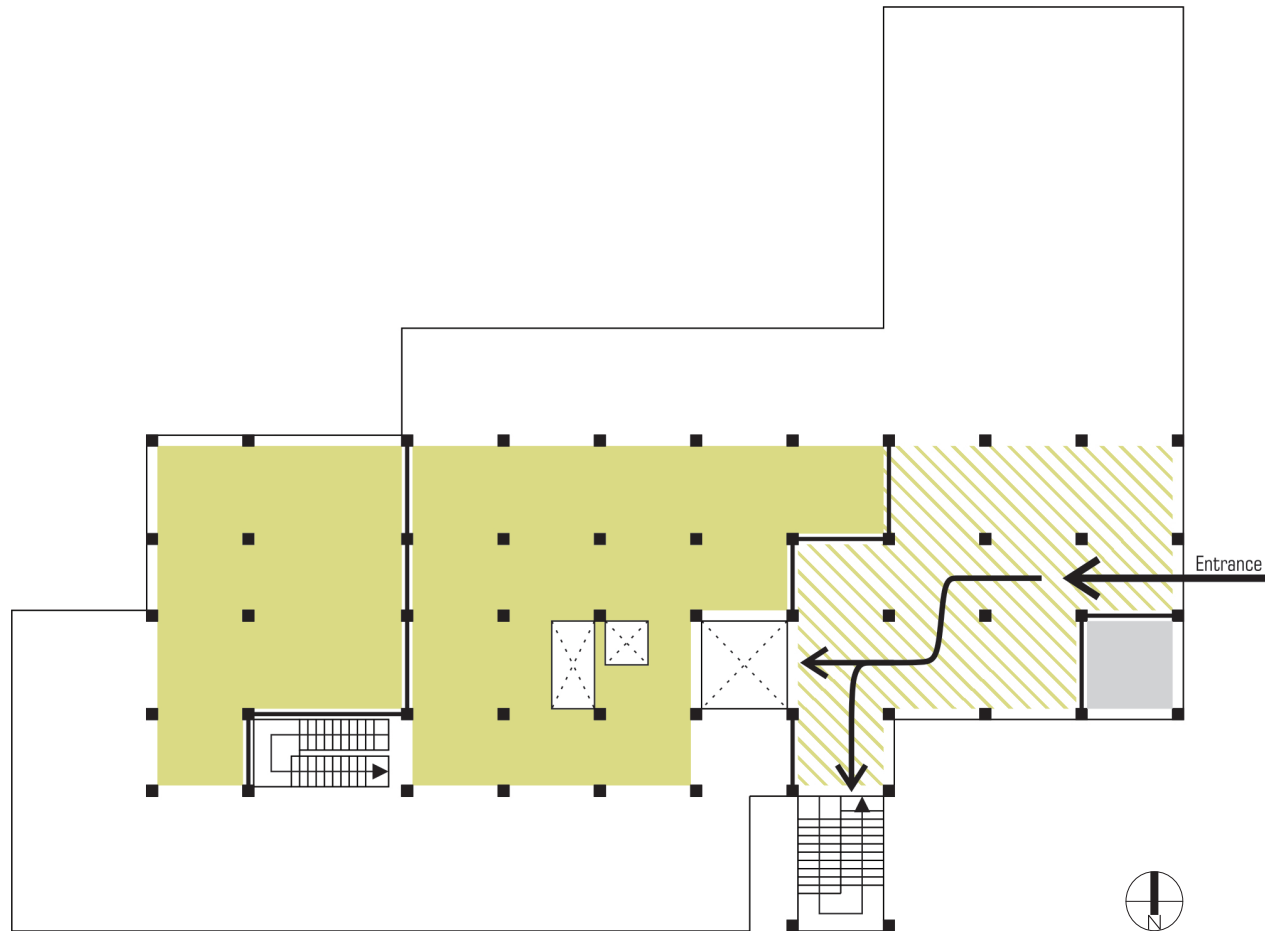


Figure 52 - Diagram of existing ground floor layout indicating main circulation route from pedestrian access (by Author)

2.3.8 Circulation

The wayfinding in the building is very easy to navigate, and public areas are well-lit. The main circulation methods are clearly visible from the main entrance (Figure 52). The main staircase forms an integral part of the architectural design (Figure 53). It is shown in the massing of the building and persons can clearly be seen by onlookers or pedestrians on the street. The glazed staircase also provides views as a person ascends and descends, giving alternating views of the surrounding landscape and the building itself. The fire escape is less successful in this regard but is also well lit via natural lighting, with views only to the side of the main movement direction, see Figure 54 to Figure 59 for further information.

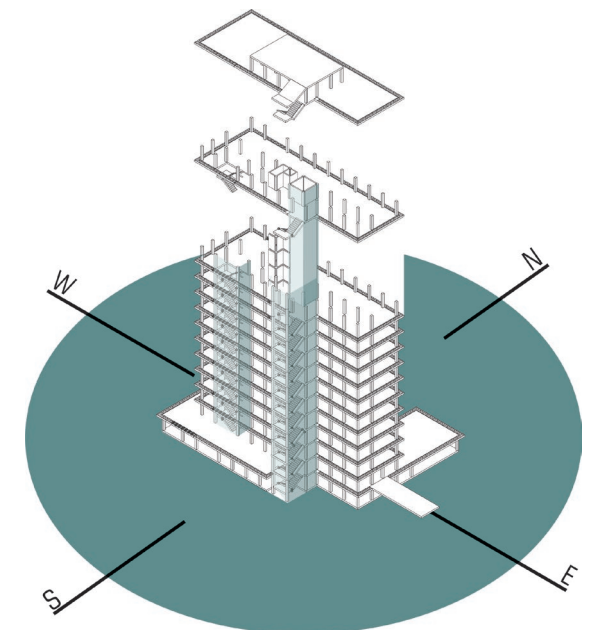


Figure 53 - Axonometric indicating main vertical circulation (by Author)

Social housing with interior public spaces



Figure 54 - Wired glazing on main staircase (by Author)



Figure 56 - View towards lift from main staircase (by Author)



Figure 58 - View from main staircase towards parking area (by Author)



Figure 55 - View of main staircase from lift (by Author)



Figure 57 - View of main staircase from parking area (by Author)



Figure 59 - View of fire escape from main circulation (by Author)

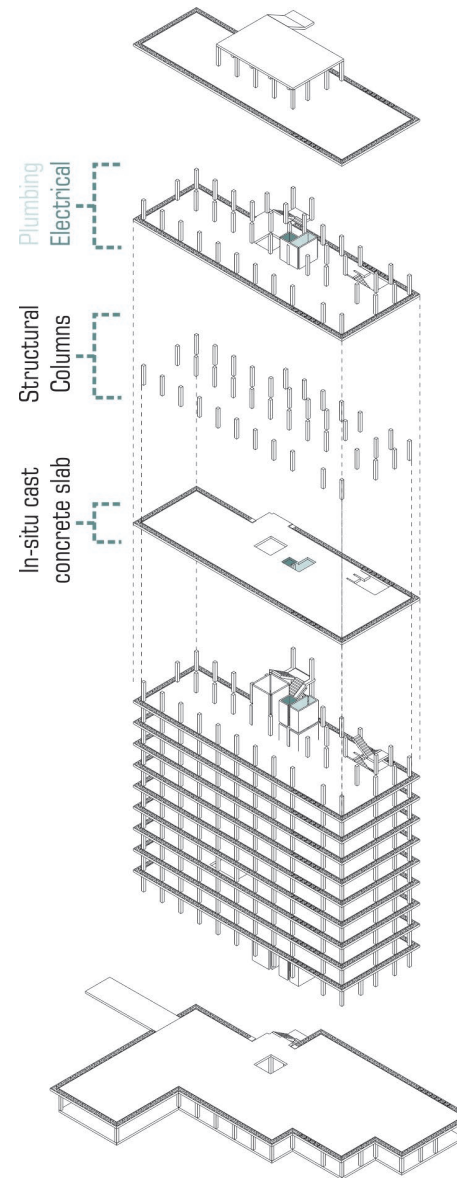


Figure 60 - Exploded axonometric of services (by Author)

2.3.9 Services and Structure

The services of the building are centralised in two service shafts, as illustrated in Figure 60. The larger shaft runs from north to south in the centre of the building and is used for all the water reticulation and sewerage. The smaller shaft immediately adjacent to that houses all the electrical services. There does not appear to be any connection between the two shafts. This would allow new services to be easily reticulated into the existing shafts. The location in the centre of the building would also mean that additional units, perhaps on the far eastern or western façades would require the introduction of additional service shafts.

The building is constructed using a concrete column and -slab method. The brise soleil has been cast in situ as part of the slab, but cantilevers beyond the edge of the floor slab. The concrete slab has been reinforced, but does not seem to have been post-stressed. This would allow for openings to be cut into the slab to create double volume or larger spaces, provided that these openings do not interfere with the reinforcements between the columns.

Social housing with interior public spaces

2.3.10 Sun Angles

The building is ideally orientated for residential living with the main northern façade being shaded with the brise soleil. The eastern and western façades could be over-exposed during the summer months due to their increased exposure. The southern façade with the circulation spaces would have consistent, even southern lighting, but would most likely have a colder atmosphere.

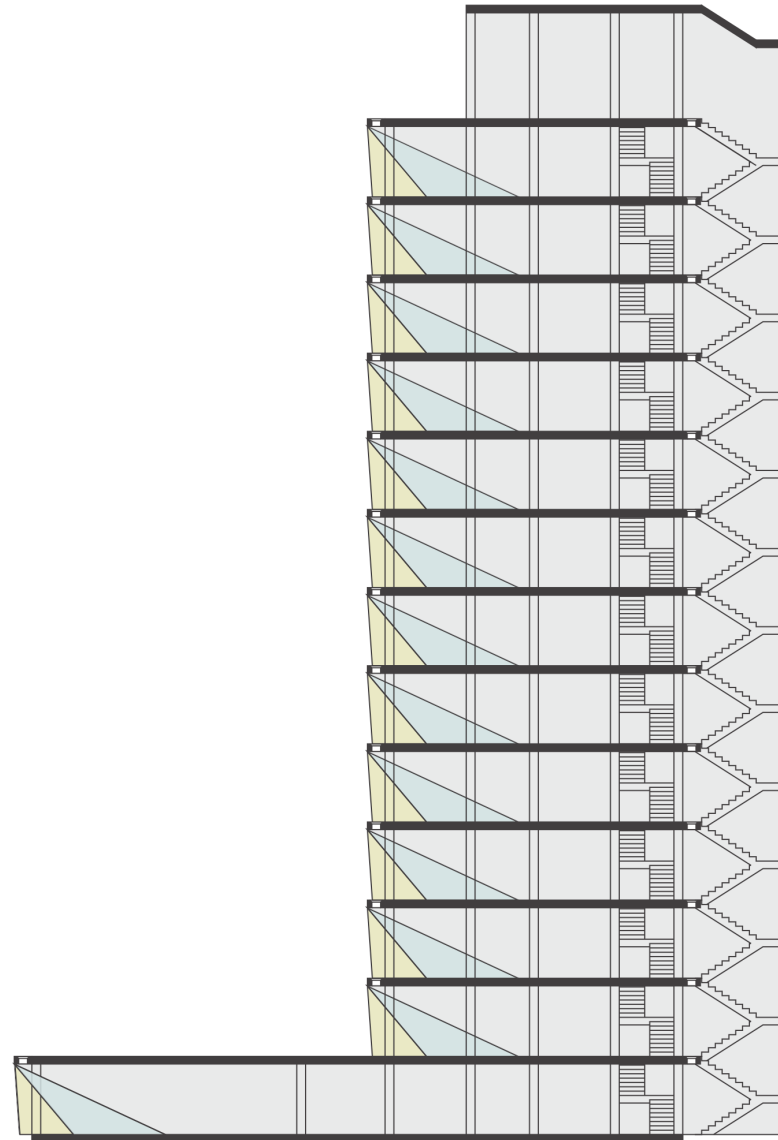


Figure 61 - Section of building indicating sun angles and efficacy of brise soleil
(by Author)

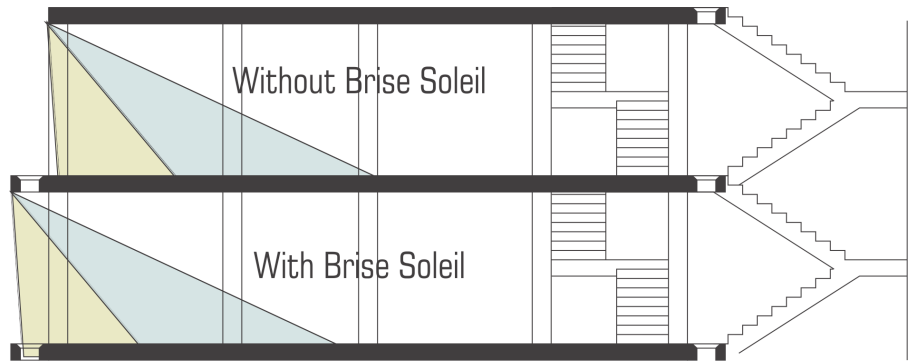


Figure 62 - Section of building indicating sun angles and floors with and without brise soleil (by Author)

Figure 61 indicates the winter solstice (blue), equinox (yellow) and summer solstices for the building. The brise soleil manages to effectively block out the summer sun but allows for winter sun to fall far into the building to heat the thermal mass of the concrete slab, as illustrated by Figure 62.

Figure 63, Figure 64, and Figure 65 indicate how deep the sun penetrates the building during the different solar situations. The models clearly indicate the efficacy of the brise soleil by blocking all of the northern sunlight in summer, yet allowing the winter sun to warm the floor slab for some passive heating.

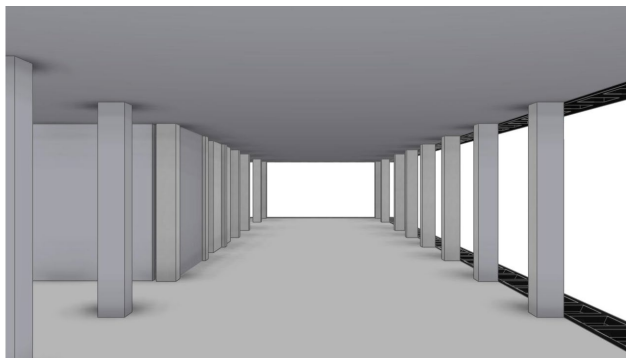


Figure 63 - Modeling of typical floor on the summer solstice (by Author)

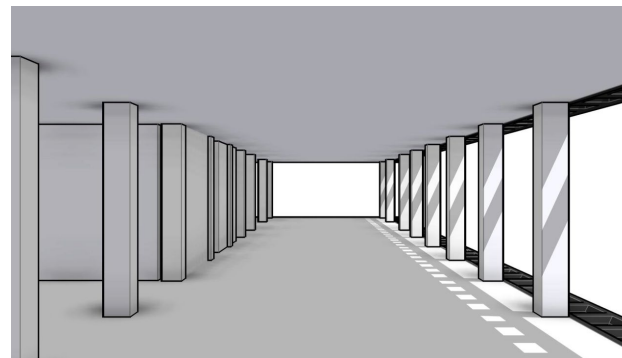


Figure 64 - Modeling of typical floor on the fall and spring solstices (by Author)

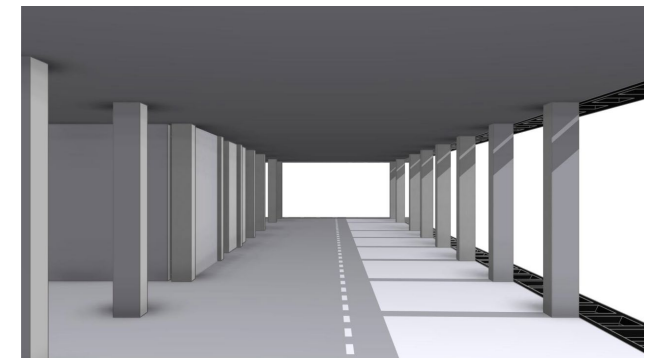


Figure 65 - Modeling of typical floor on the winter equinox (by Author)

Social housing with interior public spaces

2.3.11 Wind

The building is subject to the typical wind effects of high buildings - low wind speeds on ground and lower levels, with wind speeds increasing as one moves higher up in the building (Figure 67). This was experienced when in the building itself, as most of the façade has been removed and the visitor is very exposed to the elements at the moment. This effect would allow for highly efficient natural ventilation when considering the possibility of controlling the wind flow from the northeast (Figure 67) and using the leeward side of the building - where wind pressure is lower - to control the amount of air flowing through the building.

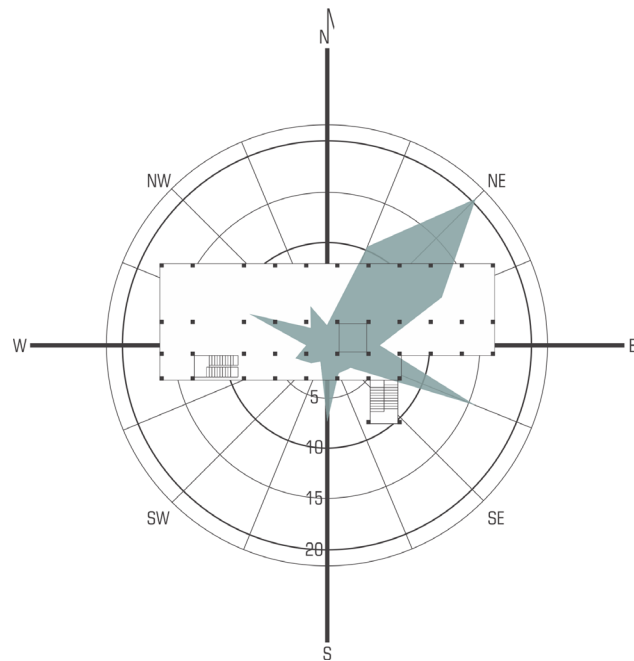


Figure 66 - Diagram of predominant wind in South Africa (by Author)

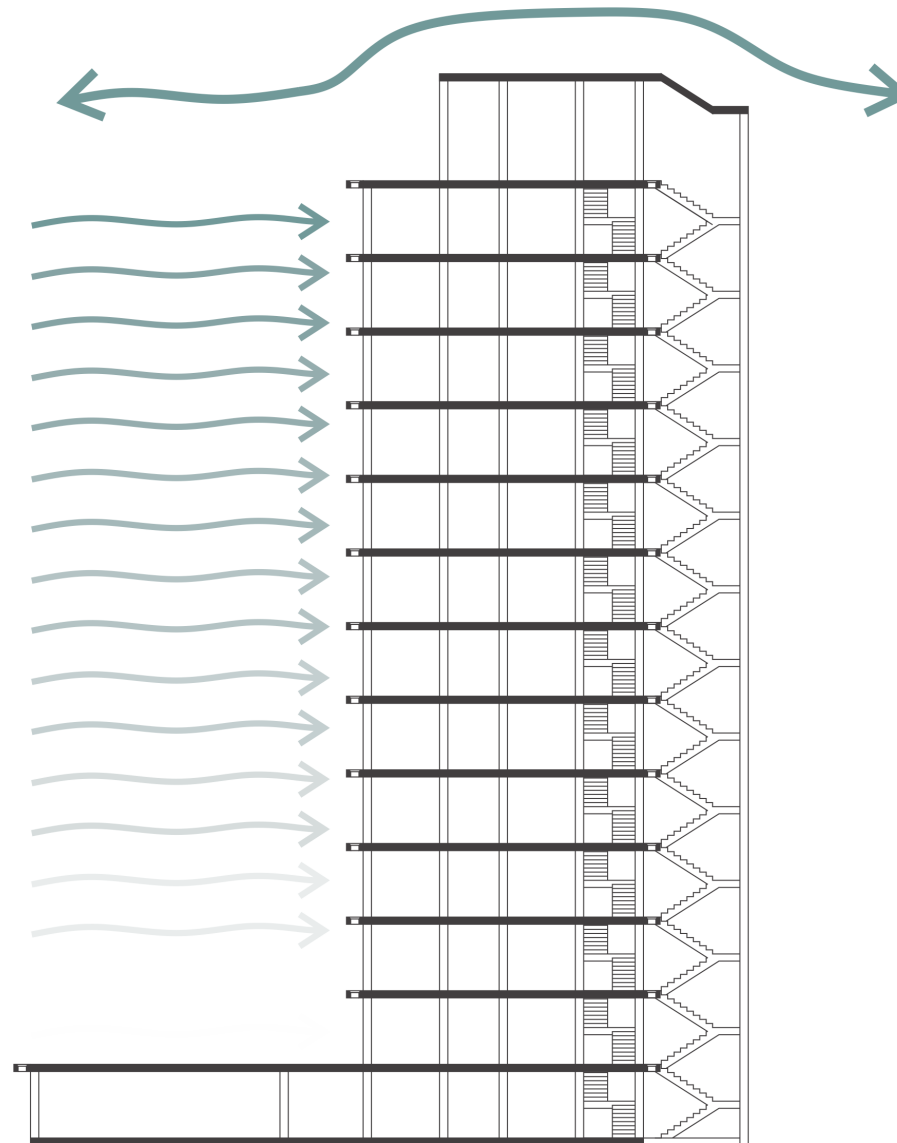


Figure 67 - Diagram illustrating the effect of the wind pressure caused by the height and exposed nature of the building (by Author)

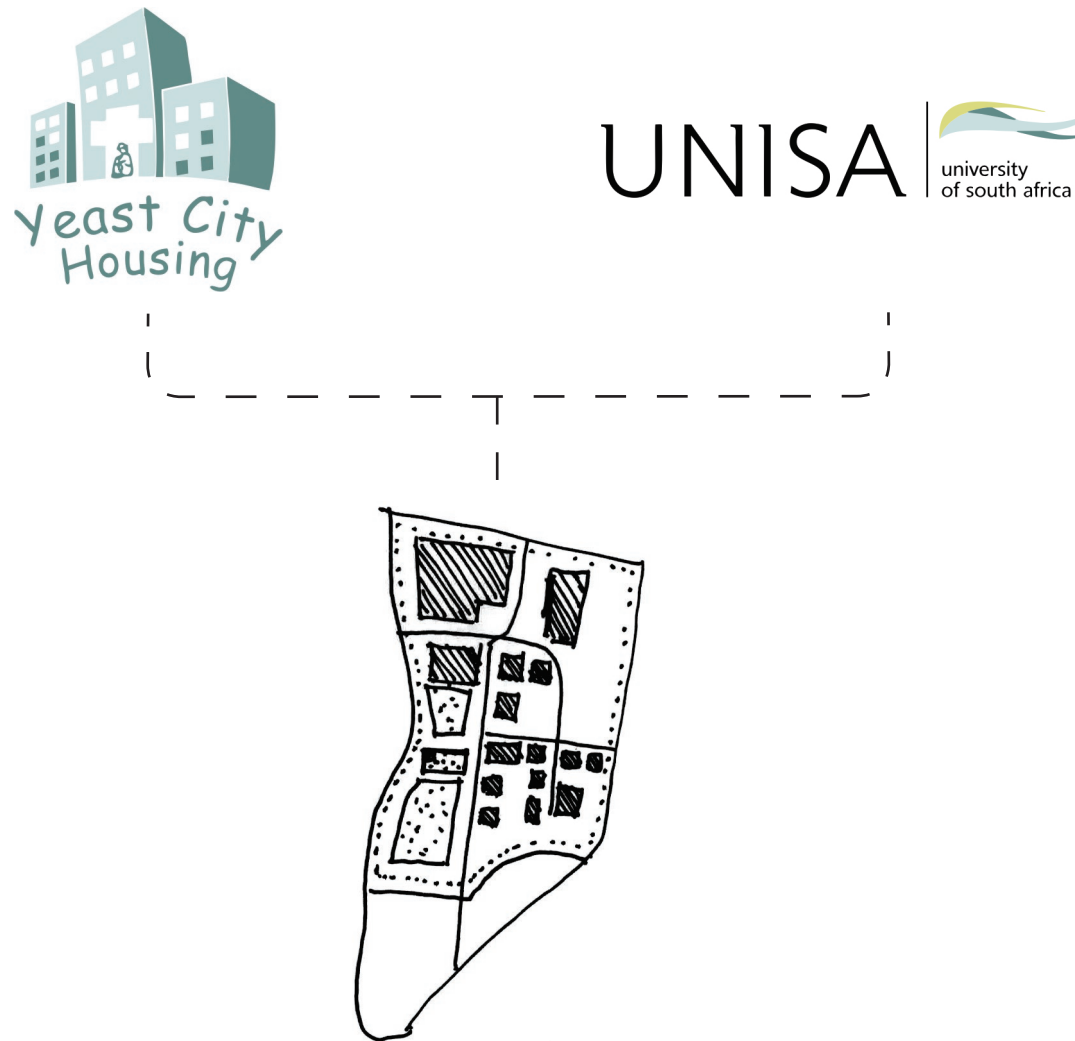


Figure 68 - Diagram illustrating the proposed clients developing the site as partners to create a unified approach for the site and surrounding available properties (by Author)

2.4 Client

The clients have been chosen as Yeast City Housing and UNISA. This proposed partnership was developed as an application of the regulations (c.f.), which encourage public and private entity partnerships.

2.4.1 Existing Owner - UNISA

The proposed site is in the University of South Africa's (UNISA) Sunnyside campus to the east of Pretoria CBD. UNISA has been chosen as the main partner for the project as they currently own the property, have established access control to the site, and has employees in various income groups. The variety of income groups would typically include members in the medium income market, the identified target market (c.f. 1.3), as well as employees lower and higher income brackets. This would apply and enforce the regulations stating that housing developments should incorporate residents of various income groups (c.f.). Developing this area as housing for their employees would have the added benefit of reducing their employees' travel time and expenses.

2.4.2 Proposed Partner - Yeast City Housing

Yeast is an approved Social Housing Institution, which focuses on housing provision for the medium income market. The institution is required to adhere to the Department of Housing's regulations in all areas, especially in their requirements for tenants.

Context | 2

2.5 Precinct

With the identification of the various unused buildings on the Sunnyside campus, as well as the regulatory requirements, a proposal to allow the clients to develop a social housing precinct is made. The precinct was informed by the regulatory requirements and the existing urban condition around the site. The more public functions, which the existing community in the surrounding areas could also benefit from, were placed to the outer edges and busy streets. The more private spaces such as housing and childcare were placed to the centre of the precinct to create a sense of casual surveillance and to define the public to private transition.



Figure 69 - Proposed precinct layout (by Author)

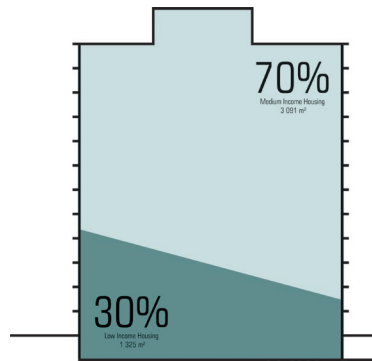


Figure 70 - Diagram illustrating the required mix of income of inhabitants (by Author)

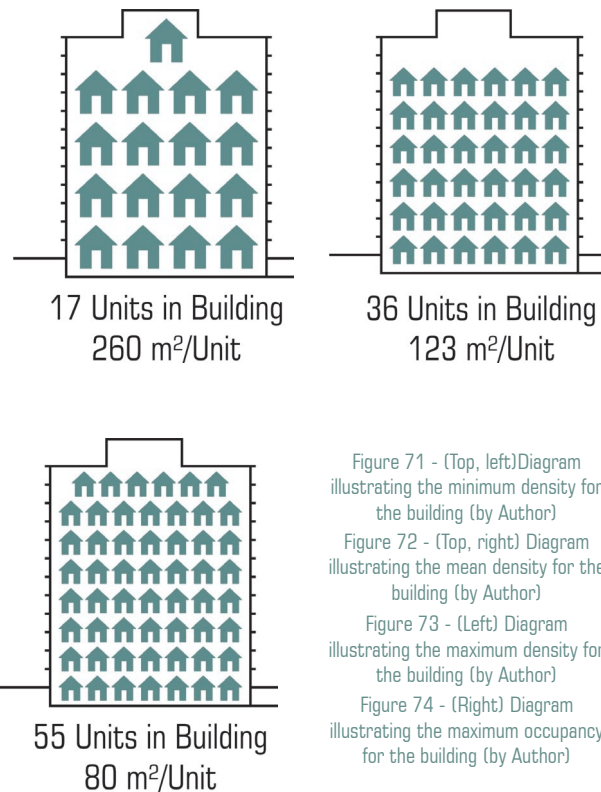
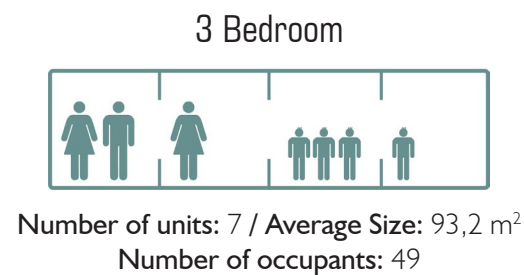
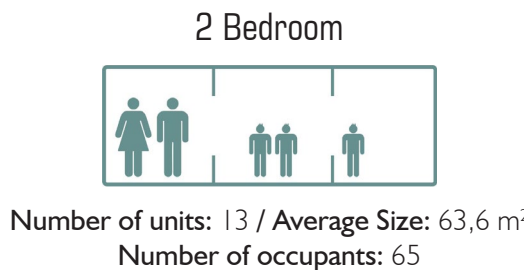
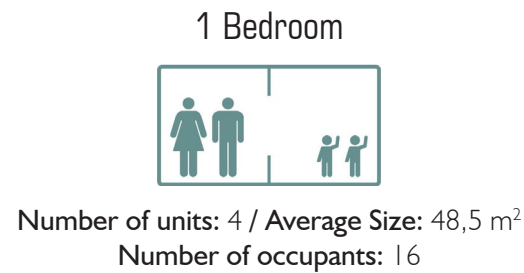
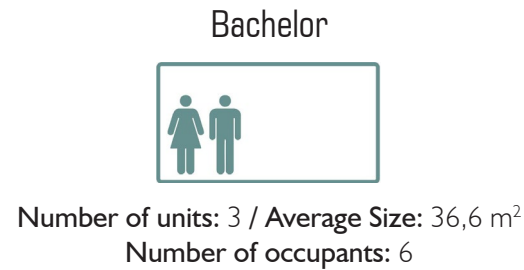


Figure 71 - (Top, left) Diagram illustrating the minimum density for the building (by Author)
 Figure 72 - (Top, right) Diagram illustrating the mean density for the building (by Author)
 Figure 73 - (Left) Diagram illustrating the maximum density for the building (by Author)
 Figure 74 - (Right) Diagram illustrating the maximum occupancy for the building (by Author)



2.6 Proposed Density

From an analysis of the regulations influencing the design, the conclusion can be drawn that in order to densify the area, the building should house a medium density living arrangement and accommodate 30% low income units and 70% medium income units (as illustrated in Figure 70).

The density of the housing should be medium density (c.f. 2.2.5). Landman and Du Toit has defined medium density as ranging between 40-125 units per hectare (2014:24). The building's total usable floor space amounts to roughly 4 428 m², or 0,4 ha. An analysis was done to estimate the amount of units that should be provided in the proposal to constitute a medium density development. Figure 71 illustrates the amount of units required for the lowest end of the estimate (40 units/ha), Figure 72 is an average of the range (83 units/ha) and the maximum amount of units (right, 125 units/ha) for the range is shown in Figure 73. The proposed density will be defined through the design process and will depend on an analysis of how the units can be arranged within the building.

The client, YEAST, has a maximum occupancy per unit type, as set out in Figure 74, in order to prevent overcrowding. The proposed amount of units and average size per type is also indicated, as per the tenant layout in Figure 139 to Figure 152.

Maximum amount of residents: 136

2.7 Conclusion

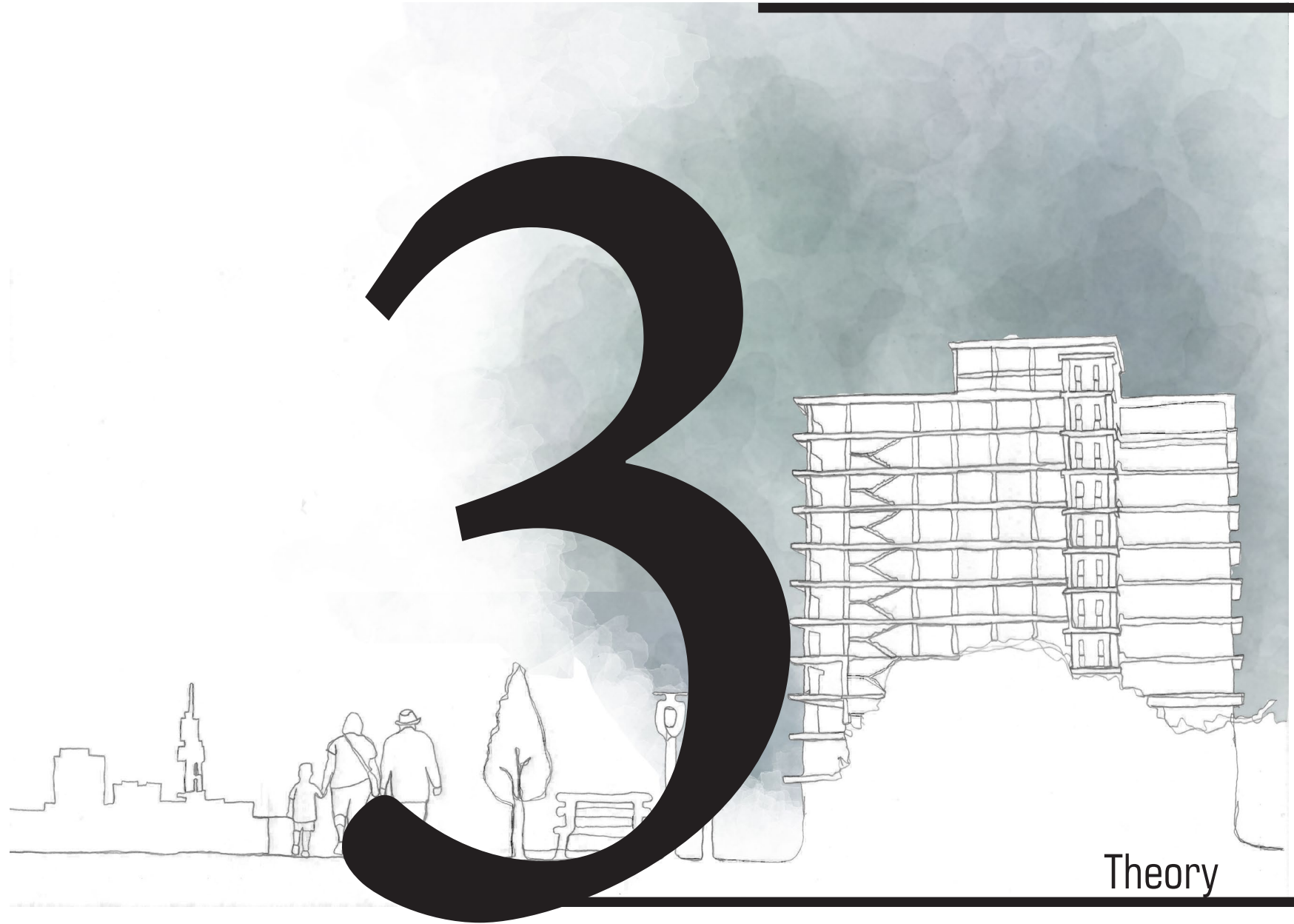
This chapter dealt with a variety of climatic, social and regulatory influences of the building and analysed the building from various points of departure.

The physical context shows that the building is ideally located in terms of infrastructure, transport, commercial activities and education services, and a conclusion can be drawn that developing a housing programme for this area is viable and would serve the area well.

An analysis of the user needs has revealed that a focus on public spaces is a valid concern and that these spaces will be used by the inhabitants, in most cases especially by women with their children. With a high importance placed on outdoor space, it would be pertinent to the study to design spaces that can fulfil this need.

The analysis of Huis Potgieter has revealed that it is an ideal building for housing units, most likely due to the fact that it was designed with a residential purpose in mind. The challenge in the design process will be to adapt the building from a highly institutional, communal type of living into separate apartments with shared spaces. In terms of the climatic considerations, the units should be placed, as far as possible, on the northern side of the building, reducing the need for artificial heating and cooling. Care must be taken in the placement of the public spaces – they should also be comfortable, but should not take up too much valuable private space.

With the contextual analysis of the building complete, the design premise and theory base will be introduced and discussed next in order to develop a design approach for the design.



Theory

Social housing with interior public spaces

“Located within a volume, which can range from a building block to a fully realised construction, the public interior greatly determines interior architecture. Thus the contribution of interior architecture to the public interior should be self-evident.”

(Poot, Van Acker, De Vos 2015:51)

3.1 Introduction

This chapter investigates the validity of the use of public spaces in the interior through creating a sense of place for the residents in the proposed housing development. The theory discussed will firstly identify public spaces in the interior as a relevant area of investigation in the field of interior design, and define a term for the public spaces created. Secondly, theories concerned with place-making in a low cost housing environment will be discussed. Lastly, theories influencing the perceptions and design of public spaces are compared.

The sources consulted in this chapter have been deliberately chosen from a variety of sources, such as peer-reviewed journals, printed books, and critiques of older sources, where deemed necessary. This was done in order to develop a balanced approach to the theories chosen.

The outcome of this chapter will be the identification of a relevant term, and definition of, a term for the public spaces in

the interior, as relevant to this study. The confirmation of the relevance of public and shared spaces in the interior, especially within a housing context, will be investigated. The final outcome will be a set of guidelines derived from the public space theories for the application in the interior environment.

3.2 Towards a definition

In order to define the current perception of public spaces in the interior, and to establish whether this project requires a specific term, an investigation was done on the origin of the original term and its placement within the field of interior design.

3.2.1 Public spaces and interior design

Poot, Van Acker and De Vos investigated the phenomenon of the “public interior” as a concept to explain internal public spaces (Poot et al 2015:46). They have chosen the term public to mean both accessible and with ownership. These spaces are accessible in the sense that they are open to all, their entrances are often ambiguous and the spaces can be entered into without effort or hesitation, and the surrounding street seems to flow into the space and vice versa, creating a highly permeable space (Figure 75). The level of accessibility is often influenced by ownership, as public interiors can often be physically owned by private entities. However, in order to create a truly public space that holds a sense of place for the users, the mental ownership must lie with the users (ibid.).

A complicated relationship exists between the realms of interior and public conditions; although they are related

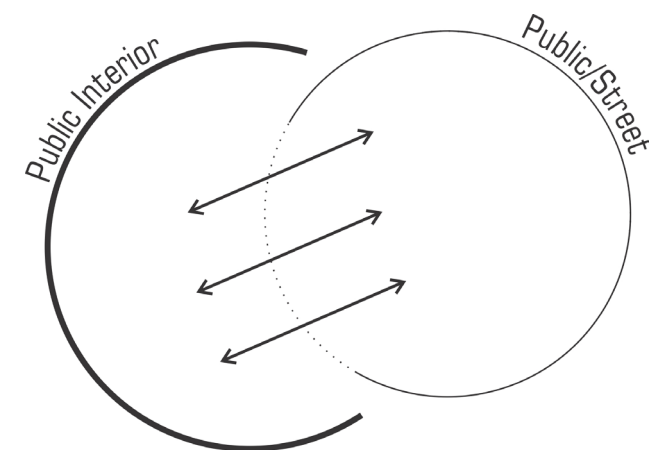


Figure 75 - Diagram of “Public Interior” (by Author)

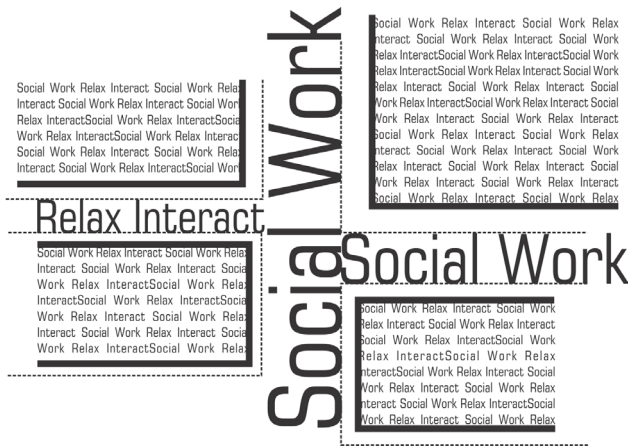


Figure 76 - Diagram of the interior versus the public room (by Author)

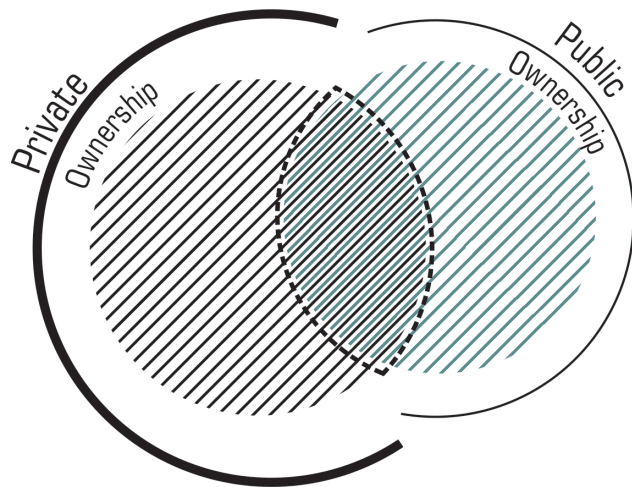


Figure 77 - Diagram of collective spaces (by Author)

to a large degree, they also differ to the same extent. The interior “room” can be seen as a device that contains our human experience, and is defined by the function, activity, and experience in the room itself. Our memory of a building is often connected to a single room or series of rooms within (Farely & Mitchell 2008:9). Rooms serve as containers for our activities and interactions, the understanding of these rooms, the potential and engagement of the bodies within (Figure 76). Thus the room is the container of our activities and interactions (Farely & Mitchell 2008:9).

This statement, that a room is defined as a container of activities and interactions, brings into existence the definition that the urban environment is also a room, albeit on a different scale. Both interior spaces and urban rooms have different scales – the interior space could be a large entrance hall or a small bathroom, whereas an urban room can take the form of small courtyards or large piazzas. When the analogy is taken further to the detailing, ‘carpet’ can be translated to the surfaces in the urban rooms, both of which have an influence on the experience and comfort of the spaces (ibid.).

Although the location and function of these urban rooms are determined in a larger framework and context, it falls mostly in the urban designer and planner’s area of expertise. The experiences and use of space by the residents falls in the area of social sciences, and designing the interaction by the residents with the spaces falls in the realm of the interior architect (Poot et al 2015:47). Poot et al continue by proposing that it is necessary to develop design principles that draw on the

expertise of interior architects, urban planners and members of the social sciences community, such as environmental psychologists, social geographers, and anthropologists (ibid).

3.2.2 The changing perception

In a capitalistic and secular urban culture, which developed in the nineteenth century, the perception of public space changed into public life as performance. This has declined in the twentieth century, as a more commercially driven culture began to emerge, as more and more public interiors surfaced in the shape of shopping malls and glass roofed shopping streets that combine the exterior and interior (Poot et al 2015:49).

Although this privatisation is seen as a loss by most designers, there are contrasting opinions. Manuel de Solá-Morales focuses on the social meaning and value of ‘collective spaces’, spaces that are both more and less than purely public, they are where everyday life plays out, is represented, or serve as reminders to it. Collective spaces are public and private simultaneously, they could be public spaces used for private use or private spaces open to the public (Figure 77). He questions whether certain well-known buildings are public or private, such as the Santa Maria del Mar, or the Barcelona football stadium – both under private ownership but publicly accessible (de Solá-Morales 1992:6). It could be argued that these elements are purely urban interiors, as they perhaps have private ownership, but the mental ownership lies with the users, to a large degree.

Social housing with interior public spaces

As outlined above, the interior designer and architect influence the experiences of users in the public spaces, whether they are on the interior of a building or within the urban environment. However, with the increasing amount of privately controlled public interior spaces, the perception of the users that the ownership lies with them becomes more difficult to achieve, while simultaneously more essential to the success of these spaces.

Interior architecture focuses on the micro-spatial level, such as the relationship of private buildings and public spaces, the street and how the entrances into buildings establish these streets, the gradual progression of public to private spaces, and the visibility of various spaces (Poot et al 2015:50).

The thresholds and transitions between the different levels of privacy gradients refer directly back to the connectedness of the public spaces to semi-public spaces, as the entrance into the more private realm from a public realm influences how one feels inside the building (Poot et al 2015:50). A poor integration would lead to a diminished experience of the interior public spaces. It is also important to limit the amount of boundary crossings within the building itself, as this increases the territorial depth, and leads to the conclusion that the space is more private than was intended (ibid.).

3.2.3 A new term: Interior Public Spaces

There are various terms and related definitions for the types of public spaces that this project investigates. However, most of these terms relate to interior public spaces that are accessible

to all members of the community, whereas the project would limit access to the building itself for security reasons. A new definition or refinement of the above terms is required. In summary, the above definitions are as follows:

Poot et al focuses on the term public interior;

"...the context of this paper... 'public' refers to two partially overlapping meanings: accessibility and ownership.. 'accessibility' denotes that these spaces are open to all... [which] can be limited in time for practical reasons... accessibility should be understood as permeability, being able to enter a space without hesitation and effort" (Poot et al 2015:46).

De Solá-Morales defines his perception of the collective space;

"... [it] is much more and much less than the public space as limited to public property. The ... richness of a city is that of the collective spaces, where everyday life is played out, represents it or serves as reminder to it... it is also the spaces that are neither private nor public, but both simultaneously; public spaces used for private activities or private spaces used for collective use" (de Solá-Morales 1992:6, translated by author).

Mitchell and Farrelly link the interior and the urban so closely that they become one;

"The language of the interior affects the urban idea, but also the urban scale infects interior space. It is a consideration of scale, but using varying forms and uses of material... The interior space can be mapped and described

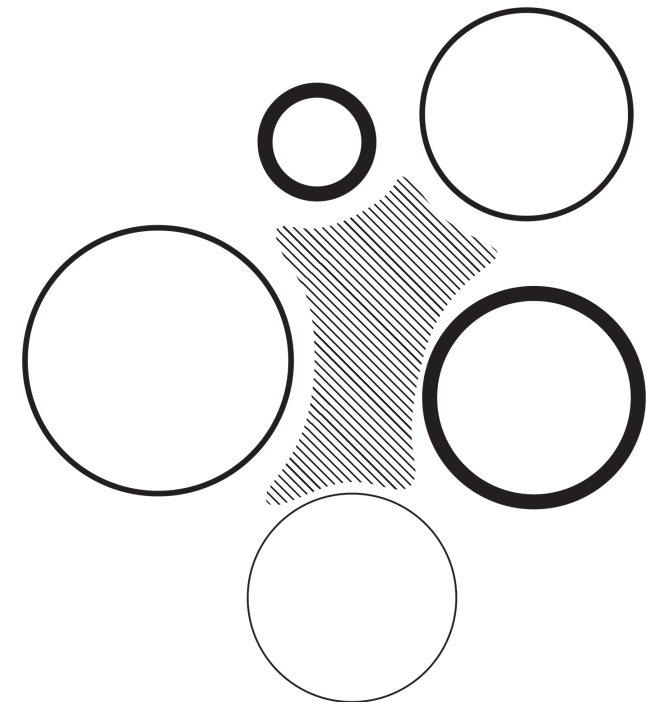


Figure 78 - Diagram of co-mingling spaces (by Author)

as a journey, an environment where events take place, analogous to the city... understanding context or place is also common to both interior and urban scales... transition between interior and urban space allows for a new understanding of the idea of the 'room'" (Farely & Mitchell 2008:1).

As an alternative, Porter discusses the term of co-mingling;

"... co-mingling space refers to that part of a building or the built environment where people can spontaneously assemble, move about and mix together... [they] occur when two or more spaces, each with its own function, overlap to cause a common meeting ground... found in lobbies, foyers, corridors, landings and, indeed, in any space that, either by accident or design, allows people to congregate and associate" (Porter 2004:22).

None of the above terms accurately describe the types and uses of spaces the project will seek to develop. Poot et al's definition is relevant to the level of accessibility that will be provided to residents of the building, although they are not accessible to all members of the larger public. De Solá-Morales' definition of collective spaces is in part correct, as the spaces are privately owned and available for public use, but, once again, not to the greater public. Mitchell and Farrelly closely link the urban and the interior, but do not describe accurately the relationship of interior spaces (as found within buildings) with an urban approach or function. Porter's "co-mingling" spaces (Figure 78) is also limited in the sense that these spaces exist purely because of their adjacency to other functions. Although these might be created in the project, they

are not the main provision of the public spaces, nor the focus of this project.

The project's proposed term for these spaces is interior public spaces, which describe public spaces within an interior that is only accessible to the users and residents of the building. From the public space or street, there is a defined and controlled entrance area. This leads to public spaces within the building which are accessible only to residents and users of the building, the interior public spaces. Of these spaces lead the more private interior units, the smaller rooms to contain human activities. These spaces are privately owned, by both the client and the residents, but the mental ownership lies with the resident, the most frequent user and the main informant in the design of these spaces.

3.3 Place-Making

When considering that the aim of the interior public spaces is to create a feeling of ownership amongst the users, the residents of the building, other influences on place-making must be considered and investigated. The investigation was centred around place-making in low income environments, as the amount of options for housing in this income group is much less than for those in higher income groups. This is partly due to the recent introduction of the medium income subsidy, and the limited private investment in this type of housing. This leads to very little stock in this portion of the market, as well as the slow turn-over of residents in these types of developments (Sebake 2014:56;89).

Social housing with interior public spaces

A home place is created through a series of place making constructs, such as social interactions, surveillance, care and civilities, and place is created through a series of place making constructs, such as social interactions, surveillance, care and civilities, and personalisation – among others – and can be divided into three main categories – attachment, appropriation and identity. These categories were the main focus of a comprehensive literature study done by Azhan Abdul Aziz and Abdullah Sani Ahmad in 2009, focusing on various methods users employ to create home places – methods that create environments that are enjoyable, supportive to their endeavours and is not just an environment which is tolerated (Aziz & Ahmad 2009:269). These endeavours can most often and most prominently be seen in the outdoor housing area – areas typically visible to other members of the community.

Low-cost housing environments are often high density due to cost constraints, which often prevents users from regulating their contact with other members of their development. This social interaction plays a substantial part in how these individuals experience their home place. A high-density living arrangement could lead to an over-abundance of social interaction, causing residents to retreat from the necessary social support and social network offered by the other residents (ibid). This is especially found if the boundaries between different users' spaces and territories are not gradual transitions or if they are not defined at all.

Allowing users to personalise and define the territory of their near-home place serves as both a visual indication of place

but also provides a defined area for controlling the intensity of interaction with the surrounding community.

3.3.1 Appropriation

Appropriation (Figure 79) or territorialization refers to the familiarity a user has with a place, streamlining activities around the house and the regulation and demarcation of boundaries, as well as the surveillance of these boundaries. It is firstly seen in the physical occupation and control of a space, either through occasional use of the space or habitual activities taking place. Lewicka's study has found that good upkeep of the building precincts and personalization of the residence area had consistent positive effects on the attachment to the residence area (Lewicka 2010:46). The habitual activities contribute to the vibrancy of the place, as the streamlining and consideration of necessary activities that take place within the near-home place encourage the appropriation of these spaces (Aziz & Ahmad 2009:274). The habitual occupation of the near-home space encourage neighbour involvement and a feeling of shared responsibility as this involvement avoid infringement or loss of the user's privacy. Through appropriation, the user controls the permeability of the near-home space, thus bringing a sense of comfort to the user, which in turn encourages the use of these spaces (Aziz & Ahmad 2009:275).

3.3.2 Attachment

The attachment to place is a psychological condition, and presents itself as maintenance of place, the development of social relationships, along with the support of and participation



Figure 79 - Diagram of appropriation (by Author)



Figure 80 - Diagram of attachment (by Author)

in these social networks (Figure 80). Social events and activities such as working towards a common goal are experiences that are necessary to bind people together. Attachment can also develop incrementally by displaying territorial behaviors such as modifying the environment, or putting care into the local social connections and being unwilling to leave their current housing environment. The manifestation of the users' rootedness, the identity attached to the place, their affiliation to the neighbourhood, promotes a positive evaluation of the home place atmosphere (Aziz & Ahmad 2009:275).

Lewicka argues that attachment can be closely linked to places of different scales. Place attachment is experienced not only to places of residence, but also in places that are visited for recreational purposes, like landscapes and wilderness (Lewicka 2010:36). Lewicka also found that residence length positively predicted place attachment, as well as the stability of the community. This stability is often increased by the amount of generations the inhabitants have been found to live in the residence or neighbourhood (Lewicka 2010:37-38). Home ownership is an unquestioned positive indicator of place attachment, and provides further support for the local regulations to decrease the waiting period before housing stock is transferred to residents (Lewicka 2010:38).

3.3.3 Identity

The idea of identity arises from the physical attachment to the place as it allows territory for associations with self-image or social identity – the residents typically identify with a place that corresponds to the image they want to convey to their

community or the lifestyle they subscribe to (Figure 81). Residents typically adapt their home place to the identity they associate with, an identity which is typically ever-changing. If the residents cannot adapt their current housing environment to their changing identities, they typically move away – not always possible in this or similar housing environments. These places must therefore have certain characteristics as described above, or have the potential to be appropriated to become an integral part of the home place. This personalisation accommodates the residents' need to express their identities by modifying the exterior of their units or by exhibiting personal items (Aziz & Ahmad 2009:277). Alexander et al also consider this step of displaying items unique to oneself, or reflections of one's identity in the final step of creating a home place, by creating a "living expression of a person" (Alexander et al 1977:1165-1166).

3.4 Public Space

3.4.1 An overview of public space theories

With public spaces forming such an integral part of any urban environment, it is not surprising that there are various existing theories and analyses of public and urban spaces. The three main sources, A Pattern Language (Alexander; Ishikawa & Silverstein 1977), Life Between Buildings (Gehl 1987), and Defensible Space (Newman 1972), have been chosen for their variety of research methodologies and different approaches to the research of public spaces, their spatial qualities, and their uses, as outlined below. The sources have been compared in direct relation to one another in order to extract a series of guidelines with which to approach the design of public spaces

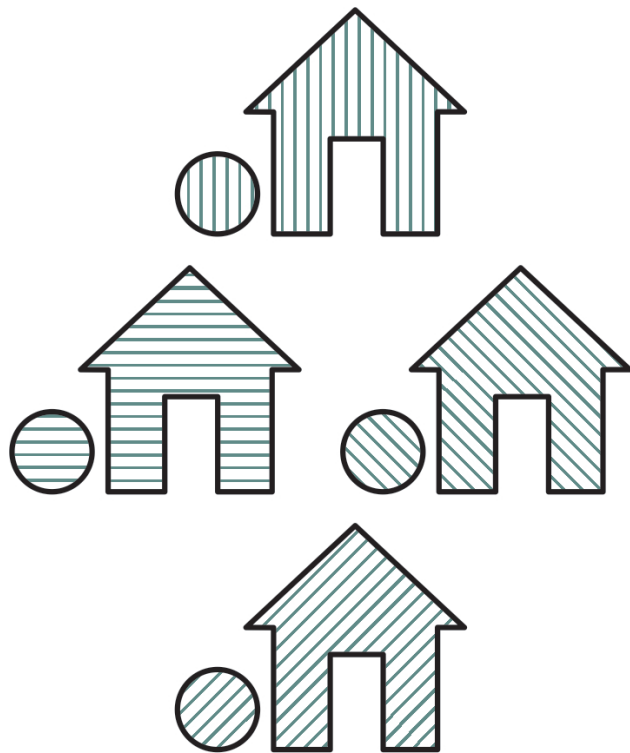


Figure 81 - Diagram of identity (by Author)

Social housing with interior public spaces

in the interior, and is available in Appendix A.

Pattern Language

“It is shown there, that towns and buildings will not be able to come alive, unless they are made by all the people in society, unless these people share a common pattern language, within which to make these buildings, and unless this common pattern language is alive itself” – Alexander et al (1977:x)

A *Pattern Language*, developed following years of research and practical experience and works in various scales, identifies and describes a series of patterns found in our everyday environments which have been summarised. The scales range from the layouts of whole neighbourhoods to the layout of a room to the construction of said room. Each pattern is given a social or physical context and problem, to which a possible spatial solution has been proposed. However, not all of the solutions are undeniably the best solution and should be questioned if called for, while still maintaining the essence of the pattern (Alexander et al 1977:xiv).

The pattern starts off with very large spaces – to identify where buildings themselves should be placed within a large open space and the development of towns or communities, and becomes progressively smaller – how the buildings should be shaped and grouped, the spaces in and around them, down to the scale where the elements are truly under the influence and control of the individual or small groups of individuals, working in a context of existing buildings. The smallest scale in the language is then derived from the construction of these

spaces themselves – from the development of a philosophy of structure to the colouring of the finishes and finally, the most personal, “Things from your life” (Alexander et al 1977:xix-xxiv), the personal items with which you adorn your home and most private spaces.

Life Between Buildings

Jan Gehl graduated from the Royal Danish Academy of the Fine Arts, School of Architecture as an architect and has worked toward the creation of humane cities for most of his professional career. Despite his modernist architectural education, Gehl became concerned with how people experience the spaces they reside in, particularly public spaces – the spaces between buildings. Elements such as the size, shape and layout of the public spaces were his main focus (Gehl & Svarre 2013:60). He also developed a spatial approach to ensure the ease of flow from inside the home to the outside, into the public realm.

Introducing a semi-private front yard with many functions allows for the users to have an excuse to spend an extended period of time in this space, thus creating the opportunity for chance encounters with neighbours and the community. The transition from inside to outside should be as fluid as possible, he argues, a ‘soft edge’ to encourage simple flow from inside to outside and make the outside activities as natural and inviting as those inside, ensuring the street will always have some life and activity in it (Gehl 1987:195).

Defensible Space

Defensible Space: People and design in the violent city by

“History has proved the virtues of these elements to such a degree that, for most people, streets and squares constitute the very essence of the phenomenon “city”. This simple relationship and the logical use of streets and squares – streets based on the linear pattern of human movement and squares based on the eye’s ability to survey an area...”

Jan Gehl (1987:91)

Oscar Newman reports on a detailed study funded by the Safe Streets Act of 1968 in the United States of America, which was tasked to investigate how the built environment affects behaviour. The study focused specifically on public housing developments' forms and how they influenced the residents' victimisation by criminals (Newman 1972:xiii).

The study itself was mostly focused on New York City, due to the fact that the city's Housing Authority kept detailed records of the residents of the projects, as well as any crime reported to any of its 1 600 strong dedicated police force. The crime reports themselves were also highly detailed, with the exact location of the crime (whether inside one of the buildings or in the surrounding area) always noted. This enabled the author and his team to identify areas and buildings with the highest crime rates in different building types and layouts (Newman 1972:xiv). The housing projects themselves possessed a large variety of building forms, densities, and locations through which the study could make highly sophisticated and accurate conclusions (ibid). In order to measure the impact of various building layouts, the social characteristics of the users were kept as constant as possible, with the only variant in their profiles being the layouts of their respective buildings (Newman 1972:xv).

3.4.2 Comparison

The three main authors investigated for this study; Gehl, Newman, and Alexander and his colleagues, all developed a comprehensive approach to public spaces. There are, however, various similarities between their approaches

and observations. In fact, both Gehl and Newman refer to Alexander and his colleagues' work (Newman 1972:148&150; Gehl 2011:150). Alexander also references Gehl's research when discussing activity nodes (Alexander et al. 1977:164), as well as Newman's when referring to the height of various types of housing (Alexander et al. 1977:118).

3.4.3 Guidelines

The theories of the aforementioned authors will be limited in their application, as the focus of this project is limited to the public spaces and the transition from public to private. The theories have been investigated and analysed, and the approaches and patterns relevant to the scale of the project and the building highlighted. As identified above, there are some similarities between the different sources.

These similarities have been identified to fall into specific space categories. After they were identified, each source was analysed and specific proposals and observations relating to each of these categories were collated and summarised, and is shown graphically in Figure 82. The definition of the categories was to consider the resident's experience and route through the building, leading from the most public area of the street, through intermediate spaces, the home.

The first category outlines the manner of entry from the street, or "Entrance from street". This category influences the spatial experience of the building's exterior, its relationship to the street and the safety of the route taken from the street to the entrance.

Theory | 3

Secondly, the “Entrance Area” is outlined. This deals with functions and flow of the lobby or reception area, as well as its relationship to and views towards the street. The guidelines in this category are focused on creating a legible and easily navigated space, as it is mainly used for circulation, but is also used for casual interactions.

The “Vertical Circulation” and “Paths” are discussed in depth in all sources. The views to and from the vertical circulation, views along the paths, articulation and placement of paths and vertical circulation are key elements to the success of the public spaces and the feeling of safety for the residents.

The “Public Spaces” category was investigated thoroughly and is the richest, with a remarkable amount of similar suggestions and observations between the sources, as well as various proposals mentioned in one source but not another. This category emphasises the approach to these spaces, as well as the movement and staying opportunities within the spaces. Main and ancillary functions are also discussed and proposed, in order to ensure a lively and interactive space.

The “Public to Private” category is important not only for safety considerations, but also as a key element of how the residents can control access and display their identities in the semi-public areas. This category also influences how the residents experience the public spaces, as abrupt transitions between their private home areas and the shared public spaces are not comfortable or conducive to regular use.

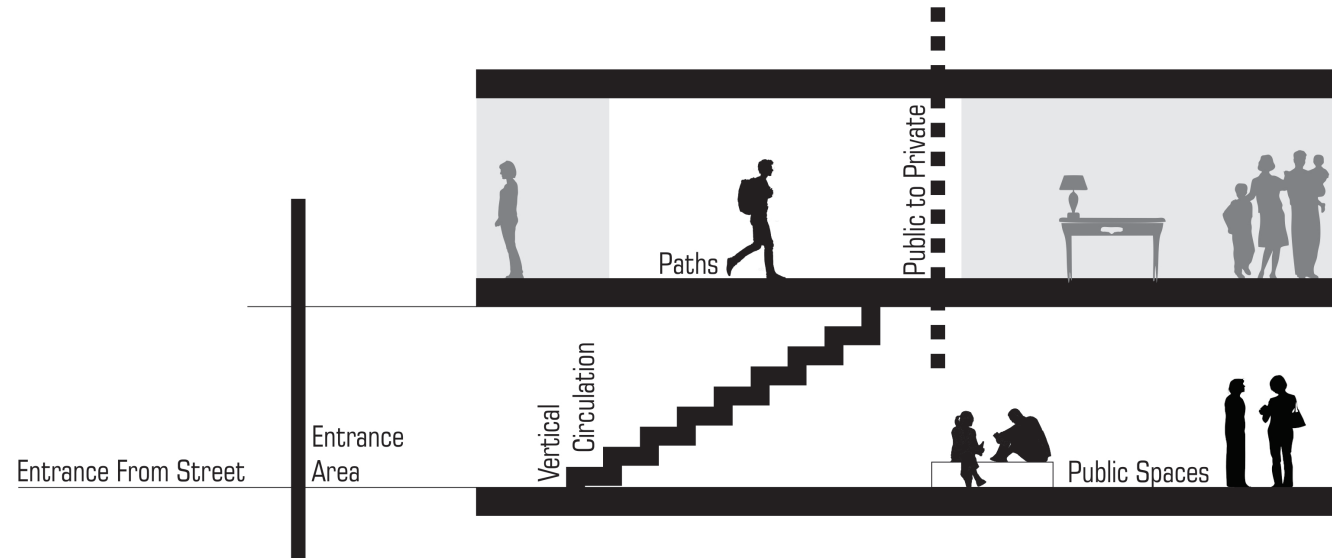


Figure 82 - Diagram of guidelines developed from public theories (by Author)

The categories and their guidelines as compiled from the various sources are available in Appendix A. The aim of the guidelines is to apply them in the first design stage in future projects, as they were applied in this project. This encourages the designer to consider the residents and their use of the building as a whole from the outset of the project. These guidelines can also be tested and expanded on in future projects, as there are new public space theories developed and tested each day.

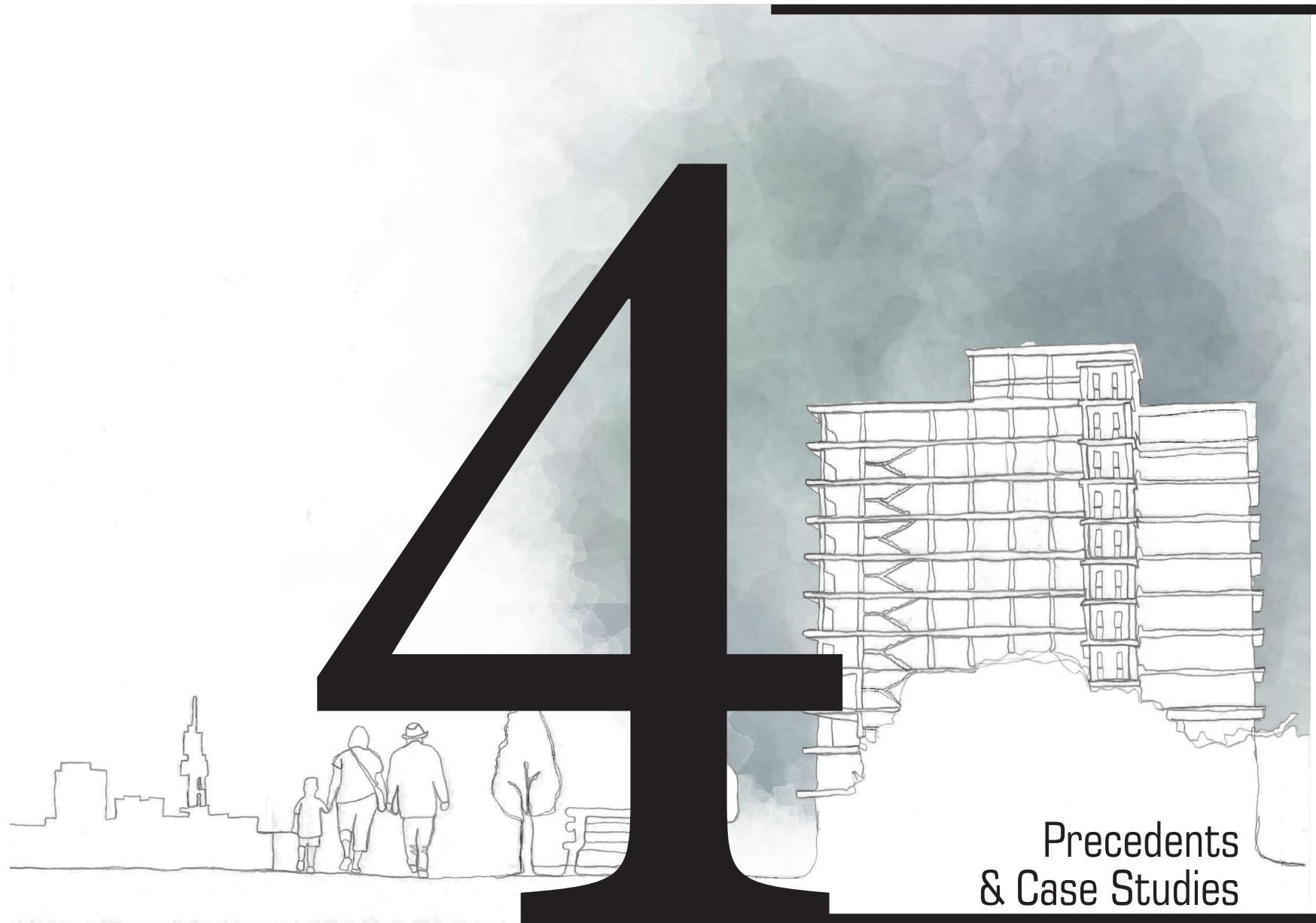
3.5 Conclusion

The theoretical investigation has led to the definition of a new term to describe the type of spaces this project will focus on. The interior public spaces focus on the user's ownership of the space, in order to encourage their perception of the spaces being user-owned. The transition between the private (units) and public spaces should be well defined, in terms of thresholds and difference in use, while maintaining a low territorial depth from the private to public spaces.

The mental and perceived ownership of the public spaces can be enhanced by allowing users to territorialise and adapt the spaces in order to reflect their own identities within the public spaces, as well as in the transition zones between public and private. This allows users to feel comfortable in their environment and makes them more receptive to developing social relationships with other members of the community. To help the user feel that they are in control of the situation, the elements identified by Aziz and Ahmad – appropriation, attachment and identity – must be allowed.

Lastly, the investigation of public space theories and the development of the guidelines seek to combine the requirements of successful interior public spaces with the residents' need for mental ownership and to encourage a sense of place. The guidelines focus on the residents' experience of the public spaces and elaborate on how to use certain elements in the public spaces. These guidelines will encourage regular use by combining different functions and creating spaces which take on different meanings depending on how the residents occupy the spaces.

Chapter 4 will identify a series of precedents which will inform the design development.



Social housing with interior public spaces

4.1 Introduction

This chapter will investigate various precedent studies and case studies in an effort to develop a series of design informants. The precedents will be analysed in a qualitative manner, using visual analysis and using the guidelines developed in chapter 3 as background. The case studies will provide a quantitative background to the study, as they contain surveys with measurable data as outcome.

The precedents have been chosen to relate to various aspects of the project. Elements in each of the projects relate back to the design. Precedents were chosen because of their:

- 1 Programme
- 2 Focus on public spaces
- 3 Conceptual Approach
- 4 Approach to public and private

The case studies were chosen on the basis of their areas of focus, as it investigated the use of public spaces in similar housing developments and use of shared public spaces.

Social housing with interior public spaces

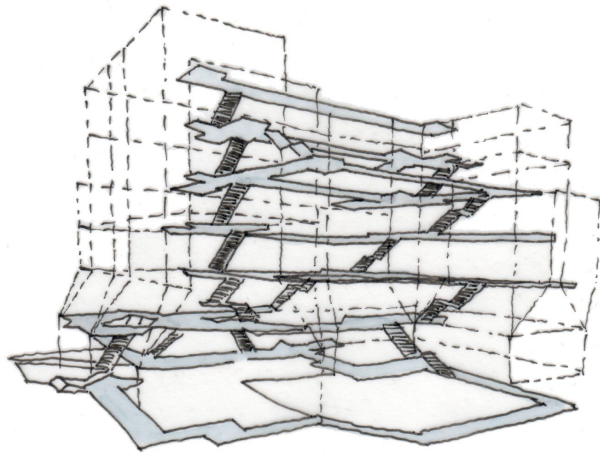


Figure 83 - Diagram of three-dimensional street

4.2 Precedent 1: Next 21

1

Programme

3

Conceptual Approach

4

Approach to public and private

4.2.1 Project Data

Location	Osaka, Japan
Completed	1994
Architect	Yositika UTIDA, Shu-Koh-Sha Architectural and Urban Design Studio
Construction Method	Reinforced concrete skeleton, with newly developed façade system and experimental infill system
Dwellings	18
Context	Urban, City Centre

4.2.2 Project Background

The Next 21 project was initiated by the Osaka Gas Corporation to investigate a 21st century solution to urban living. The objectives of the project were to create a sustainable development through a systemised construction method, introducing natural greenery, creating a wildlife habitat throughout the building. The building created a variety of residential units to accommodate varying households (Bosma, Van Hoogstraaten, Vos 2001:343-344).

The structural system –the base building, was designed first. This led to a series of rules within which each of the individual units' architects had to fit in. The infill, such as services and separate unit fit-outs were all designed to function independently and can be replaced at separate times of the building's life cycle without influencing the daily functions of the other units (Next21 Film 2009).

The base building's design employed a three dimensional street (Figure 8), which aided the communications between the inhabitants of the building. The street uses a approach that provides graded privacy from the streets to maintain privacy but allow for informal interaction (Kendall 2006).



Figure 84 - View of building from adjacent buildings, indicating exposed and hidden walkways (Osaka Gas Company 1994)



Figure 85 - Exterior of building from street level. Different facades and layouts can be seen, with the skeleton structure remaining constant throughout (P_kan 2013)



Figure 86 - The skeleton structure of the building is shown, with the more transient infill levels visible (Hiroshi Shoji Architects 2013)



Figure 87 - View from open walkway towards building (It's Late 2010)

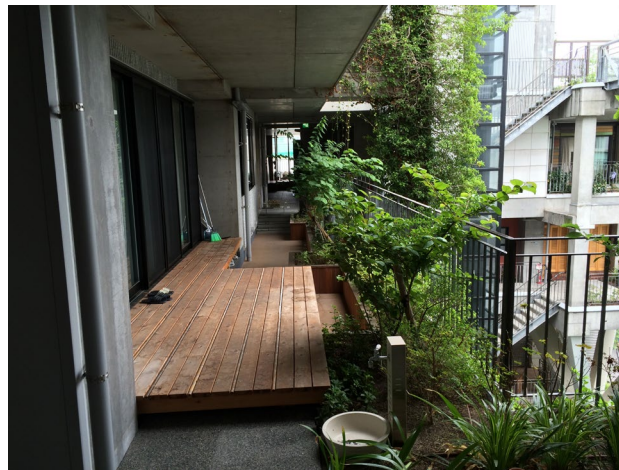


Figure 88 - View of public outdoor space indicating appropriation in the form of decorative elements and own planting (Zuidema 2016)

4.2.3 Conclusion

This project provides an insight into how adaptable units can be created, while maintaining the same level of public space and integration for all users.

The three-dimensional street that connects the units and provides alternate views across the site is the main feature that stands out in this project. The visibility of the various entrances from one to another provides passive surveillance without the units infringing on one another's privacy. The design of the various shared elements are robust but give the building a cohesive look and feel. Figure 88 shows the appropriation of near-home space, which leads to an expression of identity and the demarcation of territory, an example of how a space that has been provided as standard for all users can be made to reflect individual owners' identity through appropriation, leading to their attachment to this area.

This project's users are of a higher income bracket than the proposed project. However, the design of the shared elements in the building have been implemented at relatively low cost.

Social housing with interior public spaces

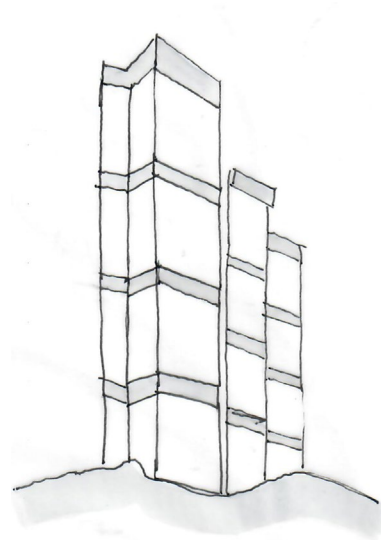


Figure 89 - The Skyvillage project divides the large project into smaller sections with dedicated public spaces in order to encourage the community development (by Author)

4.3 Precedent 2: Skyville@Dawson

1

Programme

2

Public Space
Focus

4

Approach to
public and private

4.3.1 Project Data

Location	Singapore, Singapore
Completed	2015
Architect	WOHA
Construction	Concrete slab floors, concrete columns
Method	
Dwellings	960
Context	Urban, City Centre

4.3.2 Project Background

The Skyterrace@Dawson project was developed by the Housing and Development Board of Singapore as a new application of their long-standing approach to public housing. The design is focused on three themes, community, variety and sustainability (Furuto 2012).

The building's 960 units are divided up into smaller "Sky Villages" (Figure 90), which share a naturally ventilated community terrace and garden (Figure 92). Larger shared public spaces include community living rooms, a landscaped park, play and fitness areas, courts and lawns, a rooftop park (Figure 94), and an Urban Plaza (Figure 93), which provides some retail opportunities and services to the residents (Furuto 2012).

The building has been designed to provide residents with flexible floor plans by using column and beam free bays which users could adapt into their main living spaces (Figure 95). This allows for adaptations such as home offices, lofts and future upgrades (Furuto 2012).

Considering and including design suggestions made by the public, ensured a sense of community and identity for the whole complex, which aimed to be a social space to enhance cohesiveness (Furuto 2012).



Figure 90 - Full building. Dark horizontal lines indicate separation between "skyvillages", smaller communities within the project (WOHA 2012)

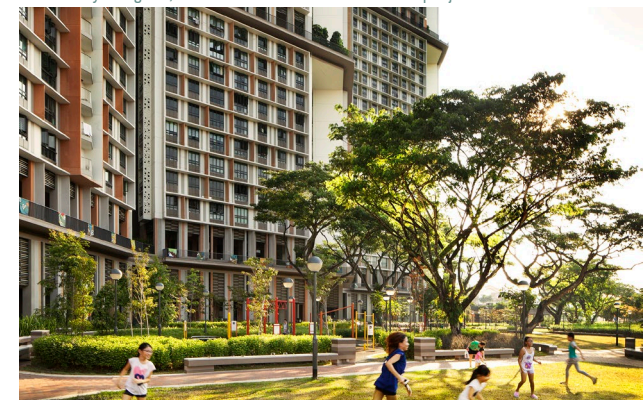


Figure 91 - Park area on the grounds of the development (WOHA 2016)



Figure 92 - View from unit to public and green spaces below, allowing for passive surveillance (WOHA 2016)



Figure 93 - Public space, allowing for a variety of uses and some privacy from other users (WOHA 2012)



Figure 95 - View of rendering of possible layout of main area of unit, note the lack of columns in the space (WOHA 2012)



Figure 94 - Rooftop public space (WOHA 2016)

4.3.3 Conclusion

This project was designed for a similar income bracket and user variety, although at a much higher density. However, the use of public spaces in a vertical arrangement is well-used and easily accessible to all users. The definition of the various “skyvillages”, grouping some residents around a public space for their own use, allows for a certain extent of identity and mental ownership. The units’ adaptability do not influence the design or use of the public spaces, which remain constant, whereas the units’ interiors can change at will.

Social housing with interior public spaces

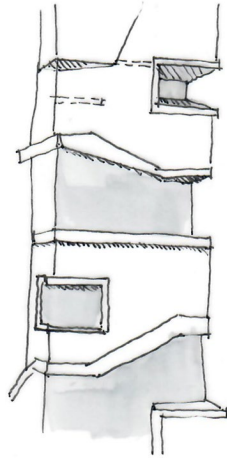


Figure 96 - The building's public and private spaces are clearly contrasted on the facade, making it an engaging project from the exterior (by Author)

4.4 Precedent 2: Roy and Diana Vagelos Education Center

2

Public Space
Focus

3

Conceptual
Approach

4

Approach to
public and private

4.4.1 Project Data

Location	New York, United States of America
Completed	2016
Architect	Diller Scofidio + Renfro
Construction Method	Concrete and steel structure with glass facade
Type	Medical Education Center
Context	Urban, City Centre



Figure 97 - View of large public space with views to exterior and circulation (Lehoux 2016).

4.4.2 Project Background

The 14-storey glass tower houses advanced classrooms, collaboration spaces, simulation centre, and other shared spaces (Archdaily 2016). The aim of the architects was to re-shape the educational and architectural perception of medical education. A variety of larger, shared spaces, as well as smaller study areas, as well as terraces and other outdoor spaces were created (Figure 98) (Archdaily 2016).

The interiors of the smaller spaces within the building, generally used for classrooms, can be reconfigured according to the needs and size of class. To encourage collaboration between students, vertically linked spaces have been created in various sizes, both open and more private, both indoors and outdoors (Figure 99, Figure 103) (Archdaily 2016).



Figure 98 - Close-up of exterior. Shared outdoor spaces are linked with interior spaces, in turn linked with smaller classrooms and intimate spaces (Baan 2016)



Figure 99 - The various types of spaces and uses are visible on the exterior of the building, creating an understanding of the building from the outside (Baan 2016)



Figure 101 - Large shared space with various activities and functions (Baan 2016).

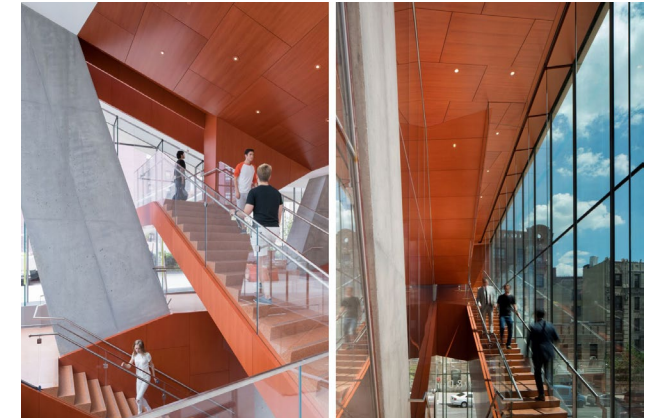


Figure 103 - Various types of circulation and views within the building, with views into adjacent functions and activities (Baan 2016)



Figure 100 - Model of circulation in building, linking various types of functions easily and as a integrated unit (DS+R 2016)



Figure 102 - Smaller, more intimate spaces created with views and in relationship to shared spaces [Ref]

4.4.3 Conclusion

This project succeeds in creating well defined public and private spaces, and reflects these spaces on the exterior of the building. More intimate spaces were created within the larger spaces without compromising on security or accessibility by using different materials, levels, and circulation approaches to indicate the transitions between public and private spaces.

The reflection of the building's programme on the façade of the building provides an interest in the building itself and communicates the principles of the building to the passers-by on the street, "framing" the activity inside. The ability to see the various types of spaces from the street allows both the users and passers-by to understand the building and increases the ability of users to relate to and find the different spaces inside. The building clearly illustrates the alternative approach to medical education, as set out by the brief.

Social housing with interior public spaces

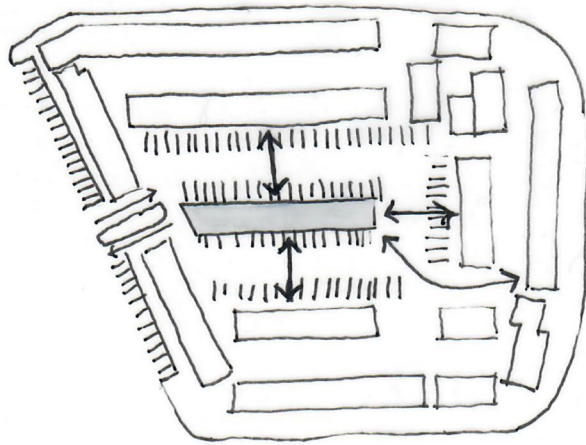


Figure 107 - Distance between unit and amenities (by Author)

4.5 Precedent 3: Brickfields Housing

1

Programme

2

Public Space
Focus

4

Approach to
public and private

4.5.1 Project Data

Location	Johannesburg, South Africa
Completed	2005
Architect	Savage & Dodd Architects, Fee & Chalis Architecture, Makhene Architects and Associates
Construction Method	Concrete column and beam system with load bearing brick infill walls
Dwelling	345
Context	Urban, City Centre

4.5.2 Project Background

The Brickfields project was initiated by the Johannesburg Housing Company. Located in the Newtown cultural precinct in order to locate it close to existing activity. A variety of building types, ranging from 4-storey walk-ups and 9-storey apartment buildings. The apartment types range from studio apartments to 2 bedroom units.

The development is arranged around a central parking and play area, with the various housing types facing inward into this area. The development also has some units looking out onto the adjacent streets for passive surveillance of the street. The majority of the development is built from facebrick, with detail focal areas plastered and painted in bright colours.



Figure 104 - Aerial view of internal parking and play area (Savage & Dodd 2005)

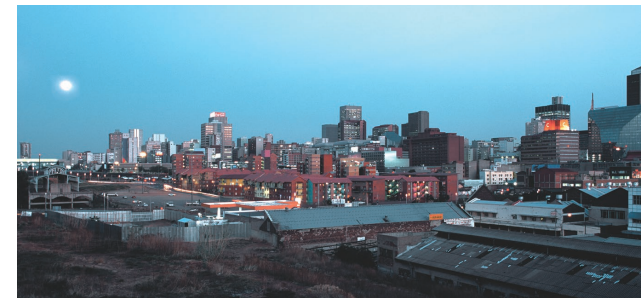


Figure 105 - Night view of development (Savage & Dodd 2005)



Figure 106 - Street elevation of 4-storey walk-ups (Savage & Dodd 2005)



Figure 108 - Aerial view of development (Savage & Dodd 2005)

4.5.3 Conclusion

The main critique of the project is the shared park and recreational area is removed and segregated from the units by the (perhaps excessive) parking lot. Some units are not even within view of this shared facility. Although the different building types prevent the development from appearing overwhelming and solid, there is very limited private outdoor space for the users.

Social housing with interior public spaces

4.6 Comparison

The precedents identified have been compared below:

	Programme	Public to private	Conceptual Approach
Next 21	Similar programme, lower density and higher income bracket.	Gradual, well demarcated transition from public to private. Public spaces of consistent quality throughout and a shared resource for all users.	The conceptual approach for the public spaces, the three-dimensional street, appears to be successful and adaptable to the current project in terms of its accessibility, views, and efficacy for providing natural surveillance.
Skyville@ Dawson	Very similar programme, albeit high density social housing, the focus on public spaces is clear.	The physical transition between these spaces is unclear. The use of semi-public walkways and shared spaces, contrasted to the more public spaces is an indication that this transition was considered and applied.	Concepts similar to "sky villages" have been used in other projects, by using sky-bridges and sky-decks within the high-rise buildings. Formalising this structure, however, could encourage stronger community connections and involvements by limiting the amount of users able to use each of these spaces – an important consideration in such large developments.
Education Centre	Unrelated programme.	The transition between public and private is clearly indicated, not only in the internal circulation and layout of the building, but also in the articulation of these functions on the façade. This provides the building with a strong transparency and legibility not found in many buildings. The language for each type of space, public and private, remains constant throughout, which makes the building easy to navigate and understand as a user. The demarcation of public and private areas are both subtle – in terms of material changes, and drastic – such as severe ceiling height changes.	The programme's transparency and legibility is echoed in the design in the arrangement and connections between the various types of spaces. The spaces are easily read and understood for their specific purpose, and succeeds in its goal to provide a new approach to college buildings of its kind.
Brickfields	Very similar programme, income bracket and density	For the units accessed from the internal parking lot, the transition from the public street to their own home is graded and ensures a relatively smooth transition. However, for the units facing the street, there are smaller alleys that do not provide the same defined transition as that of the controlled access and defined barrier of the boom gate. The public space is still very car-centred and users must cross a parking area to reach the recreational space in the centre. Even though this makes the space equally accessible to all, it becomes a conscious effort to cross the open space to this area. Separating this area from the units prevents residents from taking ownership of this space.	The approach to the form and shape of the buildings in the development focused on minimising the visual impact of the structures by breaking the housing into the separate blocks and typologies. This has worked well, apart from the very straight and un-engaging street edge. By applying the same materials and colours throughout, the development does have a sense of identity, though the colours appear merely as decoration, and not a thought-out design decision, and did not consider what areas are emphasised by the colours or if it could enhance the landmark-qualities of the development.

Table 1 - Comparison of precedents

4.7 Case Study - Landman & Du Toit

4.7.1 Analysis

A comprehensive survey was undertaken by Landman and du Toit in order to investigate the validity of developing medium-density mixed-housing in order to create more sustainable settlements. The medium-density approach often leads to users living closer to their neighbours as they might have wished, which might lead to a larger focus on the importance of the shared and private outdoor spaces. Landman and du Toit's survey investigated these elements, and focused on households where children, women and older residents were involved. Their findings indicate that shared public spaces should be considered and allowed for in order to promote neighbourliness and thus promote the social acceptability of a medium-density housing environment (2014:23).

The paper considers medium density to range between 40 and 125 dwelling units per hectare, and emphasize several factors which lead to a positive, or if unsuccessful, negative, perception of a medium-density development. Access to both private and communal outdoor spaces within the development, which are either linked or in close proximity to the unit, is of high importance – a finding supported by research indicating that a home is assessed by their neighbourhoods and homes by the standard of the amenities provided, and not by the densities they are built (Landman & du Toit 2014:24).

The research done for this case study concur with the research conducted by this author in Chapter 3, indicating that areas which allow for self-expression and territoriality (“identity” and

“attachment” as referred to in Chapter 3) are as important as communal spaces available to a larger group (Landman & du Toit 2014:25).

Landman and du Toit's research also indicated that social networks play a key role to residential choice – the development of supportive relationships with neighbours is especially abundant and needed among working families with children (2014:25).

A graphic summary of the study's findings are illustrated in Chapter 2, Figure 17 to Figure 24.

4.7.2 Conclusion

The case study confirms the importance of outdoor spaces and shared spaces that allow for community interaction. These areas are most important to female-headed households with children, and become increasingly important where households consist of 2 or more people. Considering that the study was undertaken in similar housing developments to the proposed project, these findings should be applied as far as possible as a valuable guide to the user's needs.

4.8 Case Study - Sebake

4.8.1 Analysis

Thandi Sebake investigated the quality of the shared public spaces provided by social housing institutions in Tshwane in her Master of Science in Architecture by research, titled “*An assessment of the quality of shared outdoor spaces in social housing projects in the City of Tshwane*”. Sebake closely investigated both the regulations surrounding the housing developments (2015:11-25). The regulations as well as complementary resources provided a strong background from which a set of criteria was developed, against which existing housing developments’ public spaces could be measured and analysed in an empirical manner.

All social housing developments in the CBD were measured against a set of key requirements, such as the availability of units for residents with special needs, have 3 to 4 storeys, have been operational for at least one year, have a medium density configuration, and be in close proximity to other Yeast City Housing projects. After analysis the available housing stock, three developments – Litakoemi, Hofmeyr, and Kopanong – were chosen for in depth studies.

Spatial elements such as play areas, clothing lines, dustbin areas, gardens, laundry areas, open spaces, seating spaces and walkways were investigated and analysed both from a spatial and resident experience. One element that frequently arose as a problem or less-than-ideal situation, is the prohibition of residents to use public spaces such as the lawn or courtyard,

due to management trying to keep these spaces clean and minimise the maintenance required. Other elements such as limited play-areas, and little consideration of inclusive requirements are areas the residents have identified as problem areas, or areas that can be improved to better suit their lifestyles.

Safety is a large concern for both the residents and management, with Sebake finding that all the developments investigated showed a strong awareness and intervention into areas that created possible danger zones.

4.8.2 Conclusion

Sebake found, and is supported by the Author, that the Social Housing Policy must provide clearer and less ambiguous guidance regarding the design and development of quality shared outdoor spaces in social housing projects (Sebake 2015:105).

The study provided a thorough analysis of the existing housing stock and provides an insight into the problem areas which should be addressed in the proposal. Elements such as sight lines to public spaces are important and should minimise the risk of using these spaces at night or when there are few other residents in the area.

The lack of appropriation and the reflection of the residents’ identities is worrying, and prevents the individual developments from developing their own character or identity. Some residents have taken some control over their

near-home space. However, as they are not allowed for and considered in the initial design or refurbishment, they create tripping hazards.

The final conclusion that can be drawn from Sebake's study is the consideration that each space is not always used purely for its intended function. For example, residents indicated that they check their mail in the garden, open spaces and walkways (Sebake 2015:149). Activities such as greeting and talking to one another occur across the whole development (Sebake 2015:151), and should be considered and accommodated for in future developments.

4.9 Conclusion

The precedents identified have each focused on specific areas of importance within the proposal. The precedents were chosen mainly for their aesthetic appearance and influence on the forms and physical manifestation of the design, whereas the case studies provide an insight into the user and their sociological and spatial needs, as situated in a similar context.

For application in the design proposal, the Next21 development provided an insight into a successful intervention that allows users to interact with one another without compromising their privacy. The project also allows for resident appropriation within a specified area, which appears to be highly successful.

Skyville@Dawson enforced the applicability of using public spaces in a high-rise building in order to ensure equal access to these spaces for all residents. The division of the towers

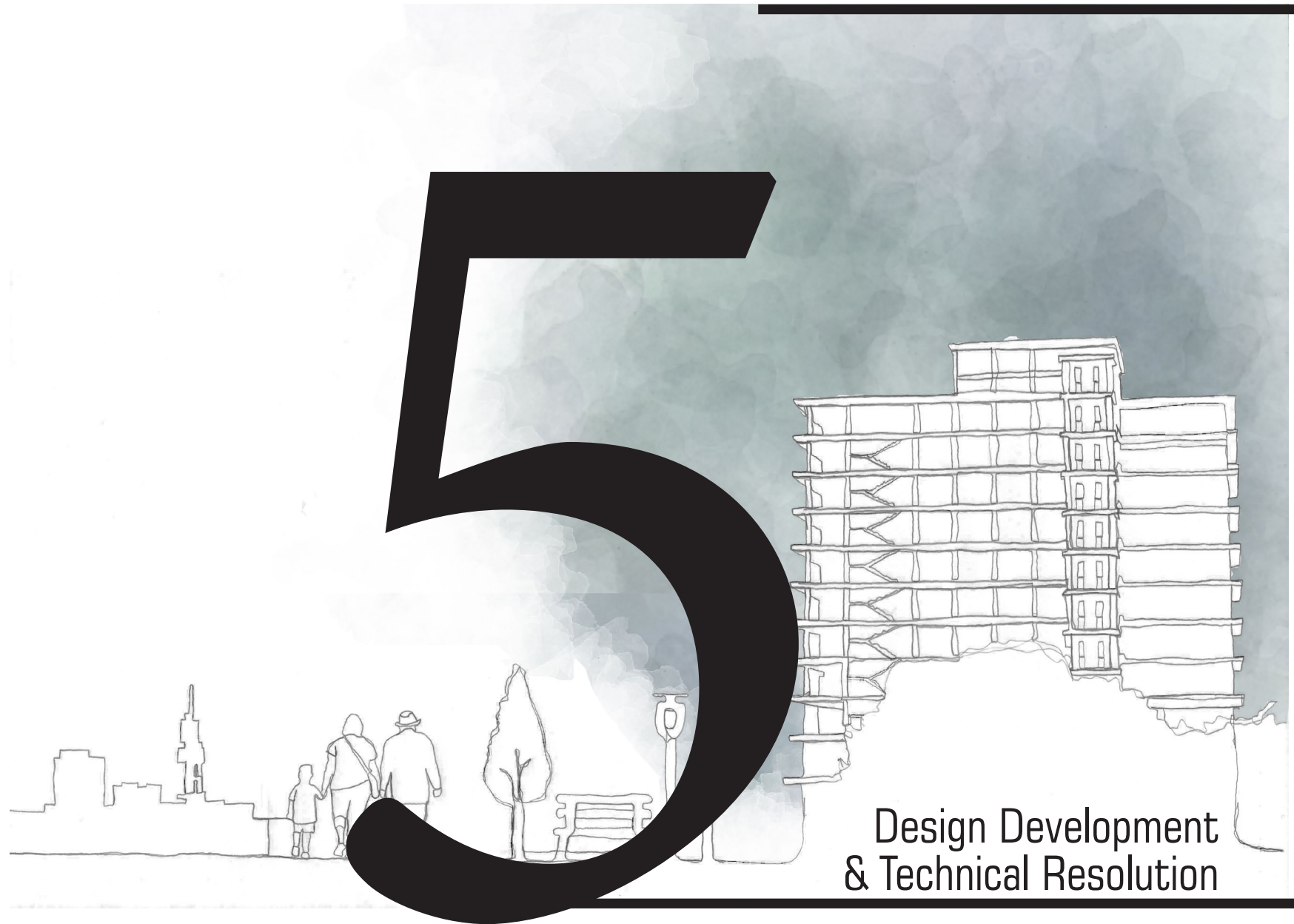
into smaller communities creates an environment where residents can connect socially with other residents on a scale that is more considerate of the human needs.

The Education Centre is an example of a clear representation of the building's function and intention on the exterior of the building. The variety of different space types have been clearly defined and are easily recognised as separate from one another, where needed.

The Brickfields development is a local example of a similar density and user group. However, analysing the project with the theories discussed in Chapter 3, it is not as successful in creating legible public spaces, or creating areas where residents can appropriate their environment and reflect their identities.

The case studies provided empirical data and background to enforce the area of investigation and provide a more detailed background on the users' needs and requirements for social housing developments.

This concludes Chapter 4. The design and technical development will be discussed in Chapter 5.



Design Development
& Technical Resolution

Social housing with interior public spaces

5.1 Introduction

This chapter will describe the development of the design, from conceptual phase, to design and detail development, concluding with the technification of the design. Throughout, the various design informants that led to specific design decisions or considerations will be discussed.

Part I will introduce the design process, as derived from the research methodology indicated in Chapter 1 (Figure 7). The development of the concept as derived from the theoretical and contextual analysis.

Part II describes the development of the design. This includes the definition and allocation of the programme, users, and spatial intervention. The various design informants will be discussed and their influence on design decisions indicated graphically. Thereafter the design proposal will be described.

Part III explores the technical resolution. Firstly an overview of the technical approach will be given, with specific details identified for investigation. Specific elements will be set out and discussed.

Part I: Design Process and Concept Development

5.2 Process

The process for the design development is a development on the process initially set out in Chapter 1 (c.f. 1.10; Figure 7). This chapter focuses on the latter part of the process, starting from the design development.

The concept was developed after a thorough analysis of the context and research. Thereafter, an initial design was developed by applying the concept to the building. The design development was influenced by further research and context analysis. From here the process follows an iterative process where the design is reflected with representative approaches (drawings, models). These were refined to develop a building identity, and finally reaching a full technical resolution. Proposed resolutions were tested with simulation in the form of an access and wayfinding audit, and retraced to the design phase for the resolution of possible problems.

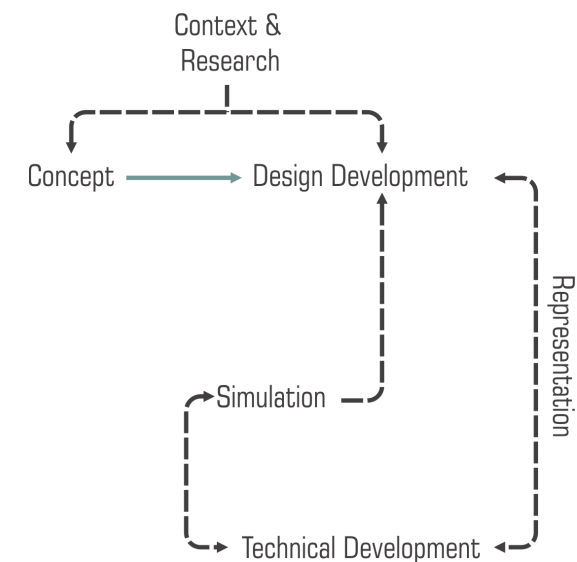


Figure 109 - Diagram of design process (by Author)



Figure 110 - "Frame" created by existing walls, columns, and brise soleil (by Author)



Figure 111 - "Frame" created by existing existing hallway and large window (by Author)



Figure 112 - "Frame" created by existing entrance (by Author)



Figure 113 - "Frame" created by existing floor, soffit and balcony space (by Author)

5.3 Concept

The concept was developed after coming across Porter's definition of "framing";

"... frames contain, order and systemize their contents... framing devices separate the viewer from view, inside from outside, and public from private to crop objects or events from the space beyond... framing becomes building, representing the container in which human activities are played out"

(Porter 2004:65-66).

The idea of framing allows the designer to clearly indicate, emphasise or obscure certain views or activities – ideal when indicating the transition between public and private.

The idea of framing or indicating defined areas of transition is echoed in the research done in Chapter 3, where all sources indicate the importance of clearly legible thresholds and transition spaces (Gehl 1987:63; Newman 1972:63-64).

The building has very well defined and attractive views all around the building (Figure 41- Figure 43). The framing concept will serve to focus users' attention to the views and use the views as an additional design element.

Social housing with interior public spaces

Brise Soleil

The main exterior architectural feature of the building is the brise soleil design, which creates strong horizontal lines on the facade all around the building. The openings in the edging reduces its visual mass when viewed from close to, and within the building itself (Figure 114).

This is also an element that is visible and accessible for all areas of the building, thus can become a repeated design element and informs the design language (Figure 110).

Lima Art Museum

The proposed “framing” of the existing building with minimalistic, highly geometric shapes and spaces, provided an insight into the possibility of using the framing technique in both a vertical and horizontal manner.

The frames can be applied as surface finishes – a darkened border around a doorway, or spatial interventions – walls placed to obscure certain views and activities while emphasising others. These framing elements can double as thresholds – the areas of transition between one space and another. These thresholds can also take different forms, and range from physical barriers such as doors, to suggested or symbolic barriers such as a floor finish change. These framing elements can also be used to emphasise vertical connections, as shown in the Lima Art Museum precedent. As is the case in the project where the verticality experienced on the outside of the building is sought to be reflected on the interior, these vertical connections should be emphasised and explored to a larger degree.



Figure 114 - View of brise soleil from ground level with framing pattern (by Author)

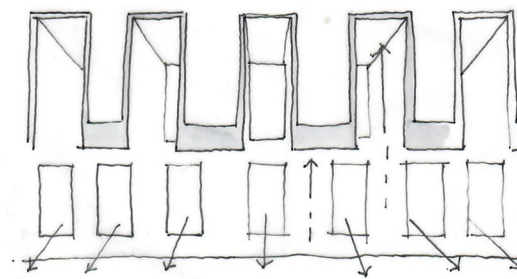


Figure 116 - Diagram of “framing” effect as seen in Lima Art Museum design (by Author)

Lima Art Museum

Location: Lima, Peru

Completed: Conceptual

Architect: Efficiency Lab for Architecture PLLC

Type: Museum, Cultural

Context: Urban, City Centre



Figure 115 - Images of Lima Art Museum (ELA 2016)

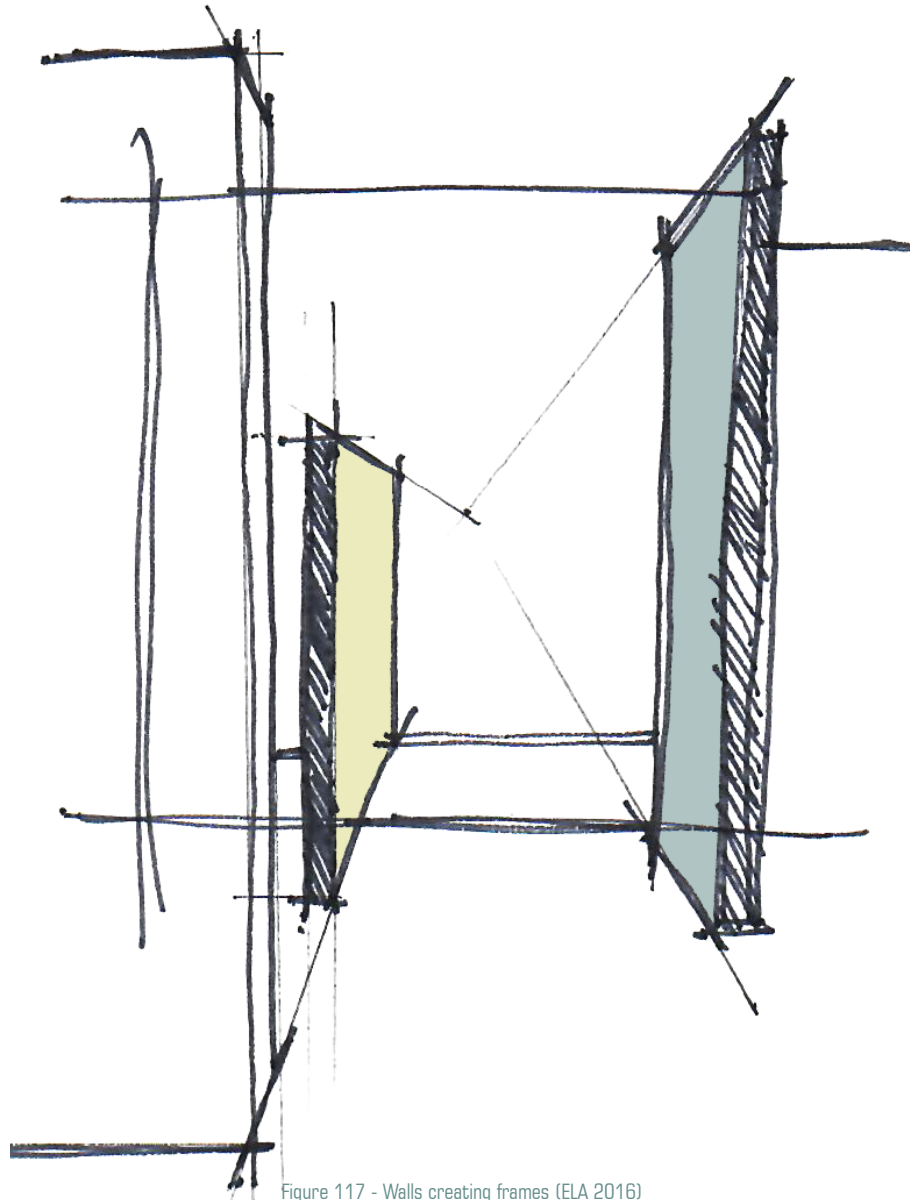


Figure 117 - Walls creating frames (ELA 2016)

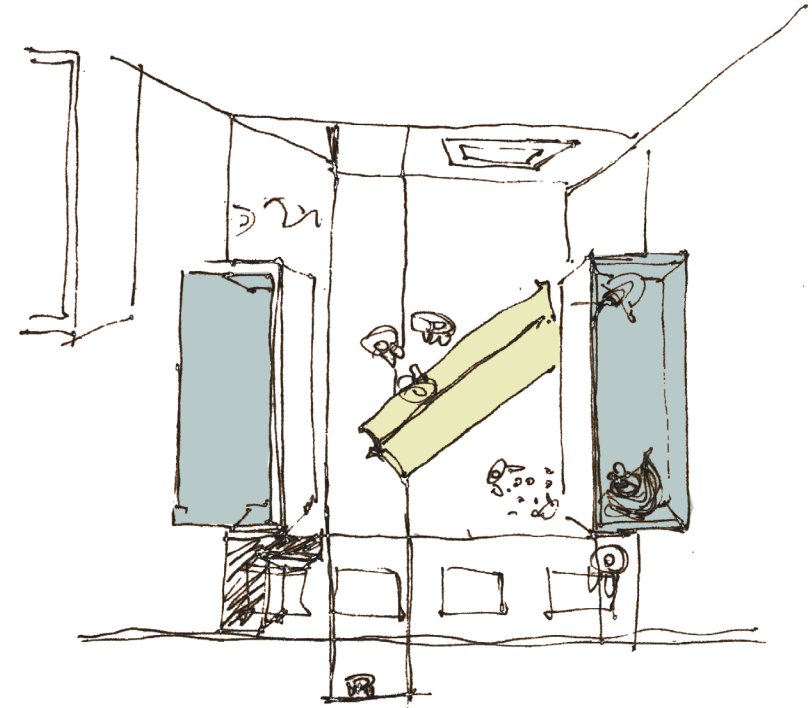


Figure 118 - "Framed" public space (by Author)

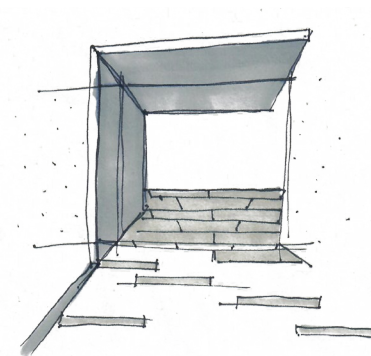


Figure 119 - Symbolic barrier and threshold (by Author)

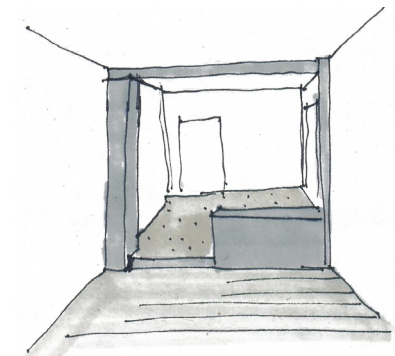


Figure 120 - Physical barrier and threshold (by Author)

Social housing with interior public spaces

Part II: Design Development

5.4 Regulations

Bearing the regulations in mind, the following social spaces and amenities are provided for and integrated in the building itself:



Laundry

There are 3 laundry spaces in the building, each with at least 3 stations each to wash, tumble dry, handwash, fold, iron, and dry the clothing. The laundry spaces would have lockable drying areas for residents to leave their washing for a set amount of time, and would not require them to wait for their clothing to dry all day.



Play Area

There is provision made for both an after school care facility (for primary school children) as well as a daycare centre within the building. An indoor play area is provided for in one of the main public spaces, which is closely linked to the daycare centre. This playarea can be used by the daycare as an indoor play area or by other inhabitants of the building.



Public Spaces

The building has various interior public spaces where residents can meet either formally or informally. Throughout the building, non-programmed general gathering spaces have been spread evenly throughout the building. More dedicated functions, such as the large communal cooking and eating areas, as well as a recreational area for young adults have been placed in dedicated areas on the lower levels of the building.



Daycare Facility

In order to create a more integrated and sustainable community, the project proposes a daycare be introduced into the building. This allows residents to drop off or pick up their children on the way to work or on the way home. Locating the daycare facility inside the building allows other residents of the building to work at the facility, providing an income and job opportunity for elderly or unemployed members of the community.

Regulations

The various regulations consulted in Chapter 2, state that additional amenities apart from the housing are required. In addition to the residential units, related social facilities and amenities must accommodate recreation and other needs related to higher density residential living. The housing must be mindful of its role in social and spatial restructuring and must create social stability. The housing environment is also just as important as its immediate environment. The development encompasses the unit design, common areas such as walkways, staircases, as well as amenities that contribute to the social environment such as play areas, landscaping, parking, laundry and drying areas, and community meeting rooms. The move to a project based approach means the public environment can be made integral to the project design – not merely a consideration left to the end or considered as secondary to the housing itself. Retrofitting should be allowed and planned for.



Study Space

There are various study areas, for use by all residents, spread out through the building. Each study area has a main focus. One space is reserved for a mixture of private study and group sessions, one is purely for social learning and groupwork, and another is integrated into a small library and is reserved for quiet study.

General

For the scope of this project, the spaces that are expected to be used most often by the largest group of people, will be designed in full detail. As there are various applications of similar functions, one of each of the following will be designed; a public, unprogrammed space, a study area, laundry area, as well as general circulation. The main reception area will also be designed in detail, as this is the first contact both users and visitors will have with the building.

In the buildings' grounds, there is a large space available for outdoor facilities (see site plan, Figure 124). These include;

- Open Space
- Outdoor eating area
- Outdoor play areas for all ages
- Outdoor Gym
- Sports Fields
- Community garden
- Outdoor cooking area

5.5 Users

The user is the main informant for this design – being social housing, satisfying the users' needs is of utmost importance. This includes their needs for appropriation, attachment and identity as discussed in Chapter 3 (c.f.).

The regulations and Yeast (the client), have identified specific family types which can receive the Gap Housing subsidies and live in Yeast's developments. They have been identified as a couple without dependants, a couple with dependants, or a single mother with dependants. In order to ensure the development considers each of these family types' needs, hypothetical families have been created in order to create plausible scenarios for the different families, each with members of varying age groups (Figure 121 - Figure 123).

It is thus highly important to consider age groups when designing for these families, especially when integration and the development of positive social relationships is required.

It has been identified that each of these age groups would have different needs in terms of amenities as well as social spaces – due to the varied nature of their social interactions and preferred activities.

Thus the building has been zoned to accommodate the amenities identified from the regulations within the building, while also considering the different age groups that might use these spaces.

Social housing with interior public spaces

Couple with Dependants

Married/stable couple with one or more children

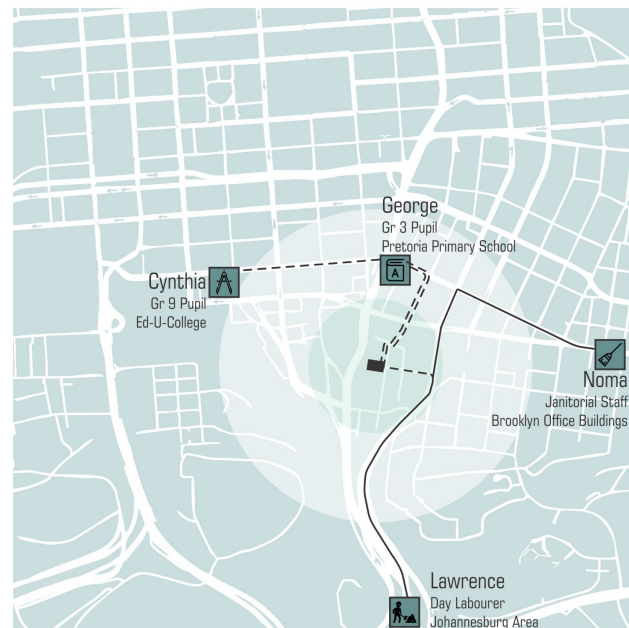
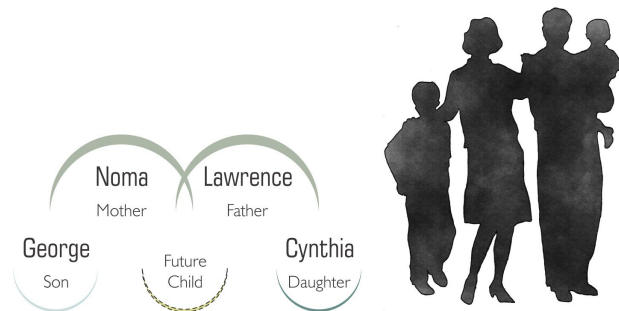


Figure 121 - Couple with dependants (by Author)

Couple without Dependants

Married/stable couple with no children

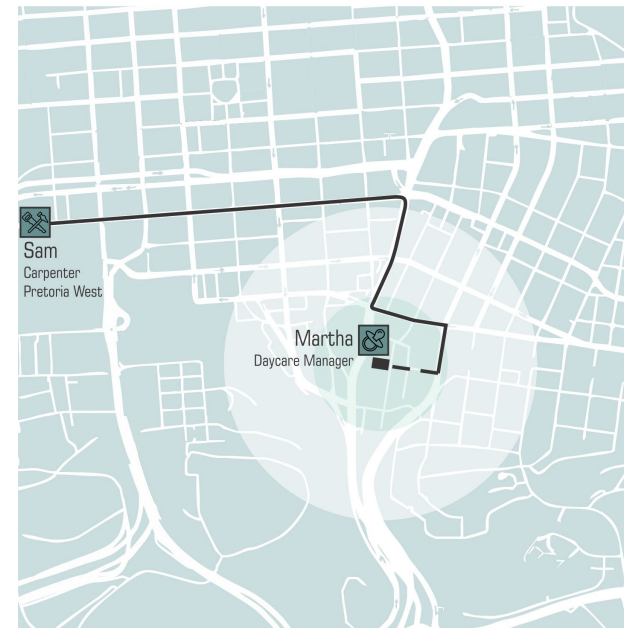


Figure 122 - Couple without dependants (by Author)

Single with Dependants

Single mother with more than 1 child and/or other dependants

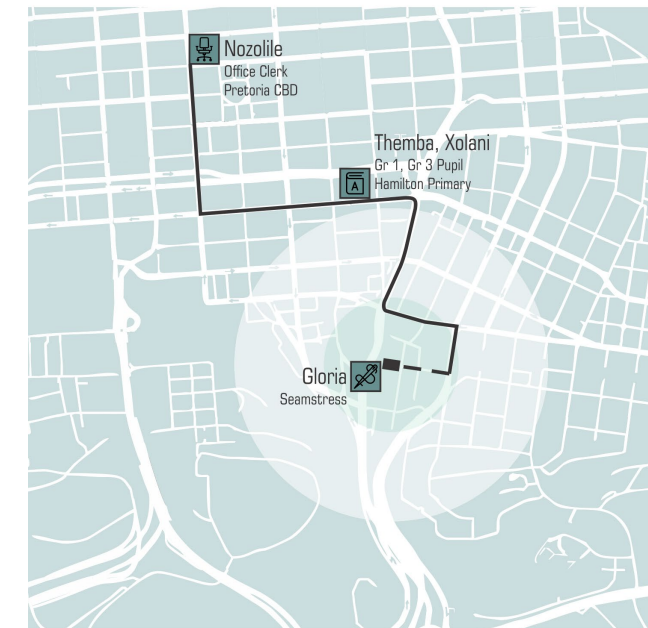
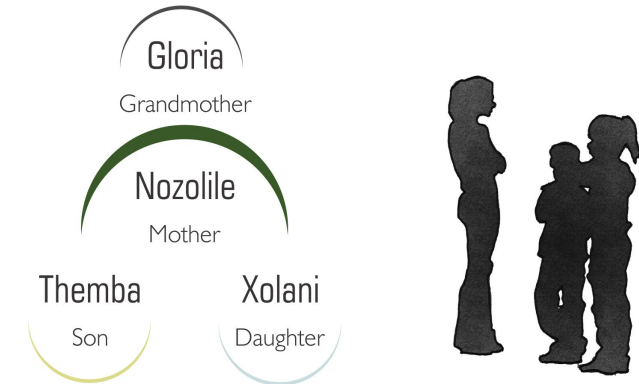
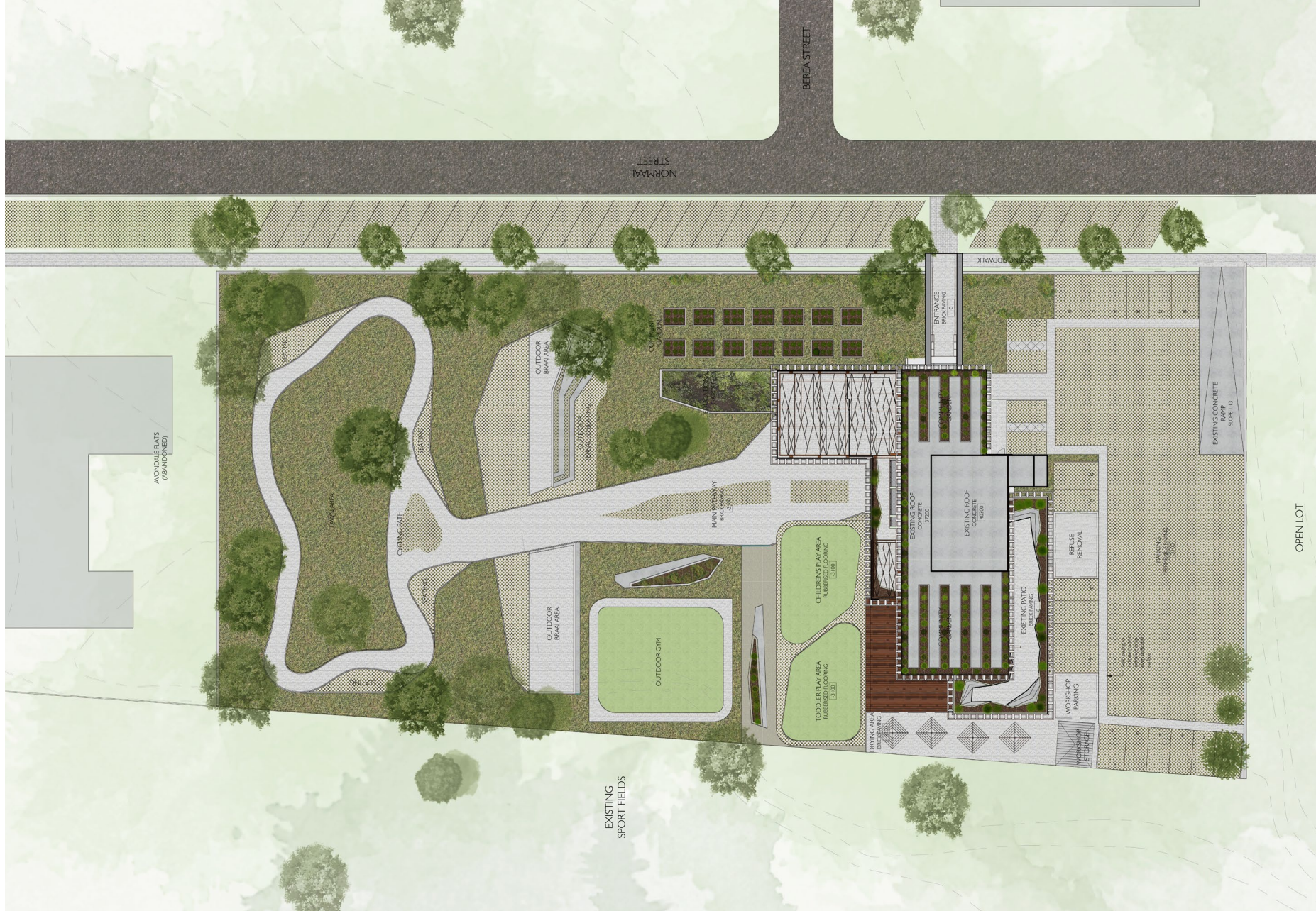


Figure 123 - Single with dependants (by Author)



1/1 Site Plan
Not to scale

Figure 124 - Site Plan (by Author)

Social housing with interior public spaces

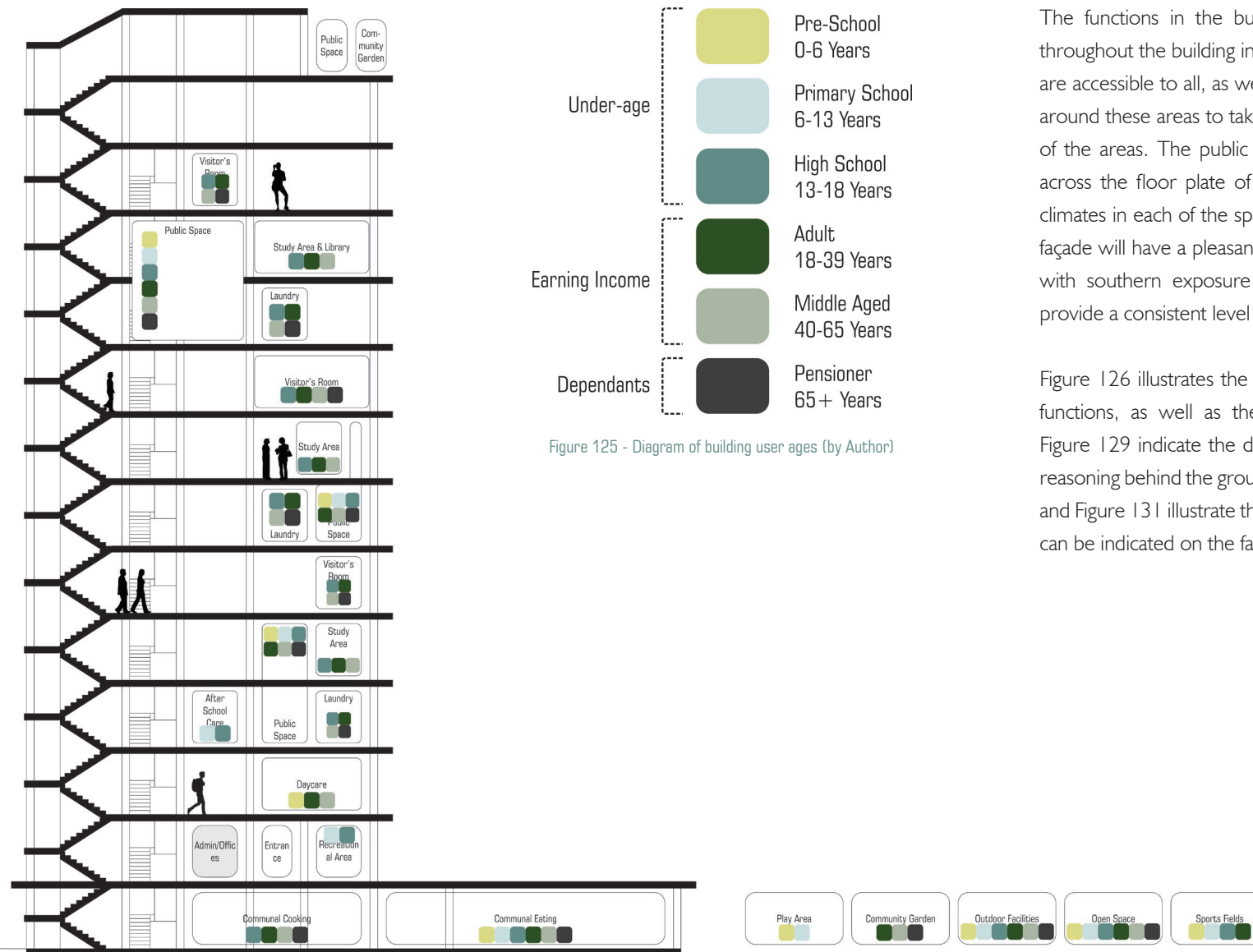


Figure 125 - Diagram of building user ages (by Author)

Figure 126 - Diagram of building zoning (by Author)

The functions in the building have been spread vertically throughout the building in order to provide public spaces that are accessible to all, as well as to create smaller communities around these areas to take responsibility for the maintenance of the areas. The public spaces have also been spread out across the floor plate of the building, allowing for different climates in each of the spaces. Public spaces on the northern façade will have a pleasant environment all year, where areas with southern exposure will be pleasant in summer, and provide a consistent level of lighting throughout the day.

Figure 126 illustrates the vertical arrangement of the various functions, as well as their intended users. Figure 127 to Figure 129 indicate the development of the zoning, and the reasoning behind the grouping of specific functions. Figure 130 and Figure 131 illustrate the investigation of how the amenities can be indicated on the façade of the building.

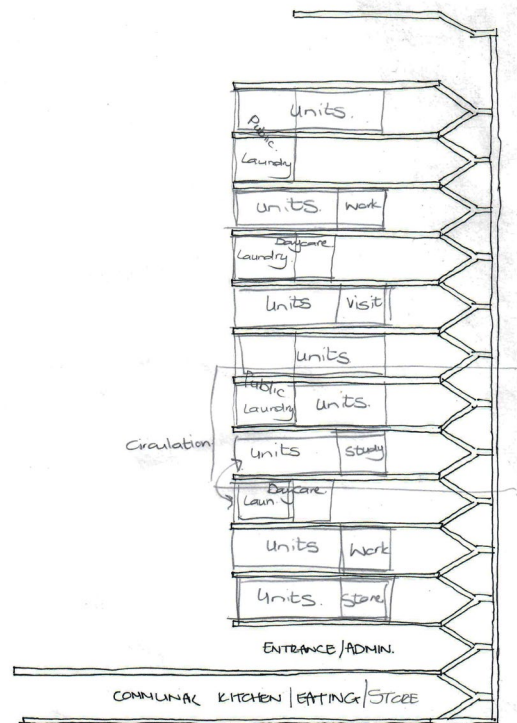


Figure 127 - Process drawing of zoning (by Author)

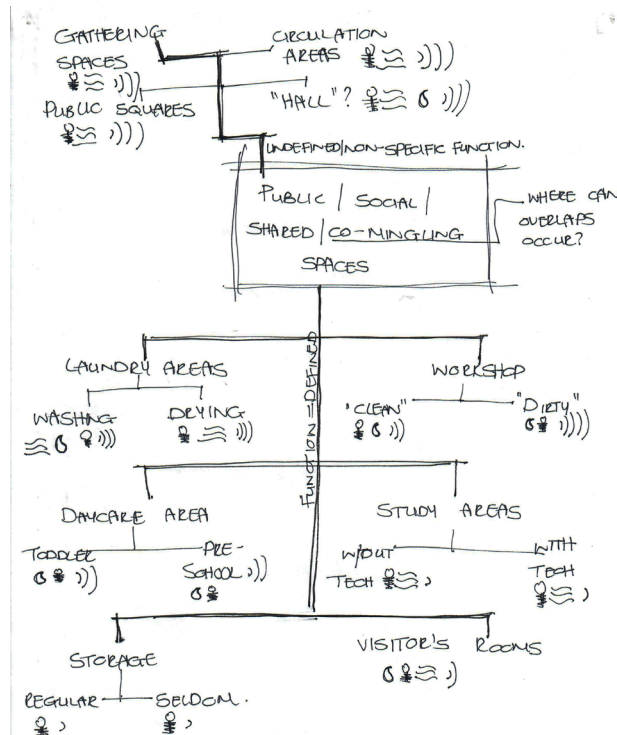


Figure 128 - Analysis of proposed functions, based on electrical, auditory and plumbing requirements (by Author)

PEOPLE DRAW MORE PEOPLE...
⇒ FUNCTIONAL SPACE NEXT TO UNPROGRAMMED

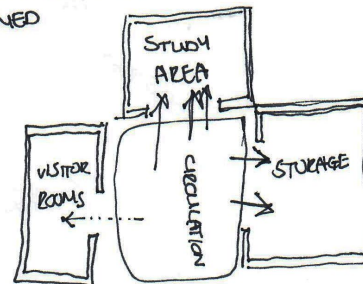


Figure 129 - Proposed functions to be grouped for mutual benefit (by Author)



Figure 130 - Zoning and facade development (by Author)

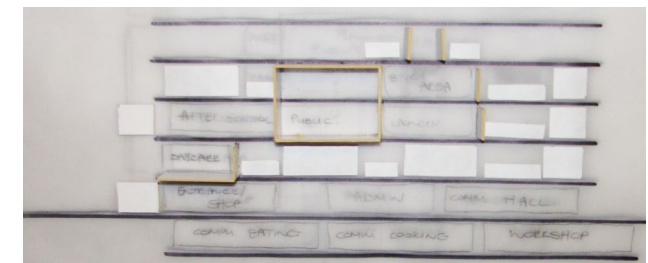


Figure 131 - Detail of zoning development (by Author)

Social housing with interior public spaces

The interior public spaces have been grouped in order to create mutually beneficial areas of interest, and to be able to effectively make use of the spatial intervention needed to create each of these.

Around the public spaces a laundry space will lead out directly from the public spaces in order to create constant activity and provide users with an excuse to spend time in or go to these spaces. On the level just above the public space, the study area will look out over the public space as a constant surveillance, also providing users with the feeling of being a part of the activity without being influenced or distracted by said activity.

The three different public spaces all use the same arrangement in order to provide consistency between all the public spaces, to ease wayfinding and navigation. A resident who regularly uses a specific laundry space, but must on occasion use another laundry space, will easily find the alternative laundry space by navigating to the public space and be safe in the presumption that the laundry space is directly linked to the public space. A child can also tell a parent that they will use the study space of a specific public space, and the parent will know how to find the correct study space.

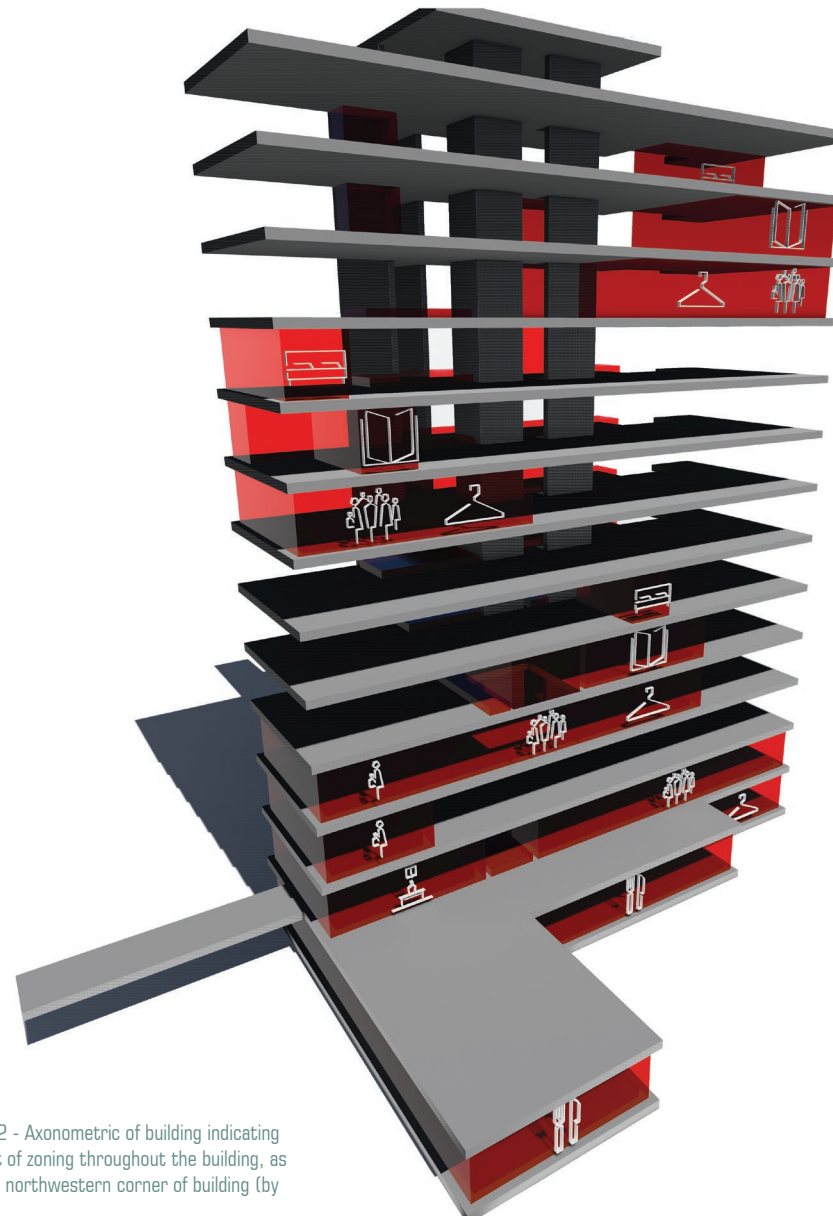
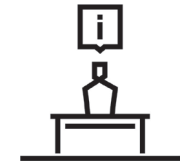


Figure 132 - Axonometric of building indicating placement of zoning throughout the building, as seen from northwestern corner of building (by Author)



Reception/Lobby



Public Space



Laundry



Study Space



Communal Eating / Cooking



Visitor's Room



Figure 133 - Photograph of public space perspex model, showing norther-eastern facade (by AE Hejdenrych)

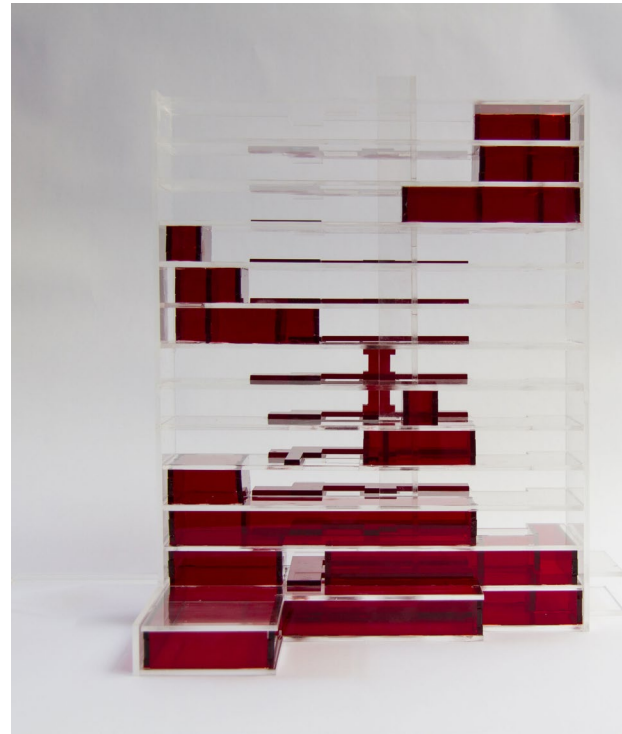


Figure 134 - Photograph of public space perspex model, showing northern facade (by AE Hejdenrych)

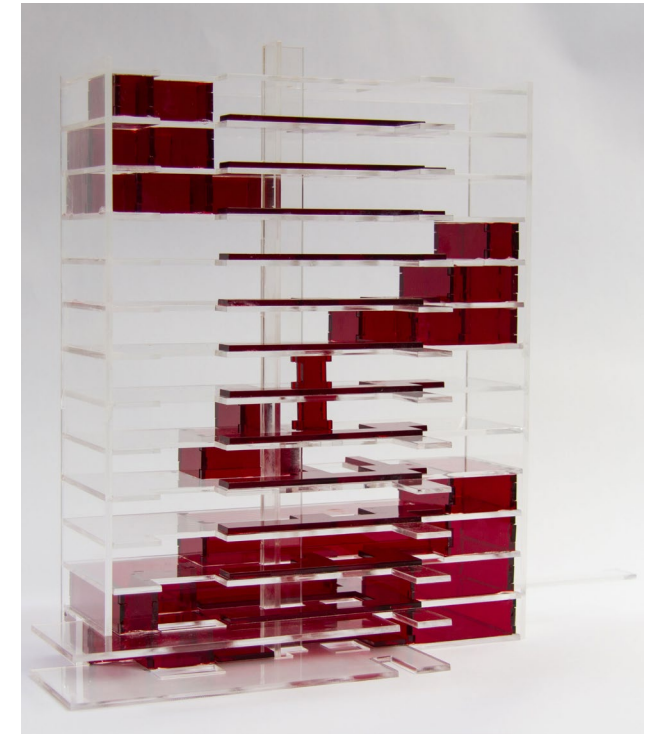


Figure 135 - Photograph of public space perspex model, showing southern facade, indicating circulation corridors (by AE Hejdenrych)

Social housing with interior public spaces

5.6 Building Verticality

5.6.1 Verticality

The building is the highest in the immediate context. The vertical green lines on the facade serve to emphasize the height of the building. The verticality of the building as a whole is not reflected on the interior at present, and provides a design opportunity.

The interpretation of the verticality of the building has been applied in two areas. Firstly, it is evident in the proposed new public spaces. The public spaces are double volumes, created by cutting away sections of the floor slab in order to create a varied spatial experience inside the building (Figure 134).

Smaller openings have been cut elsewhere to open strategic sight lines between different levels and public functions, as an indication from one floor to another of the functions above and below the floor the user may find themselves on.

Sendai Mediatheque

Ito's method for creating visual connections throughout the building - see-through columns - is intriguing and was explored within this project in order to enhance the exterior of the verticality to the interior of the building.

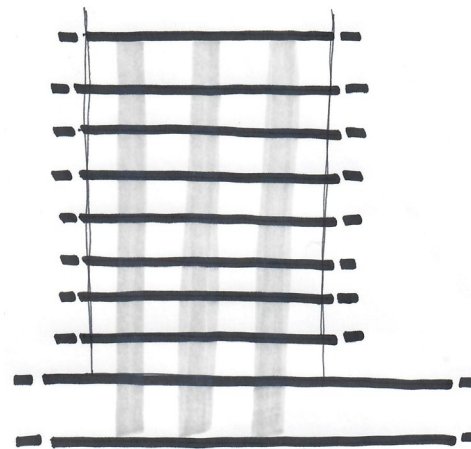
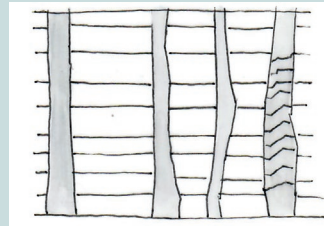


Figure 136 - Axonometric of building indicating zoning and connection between levels (by Author)

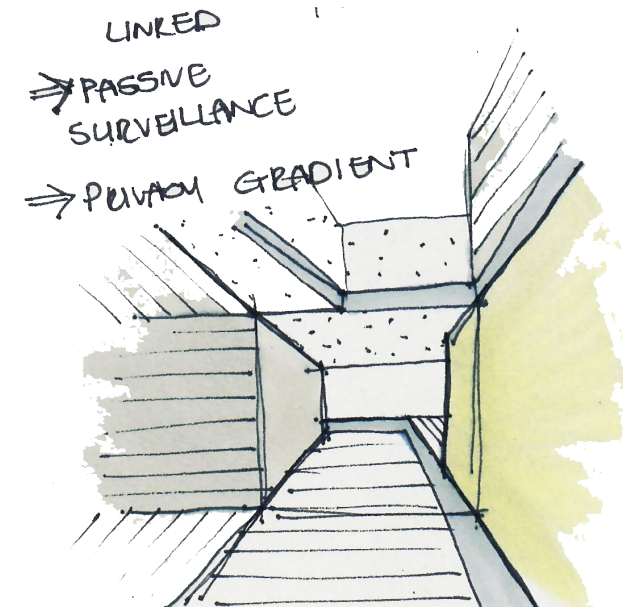


Figure 137 - Development of the visual connection between levels (by Author)

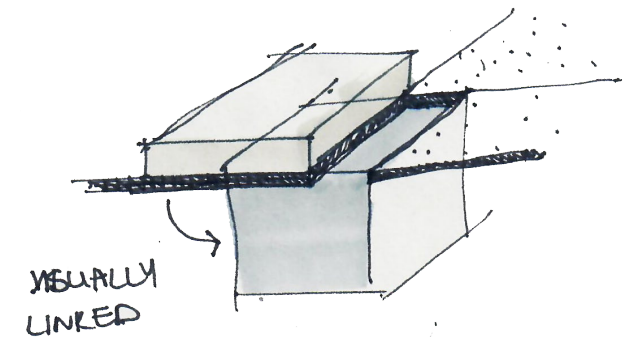


Figure 138 - Visual connection between primary and secondary functions (by Author)

5.6.2 Building Tenant Layout

Figure 136 to Figure 149 illustrate the proposed tenant layouts of the various floors, as well as the relevant double volume spaces.

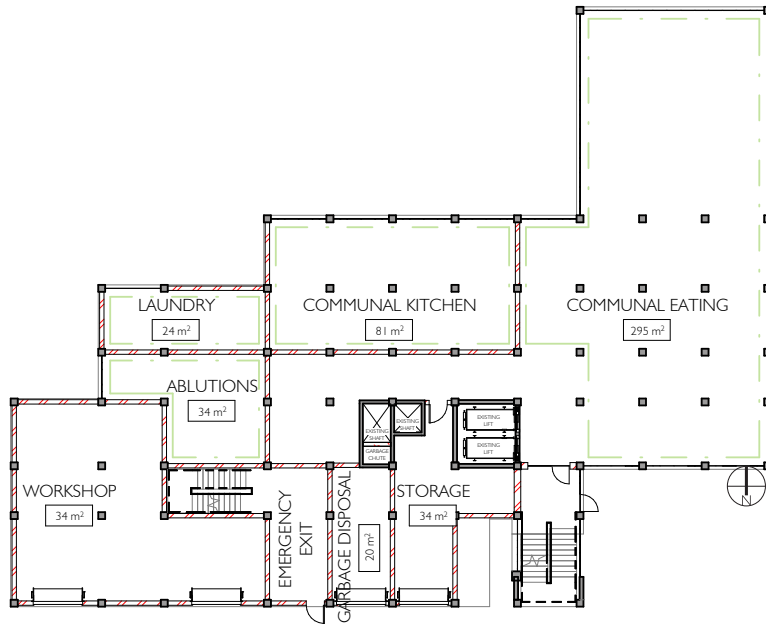


Figure 139 - Lower Ground Floor (by Author)

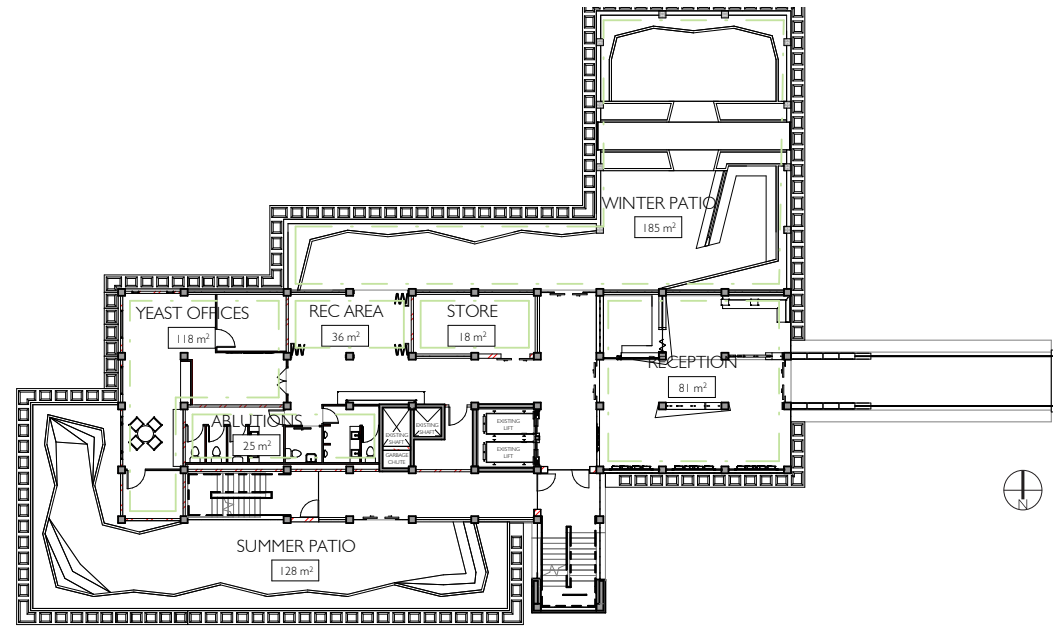


Figure 140 - Ground Floor (by Author)

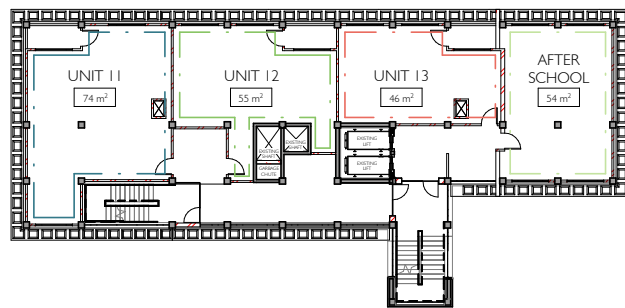


Figure 142 - First Floor (by Author)

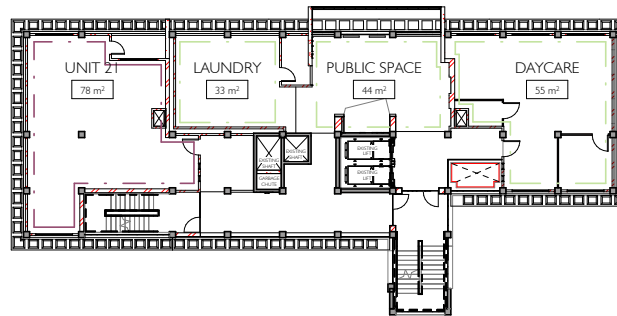


Figure 141 - Second Floor (by Author)

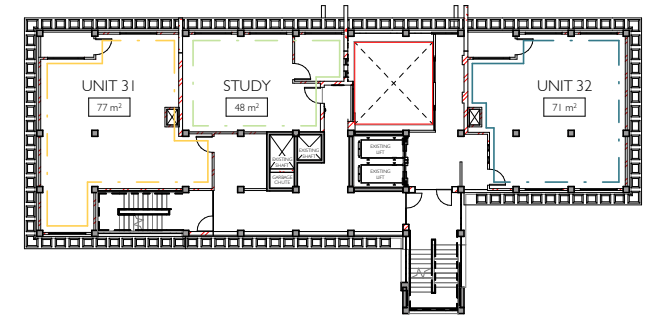


Figure 143 - Third Floor (by Author)

Social housing with interior public spaces

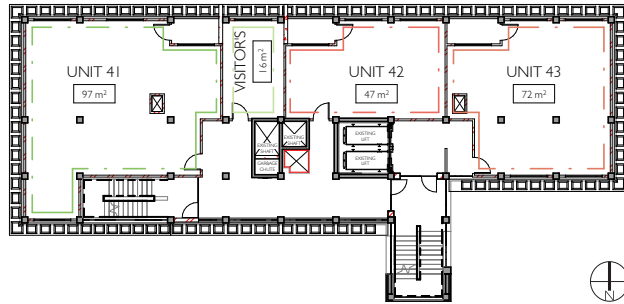


Figure 144 - Fourth Floor (by Author)

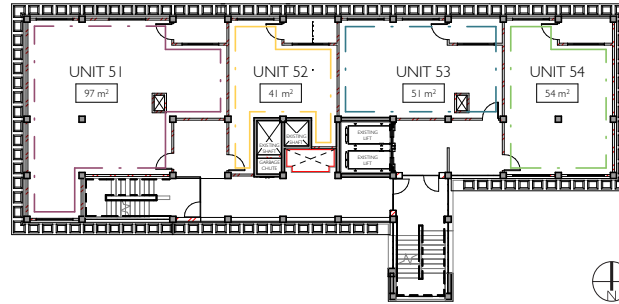


Figure 145 - Fifth Floor (by Author)

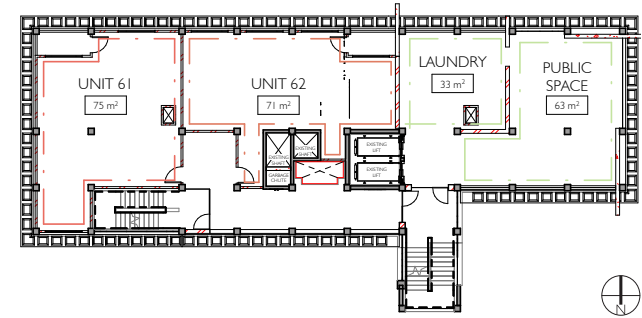


Figure 146 - Sixth Floor (by Author)

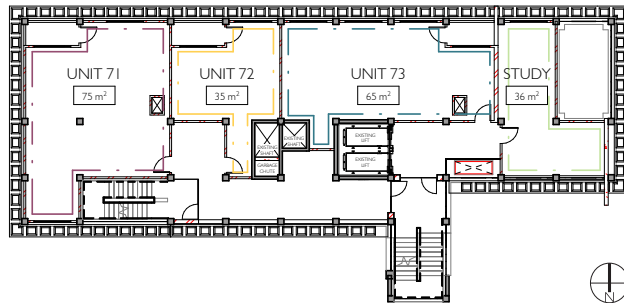


Figure 147 - Seventh Floor (by Author)

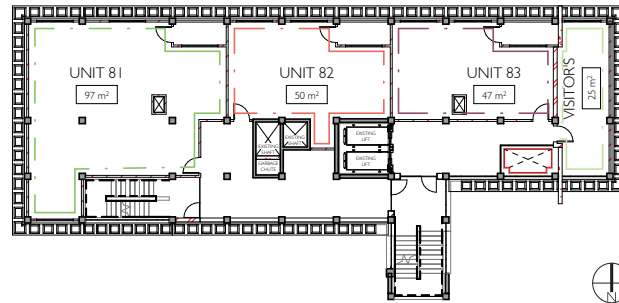


Figure 148 - Eighth Floor (by Author)

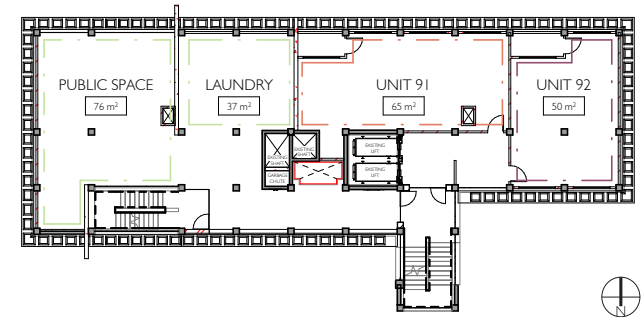


Figure 149 - Ninth Floor (by Author)

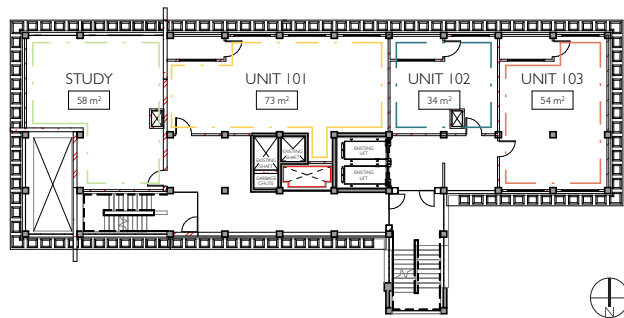


Figure 150 - Tenth Floor (by Author)

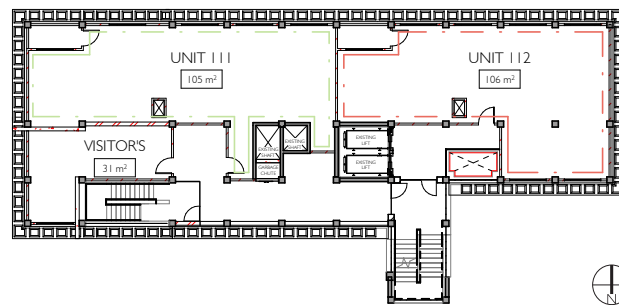


Figure 151 - Eleventh Floor (by Author)

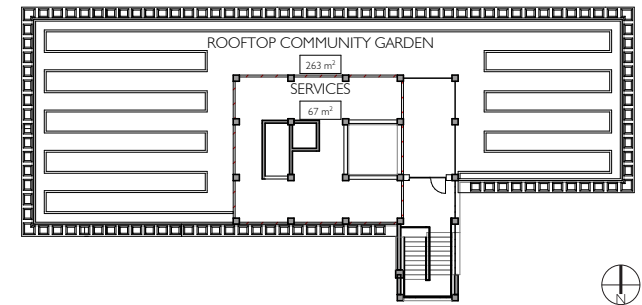


Figure 152 - Twelfth Floor (by Author)

5.7 Materiality

The materials in the building have the quality of having a smooth uninterrupted surface when viewed from far away, but the finely grained texture is revealed when the material is viewed from a close distance (Figure 138-Figure 141). The existing materials are very cold, hard, and robust, and give the building a highly institutional and clinical feeling. Although this fits with the international style architectural approach (), it does not encourage feelings of home and warmth.

The initial design proposal focused on the introduction of materials that accommodate the robust nature of the building and criteria for the building's new intervention, with textures, colours, and material connotations that evoke a feeling of warmth. The initial material palette proposed a high quantity of red clay brick, bright saturated colours, timber wall and floor finishes, and mosaic detail elements, as seen in Figure 136 and Figure 137. This material palette, although much warmer than the existing building, did not respond to the existing building's character and history. Some materials such as the timber flooring and variety of mosaics, will not respond to the high traffic and intensity of use that will be experienced in this building. A revision was necessary, and is described in c.f. 5.4.1.

"The possibilities are literally limitless, both in terms of the materials and products themselves and of the manufacturers and suppliers offering variants of them. To take control of that choice, and to avoid being overwhelmed by it, it helps to identify the qualities required of any particular material..." (Coles & House 2007:88).

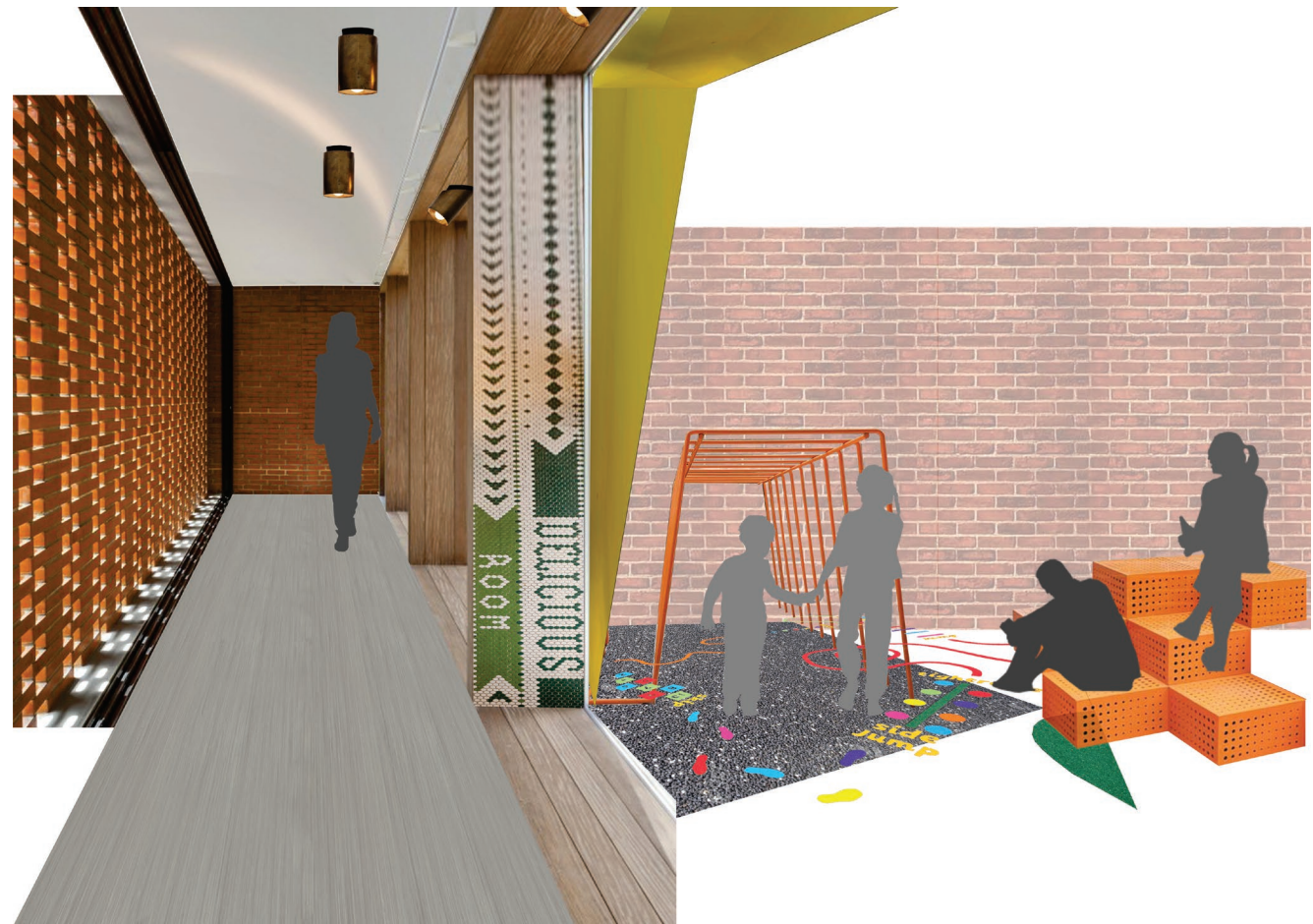


Figure 153 - Initial material and mood palette for public spaces (by Author)

Social housing with interior public spaces



Figure 154 - Initial material section (by Author)



Figure 155 - Broken glass and material on site (by Author)



Figure 156 - Wired glass and green cladding panels (by Author)



Figure 157 - Close-up view of wired glass in main stairway (by Author)



Figure 158 - Entrance railing and paving texture (by Author)



Figure 159 - Brise soleil, existing treatment of columns (by Author)

5.8 Building Grid

The building's structure is made up of a concrete beam and column structure, which reflects a strong grid. This grid was reflected and refined in the façade treatment, in the form of small panels in white and a light green colour, to create strong vertical lines on the façade to balance the strong horizontal lines of the brise soleil.

This grid has been analysed and re-interpreted to create a design pattern and motif that is used throughout the building's public spaces in an effort to develop a strong design language that is visible throughout. The pattern/grid will mostly be used in a ceiling element, as it will be out of reach for regular contact of the residents, and will therefore be easier to maintain.

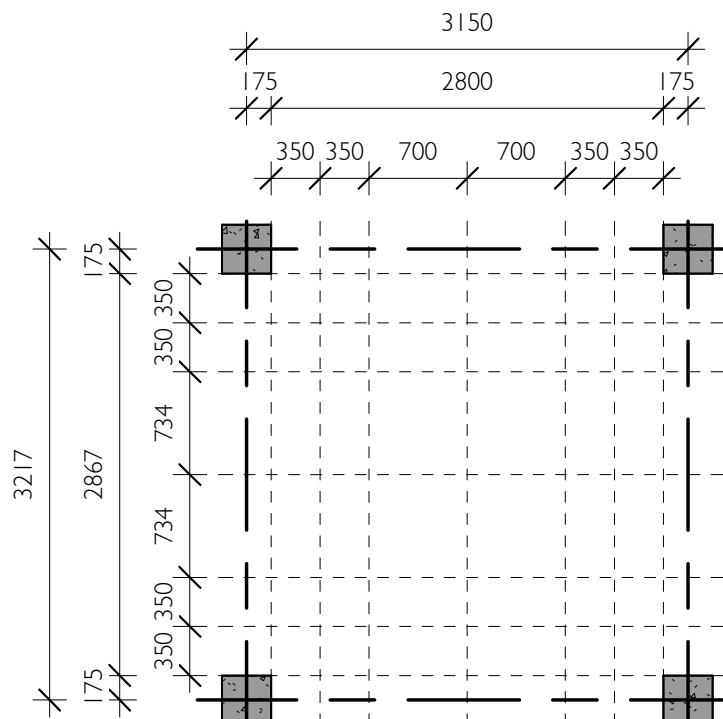


Figure 160 - Existing building and facade grid as seen on plan (by Author)

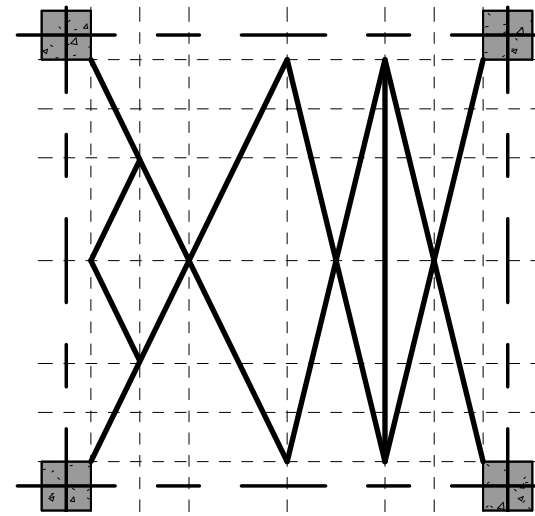


Figure 161 - Possible arrangements of using diagonal lines to interpret the grid (by Author)

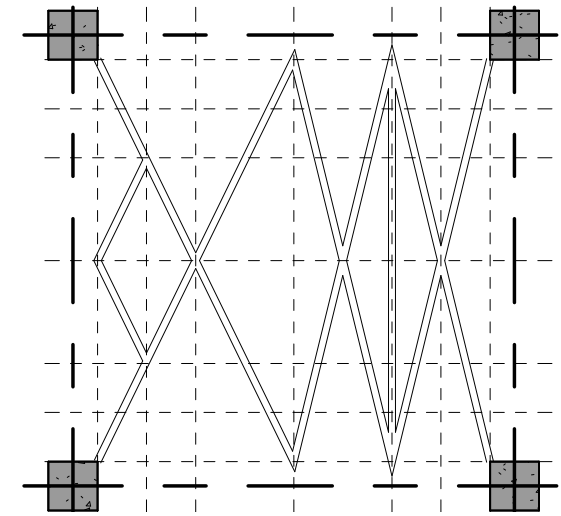


Figure 162 - Thickness applied to proposed grid, as would be experienced in the design (by Author)

Social housing with interior public spaces

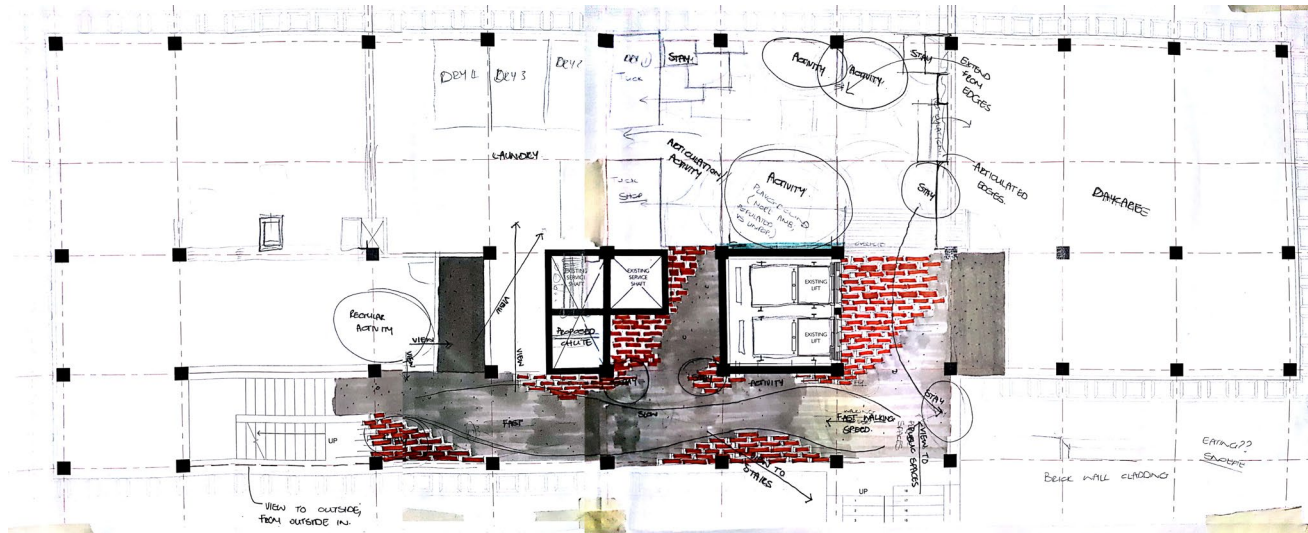


Figure 163 - Development of zoning of public spaces (by Author)

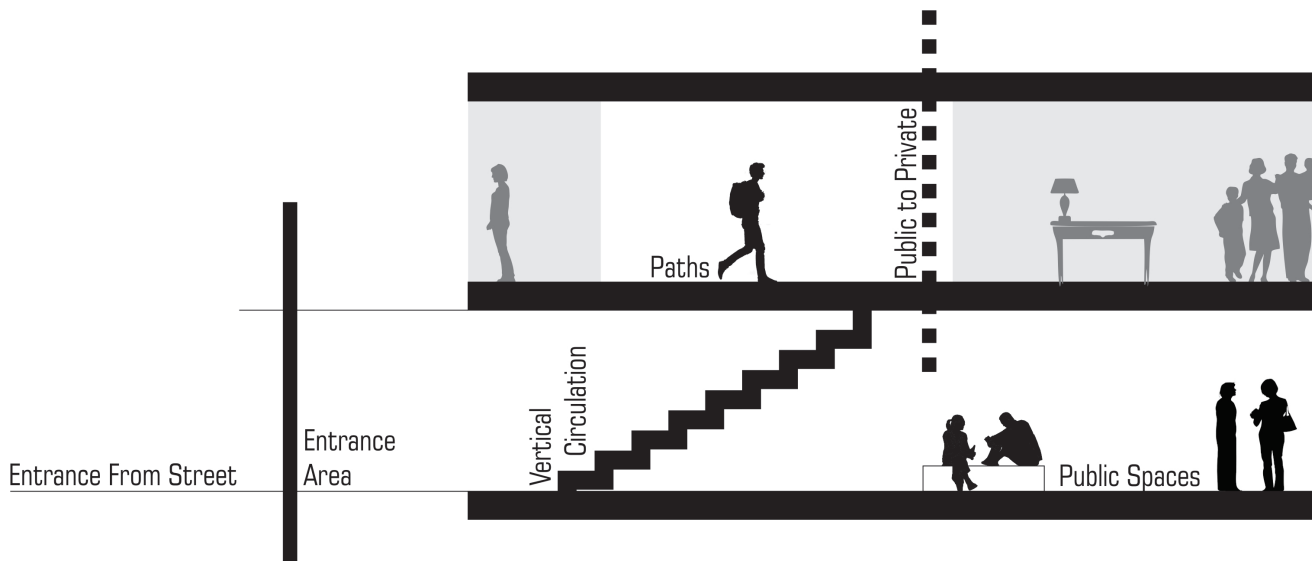


Figure 164 - Diagram of guideline focus areas (by Author)

5.9 Research

The research has given a strong base for the development of specific guidelines and approaches to the spatial design of the building.

5.9.1 Interior Public Spaces

The project's intention was to develop a new typology of public spaces in the interior. The theoretical investigation has led to the term interior public spaces. The term defines the specific role, intentions, ownership, level of public access, and functions of these spaces. With this information known, the guidelines for achieving these goals and intentions can be developed.

5.9.2 Guidelines

The investigation into the existing public space theories has provided a significant insight in how various authors and research methods have similar and corresponding results in terms of what is defined as successful public spaces. The three sources have been used in conjunction with one another as the sources refer to all areas of investigation. The guidelines have been divided into the entrance, entrance area, vertical circulation, paths, the transition of public to private space, and public spaces (c.f.). These guidelines have been chosen to not only provide an approach to the articulation of the physical space, but also to understand how users will utilize and appropriate the spaces and what they need there.

The guidelines are interpreted and developed by applying them to the design. The guidelines are enriched by the choice

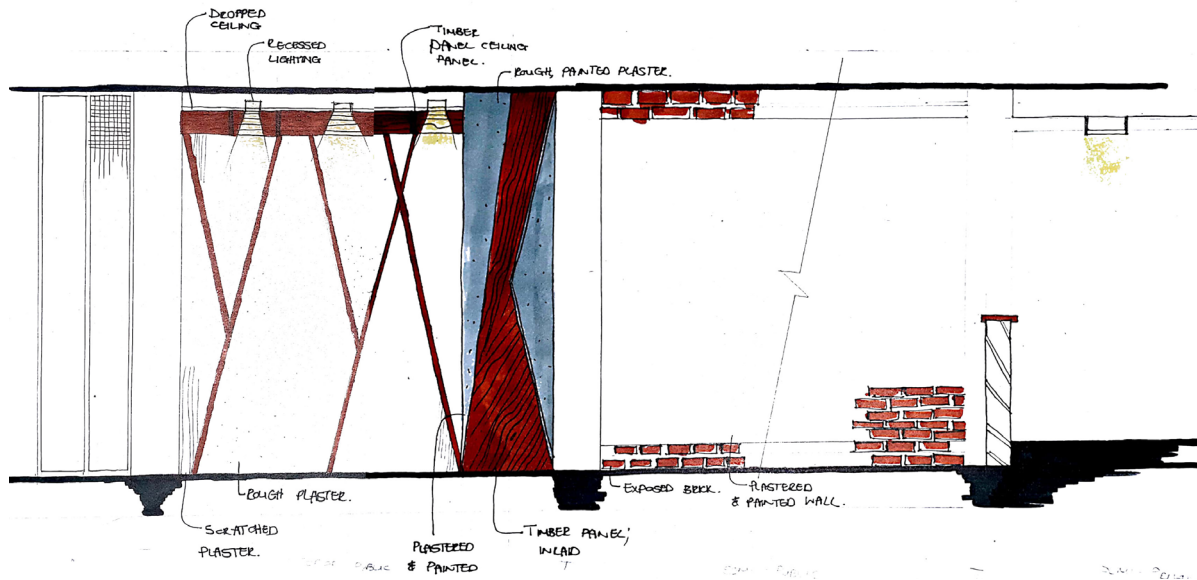


Figure 165 - Development of transitions, using symbolic barriers (by Author)

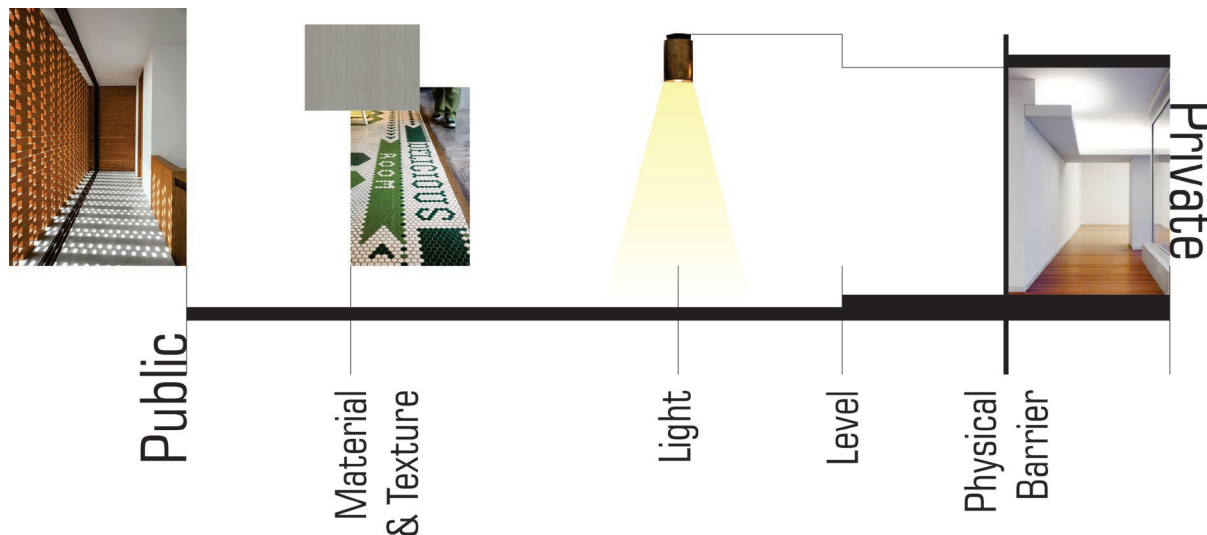


Figure 166 - Iteration of transitions, using symbolic barriers (by Author)

of materials and their applications.

With the guidelines in mind, a standard approach to the transition of public to private began to develop. The series of spaces as identified by the guidelines each required a relatively standard approach that could be applied in various areas of the building where similar transitions occur.

The current proposal is not flexible or defined enough for application throughout the whole building. The building's identity is not strong or recognisable to create a lasting impression, or to have the residents' actions to appropriate the spaces contrast sufficiently.

5.10 Building Identity

The building's identity is one that encourages the individuality of its inhabitants by providing a vibrant backdrop to their daily lives and activities – psychologically, visually, and spatially.

5.10.1 Proposal

The initial materials were chosen to reflect the robust nature of the intervention. The materials – timber, brick, and bright colours were chosen to contrast with the initial building's clinical, impersonal fit-out. However, the initial material palette would not allow the users' own appropriation to contrast with the building identity, as it contained too much detail and colour variation.

The public spaces are characterised by an urban aesthetic, with a spatial focus on framing – either views or other human

Social housing with interior public spaces

activity. The urban aesthetic is used to enhance the perception that shared areas are highly public, and to make use of the existing perception of the activities and life usually found in an urban setting.

The existing building's design and colour palette strongly reflects its history as an institutional building with hard, robust, and cold materials and strict grid structure and the only "ornament" found in the brise soleil. To create a more vibrant environment, the material and colour palette will introduce warmer elements and colours, while still remaining neutral. This is done in the selection of clay facebrick, for its warm tone and regular texture. The introduction of a natural material such as a stained pine timber contrasts strongly with the cold and robust man-made materials in the current building. In a consideration of the durability, the use of painted and plaster is proposed. To link the possible hard material of the plaster, the texture is considered and decided to make use of various texturing techniques, both to soften the visual texture of the material, but also to define and differentiate the different public spaces.

The existing building's accent colour and grid structure (both in façade and column layout) is repeated and re-interpreted in the design – taking note of and remembering the old, while still providing a new and fresh interpretation and image to the intervention. The accent colour – a mint green, is applied most visibly in the public spaces and circulation areas leading to these areas, and in focal areas such as signage leading to the public spaces.

The neutral material palette allows for the user's own appropriated spaces to be easily recognisable as different to the main building identity. The main design elements that indicate and characterise the public spaces are less visible in the more private areas of the building, allowing the appropriated spaces and reflected identities of individual residents to take precedence. Residents can appropriate the entrance areas in front of their units, both by deciding what to display there, and by selecting from a pre-selected range of unit colours, paint their front walls.

The intangible attachment to the building and functional identity will be achieved through the various types of public spaces and amenities provided to the users, which will encourage community involvement. Allowing users to appropriate their near-home space gives dedicated ownership to users. Through the theoretical guidelines, accessing the public spaces will be a gradual and almost unconscious act, linking the public spaces and more private areas in their accessibility and community focus. This would allow the user's ownership to extend to the community and shared spaces.

The building's name has been chosen as "KwilaliCity". "Kwilali", in both Xhosa and Zulu, means "village" or "in the village". "City" is taken to mean a place of situation characterized by a specified attribute.

The name has been chosen to reflect the communal spirit of the building, as well as to identify the building with a strong, unique name that is easy to remember and stands out from

the crowd.

The specific materials used will form part of the technical investigation, as the guidelines are refined and the wayfinding elements are developed in more detail.

Through the application of the theoretical guidelines, the transition between public and private spaces can be enhanced spatially and physically. This led to the development of a series of additional guidelines. Elements such as material, texture, lighting, and level changes combined with physical barriers in order to both grade the transition and indicate the changes spatially.

KwilaliCity

kwilali n. (translated from Xhosa & Zulu)

English: Village

1. A small town in the country
2. The people who live in a village

city n.

\`si-te\`

1. A large town
2. A place or situation characterized by a specified attribute (informal)

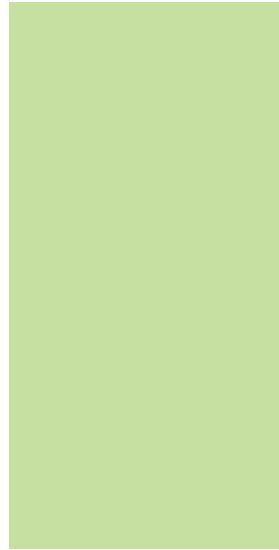


Figure 167 - Revised material palette reflecting the refined building identity (by Author)

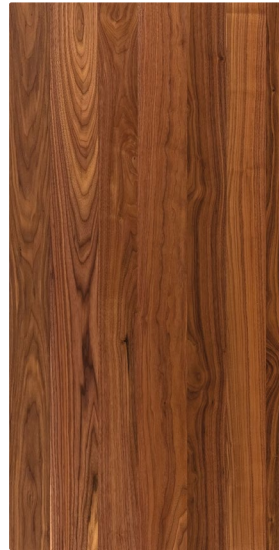
Social housing with interior public spaces



New screed
Supplier: Cemcrete
Product: CreteCote
Finish: Polished
Colour: Grey
Thickness: 15 mm



Accent Paint Colour
Supplier: Plascon
Product: Determined by use
Colour: Aloe Vera Leaf
Code: G2-B2-1



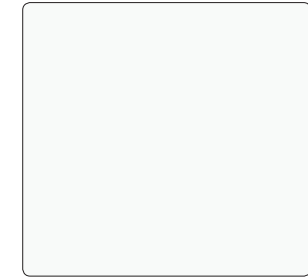
Feature element timber
Type: Walnut
Sealant: Clear



New wired glass glazing
Supplier: National Glass Distribution
Type: Laminated Georgian Wire Plate Clear Glass
Rating: 120 Minutes



Neutral Colour 1
Supplier: Plascon
Product: Determined by use
Colour: Fynbos Leaf
Code: 57



Neutral Colour 1
Supplier: Plascon
Product: Determined by use
Colour: To march Duram Blyde Falls
Code: E212-1

Unit Appropriation Colours



Supplier: Plascon
Colour: Summer Blush
Code: R2-C1-2



Supplier: Plascon
Colour: Chakalaka
Code: R7-B1-2



Supplier: Plascon
Colour: Alex
Code: O4-B1-2



Supplier: Plascon
Colour: Panorama Lights
Code: Y4-A1-2



Supplier: Plascon
Colour: Citrus Splash
Code: G1-A1-2



Supplier: Plascon
Colour: Atlantis Cliff
Code: B2-C1-3



Wayfinding Tile
Supplier: TileAfrica
Type: Mosaic sheet
Product: Byzance Stagger Mosaic
Colour: Bianco (T0027182)
Size (Sheet): 300x300 mm



Carpet
Supplier: Van Dyck Floors
Type: Woven vinyl carpet
Product: Athena Klassikos
Colour: Burlap
Size (Sheet): 300x300 mm



Proposed brick for intervention
Supplier: SABrix
Type: Merlot Non Face Brick Extra
Size: 220x108x70 mm



Anodised Aluminium Frames
Supplier: Hillaldam
Colour: Black

5.11 Facade

The building's existing façade (both in design and cladding) provides a strong visual impact on the skyline due to the low surrounding buildings. This provides an opportunity for the façade to reflect the interior programme and approach on the exterior of the building. Further inspiration was taken from the Roy and Diana Vagelos Education Center's reflection of the larger public spaces inside the building on its façade.

In keeping with the concept of the framing devices, an extended wall element was introduced to emphasise the public spaces. By cantilevering the wall beyond the existing façade line makes the wall visible from larger distances away, and provides a visual connection for the users from the street or other approaches to the building. Combining the protruding walls with recessed private balconies ensure the emphasis falls on the public spaces and maintains the visual privacy of the residents and their units.

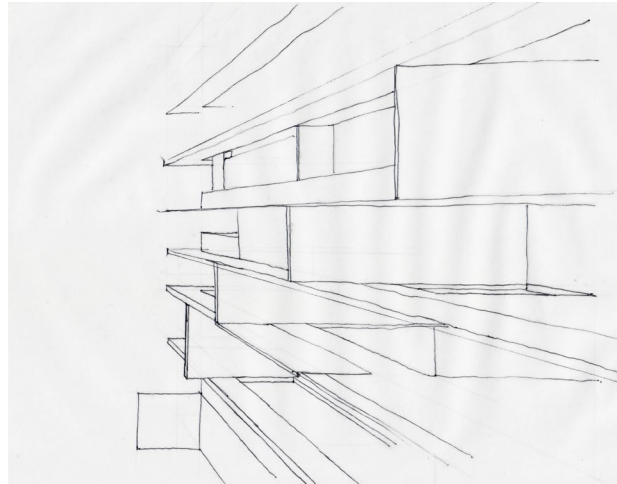


Figure 168 - Initial proposal for facade treatment (by Author)

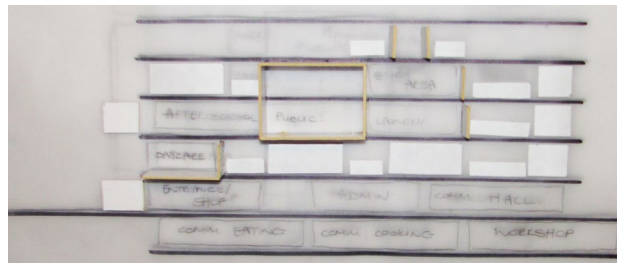


Figure 169 - Facade treatment as developed from zoning (by Author)

Roy & Diana Vagelos Education Centre

Location: New York, USA

Completed: 2016

Architect: Diller Scofidio + Renfro

Type: Medical Education Center

Context: Urban, City Centre

The building's clear definition of more public versus more private and intimate spaces both on the interior and exterior of the building provides a successful example of articulating the life inside the building on the facade. This allows those on the outside of the building to also experience and be intrigued by the spatial experience within.



Social housing with interior public spaces

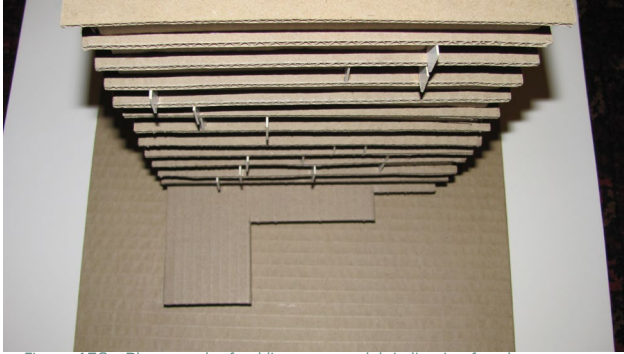


Figure 170 - Photograph of public space model, indicating facade treatment extending beyond existing facade line (by Author)

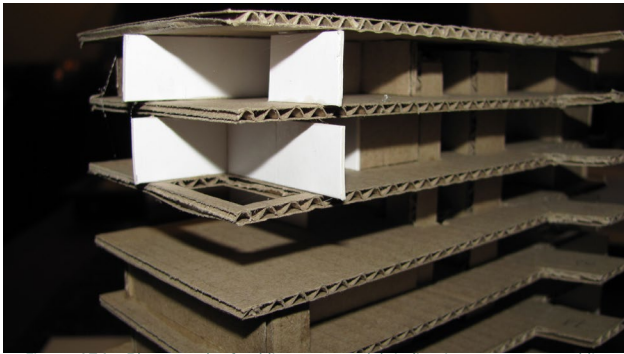


Figure 171 - Photograph of public space model, indicating uppermost public space definition (by Author)



Figure 172 - Photograph of public space model, indicating mid-level public space definition (by Author)

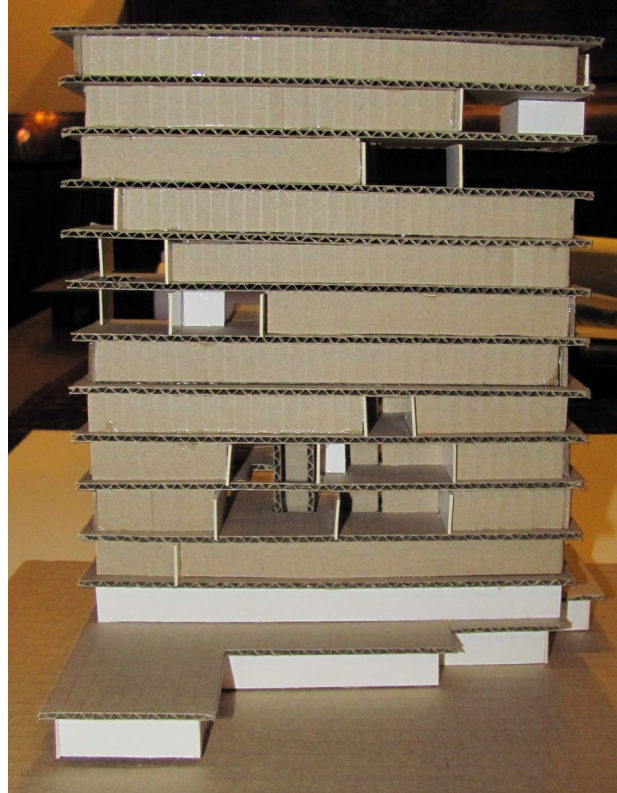


Figure 173 - Northern elevation showing permeability of facade in public spaces (by Author)



Figure 174 - Photograph of public space model, indicating focus area public space definition on northern facade (by Author)



Figure 175 - Photograph of public space model, showing southern facade with circulation and public space definition (by Author)

5.11.1 Southern Façade

The southern façade shows the prominence of the main staircase quite clearly, as well as how visually accessible this space is from the exterior. The more open nature of the public spaces as well as the overhanging facade walls can also be seen, with the material contrast emphasising these elements.



Figure 176 - Southern Elevation

Social housing with interior public spaces



Figure 177 - Southern Elevation

5.11.2 Northern Façade

The northern façade shows the contrast between the public spaces, glazing and visual height, visible from the exterior as well as the interior. The overhanging façade walls can be seen here, as well as the thickening of some columns where the walls protrude perpendicularly to the angle of view.



Figure 178 - Initial proposal for reception design (by Author)

5.12 Entrance

The entrance area design was highly influenced by the guidelines developed from the theories consulted. This is the first public space that visitors and inhabitants encounter. This allows for full expression of the building's identity, as described above. It is also important that the space allows for some expression of the inhabitants' identity in order to create an opportunity for appropriation.

The entrance area begins to establish a building identity in the repetition of the original façade colour and the re-introduction of the cladding grid.

The first proposal (Figure 175) of the entrance area enhances the building identity in its use of colour and design elements such as the counter detail and post boxes. The revised design (Figure 176) introduces built-in seating to further emphasise the building's identity. Screens are proposed to provide some privacy, and a wayfinding flooring strip is introduced.

The reception counter has been designed to be highly inclusive and accessible to all, as an introduction into the inclusivity and design language of the rest of the building. The post boxes, the second detail-item in the space, are the first interaction with items appropriated by users. These appropriated elements are placed on display where users can easily see them and have an immediate emotional connection with the building. The further development of these elements are discussed in Part III.

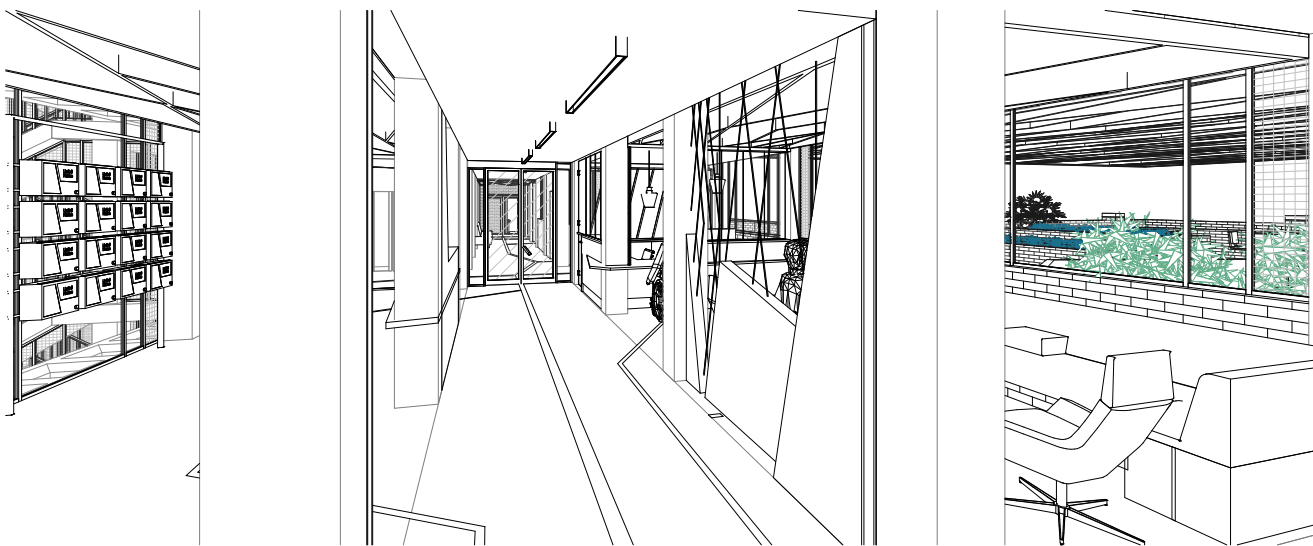


Figure 179 - Revised view of reception area (by Author)

Social housing with interior public spaces

5.13 Public Spaces

The public spaces, specifically the un-programmed spaces, have been designed to have a very direct interpretation of the building's design language and identity. The adapted ceiling/building grid is very prominent in this area, with the ceiling wrapping down to become a feature wall element, where additional functions such as a play area could directly relate to the feature wall design language, as well as indicate the public nature of the elements within the space.

The permanent elements in the space such as seating and other functions relate directly to the building's design language and have similar elements found in the main circulation areas and reception area. The arrangement of the functions themselves follow the guidelines developed from Chapter 3 closely to create a variety of seating options, with varied smaller microclimates and social seating arrangements to ensure all community members are accommodated for. The placement of necessary functions such as laundry and study areas ensure constant activity flowing through the public spaces.

In an effort to reflect the building's alternative approach to integrating public spaces into the housing development, an intervention on the façade of the building was required (c.f. 5.11). Protruding, cantilevering walls that define the edges of the public spaces serve to indicate to passersby that these areas are more public. These elements also indicate the placement of the various public spaces as being placed in different areas of the floorplate. It provides users with a more direct connection to these public spaces, as they can see them

when approaching the building, as well as experience them from outside.

From an interior perspective, the walls extending beyond the building slab enforces the concept of framing, by framing the views around the buildings, as well as providing privacy to the units adjacent to the public spaces by preventing users from looking into their units from the public balconies.

The circulation, both vertical and horizontal, forms part of the public spaces, as they are the most public spaces and used by all community members. The circulation areas are designed to be the most visually and physically accessible, with a strong design language. The circulation spaces are also designed to emphasise the users' own unit colouring and decoration.

Figure 177 indicates the design development of the public spaces and the application of the building identity. Figure 178 and Figure 179 show the section and plan of the public space as the final design proposal before technical development.

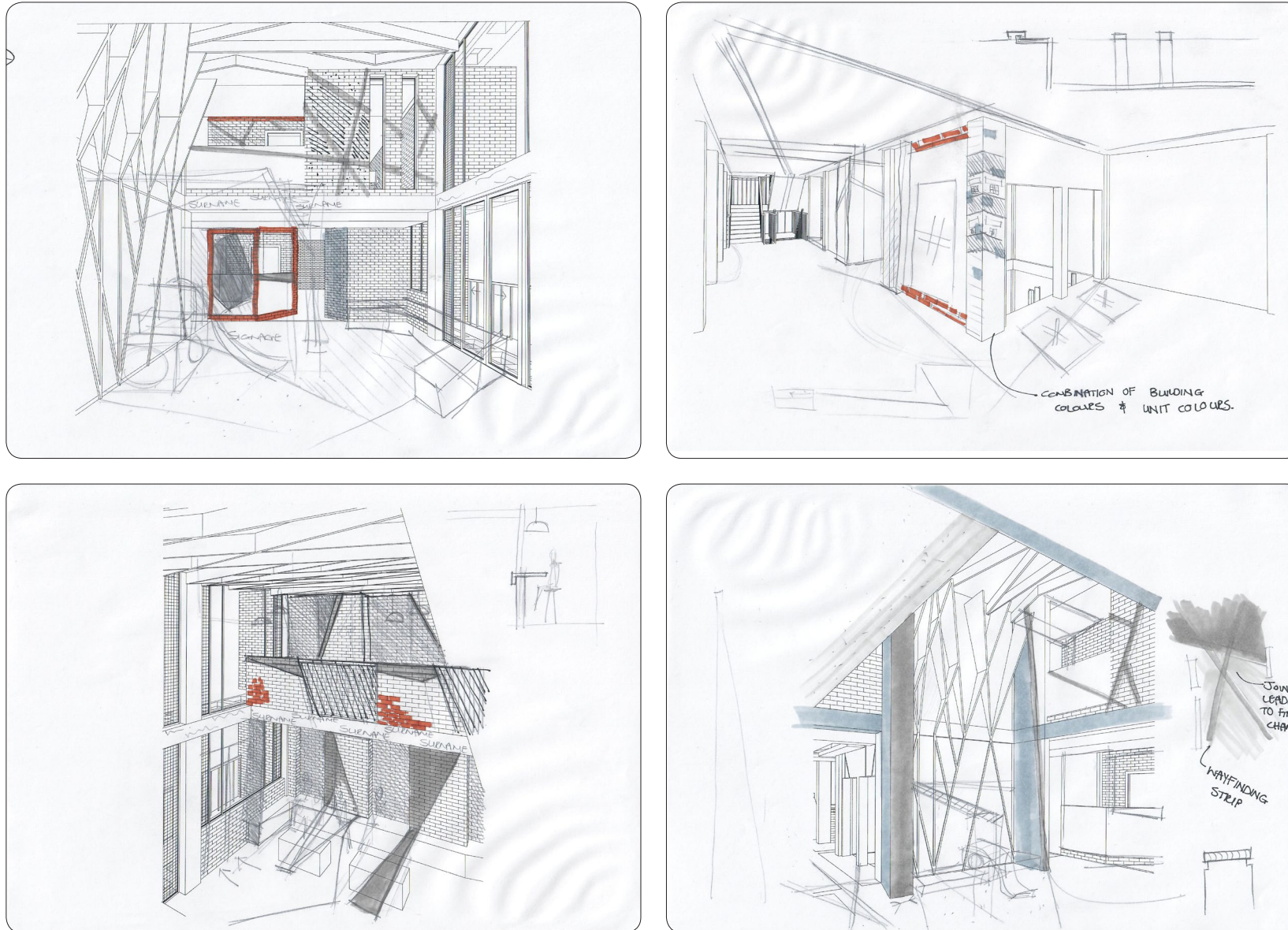


Figure 180 - Scans of development of public spaces (by Author)

Social housing with interior public spaces

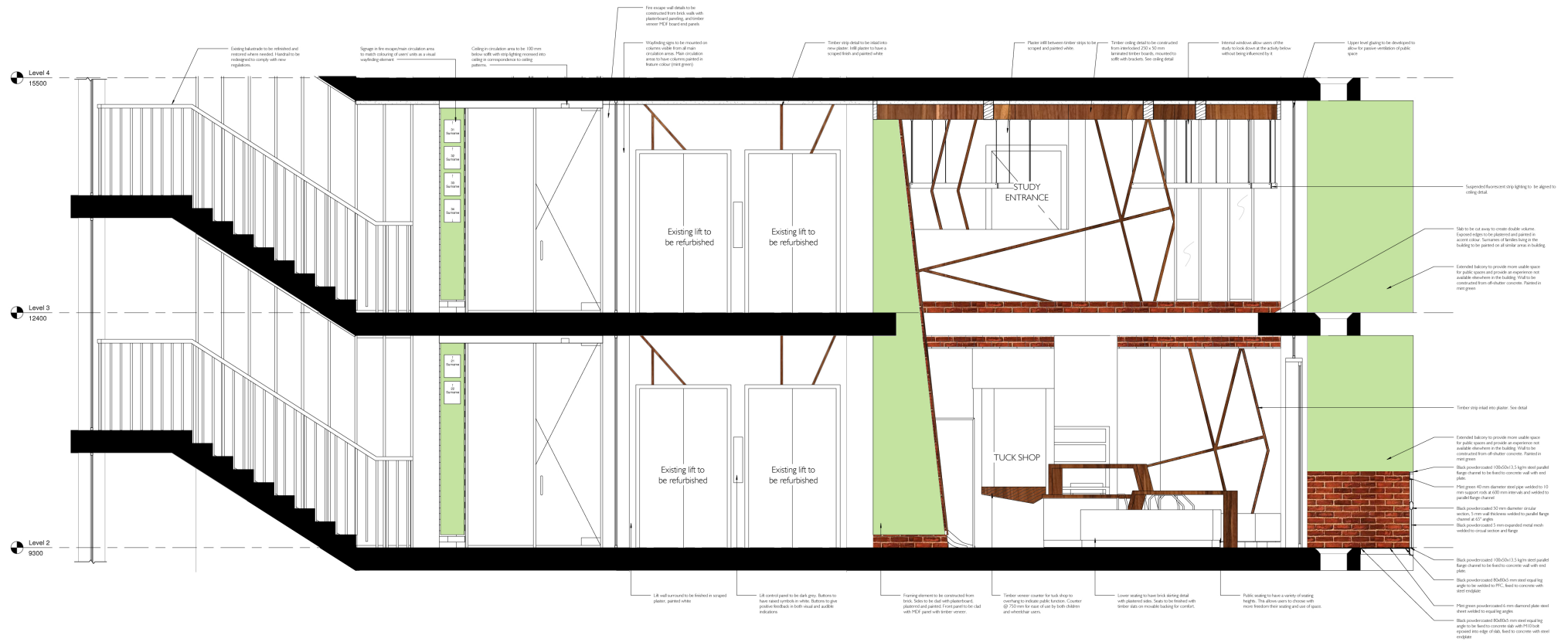


Figure 181 - Section of public space (by Author)

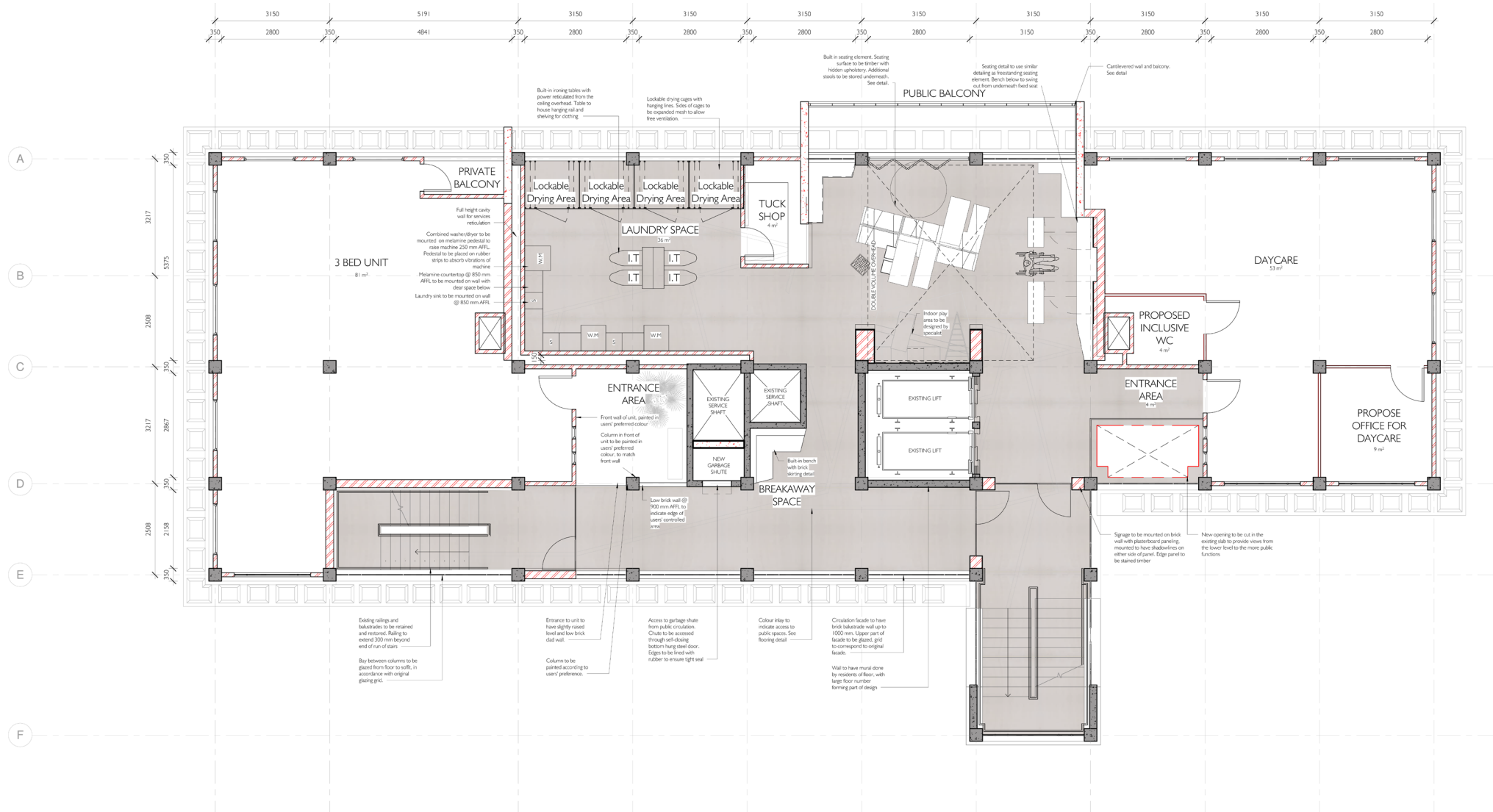


Figure 182 - Plan of public space (by Author)

Social housing with interior public spaces

Part III: Technical Resolution

5.14 Introduction

As the legibility and accessibility of the building is highly important – both to users and visitors, the wayfinding and accessibility will become the main focus of the technical investigation. Additional detail elements focus on the entrance and reception area, specifically the reception counter and post boxes. The various seating elements and material choices for these areas will become additional design detail investigations. Elements that contribute greatly to the design language and brand of the building, such as the ceiling element and flooring details will also be designed in detail.

5.15 Wayfinding Audit

“Wayfinding is a process by which individuals navigate through unfamiliar territory... The purpose of wayfinding is to direct people through a primary circulation path, such as corridors and aisles that lead to a variety of destinations. However, successful wayfinding also provides everyone access to the same products and activities within an interior and throughout a community.”
(Nussbaumer 2009:136)

A main design informant to the project is the users of the building (c.f. 5.5). The users fall into a variety of age groups, levels of mobility and specific access requirements. With this in mind, wayfinding and inclusive design became a large determinant of the ease of use and thus success of the building. Following on the development of the guidelines developed

through the theoretical investigation (c.f. 4.3) to ensure spaces that are accessible from a psychological point of view, the issue of wayfinding and inclusive design became prominent from a detail perspective.

The exploration of wayfinding as a detail investigation has led to a deeper and stronger design language and building identity. However, no clear or comprehensive audit for inclusive design has yet been developed within the interior design field or knowledgebase. In an effort to ensure the viability of the project to a wide group of users, various sources have been consulted and an access audit developed for use in this project as well as in future projects (Appendix B).

The audit developed from an investigation into the inclusive design requirements for each of the categories within the theoretical guidelines, and was supplemented by additional regulations for signage and egress, as these categories influences all areas the building.

The audit considers requirements for specific areas of the building, as aligned with the guidelines developed in Chapter 3 (c.f. 3.4.3). Firstly, the “Entrance from the street” considers the level changes and distance of travel from the street. The “Entrance lobby and reception” consider the materials, reception counter and seating requirements for inclusive access. Thirdly, the “Vertical Circulation” outlines regulations and proposals for ease of access for level changes and handrails. “Horizontal Circulation” considers the lighting and possible barriers that users may encounter in a busy apartment

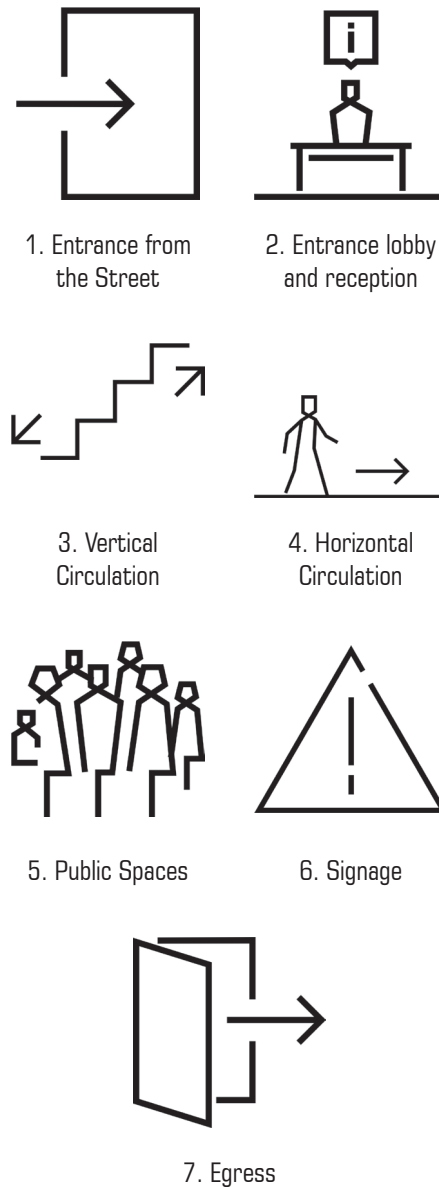


Figure 183 - Icons for Access Audit Categories (by Author)

building walkway. The “Public Spaces” category illustrates the requirements to ensure all users have equal access to use all of the interior public spaces, by considering seating and movement requirements. Some requirements apply to the whole building, such as signage and egress regulations. They ensure a safe and accessible environment for the whole building.

The audit has been used as part of the iterative simulation process. The conditions and regulations have been used to audit the design intervention at three stages.

5.15.1 Audit 1

The first audit (Appendix C, Figure 181) was done after the initial design proposal was developed. This was done to create a baseline for a typical design proposal that does not consider the inclusive design requirements.

5.15.2 Audit 2

The second audit (Appendix D, Figure 182) was completed after the first technical investigation. This indicates the improvements made to the design proposal when there is an awareness and focused approach to improve the inclusive design.

5.15.3 Audit 3

A third audit (Appendix E, Figure 183) was completed after the revision of the second technical investigation. An effort was made to apply the requirements to the letter.

5.15.4 Audit 4

A final audit (Appendix F, Figure 184) was completed after the final revision of the technical investigation. A fully inclusive building was achieved, as was the goal of the Access Audit.

5.15.5 Conclusion

The graphic summaries indicate a significant improvement from the first audit to the second, and incremental improvements after. Iterations were done to further improve the accessibility of the entire proposal. This was achieved after the fourth iteration. The access audit requirements did not influence the design negatively - on the contrary. The application of especially the finer details of the audit requirements enhanced the legibility of the design and the spaces within, and served to emphasise the building’s identity by requiring signage and the consistent application of specific elements for wayfinding purposes.

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Figure 184 - Audit 1: Design Development



Figure 185 - Audit 2: Technical Development



Figure 186 - Audit 3: Technical Iteration



Figure 187 - Audit 4: Technical Resolution

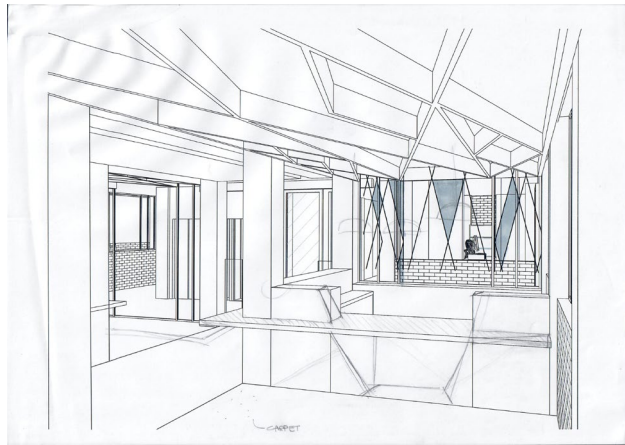


Figure 188 - Development of reception area (by Author)



Figure 189 - Development of reception area (by Author)

5.16 Ground Floor

The reception and lobby area is the first interaction residents and visitors have with the building. It is important that the building's identity and the principles for the wayfinding used throughout the building is established in this area.

The reception desk is the main point of contact for most residents and visitors to the building. The design focuses on applying the colouring and design elements prominent in the building's identity such as the timber detailing and colouring. Security, accessibility and legibility are the main concerns for the reception counter as well as the remainder of the lobby space.

The lobby and building itself is kept safe by applying the guidelines indicating that visual connections from the street into the entrance area and vice versa are important. From an access control point of view, automatic sliding doors allow everyone to enter, within view of the reception desk. A second automatic sliding door has an access control device connected, which limits access to the main portion of the building to residents and employees in the building only.

There is a waiting area for visitors to wait for residents to come and collect them, or to wait for possible appointments with management of the building. The waiting area is comprised of a mixture of fixed and loose seating, and allows for various seating arrangements. Movable armrests, clear trafficable space and clear spaces adjacent to seats allow for users of all levels of mobility to have equal access to this area.

Specific detail items such as the reception counter and post boxes were identified as key elements and are designed in full detail.

The floor plan can be seen in Figure 187, indicating the general layout of the level, the wayfinding flooring strip and the patio areas.

The fire escape routes for the Lower Ground level (Figure 188) and Ground level (Figure 189) indicate the exits of the various fire escapes. Figure 190 indicates the service reticulation of the newly introduced service shafts to the main, existing service shaft.

The ceiling and lighting layout, as well as the specifications can be seen in Figure 191, and lighting calculations can be seen in Figure 192. The ceiling design also responds to the re-interpreted ceiling grid (c.f. 5.8), both in the designed ceiling element and in the application of the acoustic treatment and lay-in ceilings. The lighting fixtures were chosen for their simple design to not subtract from their purpose as additional wayfinding elements. The fixtures are installed to align with the wayfinding flooring strip to ease the navigation of the main circulation areas.

Social housing with interior public spaces

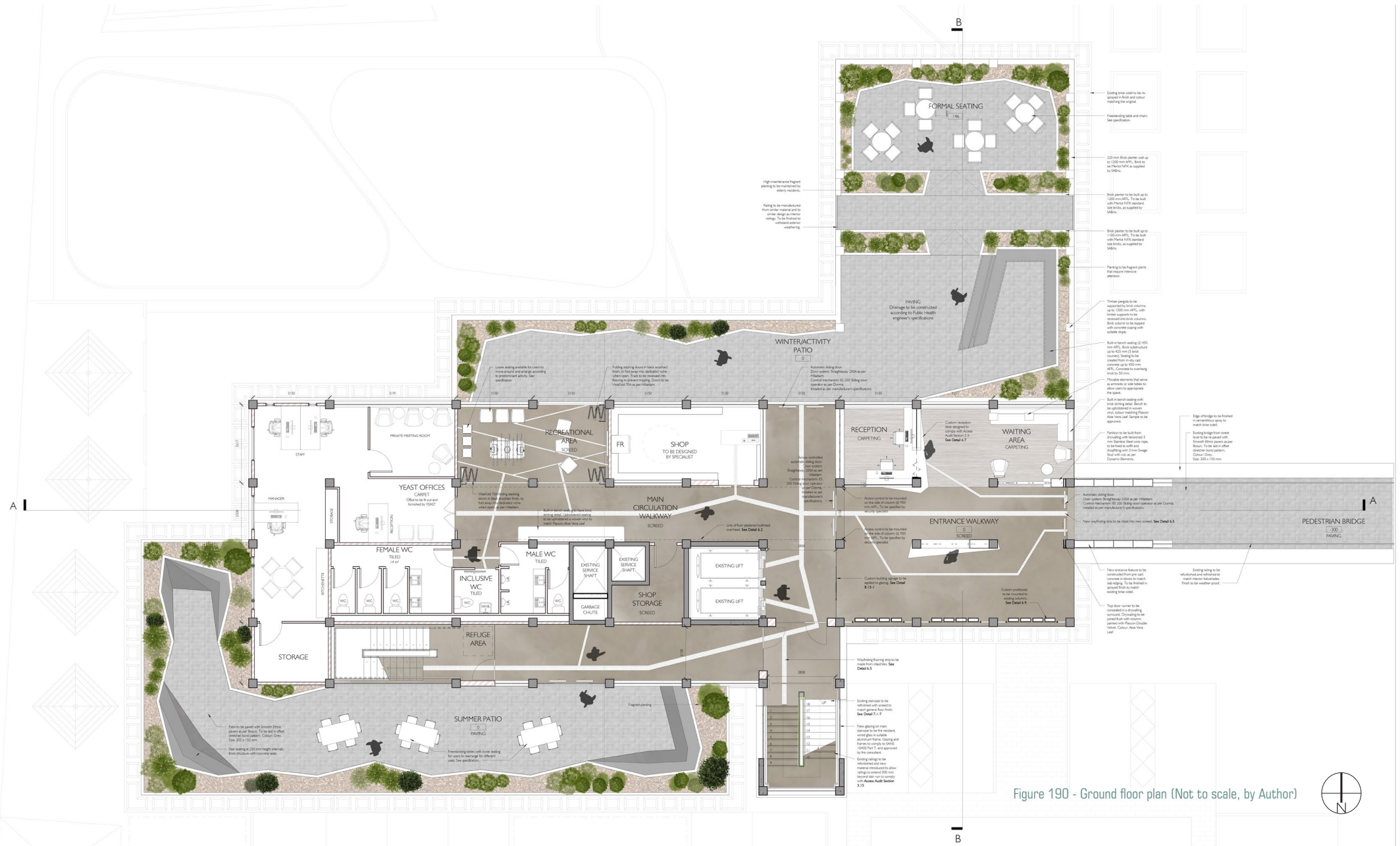


Figure 190 - Ground floor plan (Not to scale, by Author)

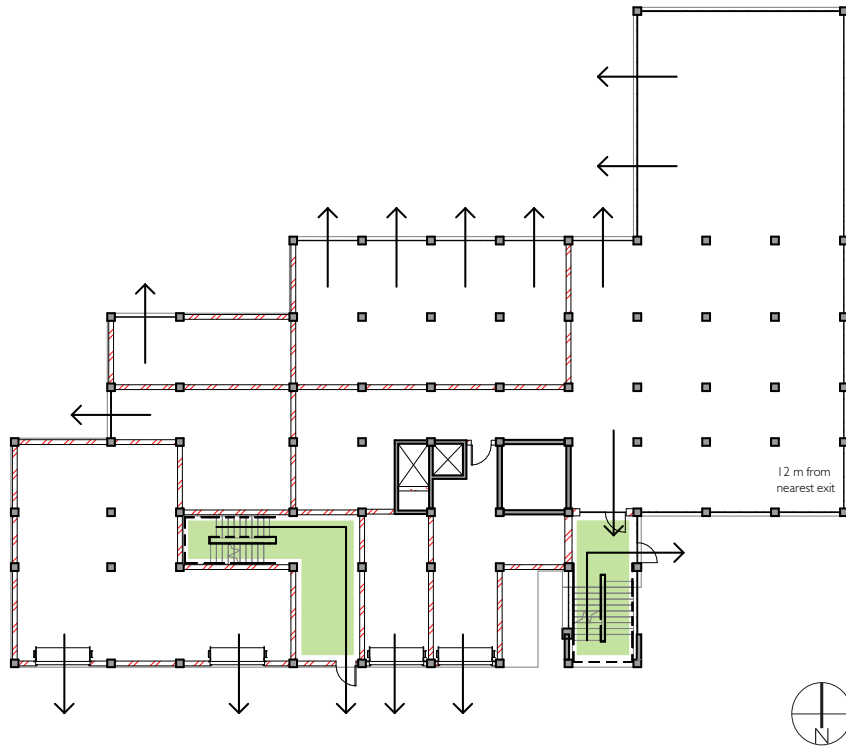


Figure 191 - Lower Ground floor plan - Fire (Not to scale, by Author)

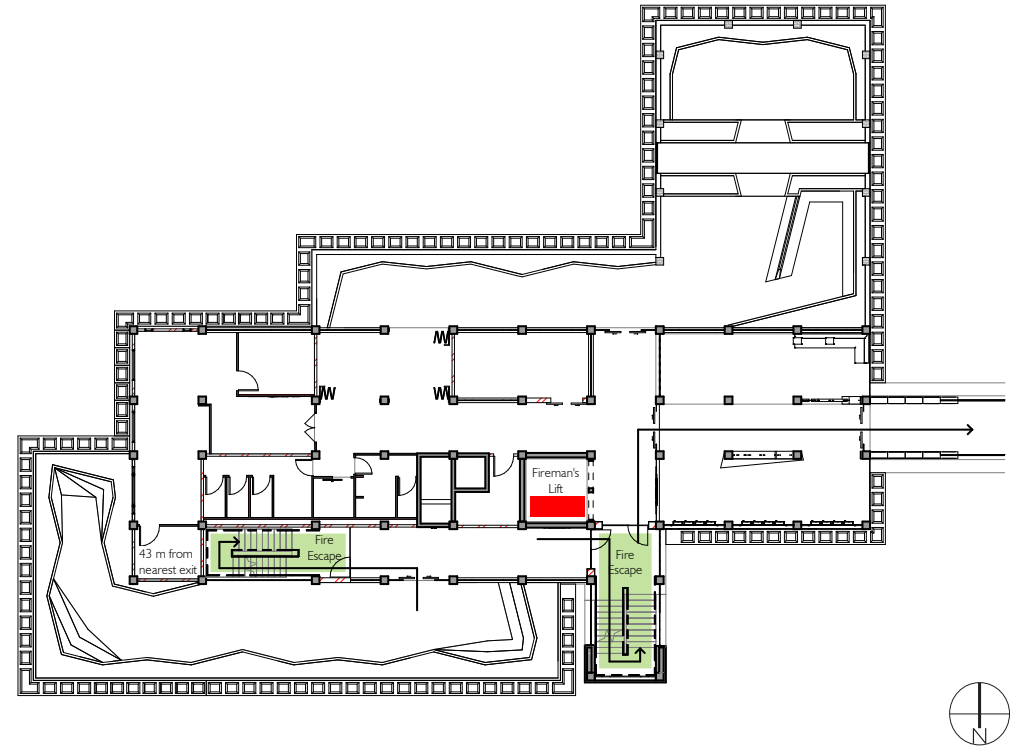


Figure 192 - Ground floor plan - Fire (Not to scale, by Author)

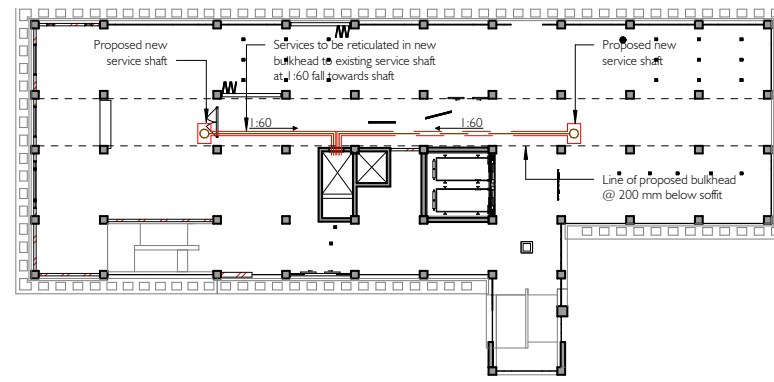


Figure 193 - Ground floor service reticulation (Not to scale, by Author)

Social housing with interior public spaces

Name	Image	Symbol	Specifications
Atrioza (Surface Mounted Downlight)			Lamp Type: 1 x E27, max 50 W Size: 120 (L) x 120 (W) x 130 (H) mm Warranty: 2 Years Supplier: LEDSC4 Code: IS-9558-CA-88
E27 Lamp			Lamp Type: E27 LED Lamp Power: 7 W Size: 60 Ø x 114 (H) mm Colour Temp: 3 000 K (Warm White) Lifetime: 30 000 hours Luminous Flux: 500 lx Supplier: Radiant Lighting Code: LED128
Mini (Recessed Downlight)			Lamp Type: 1 x GU10 Size: 100 (L) x 100 (W) x 140 (H) mm Warranty: 2 Years Supplier: LEDSC4 Code: DM-1106-N3-00
GU10 Lamp for Mini LED120			Lamp Type: GU10 LED Lamp Power: 6 W Size: 50 Ø x 56 (H) mm Colour Temp: 3 000 K (Warm White) Lifetime: 30 000 hours Luminous Flux: 450 lx Supplier: Radiant Lighting Code: LED120
Infinite (Linear Lighting Fixture)			Lamp Type: 2 x G5 Size: 1 200 (L) x 104 (W) x 105 (H) mm Warranty: 2 Years Supplier: LEDSC4 Code: AD-0701-N3-00
G5 Lamp for Infinite Fixture			Lamp Type: G5 Fluorescent Power: 13 W Size: 517 (L) x 16 Ø mm Colour Temperature: 4 200 K (Cool White) Lifetime: 6 000 hours Luminous Flux: 740 lx Supplier: Radiant Lighting Code: YFTL005
Custom Signage			Lamp Type: 2 x G10q 4 Pin Compact Fluorescent Power: 28 W Size: 300 (L) x 300 (W) x 250 (H) mm To be custom made by appropriate contractor. See detail 8.12.
G10q 4 Pin Lamp for Custom Signage			Lamp Type: G10q 4 Pin Compact Fluorescent Power: 28 W Size: 195 (L) x 205 Ø mm Colour Temperature: 4 200 K (Cool White) Lifetime: 8 000 hours Luminous Flux: 2050 lx Supplier: Radiant Lighting Code: YFTL053
Custom Pendant			Lamp Type: E27 LED Lamp Size: 270 Ø x 330 (H) mm To be custom made to match previous pendants.
Lay-in ceiling			600x1200 mm Lay-in ceiling with recessed joints. Panels to be compound panels with acoustic absorptive material behind.
Acoustic Treatment			EcoPhon Focus B Tech acoustic ceiling to be glued directly onto soffit. Colour: White Frost
Ceiling Detail			See Detail 8.9

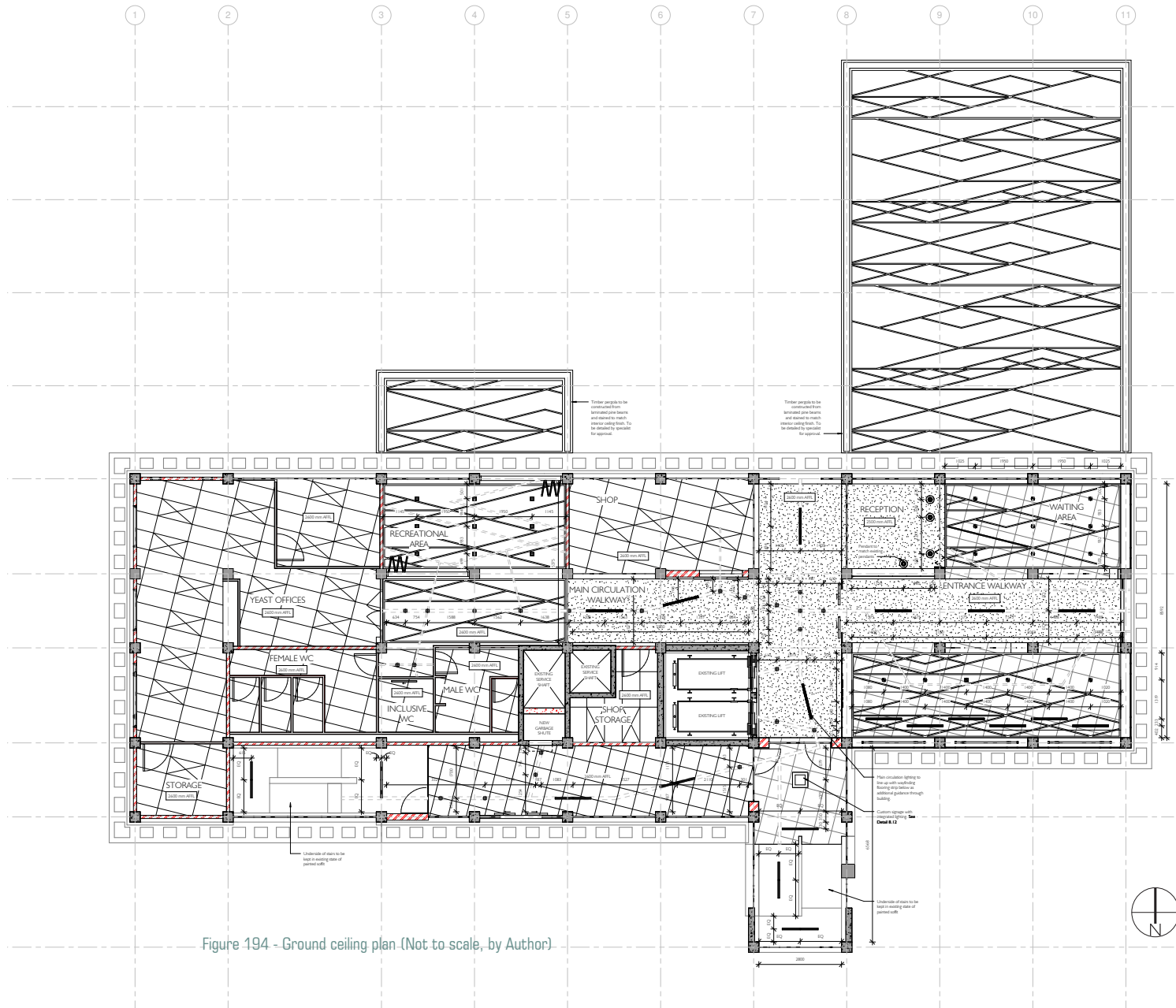


Figure 194 - Ground ceiling plan (Not to scale, by Author)

Entrance Area		Lift and Patio Circulation		Recreational Area		Main Circulation & Fire Escape	
Required Lux	500	Required Lux	200	Required Lux	500	Required Lux	200
Achieved Lux	634,8777	Achieved Lux	418	Achieved Lux	534,84	Achieved Lux	308,95
1 Luminous Flux	187100	1 Luminous Flux	37920	1 Luminous Flux	76050	1 Luminous Flux	36180
Type 1 - Surface Mounted Downlighter		Type 1 - Recessed Downlighter		Type 1 - Recessed Downlighter		Type 1 - Surface Mounted Linear	
Number of Luminaires	15	Number of Luminaires	8	Number of Luminaires	13	Number of Luminaires	4
Number of Lamps	15	Number of Lamps	8	Number of Lamps	13	Number of Lamps	8
Lumen per lamp	500	Lumen per lamp	500	Lumen per lamp	450	Lumen per lamp	740
Total	112500	Total	32000	Total	76050	Total	23680
Type 2 - Surface Linear		Type 2 - Recessed Linear		Room Index	1,053	Type 2 - Surface Mounted Downlighter	
Number of Luminaires	6	Number of Luminaires	2	Length	5,6	Number of Luminaires	5
Number of Lamps	12	Number of Lamps	4	Width	5,9	Number of Lamps	5
Lumen per lamp	740	Lumen per lamp	740	Height (Working plane height)	2,8	Lumen per lamp	500
Total	53280	Total	5920	LxW	33,04	Total	12500
Type 3 - Pendant		Room Index	1,53	L+W	11,5	Room Index	3,10
Number of Luminaires	4	Length	2,8	2 Utilisation Factor (UF) (from table)	0,35	Length	2,1
Number of Lamps	4	Width	8,6	3 Maintenance Factor (MF)	0,66389	Width	17,4
Lumen per lamp	500	Height (Working plane height)	2,8	Lamp Lumen Maintenance Factor (LLMF) (From table)	0,87	Height (Working plane height)	2,8
Total	8000	LxW	24,08	Lamp Survival Factor (LSF) (From table)	0,99	LxW	36,54
Type 4 - Recessed Linear		L+W	11,4	Luminaire Maintenance Factor (LMF) (From table)	0,82	L+W	19,5
Number of Luminaires	3	2 Utilisation Factor (UF) (from table)	0,4	Room surface maintenance Factor (RSMF) (From table)	0,94	2 Utilisation Factor (UF) (from table)	0,47
Number of Lamps	6	3 Maintenance Factor (MF)	0,66389	4 Working Plane	33,04	3 Maintenance Factor (MF)	0,66389
Lumen per lamp	740	Lamp Lumen Maintenance Factor (LLMF) (From table)	0,87	Lamp Lumen Maintenance Factor (LLMF) (From table)	0,87	Lamp Lumen Maintenance Factor (LLMF) (From table)	0,87
Total	13320	Lamp Survival Factor (LSF) (From table)	0,99	Lamp Survival Factor (LSF) (From table)	0,99	Lamp Survival Factor (LSF) (From table)	0,99
Room Index	1,579096	Luminaire Maintenance Factor (LMF) (From table)	0,82	Luminaire Maintenance Factor (LMF) (From table)	0,82	Luminaire Maintenance Factor (LMF) (From table)	0,82
Length	8,6	Room surface maintenance Factor (RSMF) (From table)	0,94	Room surface maintenance Factor (RSMF) (From table)	0,94	Room surface maintenance Factor (RSMF) (From table)	0,94
Width	9,1	4 Working Plane	24,08	4 Working Plane	24,08	Room surface maintenance Factor (RSMF) (From table)	0,94
Height (Working plane height)	2,8					4 Working Plane	36,54
LxW	78,26						
L+W	17,7						
2 Utilisation Factor (UF) (from table)	0,4						
3 Maintenance Factor (MF)	0,66389						
Lamp Lumen Maintenance Factor (LLMF) (From table)	0,87						
Lamp Survival Factor (LSF) (From table)	0,99						
Luminaire Maintenance Factor (LMF) (From table)	0,82						
Room surface maintenance Factor (RSMF) (From table)	0,94						
4 Working Plane	78,26						

Formula:

$$\text{Average Illumination} = \frac{(\text{Total Luminous Flux} \times \text{Utilisation Factor} \times \text{Maintenance Factor})}{\text{Average Working Plane}}$$

Table 2 - Lighting calculations for ground floor

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Figure 195 - Night Rendering of reception area (by Author)

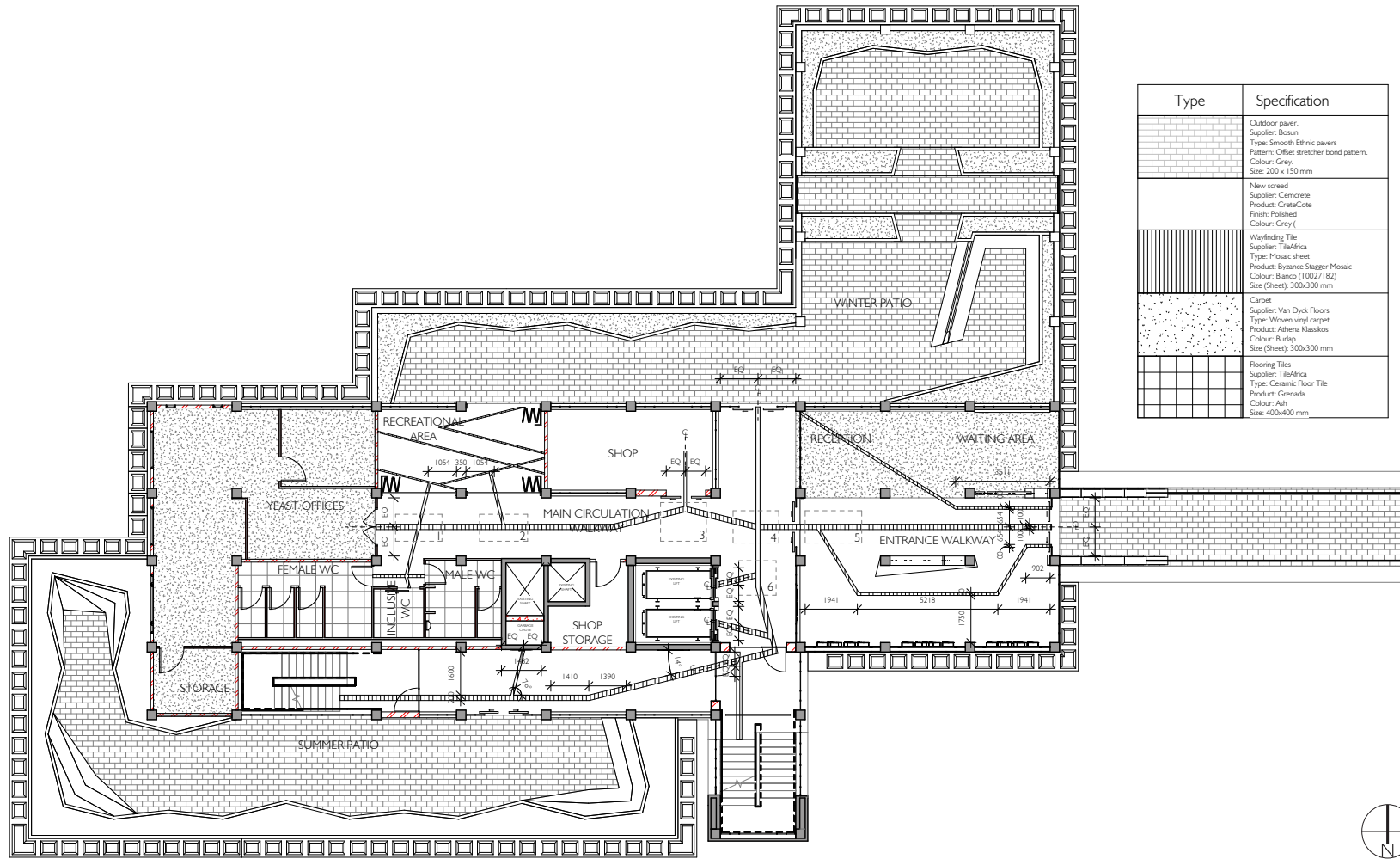


Figure 196 - Ground floor floor finishes layout (by Author, not to scale)

Type	Specification
	Outdoor paver: Supplier: Bosun Type: Smooth Ethnic pavers Pattern: Offset stretcher bond pattern. Colour: Grey Size: 200 x 150 mm
	New screed Supplier: Cemcrete Product: CreteCove Finish: Polished Colour: Grey (
	Wayfinding Tile Supplier: TileAfrica Type: Mosaic sheet Product: Byzance Slagger Mosaic Colour: Bianco (1002/182) Size (Sheet): 300x300 mm
	Carpet Supplier: Van Dyck Floors Type: Woven vinyl carpet Product: Athena Klassikos Colour: Burlap Size (Sheet): 300x300 mm
	Flooring Tiles Supplier: TileAfrica Type: Ceramic Floor Tile Product: Grenada Colour: Ash Size: 400x400 mm

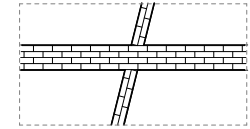


Figure 197 - Floor Finish Detail 1 (not to scale)

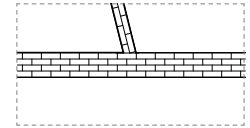


Figure 198 - Floor Finish Detail 2 (not to scale)

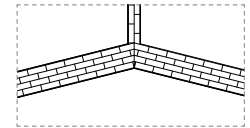


Figure 199 - Floor Finish Detail 3 (not to scale)

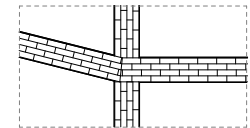


Figure 200 - Floor Finish Detail 4 (not to scale)

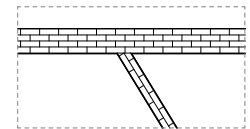


Figure 201 - Floor Finish Detail 5 (not to scale)

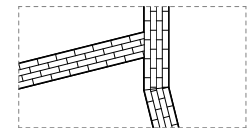


Figure 202 - Floor Finish Detail 6 (not to scale)

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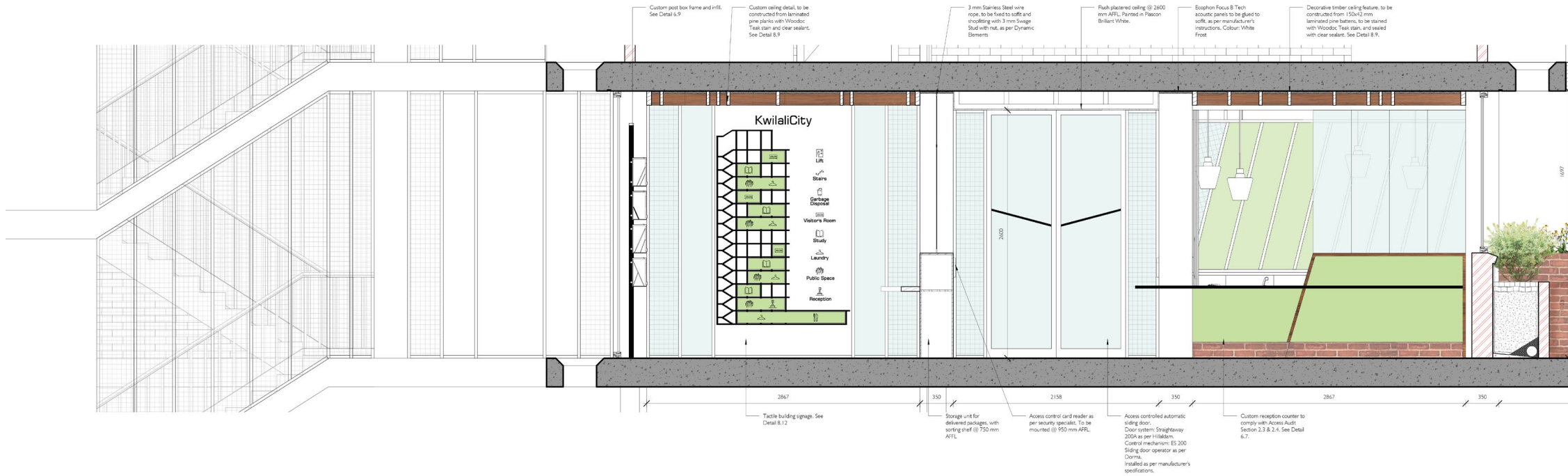


Figure 203 - Ground Floor Section A-A (, by Author, not to scale)

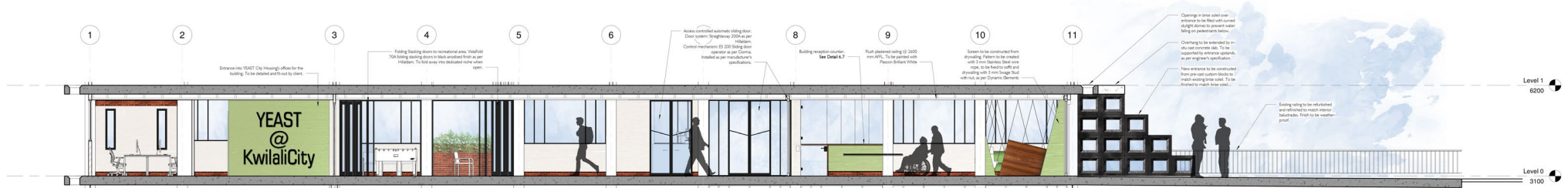


Figure 204 - Ground Floor Section B-B (, by Author, not to scale)



Social housing with interior public spaces

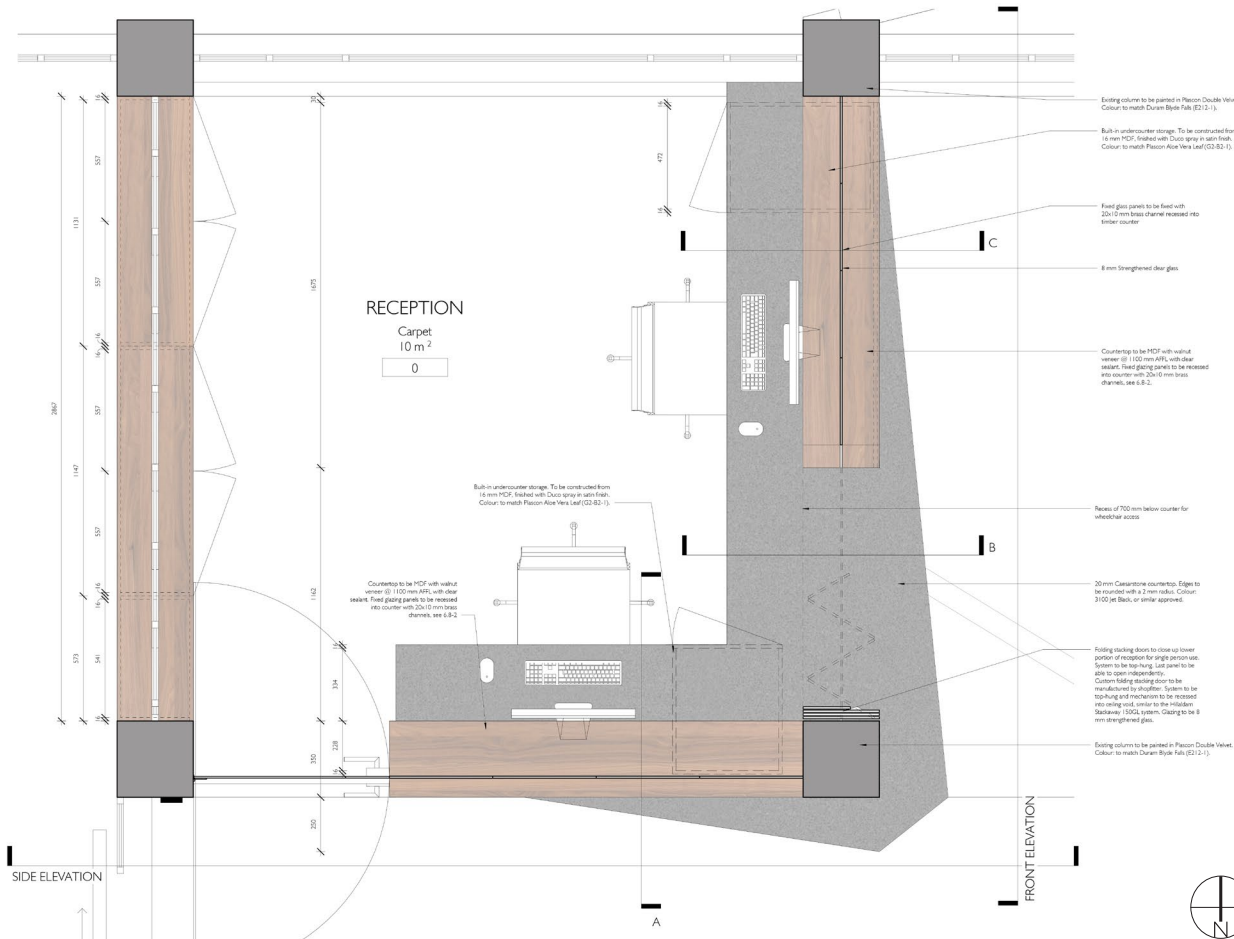


Figure 205 - Plan of reception counter, not to scale (by Author)

5.16.1 Reception (Detail 6.7)

The reception desk was designed with clear and defined guidance from the wayfinding audit. There are two main heights to accommodate users that require help when stood upright and a lower section to assist seated users. Clear space underneath the lowered counter allows wheelchair users to approach the counter with ease and communicate at a comfortable distance with the receptionist/s. Behind the counter there is also sufficient clear space to accommodate a wheelchair turning circle, to allow receptionists in wheelchairs to move about efficiently and without obstruction. Feature lighting that doubles as task lighting over the various workstations allows for sufficient lighting over these areas, both for those assisting visitors, but also for visitors to clearly see and lip-read those assisting them, if needed.

For security purposes, the majority of the counter will have glazing to ceiling height. However, a folding-stacking glass door will be able to fully open the main portion of the counter for ease of access. This door can be closed at night or when the receptionist/s need to leave their post momentarily.

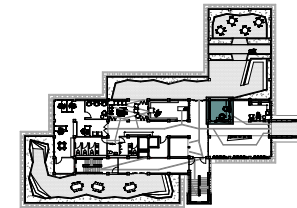


Figure 206 - Key plan of reception counter (by Author)

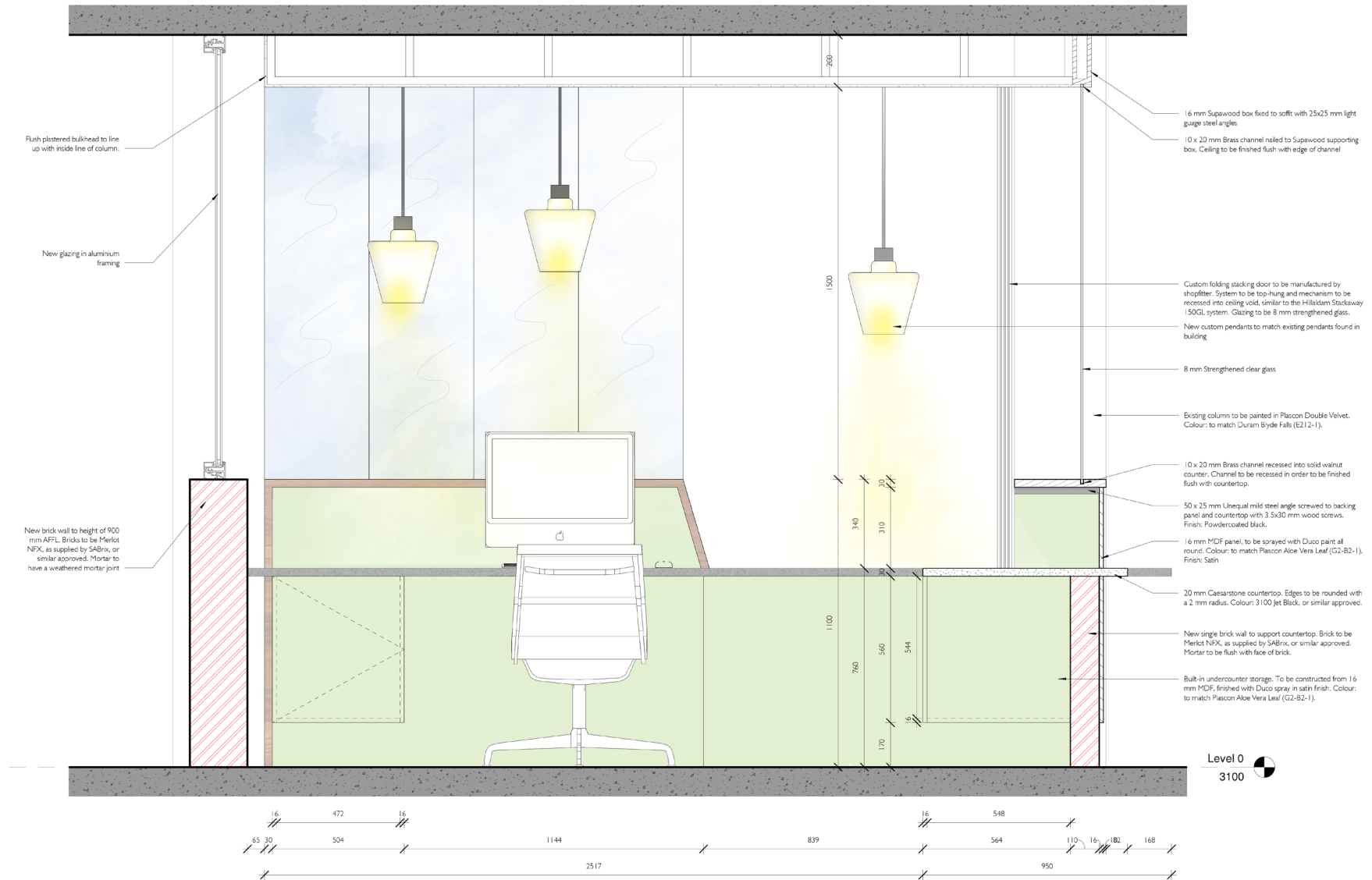


Figure 207 - Section A-A of counter, not to scale (by Author)

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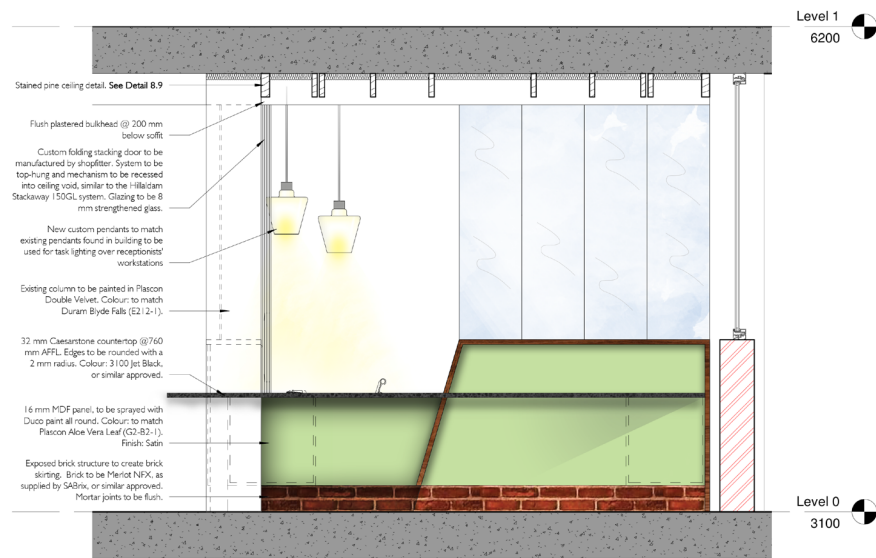


Figure 208 - Front Elevation of counter, not to scale (by Author)

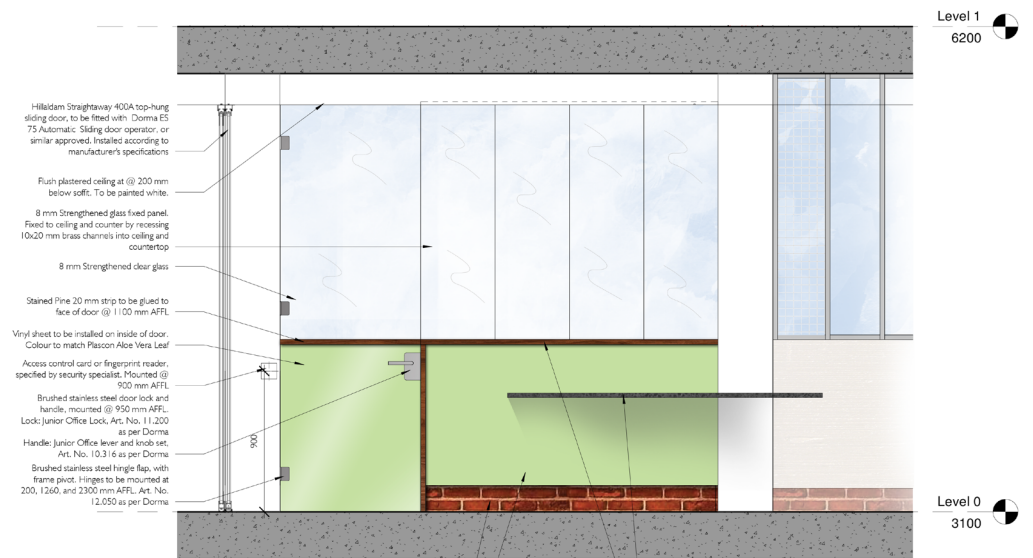


Figure 209 - Side Elevation of counter, not to scale (by Author)



Wedge Medium Back Office Chair
Supplier: Office Furniture Direct
Colour: Black base, black seat, green back



Moru Accent Chair
Supplier: Seating
Code: 99907
Colour: Oak legs with Chocolate Monocoat stain.
Fabric: Pea Green Pletha (OPL-233)

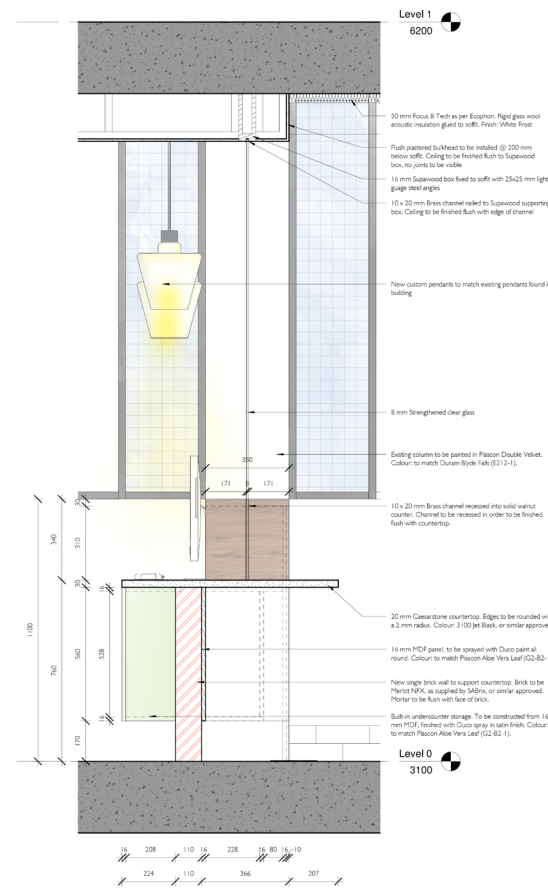


Figure 210 - Section B-B of counter, not to scale (by Author)

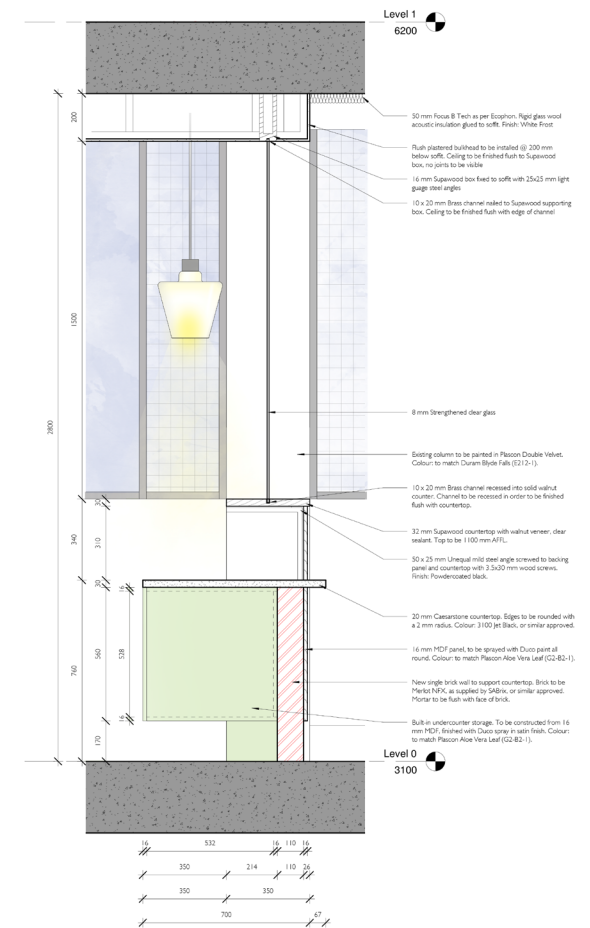


Figure 211 - Section C-C of counter, not to scale (by Author)

Social housing with interior public spaces



New screed
Supplier: Cemcrete
Product: CreteCote
Finish: Polished
Colour: Grey
Thickness: 15 mm

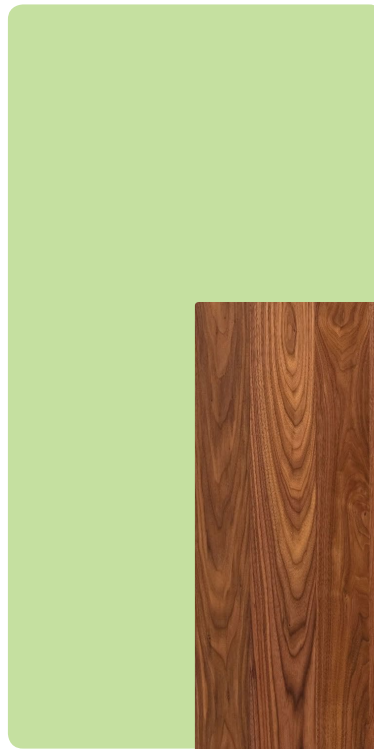
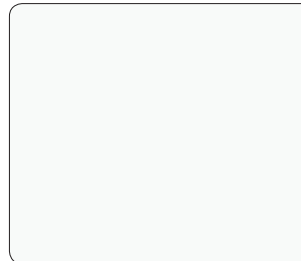


Wayfinding Tile
Supplier: TileAfrica
Type: Mosaic sheet
Product: Byzance Stagger Mosaic
Colour: Bianco (T0027182)
Size (Sheet): 300x300 mm

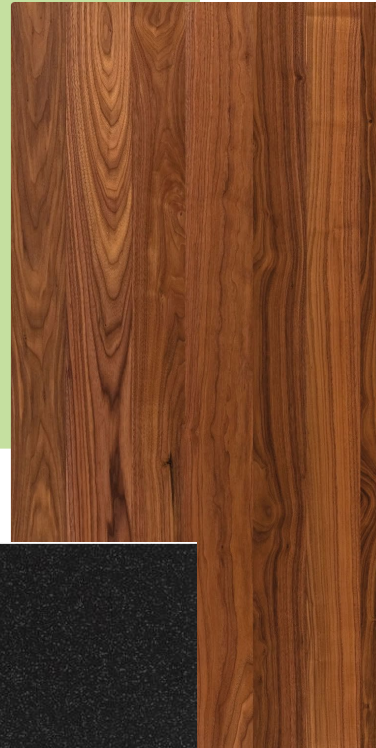


Carpet
Supplier: Van Dyck Floors
Type: Woven vinyl carpet
Product: Athena Klassikos
Colour: Burlap
Size (Sheet): 300x300 mm

Neutral Colour 1
Supplier: Plascon
Product: Determined by use
Colour: To march Duram Blyde Falls
Code: E212-1



Accent Paint Colour
Supplier: Plascon
Product: Determined by use
Colour: Aloe Vera Leaf
Code: G2-B2-1



Feature element timber
Type: Walnut
Sealant: Clear



Reconstituted Stone Counter
Supplier: Caesarstone
Colour: Jet Black
Code: 3100



Proposed brick for intervention
Supplier: SABrix
Type: Merlot Non Face Brick Extra
Size: 220x108x70 mm



New wired glass glazing
Supplier: National Glass Distribution
Type: Laminated Georgian Wire Plate Clear Glass
Rating: 120 Minutes

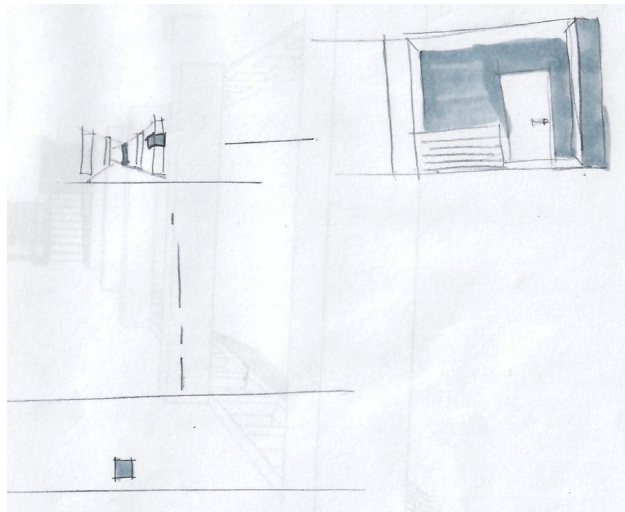


Figure 212 - Diagram illustrating the connection of appropriation of post box, signage, and front wall of unit (by Author)



Figure 213 - Proposed colour range that residents can choose from for spaces and elements they can appropriate (by Author)

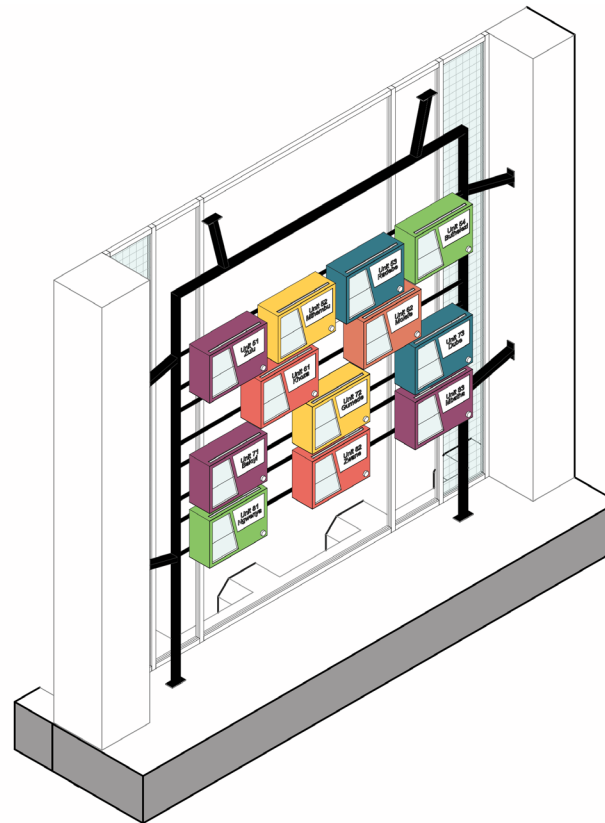


Figure 214 - Axonometric of single bay of post boxes, indicating appropriated colours (by Author)

5.16.2 Post boxes (Detail 6.9)

After a consideration of the theoretical guidelines, it was decided to introduce a series of post boxes for use by the residents of the building. The layout of the units in the levels above are purely tenant layouts (as proposed by the project), and allow for different amounts of units per level. This necessitates a post box design that can adapt to the amount of units per floor. The maximum amount of boxes are shown in Figure 214, and the appropriated bay is shown in Figure 212.

The post boxes have been chosen as a detail investigation as it provides an opportunity for appropriation. A post box is a somewhat private element in a highly public space, thus creating a strong visual representation of the resident in an area that is accessible to all. Residents will be allowed to appropriate the post boxes by painting their post box in the same colour as their unit's front wall. This is a reflection of the residents' identity and encourages attachment.

The proposal to provide a post box as its only function is limited and not as relevant in today's life as it was some years ago. However, there is still a need for a controlled area for mail delivery. Secondly, considering the need for interventions that allow for appropriation, a post box is a small intervention with a large impact. Placing the post boxes in a publically accessible place also allows for other residents to leave messages to friends or acquaintances. The small glazed opening allows residents to see whether they have mail and need to make a detour, or if they can continue straight to their units.

Social housing with interior public spaces

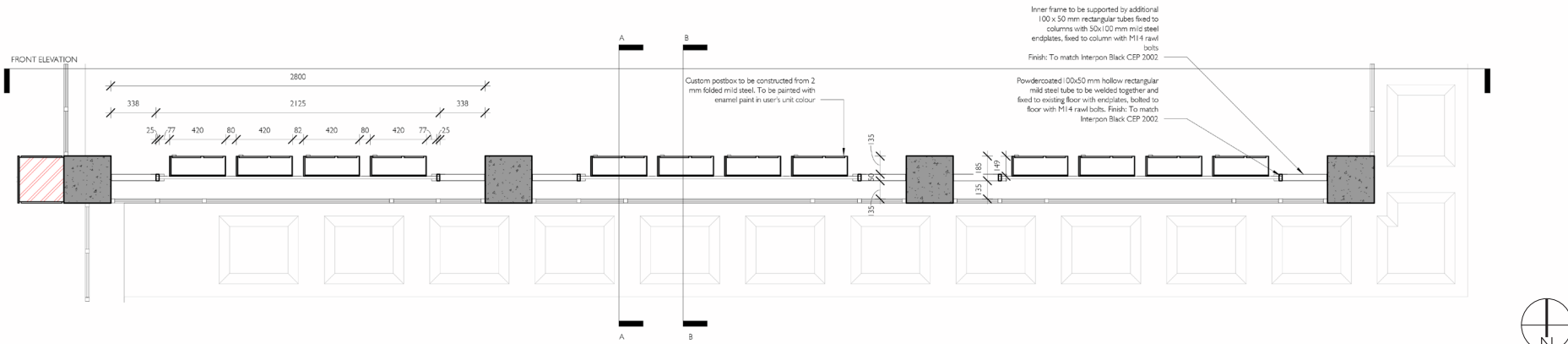


Figure 215 - Plan of post boxes, not to scale (by Author)

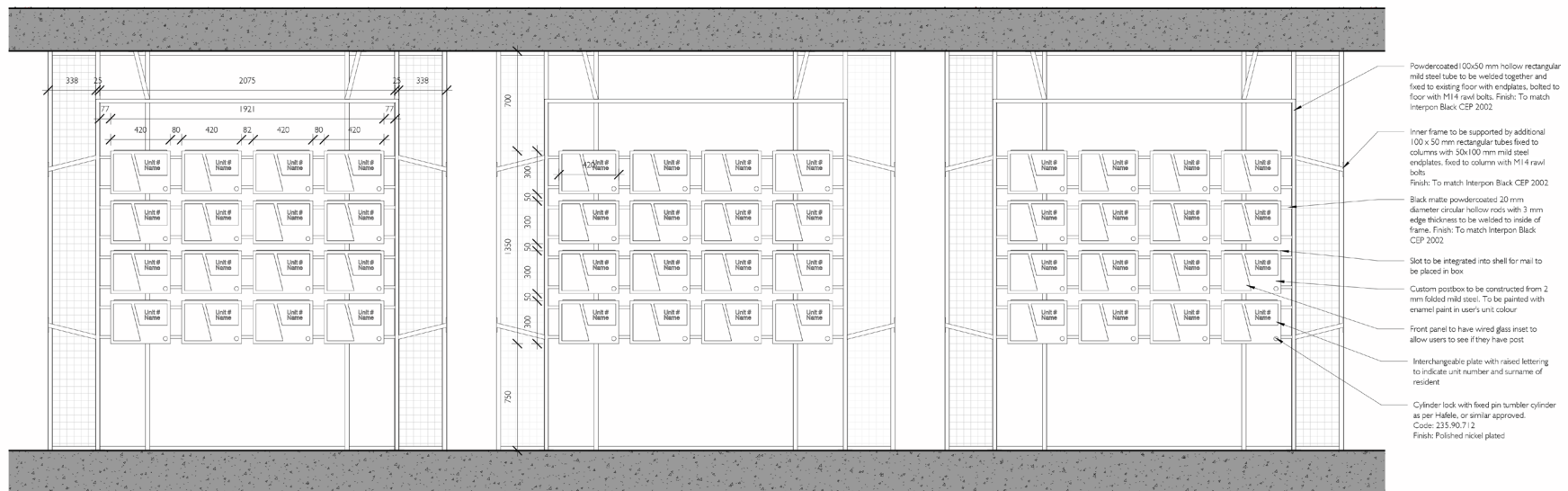


Figure 216 - Front Elevation of post boxes, not to scale (by Author)

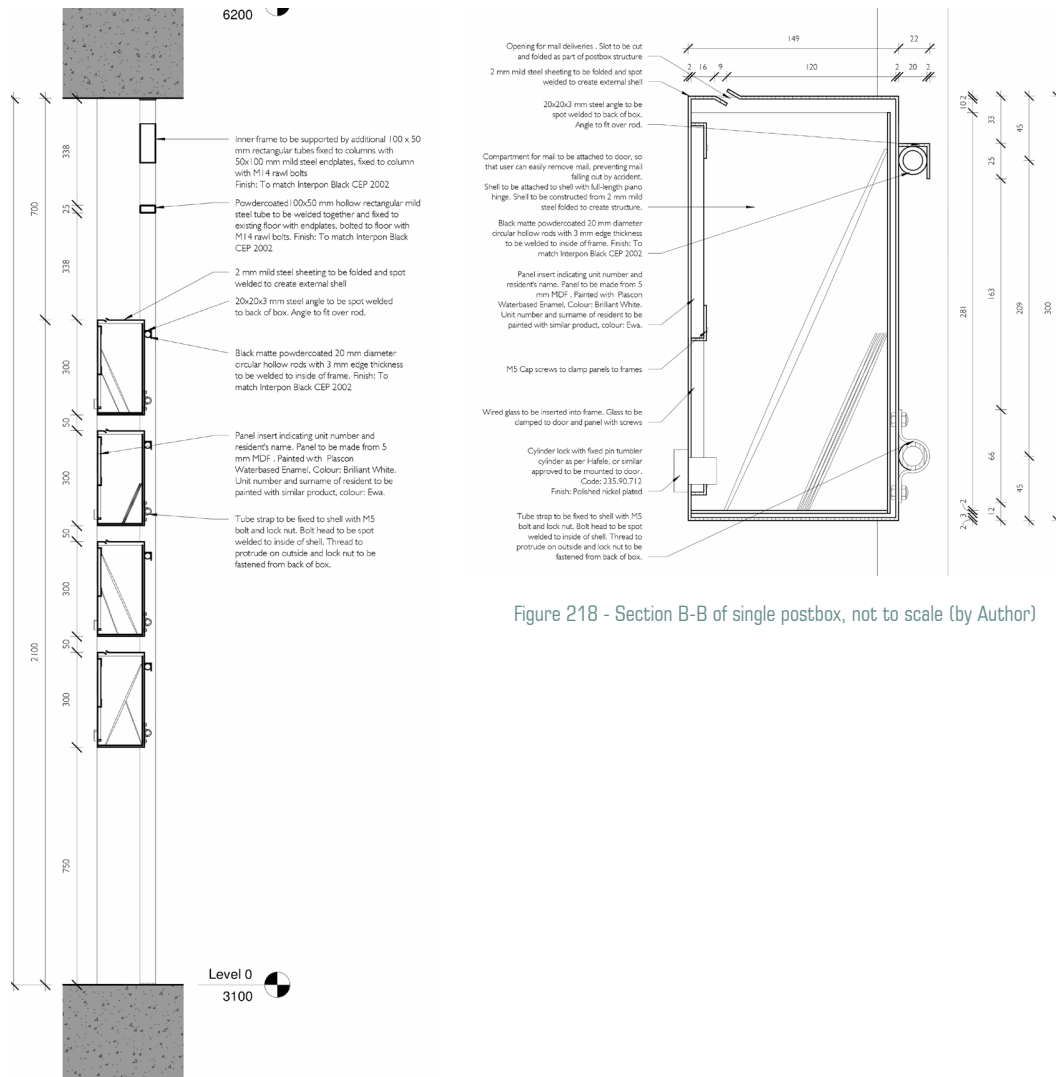


Figure 217 - Section A-A of mailbox bay, not to scale (by Author)

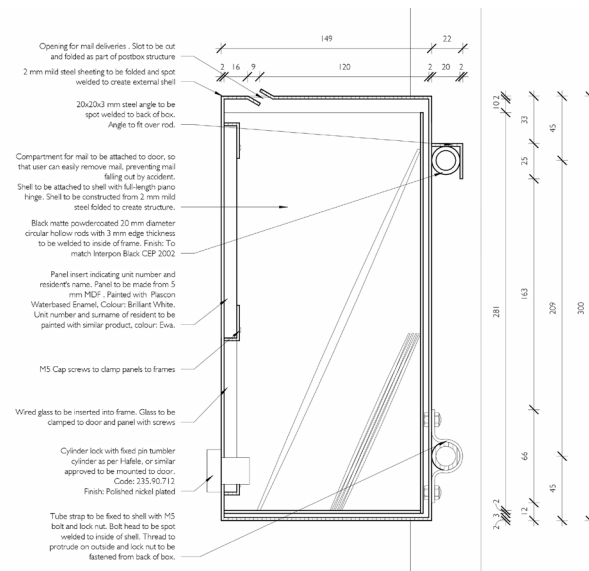


Figure 218 - Section B-B of single postbox, not to scale (by Author)

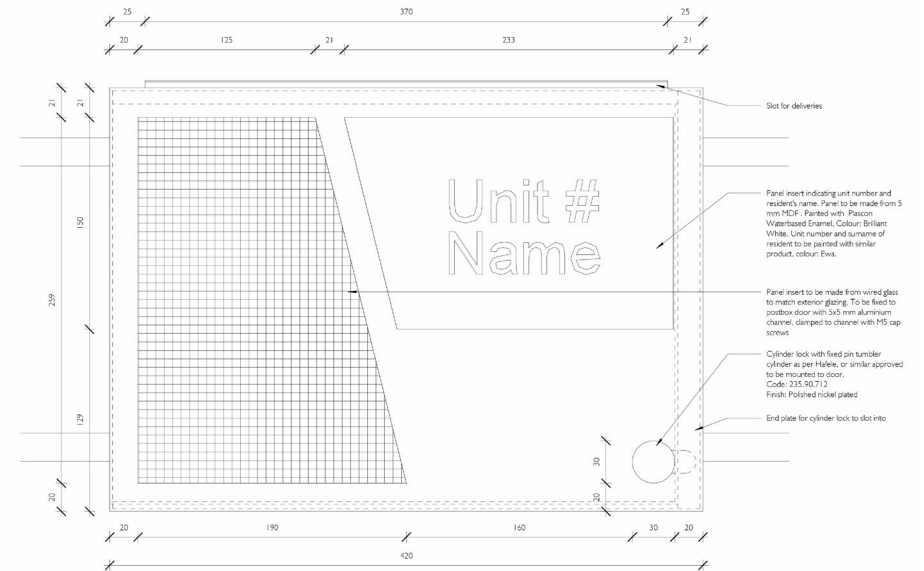


Figure 219 - Front view of single postbox, not to scale (by Author)

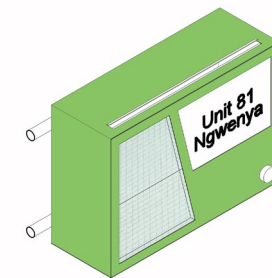


Figure 220 - Axonometric of single, appropriated postbox, not to scale (by Author)

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Figure 221 - Rendered view of reception counter (by Author)



Figure 222 - Rendered view of postboxes (by Author)

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5.16.3 Vertical Circulation (Detail 7.1)

The Access Audit defined various requirements for the vertical circulation. The current staircase was built before the current SANS regulations were implemented. Adaptations to the balustrade and railing, as well as the floor finishes were necessary.

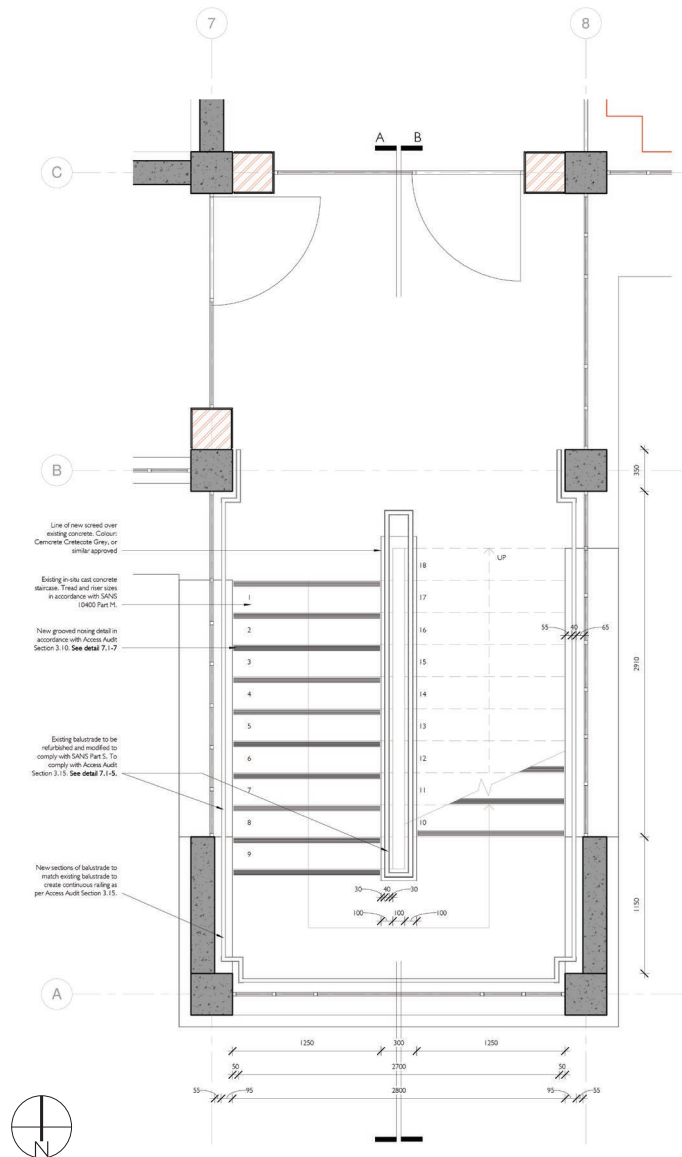


Figure 223 - Plan of main staircase (by Author)



Figure 224 - Section A-A detail of single flight (by Author)

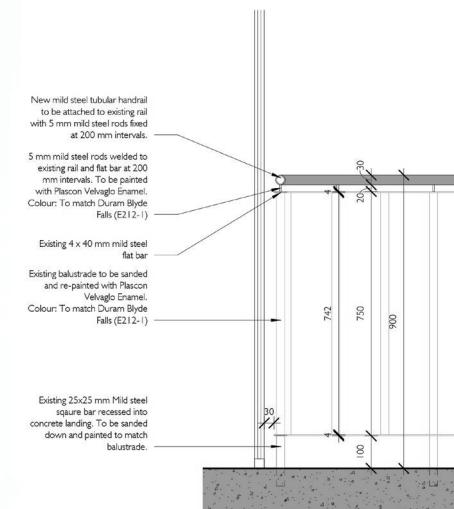


Figure 225 - Detail of balustrade and railing (by Author)



Figure 226 - Section A-A of entire staircase (by Author, not to scale)

Figure 227 - Section B-B of entire staircase (by Author, not to scale)

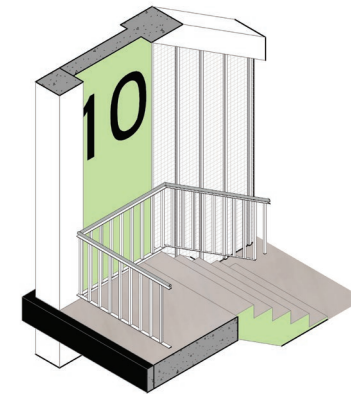


Figure 228 - Axonometric of single landing indicating colour and new railing (by Author, not to scale)

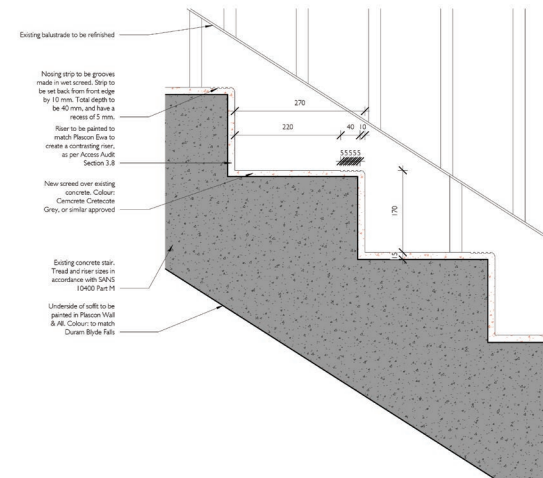


Figure 229 - Detail of stair tread and nosing strip (by Author, not to scale)

Social housing with interior public spaces

5.17 Public Spaces

As discussed previously, a unified design was necessary to apply a consistent design language and approach to all public spaces in the building. These areas are high-traffic, and require highly robust materials that require low maintenance. There are specific elements that repeat throughout the public spaces, such as the wayfinding flooring strips, as well as the more decorative wall details, that serve to identify public spaces as such.

A recognisable ceiling feature was also developed, which will be applied in all public spaces as a visual connection between all public spaces.

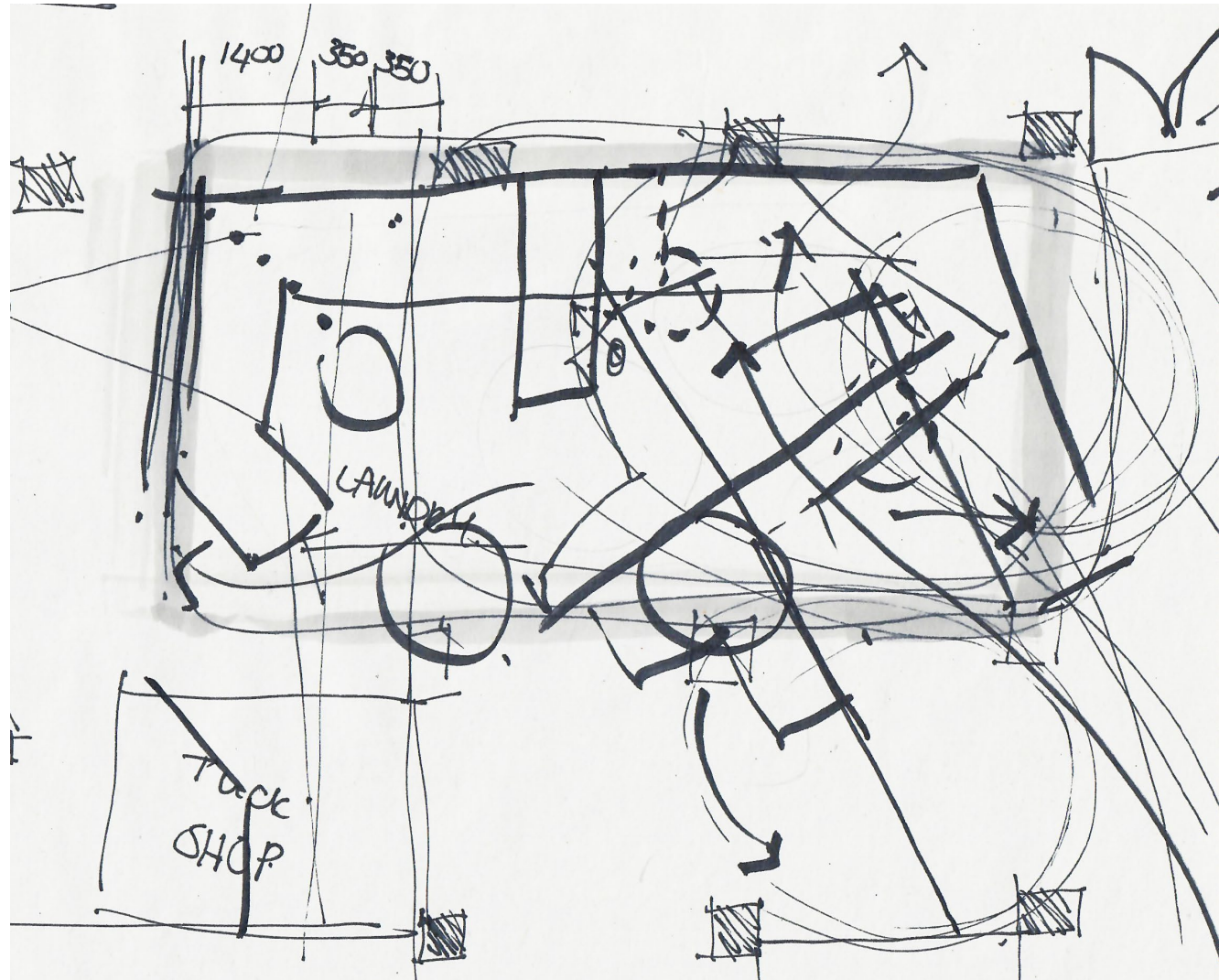


Figure 230 - Development of public seating (by Author)

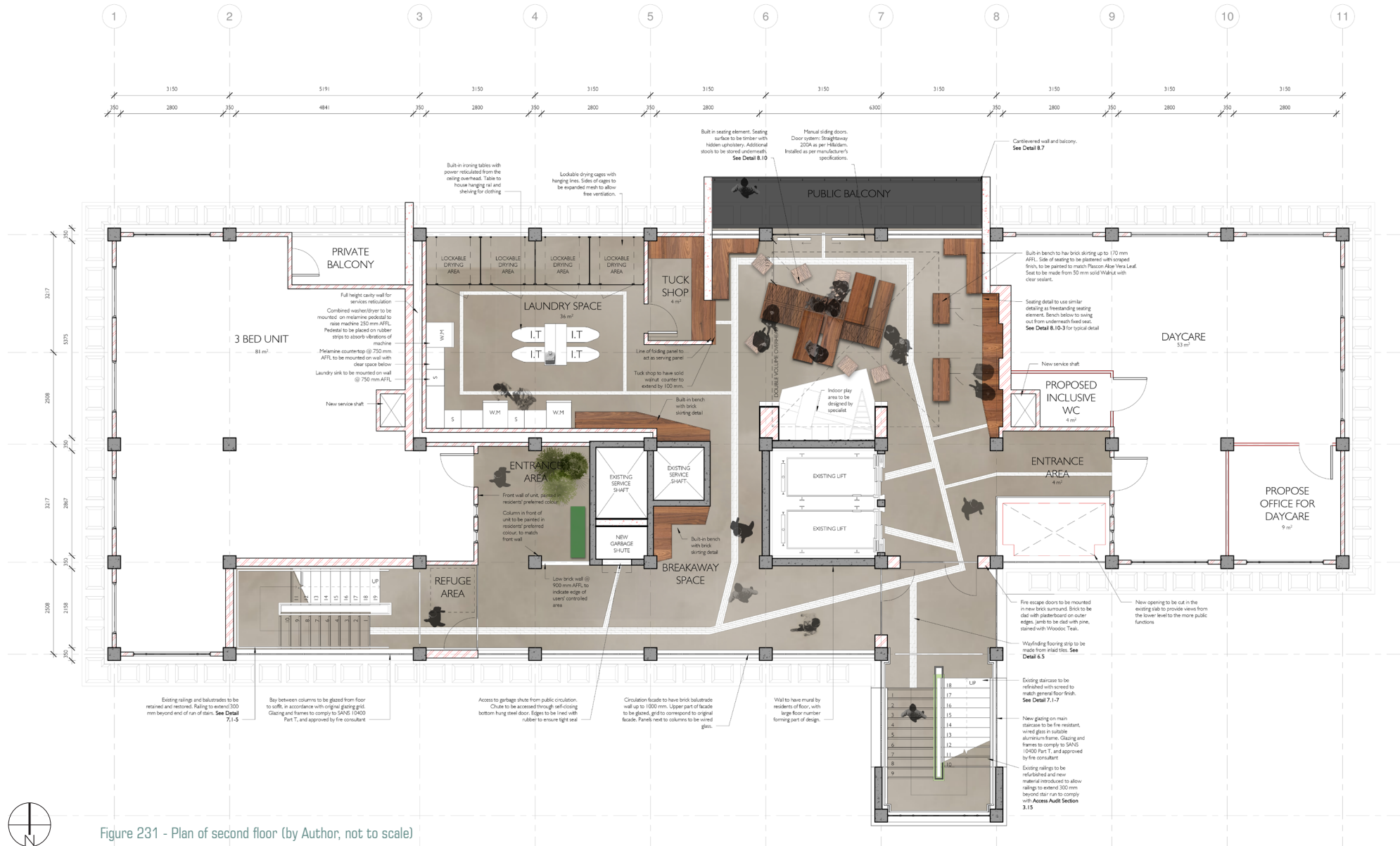


Figure 231 - Plan of second floor (by Author, not to scale)

Social housing with interior public spaces

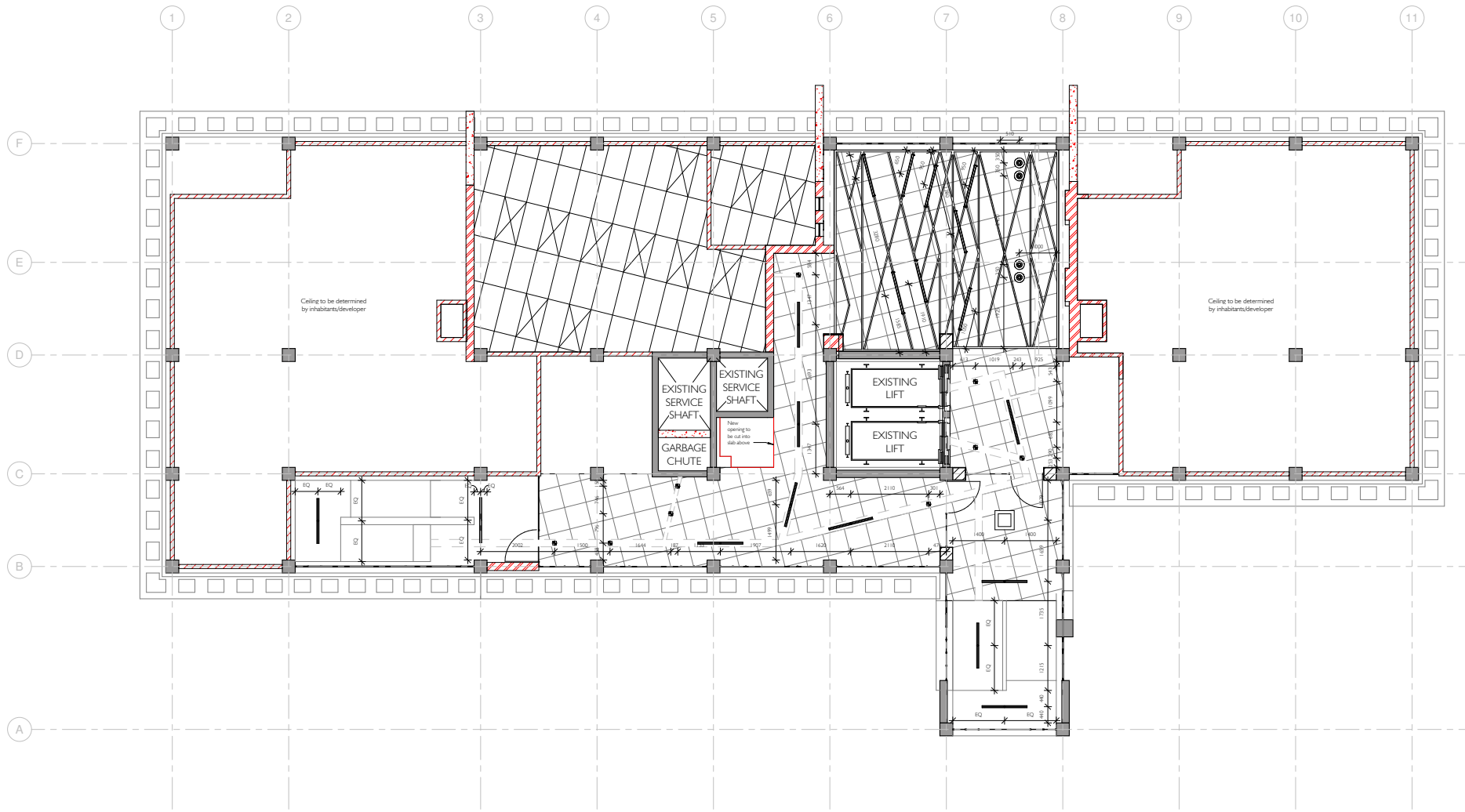


Figure 232 - Third floor ceiling and lighting layout (by Author, not to scale)

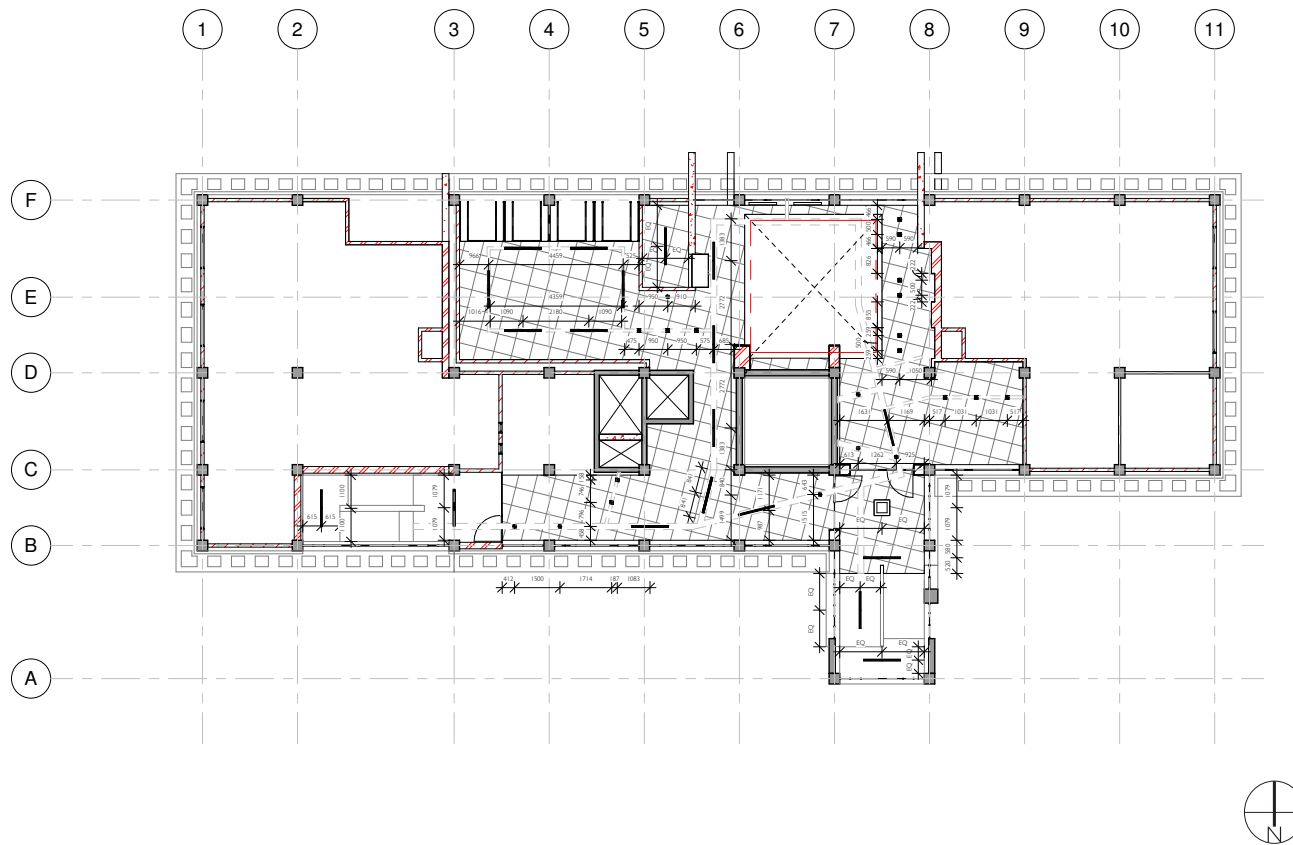


Figure 233 - Second floor ceiling and lighting layout (by Author, not to scale)

Name	Image	Symbol	Specifications
Afrodita (Surface Mounted Downlight)			Lamp Type: 1 x E27, max 30 W Size: 120(L) x 120 (W) x 130 (H) mm Warranty: 2 Years Supplier: LEDSC4 Code: 15-9558-CA-B8
E27 Lamp			Lamp Type: E27 LED Lamp Power: 7 W Size: 60 Ø x 114 (H) mm Colour Temp: 3 000 K (Warm White) Lifespan: 30 000 hours Luminous Flux: 500 lx Supplier: Radiant Lighting Code: LED128
GU10 Lamp for Mini: LED120			Lamp Type: GU10 LED Lamp Power: 7 W Size: 50(L) x 56 (H) mm Colour Temp: 3 000 K (Warm White) Lifespan: 30 000 hours Luminous Flux: 450 lx Supplier: Radiant Lighting Code: LED120
Infinite (Linear Lighting Fixture)			Lamp Type: 2 x G5 Size: 1 200 (L) x 104 (W) x 105 (H) mm Warranty: 2 Years Supplier: LEDSC4 Code: AD-0701-N3-00
G5 Lamp for Infinite Fixture			Lamp Type: G5 Fluorescent Power: 13 W Size: 517 (L) x 16 Ø mm Colour Temperature: 4 200 K (Cool White) Lifespan: 6 000 hours Luminous Flux: 740 lx Supplier: Radiant Lighting Code: YFTL005
Custom Signage			Lamp Type: 2 x G10q 4pin Size: 500 (L) x 300 (W) x 250 (H) mm To be custom made by appropriate craftsman. See detail 8.12.
G10q 4 Pin Lamp for Custom Signage			Lamp Type: G10q 4 Pin Compact Fluorescent Power: 28 W Size: 195 (L) x 205 Ø mm Colour Temperature: 4 200 K (Cool White) Lifespan: 8 000 hours Luminous Flux: 2050 lx Supplier: Radiant Lighting Code: YFTL003
Custom Pendant			Lamp Type: E27 LED Lamp Size: 270 Ø x 330 (H) mm To be custom made to match previous pendants.
Lay-in ceiling			600x1200 mm Lay-in ceiling with recessed joints. Panels to be compound panels with acoustic absorptive material behind
Acoustic Treatment			Ecophon Focus B Tech acoustic ceiling to be glued directly onto soffit. Colour: White Frost
Ceiling Detail			See Detail 8.9

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Figure 234 - Rendering of night scene in public space (by Author)

Public Space		Intimate Seating		Main Circulation & Fire Escape		Laundry Area	
Required Lux	500	Required Lux	200	Required Lux	200	Required Lux	500
Achieved Lux	585	Achieved Lux	337	Achieved Lux	308,95	Achieved Lux	511
1 Luminous Flux	53280	1 Luminous Flux	18000	1 Luminous Flux	36180	1 Luminous Flux	57780
Type 1 - Suspended Linear		Type 1 - Recessed Downlighter		Type 1 - Surface Mounted Linear		Type 1 - Surface Mounted Linear	
Number of Luminaires	6	Number of Luminaires	6	Number of Luminaires	4	Number of Luminaires	6
Number of Lamps	12	Number of Lamps	6	Number of Lamps	8	Number of Lamps	12
Lumen per lamp	740	Lumen per lamp	500	Lumen per lamp	740	Lumen per lamp	740
Total	53280	Total	18000	Total	23680	Total	53280
Room Index	0,5	Room Index	1,05	Type 2 - Surface Mounted Downlighter		Type 2 - Surface Mounted Downlighter	
Length	4,5	Length	2,1	Number of Luminaires	5	Number of Luminaires	3
Width	4,7	Width	5,9	Number of Lamps	5	Number of Lamps	3
Height (Working plane height)	4,7	Height (Working plane height)	2,8	Lumen per lamp	500	Lumen per lamp	500
LxW	21,15	LxW	12,39	Total	12500	Total	4500
L+W	9,2	L+W	8	Room Index	3,10	Room Index	1,2
2 Utilisation Factor (UF) (from table)	0,35	2 Utilisation Factor (UF) (from table)	0,35	Length	2,1	Length	5
3 Maintenance Factor (MF)	0,66389	3 Maintenance Factor (MF)	0,66389	Width	17,4	Width	6
Lamp Lumen Maintenance Factor (LLMF) (From table)	0,87	Lamp Lumen Maintenance Factor (LLMF) (From table)	0,87	Height (Working plane height)	2,8	Height (Working plane height)	2,1
Lamp Survival Factor (LSF) (From table)	0,99	Lamp Survival Factor (LSF) (From table)	0,99	LxW	36,54	LxW	30
Luminaire Maintenance Factor (LMF) (From table)	0,82	Luminaire Maintenance Factor (LMF) (From table)	0,82	L+W	19,5	L+W	11
Room surface maintenance Factor (RSMF) (From table)	0,94	Room surface maintenance Factor (RSMF) (From table)	0,94	2 Utilisation Factor (UF) (from table)	0,47	2 Utilisation Factor (UF) (from table)	0,47
4 Working Plane	21,15	4 Working Plane	12,	3 Maintenance Factor (MF)	0,66389	3 Maintenance Factor (MF)	0,66389
				Lamp Lumen Maintenance Factor (LLMF) (From table)	0,87	Lamp Lumen Maintenance Factor (LLMF) (From table)	0,87
				Lamp Survival Factor (LSF) (From table)	0,99	Lamp Survival Factor (LSF) (From table)	0,99
				Luminaire Maintenance Factor (LMF) (From table)	0,82	Luminaire Maintenance Factor (LMF) (From table)	0,82
				Room surface maintenance Factor (RSMF) (From table)	0,94	Room surface maintenance Factor (RSMF) (From table)	0,94
				4 Working Plane	36,54	4 Working Plane	30

Table 3 - Lighting calculations of public space (by Author)

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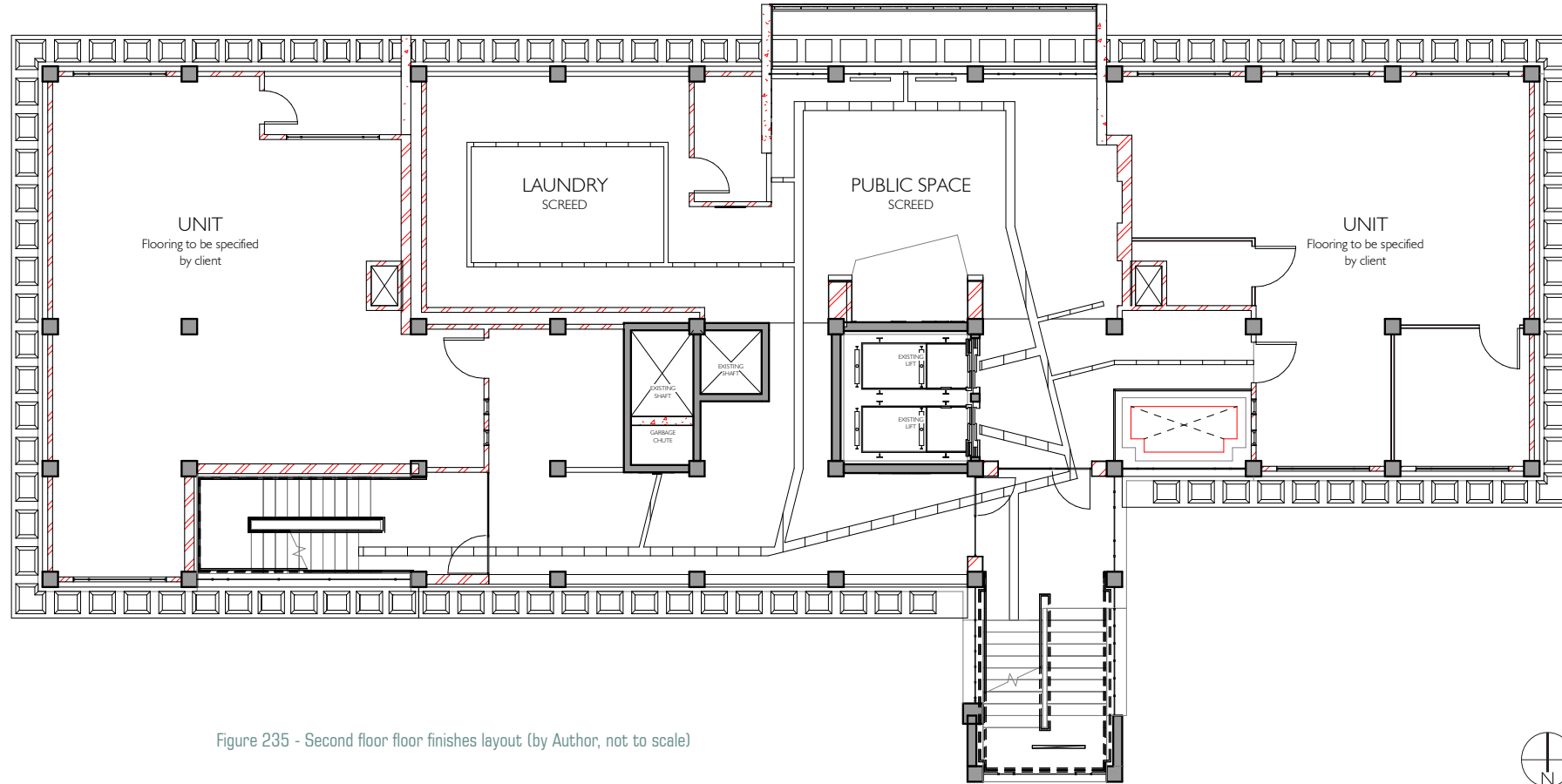


Figure 235 - Second floor floor finishes layout (by Author, not to scale)

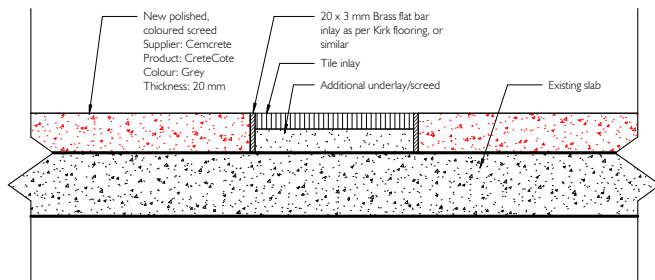


Figure 236 - Flooring inset strip detail (by Author, not to scale)

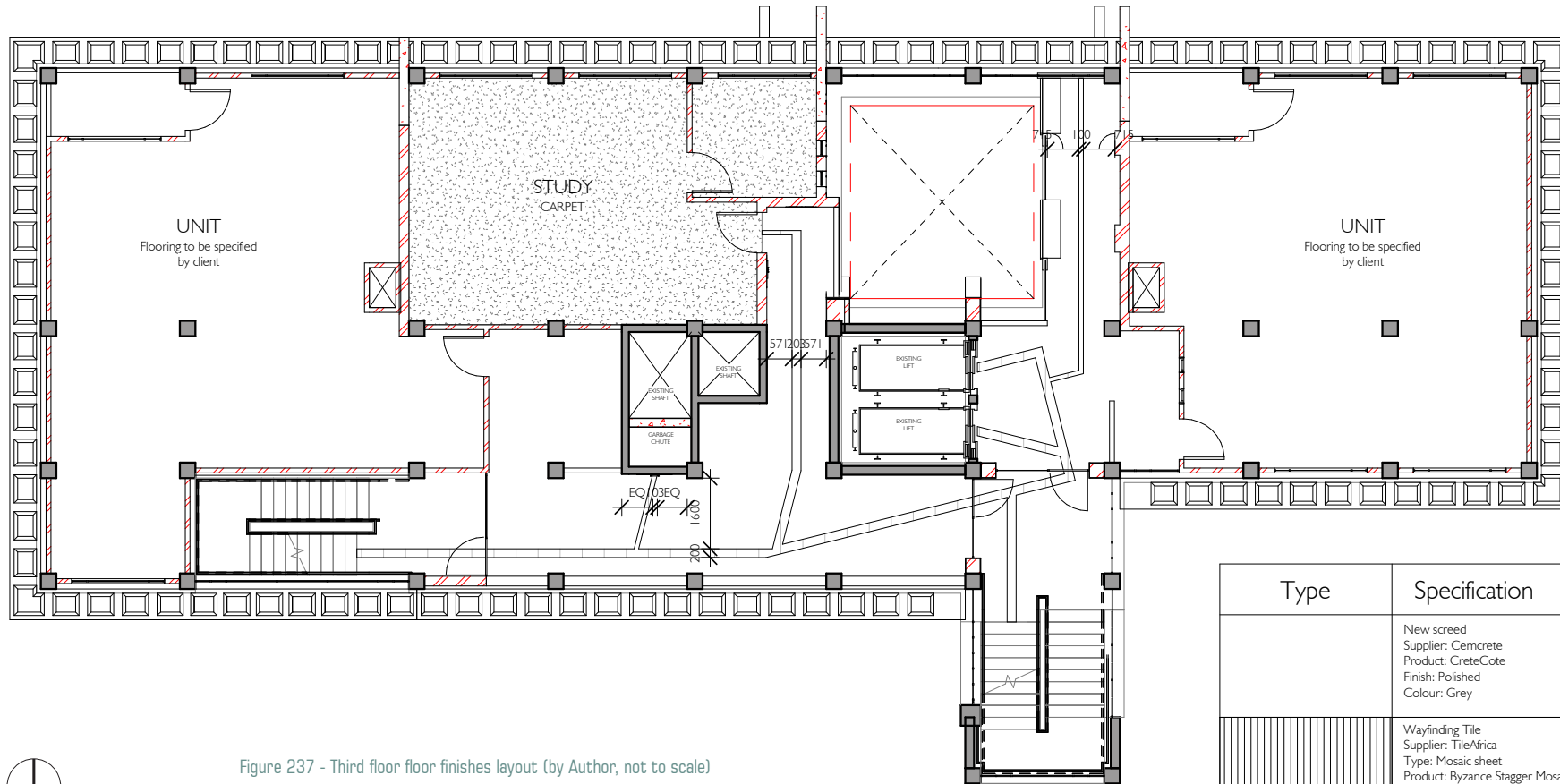

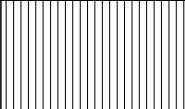



Figure 237 - Third floor floor finishes layout (by Author, not to scale)

Type	Specification
	New screed Supplier: Cemcrete Product: CreteCote Finish: Polished Colour: Grey
	Wayfinding Tile Supplier: TileAfrica Type: Mosaic sheet Product: Byzance Stagger Mosaic Colour: Bianco (T0027182) Size (Sheet): 300x300 mm
	Carpet Supplier: Van Dyck Floors Type: Woven vinyl carpet Product: Athena Klassikos Colour: Burlap Size (Sheet): 300x300 mm

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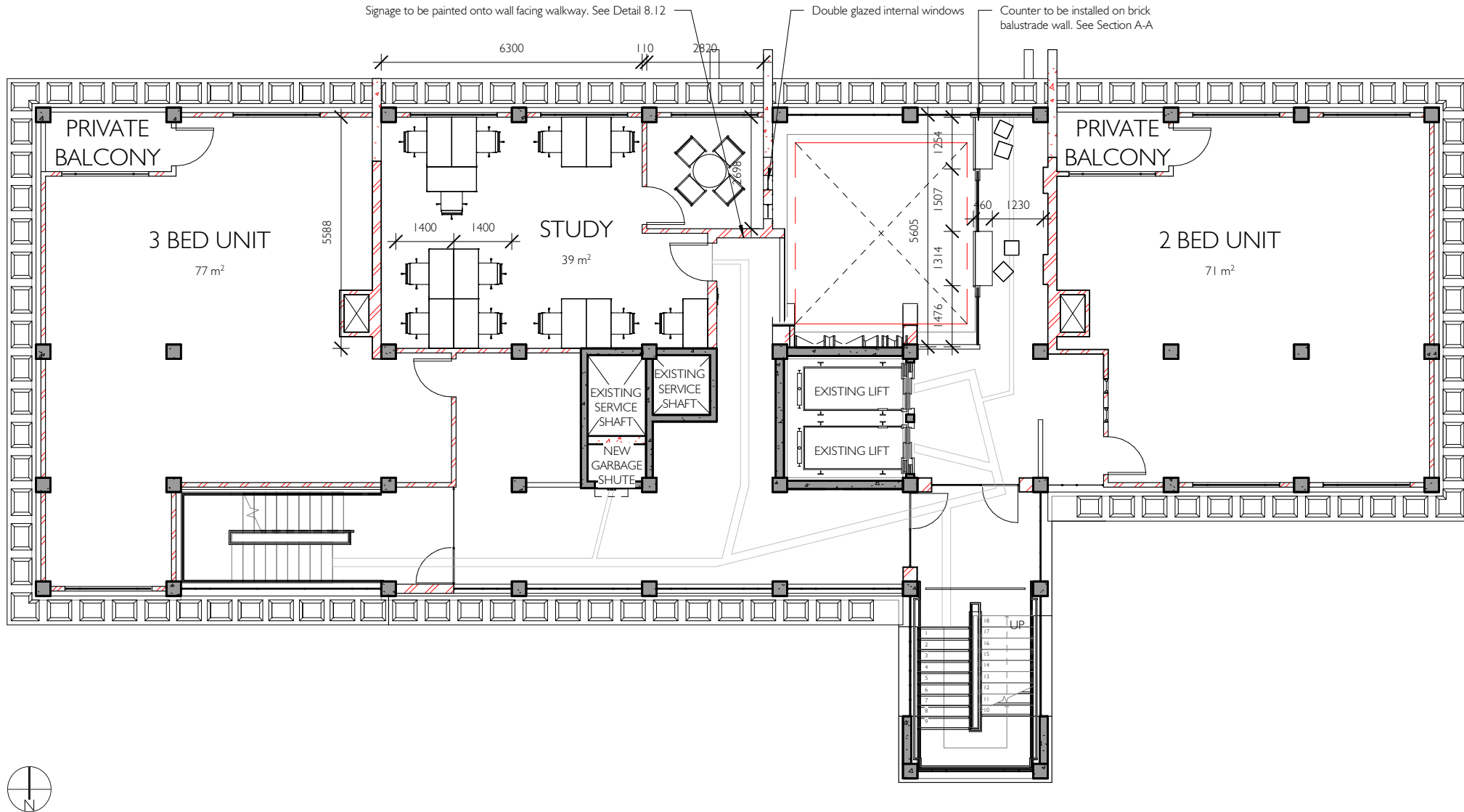


Figure 238 - Third floor layout (by Author, not to scale)

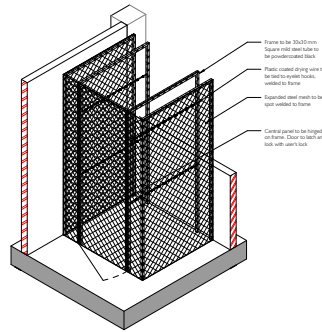


Figure 239 - Axonometric of laundry drying areas (by Author, not to scale)

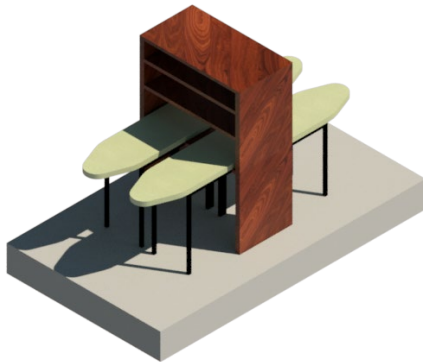


Figure 240 - Axonometric of laundry ironing tables (by Author, not to scale)

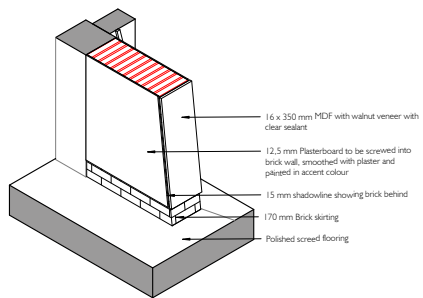


Figure 241 - Wall framing detail (by Author, not to scale)

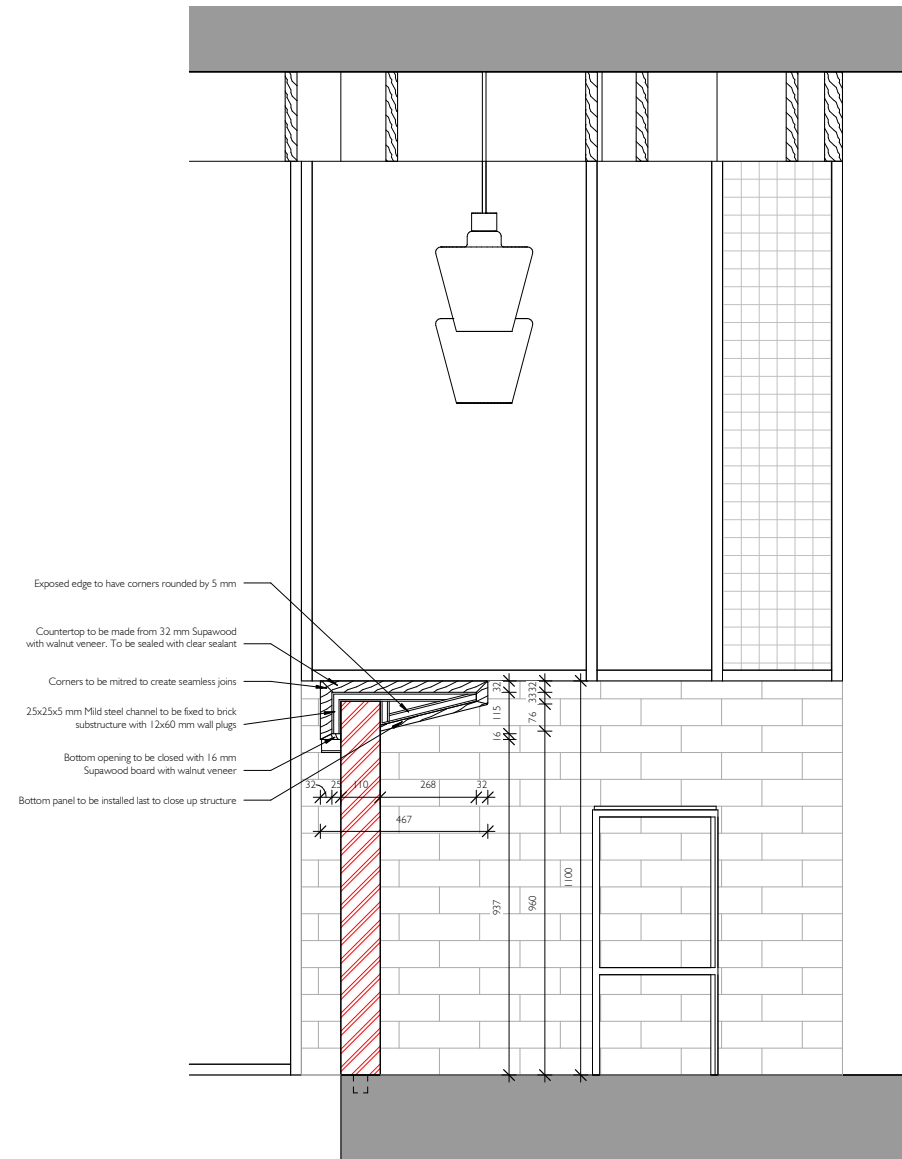


Figure 242 - Section of overhead balcony (by Author, not to scale)

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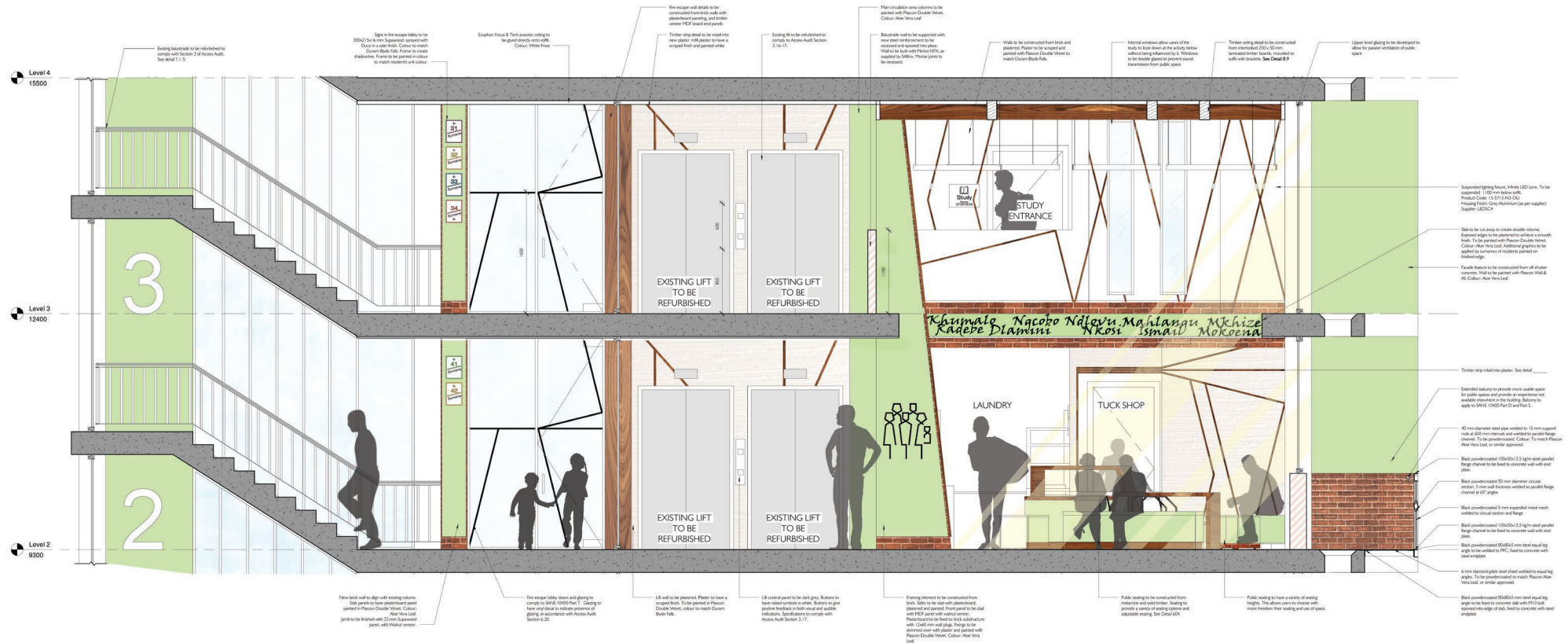


Figure 243 - Section A-A of public space (by Author, not to scale)

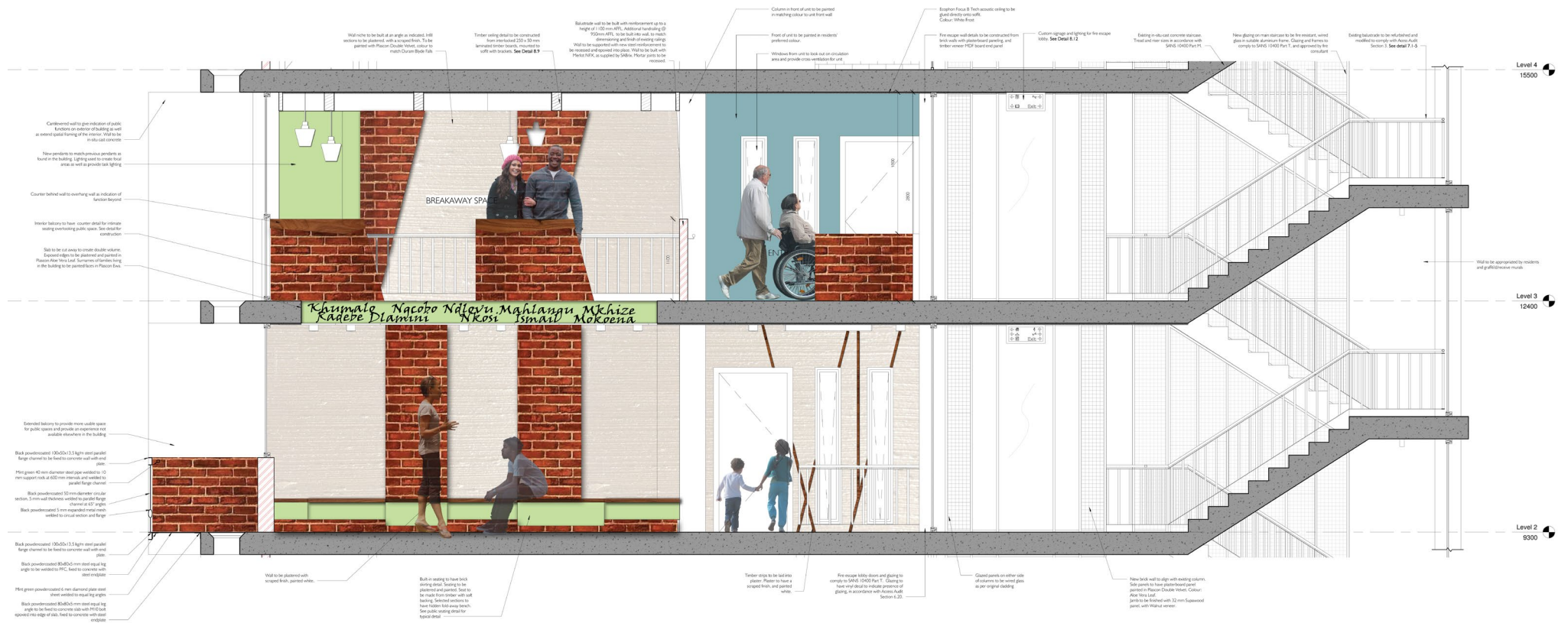


Figure 244 - Section B-B of public space (by Author, not to scale)

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5.17.1 Ceiling Detail (Detail 8.9)

In the development of the building identity, it was necessary to design a feature element that can be repeated in all public spaces to establish a consistent identity and language. It was decided to apply this feature as a ceiling element. Applying the intervention to the ceiling allows for a more intricate design. It will be out of reach for regular contact, and will not be as maintenance-intensive.

The ceiling detail was developed by re-interpreting the existing building grid (Figure 158 to Figure 160). The ceiling detail comprises of heat-treated pine beams mounted on edge to the existing soffit. The mountings are then covered by the acoustic glass wool insulation. The acoustic treatment is necessary to provide a comfortable environment for all users, as well as residents living adjacent to the public spaces.

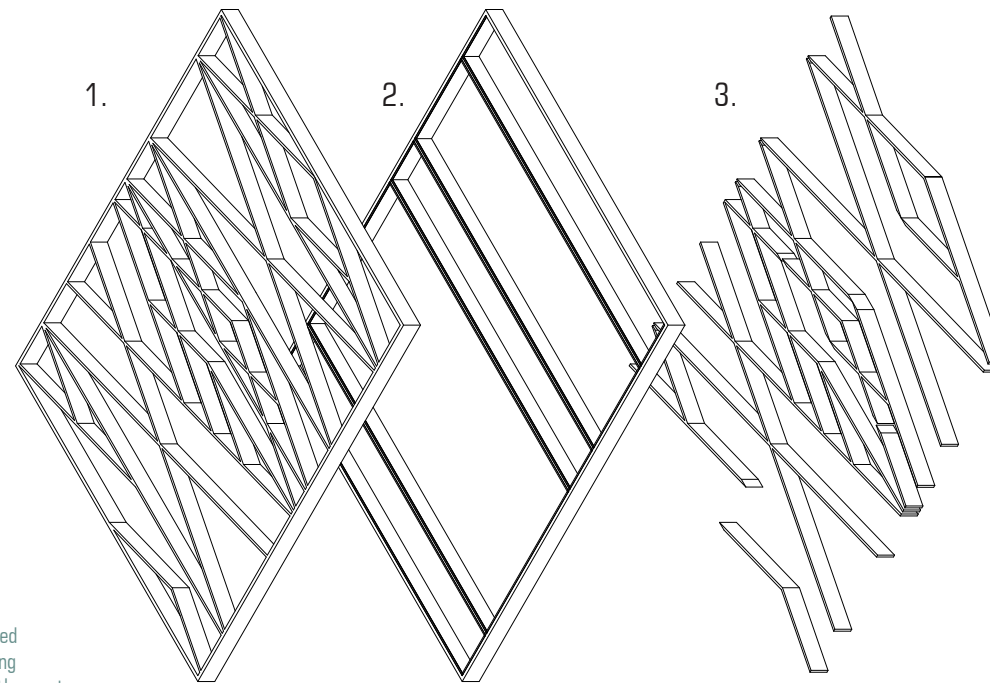
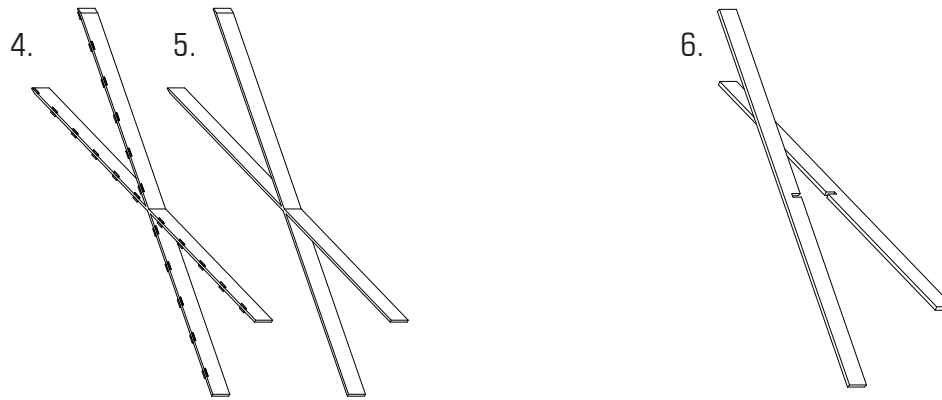


Figure 245 - Exploded axonometric of ceiling intervention (by Author, not to scale)

1. Final Product

2. Frame to be attached to soffit with 20x20x5 mm Aluminium equal angles, to be shot nailed with a Hilti gun into soffit above. Channels to run the length of frame

3. Internal angles to be arranged within frame as per design



4. Internal angles to be made from 250x50 mm heat-treated laminated pine beams, as per Rhinowood. To be fixed to soffit with 100mm lengths of 20x20x5 mm aluminium equal angles, at 500 mm centres.

5. Internal angles to be pre-manufactured to fit into frame

6. Internal angles to join to one another with cross halving joints, to limit the amount of fixings required.

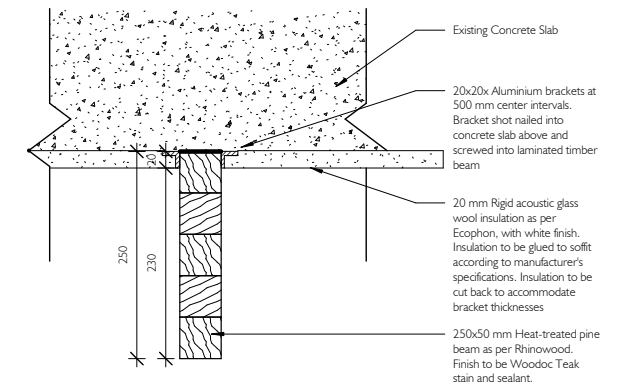


Figure 246 - Detail of fixture to ceiling (by Author; not to scale)

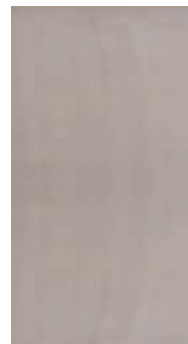
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5.17.2 Flooring Details

With the introduction of dedicated wayfinding flooring strips, a hard-wearing floor surface and insert was necessary. The flooring surface was chosen to be a coloured screed to accommodate the hard-wearing and cost requirements. A flooring detail was developed to allow a clean and easily installed wayfinding texture. The floor finishes layout can be seen in Figure 194 for the ground floor, Figure 234 for the second floor and Figure 236.

5.17.3 Wall Details

In conjunction with the floor wayfinding strips, wall inlays were developed. The wall inlays will serve to connect the ceiling detail and pattern with the wayfinding flooring detail. To link the ceiling and wall detail, a stained pine strip was the material of choice. For this detail, the installation process was of concern. The timber strip will be inlaid into a plastered wall. The wet nature of the plaster application will warp the timber if installed simultaneously. To resolve this, an aluminium channel will be mounted to the wall before the plaster is applied. This will allow the plaster to be applied neatly and finished before the strip is inlaid. The strip will also serve to protect the plaster if the timber strip needs to be replaced.



The main floor finish will be a new screed that will even out the irregularities of the existing floor.

Supplier: Cemcrete
Product: Cretecote
Colour: Grey



As wayfinding detail, small tiles will be inlaid into the screed to provide a tactile but hazard-free wayfinding method.

Wayfinding Tile
Supplier: TileAfrica
Type: Mosaic sheet
Product: Byzance Stagger Mosaic
Colour: Bianco (T0027182)
Size (Sheet): 300x300 mm



Supplier: Plascon
Colour: Summer Blush (R2-C1-2)



Supplier: Plascon
Colour: Chakalaka (R7-B1-2)



Supplier: Plascon
Colour: Alex (O4-B1-2)



Supplier: Plascon
Colour: Panorama Lights (Y4-A1-2))



Supplier: Plascon
Colour: Citrus Splash (G1-A1-2)



Supplier: Plascon
Colour: Atlantis Cliff (B2-C1-3)



Material: Pine
Stain supplier: Woodoc
Colour: Teak
Finish: Satin/Waxed

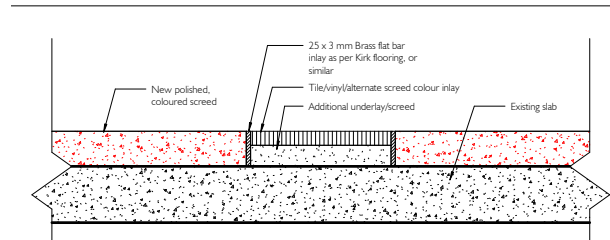


Figure 247 - Flooring detail and material specifications (by Author)

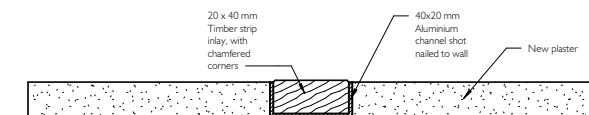
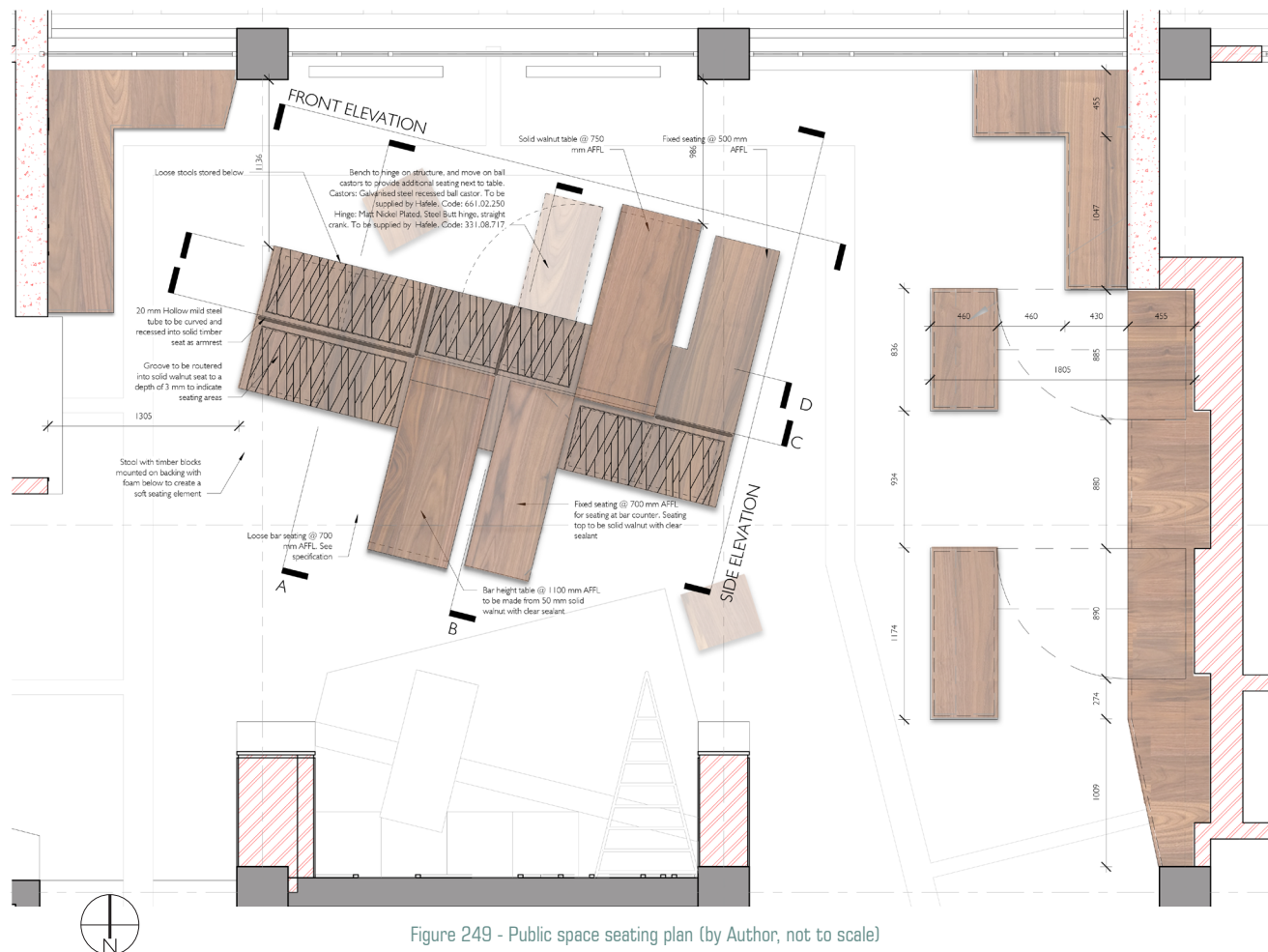


Figure 248 - Flooring detail and material specifications (by Author)

5.17.4 Public Seating Elements (Detail 8.10)

Providing a variety of seating is necessary to ensure all users of the public spaces with a choice of seating in different microclimates and views. The seating must accommodate for small to large groups of people, as well as, where possible, some appropriation of the seating itself. This appropriation is manifested by moving selected seating elements into more comfortable locations. This adaptation and appropriation will also encourage a sense of ownership in these spaces, and residents will hold one another accountable for the care of these elements.

The seating element has a fixed table height counter with fixed bench, as well as a swing out bench on the opposite side to provide additional seating if required, while allowing for a wheelchair user to sit opposite the fixed seating. Bent steel tubes provide arm and backrests, while recessed grooves indicate the suggested seating areas. The side closest to the play area has a bar height counter with fixed seating, with an open area opposite for standing use. The element provides a variety of views within the public space, as well as out of the space.



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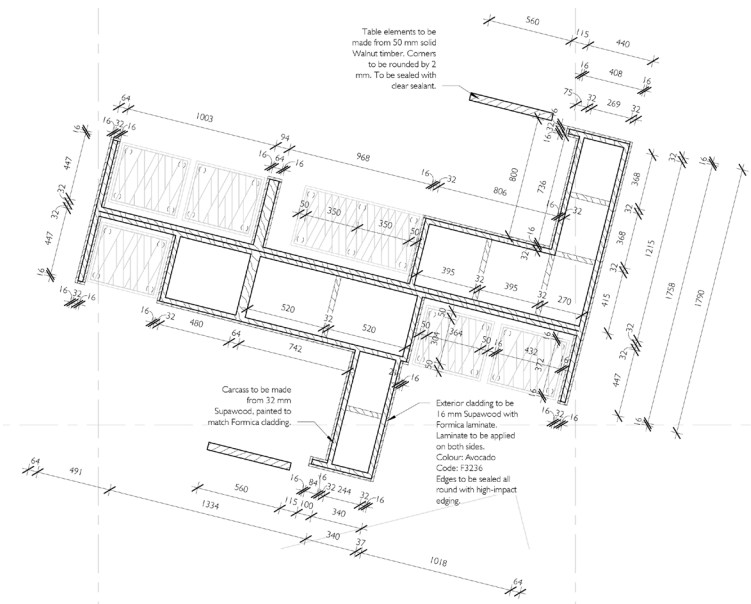


Figure 250 - Public space seating carcass plan (by Author, not to scale)

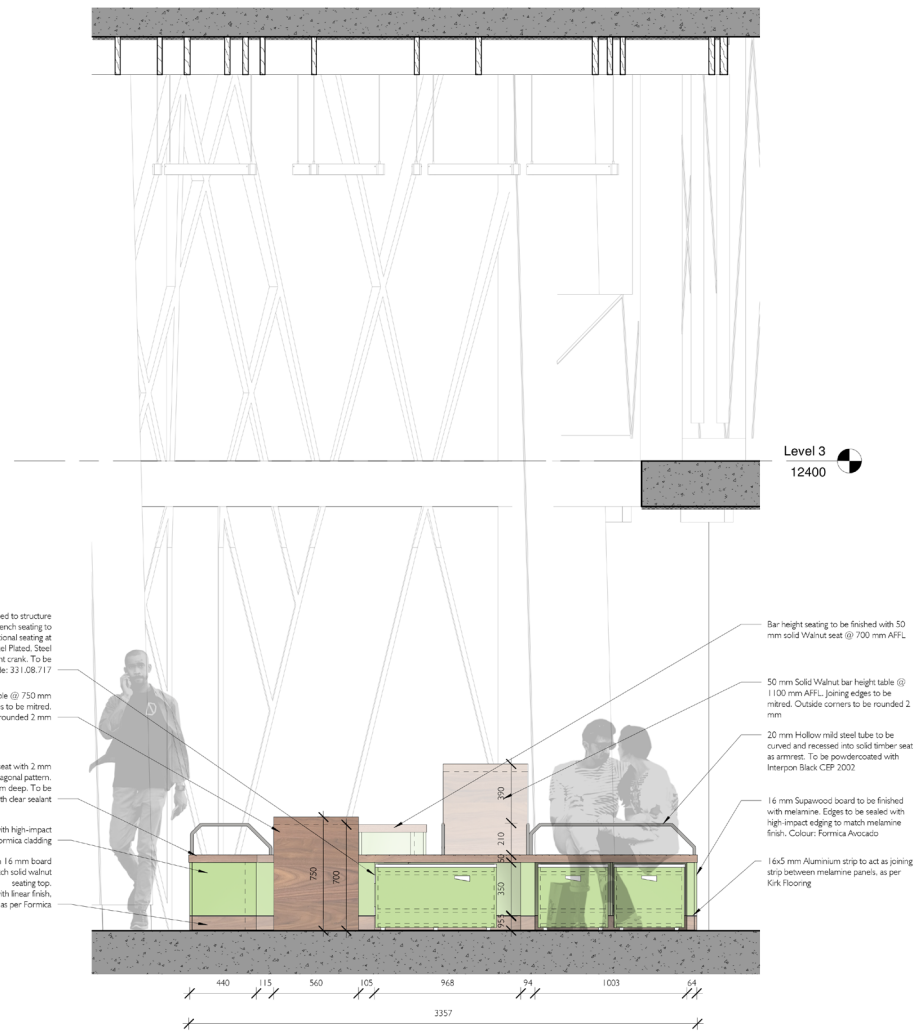


Figure 251 - Public space seating front elevation (by Author, not to scale)

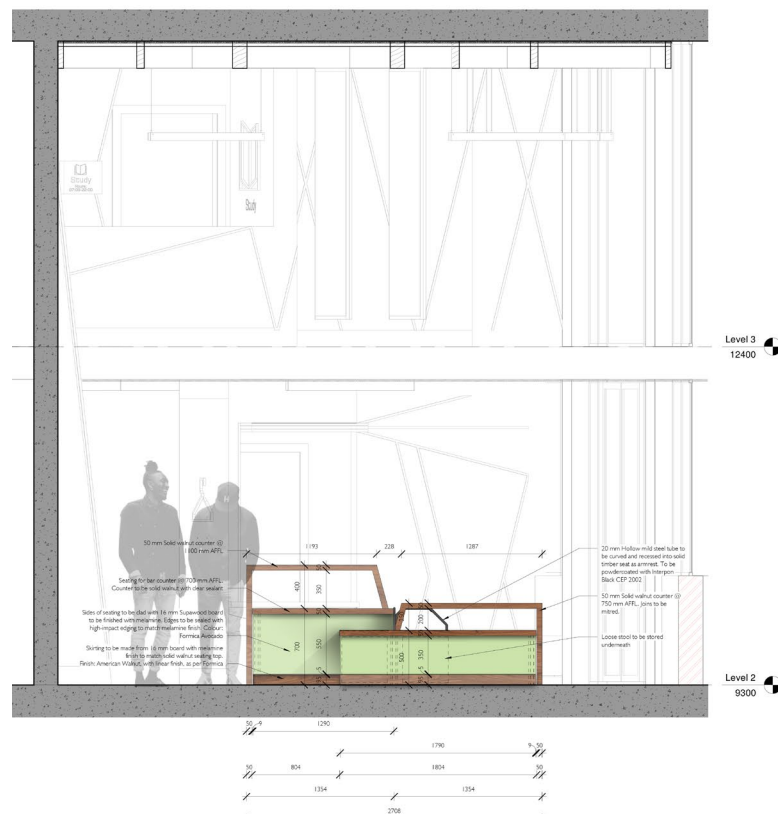


Figure 252 - Public space seating side elevation (by Author, not to scale)

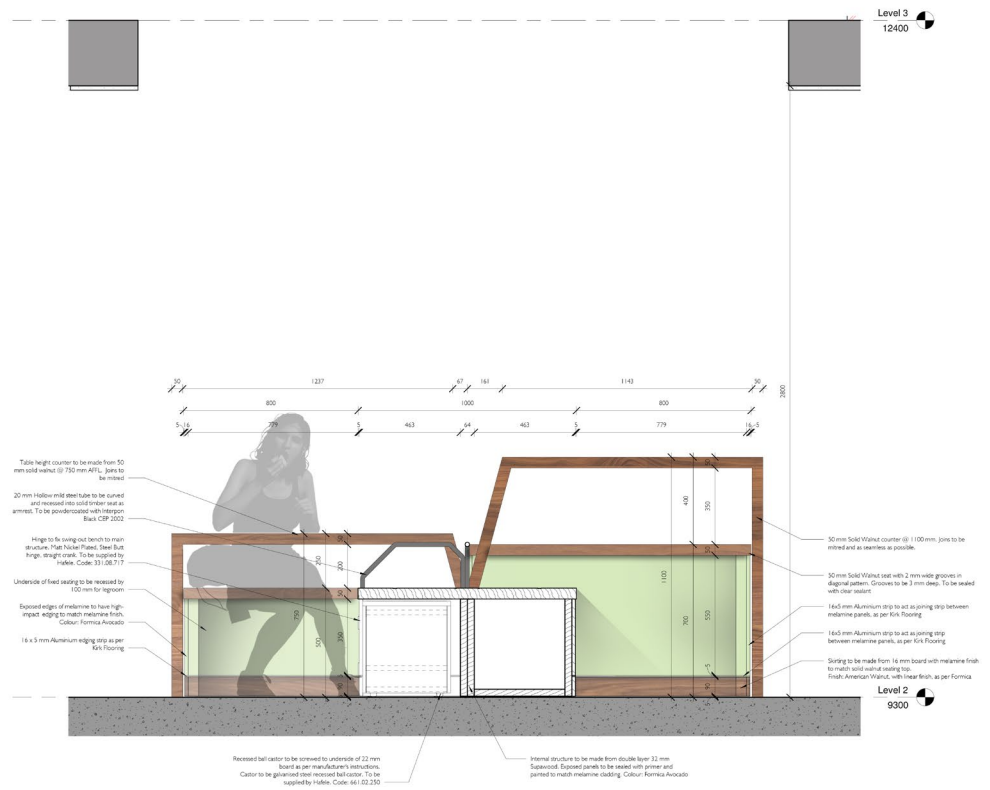


Figure 253 - Public space seating section A-A (by Author, not to scale)

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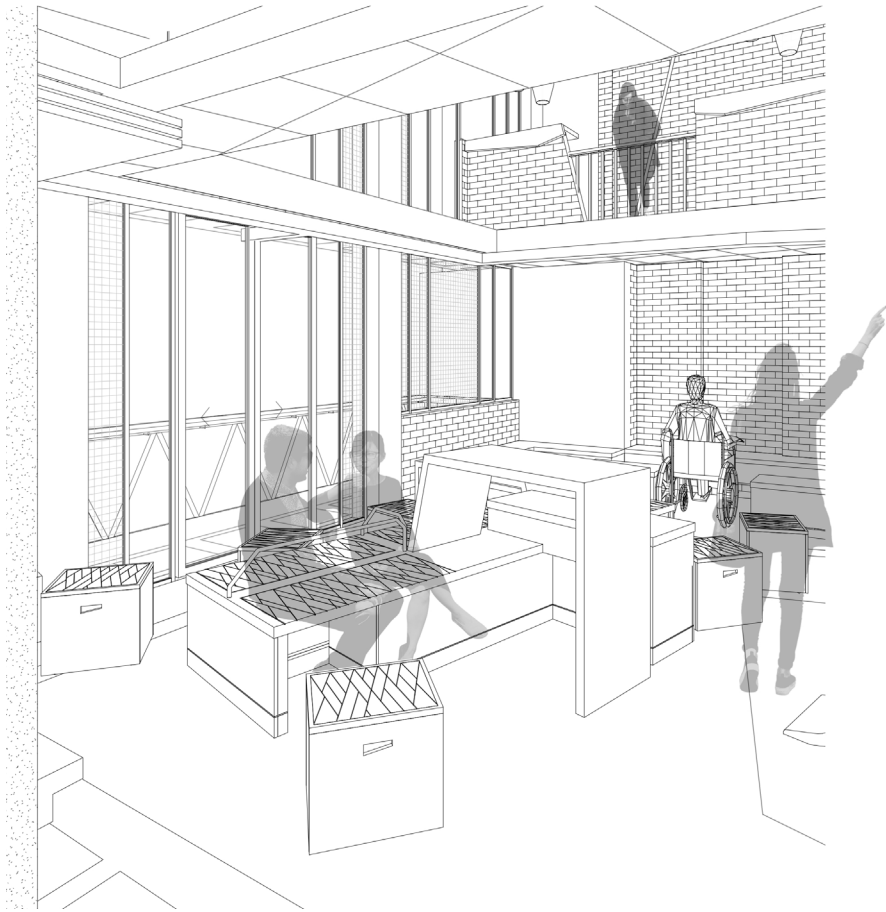


Figure 254 - 3D view of use of public space seating (by Author)

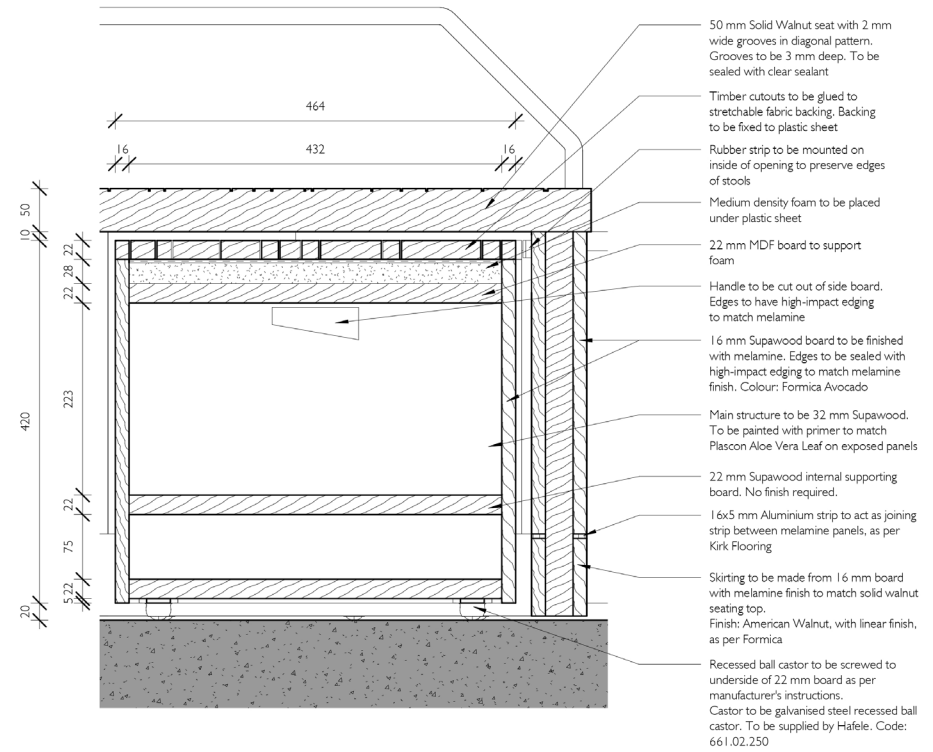


Figure 255 - Sectional detail of loose seating element (by Author, not to scale)



Figure 256 - Photograph of public seating model, front view (by AE Hejdenrych)



Figure 258 - Photograph of public seating model, back view (by AE Hejdenrych)



Figure 257 - Photograph of public seating model, front view with seating exposed (by AE Hejdenrych)



Figure 259 - Photograph of public seating model, back view with seating exposed (by AE Hejdenrych)

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Figure 260 - Photograph of public seating model, close-up, front view with seating hidden (by AE Hejdenrych)



Figure 261 - Photograph of public seating model, close-up, front view with seating exposed (by AE Hejdenrych)

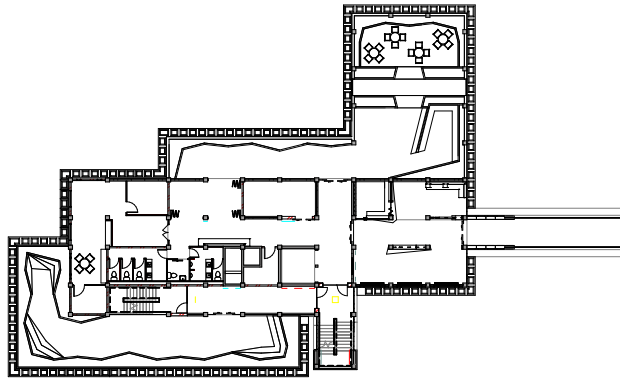


Figure 262 - Layout of signage on Ground Floor (by Author)

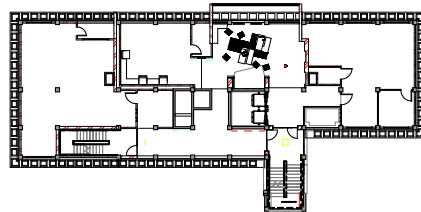


Figure 263 - Layout of signage on Second Floor (by Author)

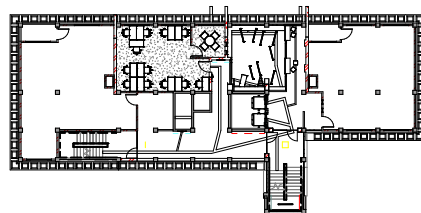


Figure 264 - Layout of signage on Third Floor (by Author)

Legend

	Building Signage - Layout and Numbering
	Emergency Signage (Ceiling Mounted)
	Amenity Signage
	User Appropriated Mural

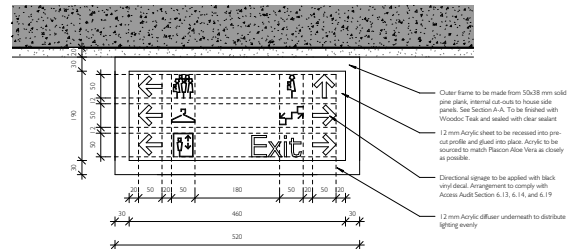


Figure 265 - Side Elevation of fire escape signage (by Author, not to scale)

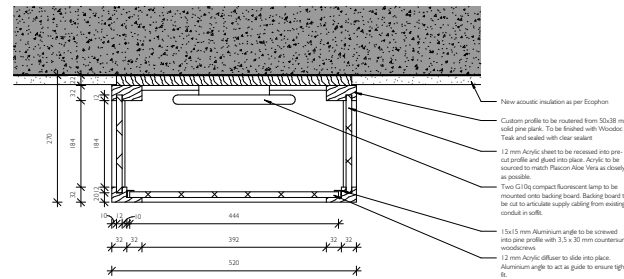


Figure 266 - Section A-A of fire escape signage (by Author, not to scale)

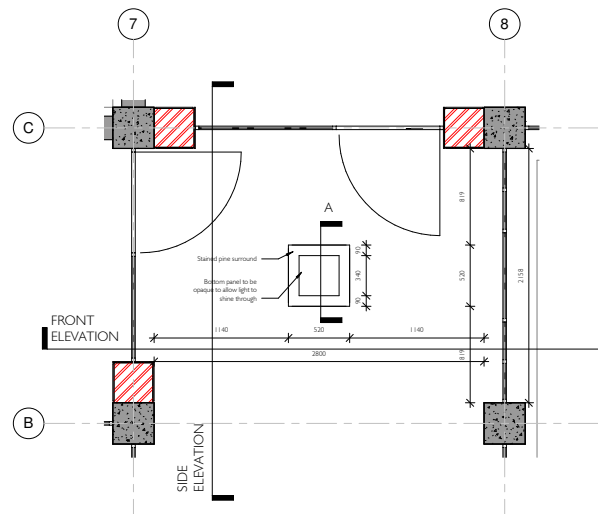


Figure 267 - Ceiling layout of fire escape signage (by Author)

5.17.5 Signage (Detail 8.12)

The signage for the building was identified as a detail investigation after the compilation of the access audit. The signage enables the identity to be seen throughout the building not only in the aesthetic interventions, but also in the integral wayfinding elements. Easily recognisable icons are used consistently, and the development of a lighting fixture that incorporates the signage in the safety aspects of the building.

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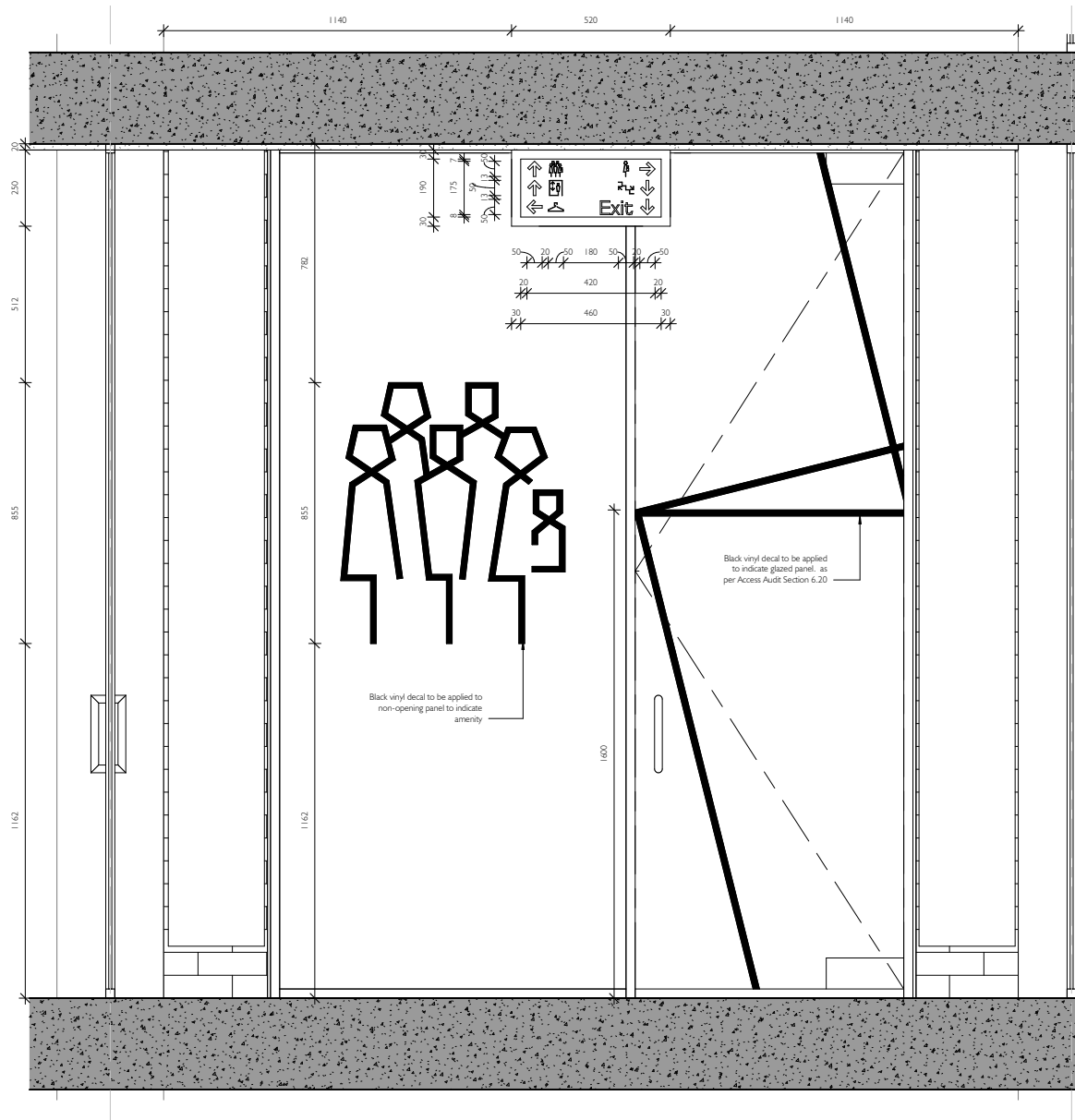


Figure 268 - Front elevation of fire escape signage (by Author, not tot scale)

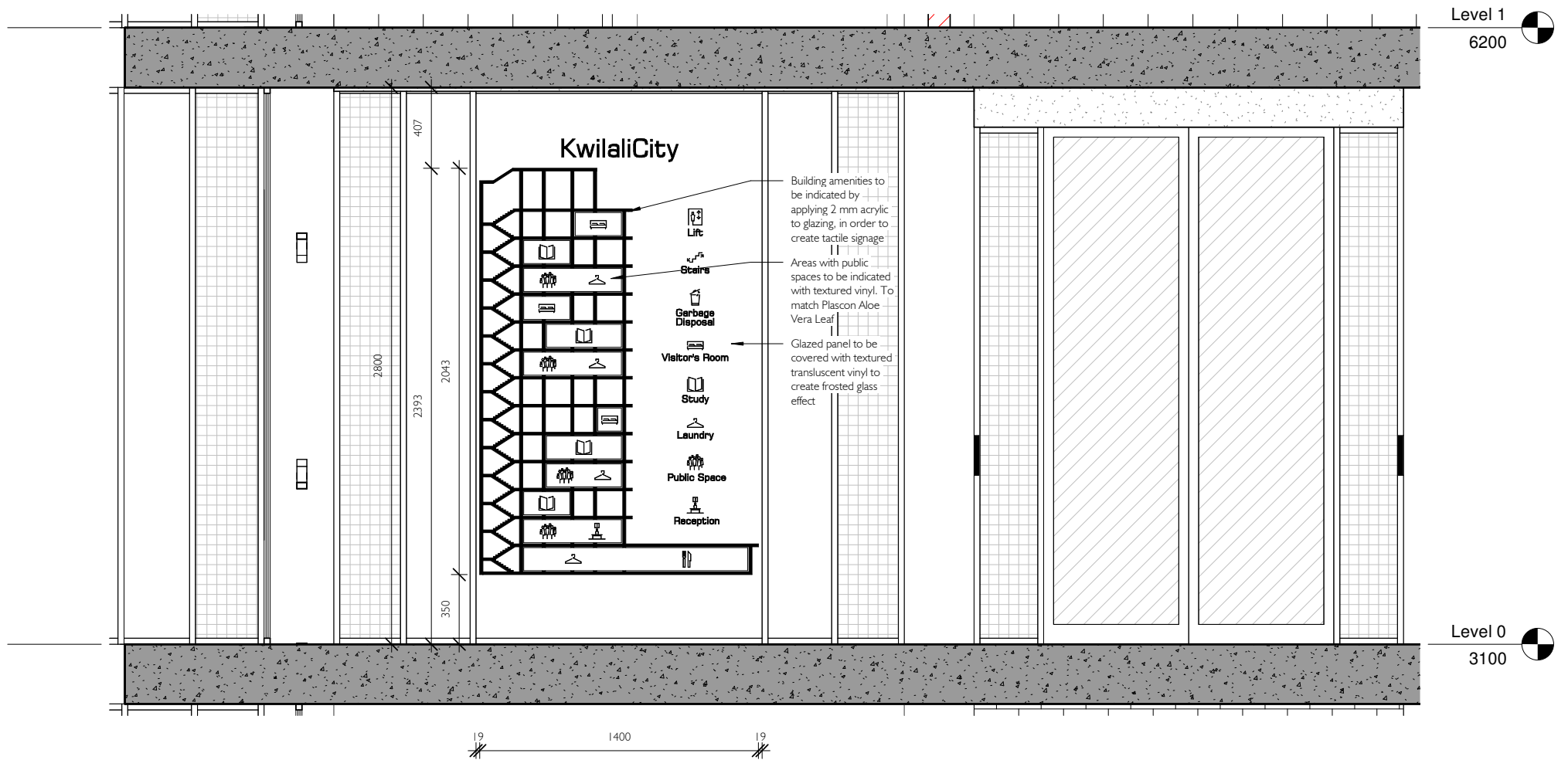


Figure 269 - Elevation of building wayfinding signage (by Author, not tot scale)

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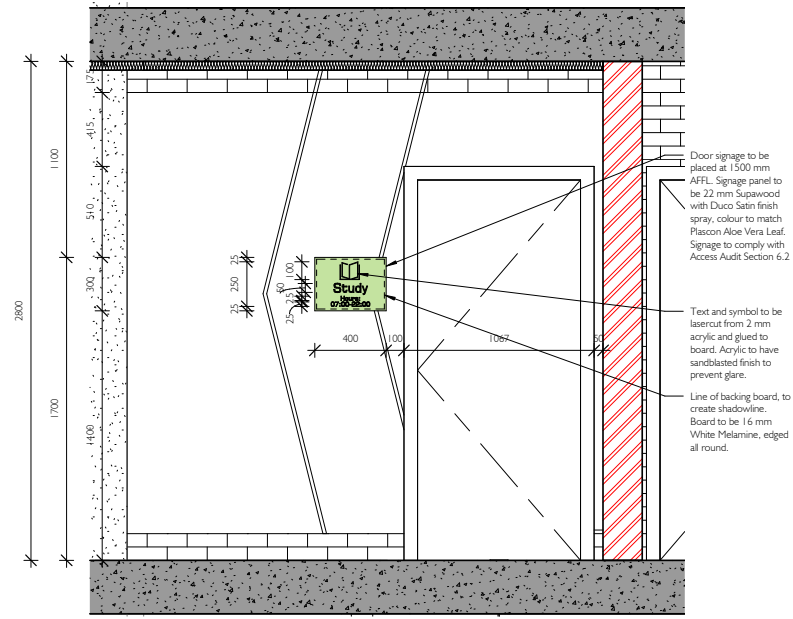
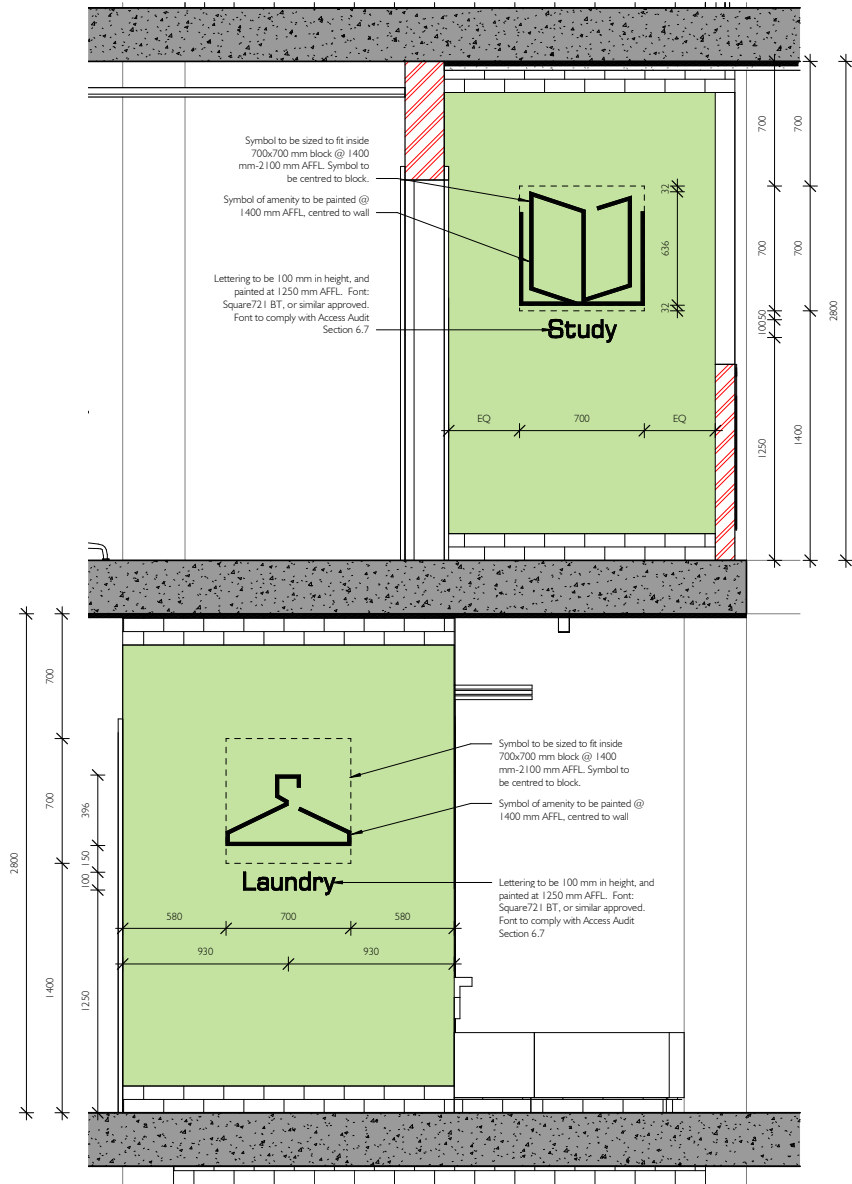


Figure 271 - Elevation of amenity door signage (by Author, not tot scale)

Figure 270 - Elevation of amenity signage (by Author, not tot scale)



Figure 272 - Render of fire escape lobby and signage (by Author)

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Figure 273 - Render of study area entrance (by Author)



Figure 274 - Render of entrance to unit, indicating appropriated colour use (by Author)

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Figure 275 - Render of entrance to public space (by Author)

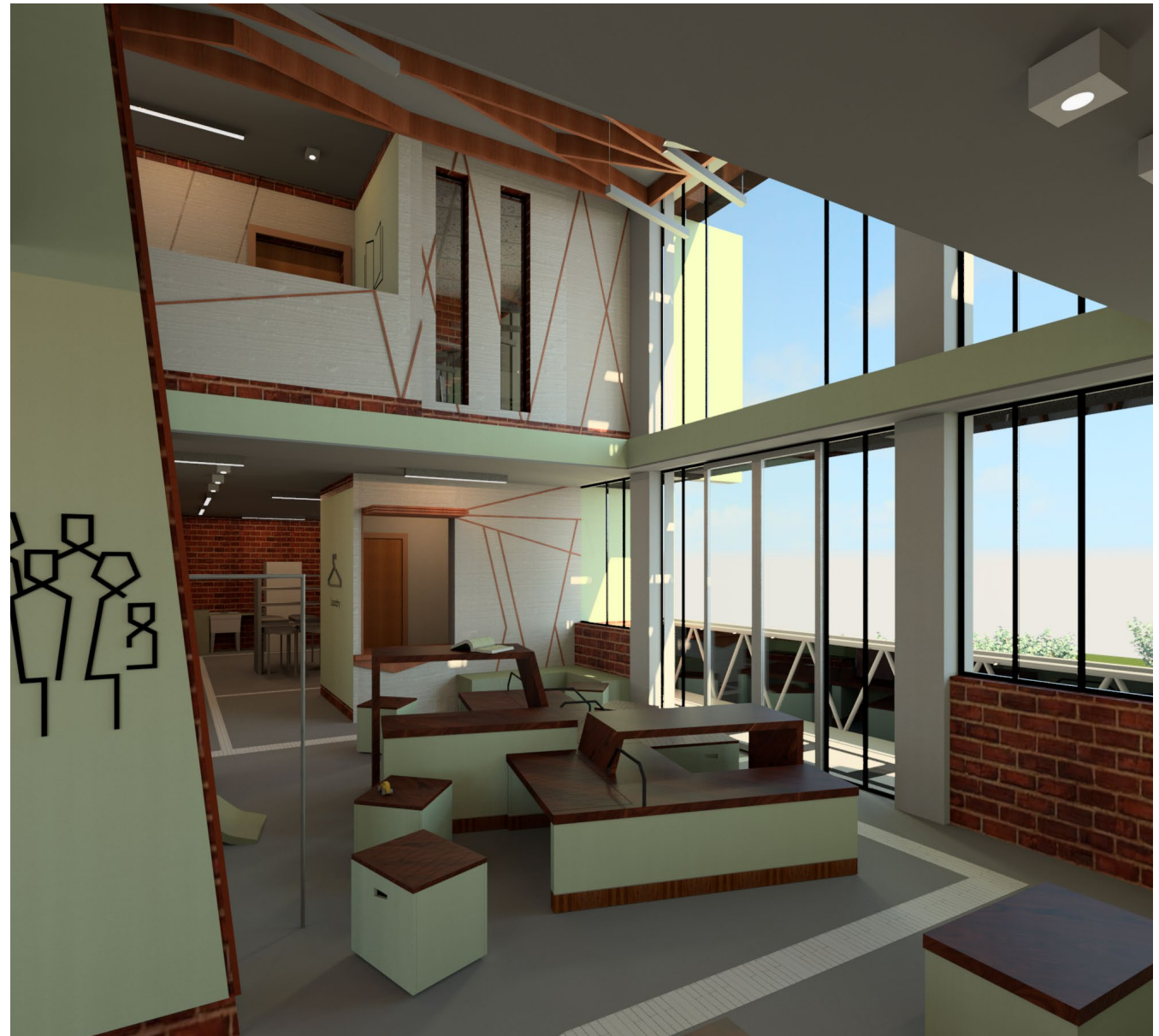


Figure 276 - Render of entrance to public space with view to laundry space (by Author)

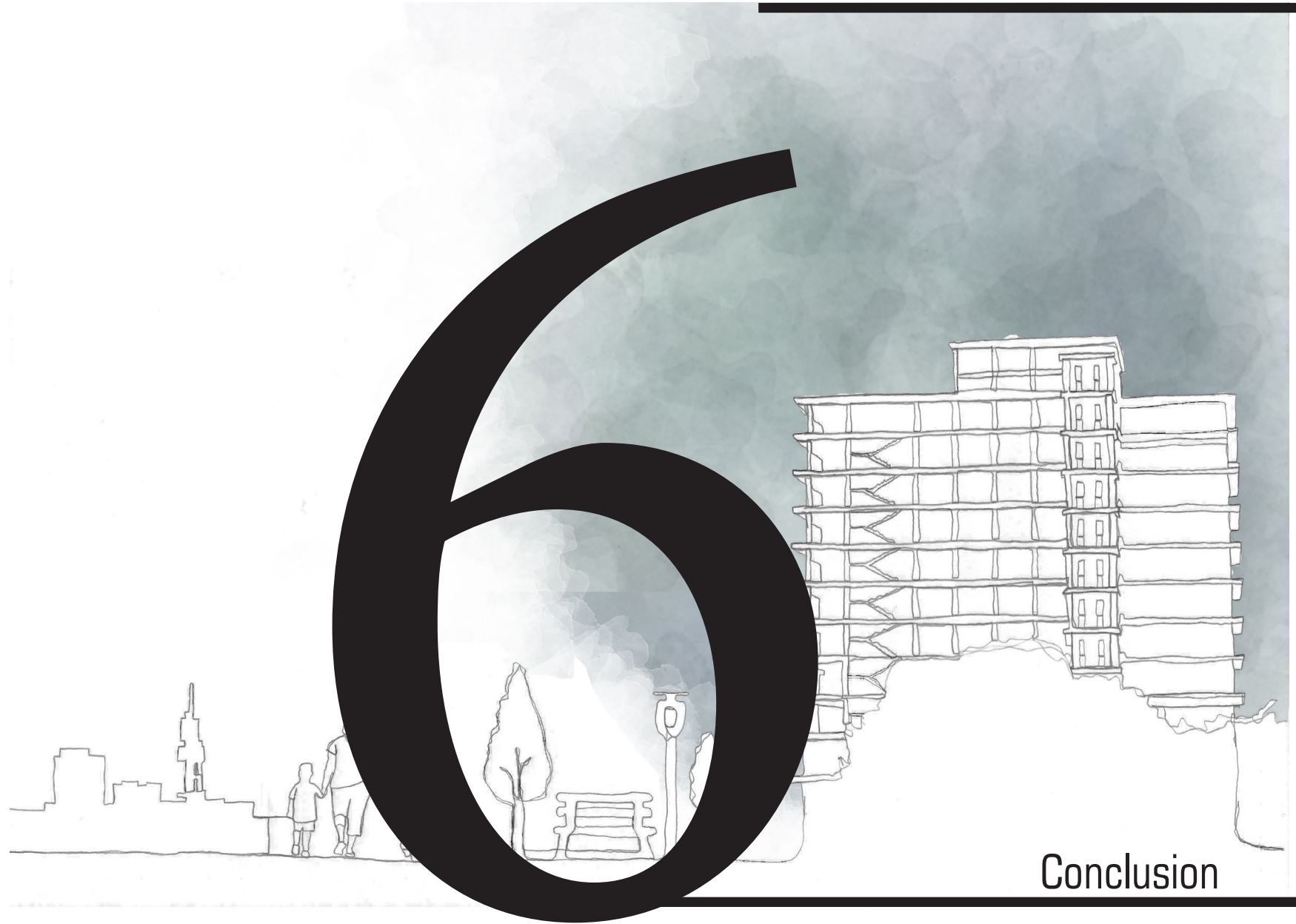


Figure 277 - Render of KwilaliCity
(by Author)

5.18 Conclusion

The concept was strongly influenced by the building's characteristics and existing finishes. This led to a highly place-sensitive concept that consistently relates the design to the existing building. The development of a strong design language aids in making strong design choices that can be repeated throughout the building to create a uniform image and brand for the building.

The chosen technical details serve to ease the use of the building and its public spaces. The audit developed for the purposes of the project tested and applied inclusive design responses to ensure all users can use the building with relative ease and without assistance. The other details were developed to enhance the application of the building's identity and develop standard details that can be applied throughout the building.



Conclusion

Social housing with interior public spaces

The project investigated the relevance of interior design knowledge and approach in the development of social housing for the medium income market, by introducing housing through an adaptive re-use process into abandoned buildings in the Pretoria CBD.

A thorough context analysis indicated a relevant site at Huis Potgieter, which was further analysed with a design intervention in mind.

Research into the users indicated that a key focus area for residents in this market is the provision of public space. A new term, interior public spaces, was developed to describe the nature of the public spaces provided in the building. Public space theories were investigated and synthesised into a comprehensive set of public space guidelines to create a frame of reference within which to develop and apply the interior public spaces. Further research into typical behaviour in similar income developments identified other behaviours such as attachment, appropriation, and a reflection of identity exhibited by users. This led to the design of the interior public spaces to have a strong identity that is visible in all public areas within the building, and is contrasted to specific elements that the users can adapt and appropriate to allow for the behaviours stated above.

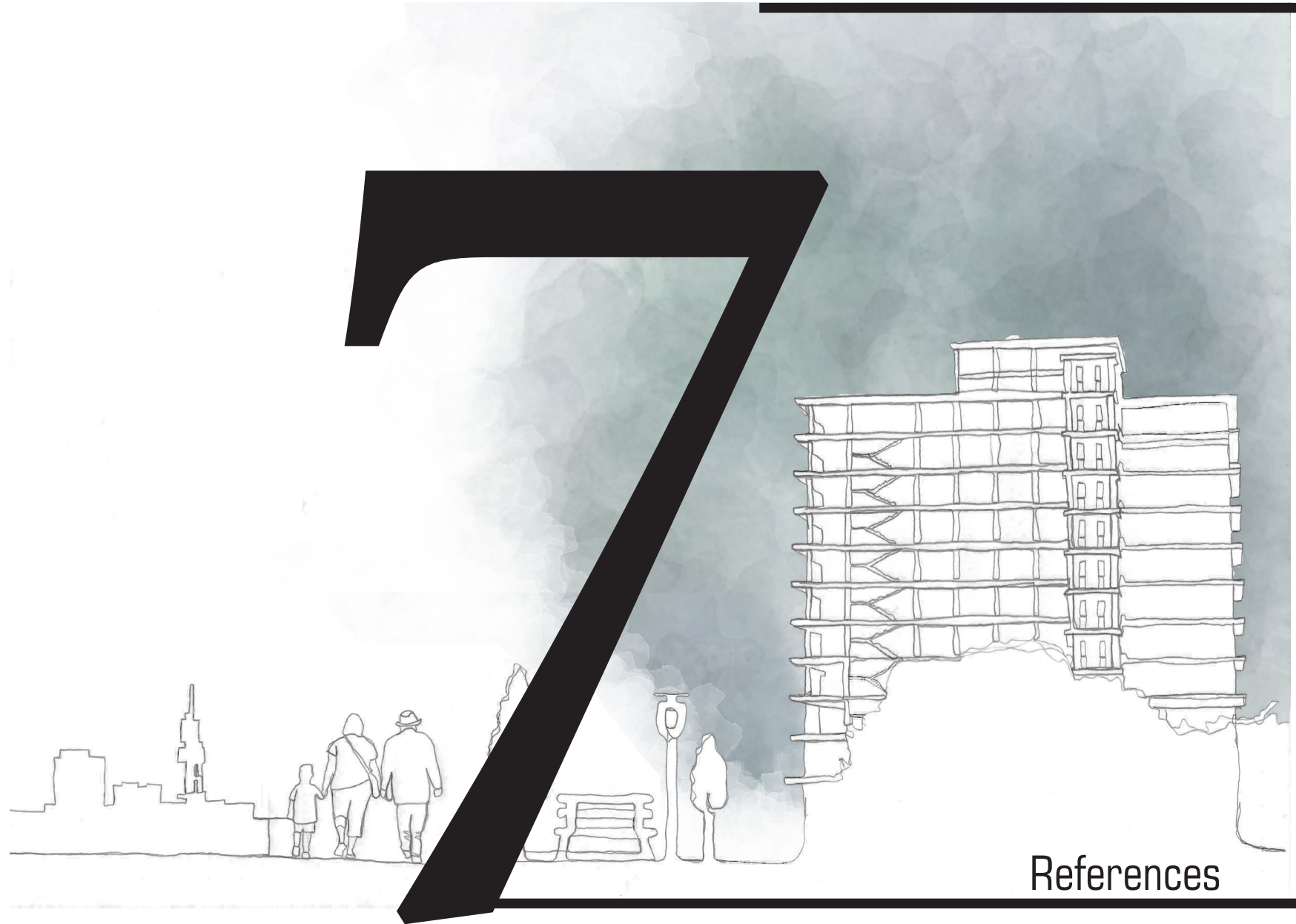
The design proposal's focus on the design language and building identity emphasises the place-sensitive approach to the project, by responding to the building itself, the users and its immediate environment. Combined with the theoretical

support of guidelines, this approach can be applied to various other buildings in the city. The technical investigation's focus on creating a highly inclusive environment emphasised the importance of all residents in the building to be able to use the amenities and public spaces to function as equal members of the community.

The research and proposed intervention has served to develop a new typology for social housing, through the adaptive re-use of an urban building. The use of interior public spaces created shared public spaces that with the support of public space theories encourage community involvement, and create a sense of place through encouraging acts of appropriation and attachment.

A recommendation for further study would be the investigation of extending the principles of the public spaces into the units themselves, to provide personalised and inclusive private environments to the residents. The challenge would be to create a balanced approach to permanent interventions that could also be changed with little impact on the environment if the market or user needs change.

Further study should also be done by applying the guidelines and approaches outlined in this study to other buildings, as proposed. Through experimenting and testing the theories set out in this proposal, a deeper understanding should be reached in order to develop projects that are as socially sustainable and responsible as possible.



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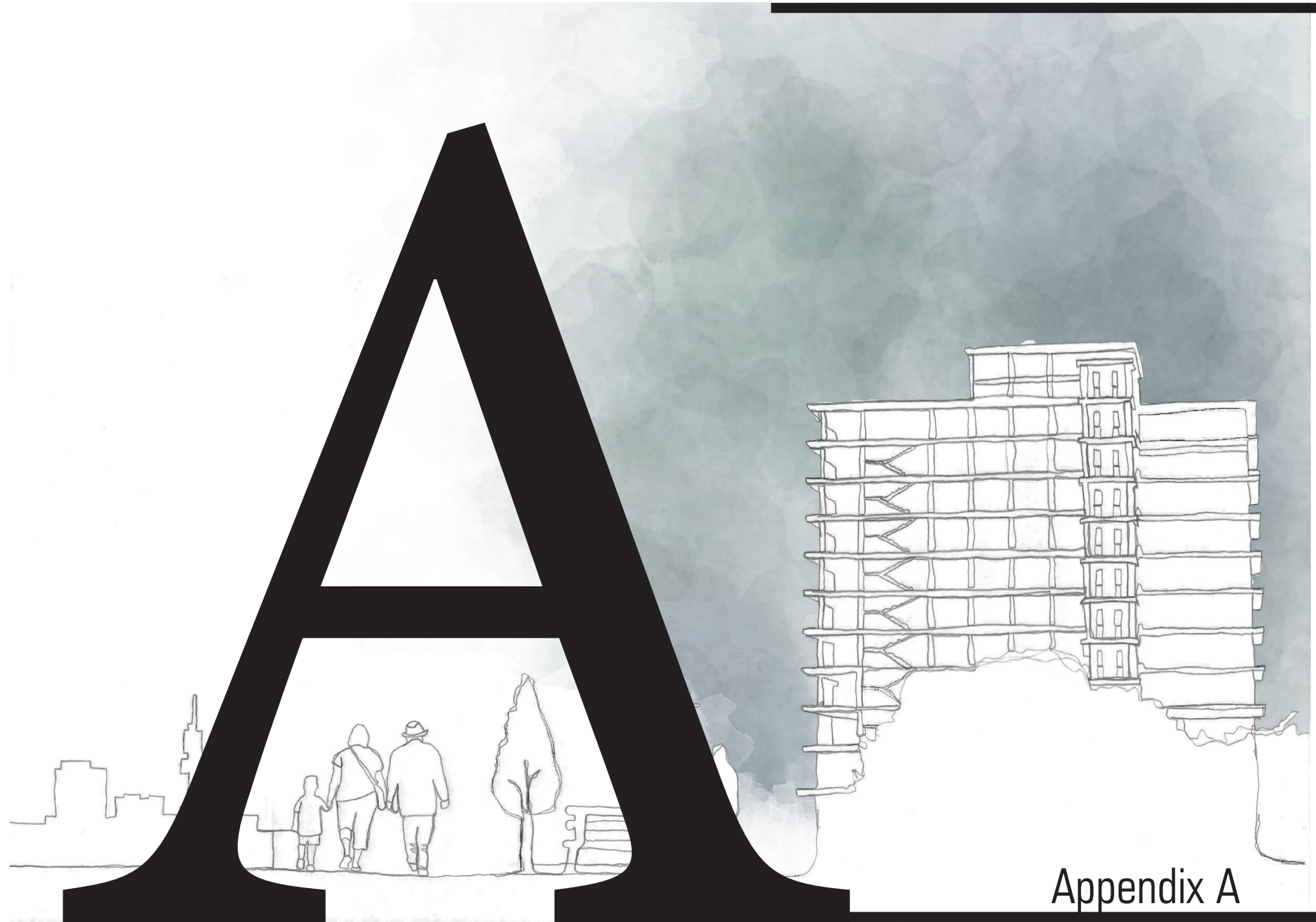
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Appendix A

Social housing with interior public spaces

Guideline	Poor	Below Ex- pectations	Acceptable	Exceeds Ex- pectations	Outstanding
Entrance from the street					
Transition from street to building should have clearly articulated threshold (symbolic or physical), while not hampering contact with the outside world, they should indicate degrees of right to access (Alexander et al 1977:548-552; Gehl 1987:63; Newman 1972:63).					
The entrance to the building should be clearly articulated so that it is easily distinguished as such, regardless of where the user approaches (Alexander et al 1977:540-544).					
The natural traffic of cars and other pedestrians should not be prohibited or hampered, in order to provide the entrance with continued passive surveillance (Newman 1972:25,33).					
The grounds around a high-rise buildings should be spatially defined to indicate it as part of the building's territory, and to reinforce the building as a private space, only for use by the residents (Newman 1972:53-54).					
Surveillance of the entrance should be encouraged. This allows users to establish the level of safety within the building and surrounding street, as well as encourage involvement with passers-by on the street from inside the building (Gehl 1987:11-15,25; Newman 1972:8).					
Entrance Area					
Views looking out onto the entrance are essential – for security and for the acknowledgement of visitors (Alexander et al 1977:622-626).					
Maintain the privacy of the residents beyond (Newman 1972:87).					
Passers-by should be able to see routine activities taking place in the entrance area, e.g. getting the post or waiting for the lift (Newman 1972:87).					

Guideline	Poor	Below Ex- pectations	Acceptable	Exceeds Ex- pectations	Outstanding
Vertical circulation					
Stairs are visible from the outside street, especially when lit at night (Newman 1972:91).					
Stairs are accessed directly from the public spaces or shared circulation (Alexander et al 1977:740-744)					
Those using the stairs are visible from inside the building (Alexander et al 1977:740-744).					
Paths					
<p>The building as a whole should be easy to navigate, especially for those living there. Navigation can be eased by creating a nested system of realms, where a larger public space leads to a series of smaller spaces. The following applies:</p> <ol style="list-style-type: none"> (1) Each space should have a main circulation space that opens directly from the entrance into that area. (2) Entrances to any spaces must open directly onto the circulation space of the next larger realms. (3) Each space should have a clearly defined beginning and end and a name 					
<p>Each of these spaces are accessed through an entrance, they should be handled in one of the following manners:</p> <ol style="list-style-type: none"> (a) All to be visible from one point of entry, (b) Laid out to provide a series of entry points, each following point visible from a previous point, or (c) Lay them out to form a cluster, and each can be differentiated from the next. <p>(Alexander et al 1977:480-484,499-502)</p>					
The path shape should be defined by the functions/buildings bordering the path (Gehl 1987:95,97).					
Public activities alongside the path must be visible from the path to provide intensity and invite interaction (Gehl 1987:95,97).					
Frequent activities within the home (such as the kitchen or dining area) must be placed in areas that overlook the path for casual surveillance (Newman 1977:91).					
Windows from the units into the circulation area allows from cross-ventilation (Newman 1977:93).					
<p>The routes from private to public spaces or from public space to public space are influential in generating activity in each of these spaces. Routes between public spaces should be as direct as possible (Alexander et al 1977:585-588, Gehl 1987:117).</p> <p>Paths should lead in the general direction of the following public space/destination, with goals and landmarks along the route (Gehl 1987:139,143).</p>					

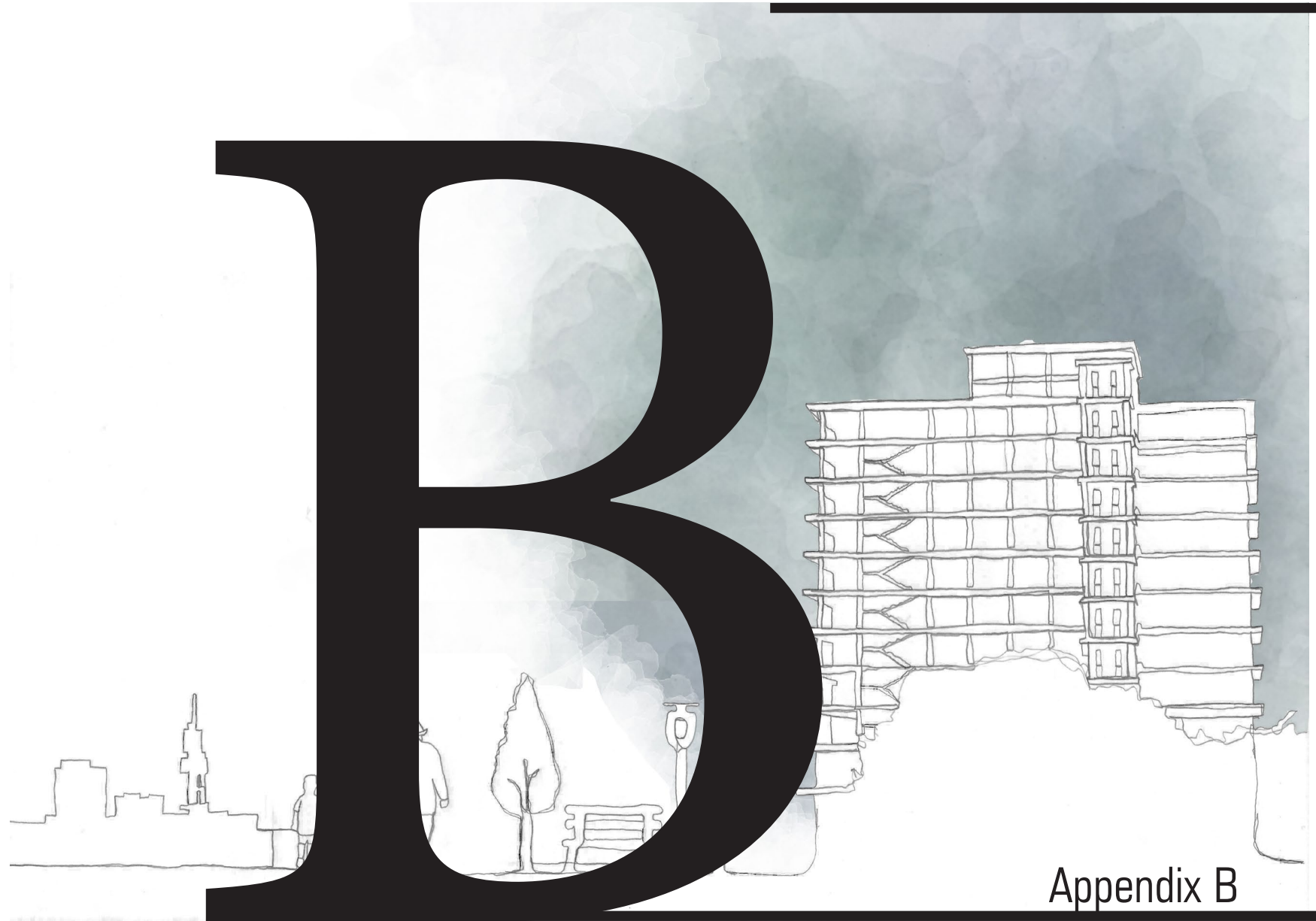
Social housing with interior public spaces

Guideline	Poor	Below Ex- pectations	Acceptable	Exceeds Ex- pectations	Outstanding
Public functions should never be more than a couple hundred meters apart (Alexander et al 1977:585-588, Gehl 1987:117). To indicate where users can linger or should move through quickly, the path must either widen or become narrower, respectively. The path width must consider the intensity of the flow of pedestrians and not dissipate the activity (Alexander et al 1977:589-592, Gehl 1987:135).					
Small scale resting areas originate around nuclei such as niches, columns, lamps, or formal seating. The provision of these prevent these areas from appearing desolate (Gehl 1987:153,155).					
Paths leading into large public spaces should be placed along the edge of these spaces. This allows the user to appreciate the large open space while still being in contact with the detail and stimulation of the façade (Gehl 1987:144).					
Public Spaces					
A small public space should not be more than 13 to 18 meters across, which is the ideal width where voices are audible and faces recognisable. The total floor space should be between 14P-28P, P as the number of people typically expected to be in the space (Alexander et al 1977:310-314; Gehl 1987:93).					
Functional activities such as laundry areas and necessary functions related should be placed along the edges of small public squares, in order to create an area of higher use intensity and ensures these areas are always surrounded by activity.					
Pedestrian movement should move through nodes of activity to provide continued casual surveillance.					
Public spaces should draw together main paths, keep the activity concentrated, contain activities with a symbiotic relationship, and be spread across the whole community.					
Public spaces should balance the definition of specific activities within, with the provision of space to allow unplanned activities to occur (Alexander et al 1977:348-352,517-523).					
Public spaces must be defined by the surrounding activities, with articulated edges that create protected areas for lingering (Alexander et al 1977:348-352,517-523).					
Public spaces must allow users to engage in group activities, or in individual activities within the same space (Gehl 1987:109).					
People prefer sitting with their backs to something, their gaze oriented to a view or activity. Create a sequence of views and open spaces, where each open space looks out onto a larger space – allowing for a balance between viewing something else and providing a “back” to the space (Alexander et al 1977:557-560,599-602).					

Guideline	Poor	Below Ex- pectations	Acceptable	Exceeds Ex- pectations	Outstanding
Place activity pockets around the public spaces, in order to locate places for staying around the edges, and to create activity that people can watch (Alexander et al 1977:557-560,599-602).					
Create stair seats along the edges of public spaces, so that users are low enough to place people in the activity range, or high to have a vantage point over all the activity in the space (Alexander et al 1977:603-605).					
In larger spaces, provide something roughly in the middle of the space, so that when the edges are oversaturated with activity, a secondary nucleus can form around an object (Alexander et al 1977:606-608).					
Users must pass through the public spaces on their way into or out of the building, or on the way from the entrance towards the more private spaces, allowing them to linger if something catches their attention (Gehl 1987:123).					
Public spaces must be at the centre of gravity of the building and equally accessible to all (Gehl 1987:123).					
Public spaces must give users something to do – sit, eat, venture outside, have a discussion (Alexander et al 1977:617-621,773-776, Gehl 1987:123).					
If exposure is the main driver for the success of the space, allow users to move through and become a part of the activity (Alexander et al 1977:773-776).					
"The quality of experiencing a large space is greatly enriched when the approach occurs through a small space" (Gehl 1987:143).					
Create areas where users feel comfortable to stay for longer periods of time, which increases the users' chances of chance encounters, initiating social contact or becoming part of activities already occurring in the space.					
Apply a graded transition of private to public when entering the public spaces, creating a smooth transition with minimal effort from the users' approach.					
Ensure the transitional areas between spaces accommodate lingering, providing enough space for this to occur without influencing the traffic to and from the public spaces.					
Ensure that transitional areas provide sufficient views into both adjoining spaces.					
Seating in public spaces must be provided along the edges, and be considerate of the spatial and functional qualities such as the views, activities, sun, wind, etc.					
Different types of seating should be provided for different stays – stair seats for short stays, benches with backs for longer stays.					

Social housing with interior public spaces

Guideline	Poor	Below Ex- pectations	Acceptable	Exceeds Ex- pectations	Outstanding
Public to Private Transition					
The transition between the public and private spaces of a building should be gradual yet defined – both for security and experience purposes.					
Users are provided with a choice between living close to or further away from public activity					
Users are provided with specific, defined zones of influence outside their homes.					
Place areas that are most active/public within the unit itself, close to the entrance or directly adjacent to the entrance to the unit. This allows users to transition into the more public areas outside their units with greater ease.					
Provide areas for lingering outside the unit, preferably with a dedicated function					
Allow for views from the unit's interior and other public activities onto the public spaces such as paths, squares, and activities – both to serve as an invitation to participate and as a method of passive surveillance.					
Allow users to share a clearly delineated intermediate public space with another units/users, to enhance the feeling of territoriality and responsibility. Users must be able to look out into these spaces, as well as the larger public spaces beyond.					
Public spaces should be divided into different areas of influence – building, floor, groups of units, specific units. Each public space must have specific groups or persons responsible for each (Gehl 1987:199; Newman 1972:50).					
To enhance the barriers and definition of the various zones of influence, barriers should be created, either physical or symbolic.					
The barriers must be well-defined, surveyed, and leave a low tolerance for ambiguity (Gehl 1987:63; Newman 1972:63-64).					



Appendix B

Social housing with interior public spaces

Requirements/Guidelines	Complies (x)	Comments
Entrance from the street		
The entrance to the building should be within 40m of the street (Newman 1972:83).		
From street level, there must be a clear line of sight to either the secondary access door, main vertical circulation, or to the first point of contact for information - preferably a manned reception counter (Newman 1972:83).		
The entrance shall have an overhang of at least 1200 mm on the exterior of the building to provide a sheltered waiting area (Nussbaumer 2012:110)		
A minimum of 1550x1500 mm level, clear space shall be provided on the outside of the building to serve as a waiting area (Nussbaumer 2012:110)		
The access doors shall be automatic, movement activated sliding doors. Where doors cannot be automatic sliding doors, they shall be fitted with a door closer that does not require more than 25 Newtons of power exerted by a user to open.		
The clear opening width of the doorway or access point shall not be less than 900 mm.		
The access route from the street to the main entrance of the building shall be fully accessible. It must: Have a clear, trafficable surface width of at least 1200 mm Have a non-slip surface finish in both dry and wet weather conditions Where a level change is required, a gentle slope or ramp with a maximum incline of 1:15, but preferably of 1:20 shall be provided Have a general illuminance of not less than 200 lux on the walking surface. Be provided with a tactile warning strip before any barriers such as entrance doors or level changes Be provided with a handrail according (see requirements below) on both sides of the main access path		
Entrance lobby and reception		
There shall be a level, clear, unobstructed space of 1550 x 1550 mm directly inside the entrance point/door: allowing users to step aside, if needed, or pause to orientate themselves without obstructing others entering or exiting the building (Nussbaumer 2012:110).		
All directional signage shall be visible and readable being sized, oriented and designed to be viewed from this primary viewing angle. These include signs indicating lifts, stairs, principal circulation routes, WCs, and reception desk/information panels.		

<p>Where space permits, there shall be a reception counter that complies to all of the following:</p> <p>Counters should be located away from large sources of noises such as entrance doors, or large gathering spaces</p> <p>Counters should not be located directly in front of exterior windows where faces can be silhouetted</p> <p>Backgrounds which are pattern-heavy or reflective surfaces should be avoided</p> <p>There shall be a clear manoeuvring space on either side of the counter. This space shall be 1800x1200 mm</p> <p>As far as possible, both the visitor and staff member serving them should be on the same floor level</p> <p>Counters should be provided at 950-1100 mm for standing use.</p> <p>A section of minimum 1000mm long counter should be dropped to 760mm AFFL with 700mm AFFL space underneath to allow for leg-room.</p> <p>Knee recesses should be 500 mm on the customer side, and 650 mm deep on staff side</p> <p>Counter depth, where an allowance has been made for wheelchair use, should be at least 700 mm</p> <p>There should be a colour contrast between the counter surface, edgings, and adjacent wall and floor surfaces</p> <p>All counter edges are rounded</p> <p>In the case of an enclosed reception desk, a fully openable section of glazing should be provided to allow for ease of communication. If this is not possible, a voice amplification system shall be installed</p> <p>Lighting should be designed to adequately light both the staff members' and customer/visitor's face to enable lip-reading</p> <p>Staff to have access to controls that control glare, direct sun and minimises direct and indirect glare</p> <p>Artificial light controls are within reach and operable from a wheelchair, and operable with a closed fist or open hand</p> <p>Provision to be made for artificial task lighting for staff</p>		
<p>All routes to amenities and other functions from the entrance area shall have a clear, unobstructed width of at least 1200 mm</p>		
<p>Seating should be provided in a designated waiting area. This seating shall:</p> <p>Access to seating should be direct and unobstructed</p> <p>All seating should be on a level ground or floor surface</p> <p>A clear space should be provided to the side of fixed seating, minimum size to be 900 mm wide and 1400 mm deep</p> <p>There shall always be seats with backs available</p> <p>Seating in reception areas shall have cushioned seating</p> <p>Seating should visually contrast with the surrounding surfaces</p>		
<p>Vertical Circulation</p>		
<p>All changes in level shall have a handrail on both sides of the level change</p>		

Social housing with interior public spaces

Ramps will have an incline of maximum 1:15, with an optimal incline of 1:20		
Ramps will not have a trafficable width less than 1100 mm		
Ramps will have a level landing at the top and bottom of 1,2m at the top and bottom in length and with a width not less than that of the ramp		
Ramps will have a central rail if the width of the ramp is more than 2400 mm		
All stairways will have a minimum width of 900 mm, with an optimal width of 1200 mm		
All stair treads to have a maximum riser of 170 mm, and a minimum tread of 250 mm		
The tread and riser of stairways shall be of contrasting colours		
All stairways shall have solid risers		
All stairways shall have contrasting nosings of 40 mm depth, and be inset from the edge by 10 mm		
Maximum height of flight of stairs not more than 1530 mm		
Landing serving two flights of stairs in a straight line at least 1,1 m long		
There is to be no lip or overhang on any stair, as they would create tripping hazards		
Tactile warning strips should be placed at the beginning and end of every level change		
<p>All handrails to comply to the following regulations:</p> <ul style="list-style-type: none"> • Handrails have an elliptical gripping surface of at least 50 mm wide and 40 mm deep, or a circular profile not less than 35 mm or more than 50 mm • Height to top of railing is between 900 to 1000 mm AFFL and is consistent along length of stairway or ramp • Handrails to be securely fixed and rigid • Surface free of abrasive and sharp elements • Clear width of 60 mm between handrail and adjacent wall • Handrails extend 300 mm horizontally beyond top and bottom of the ramp or stairway and returns to supporting structure or is finished with a positive return • Handrails are continuous across landings where they don't create a hazard • Handrails supported centrally from below not less than 50 mm between the underside of the handrail and the top of the support 		

At least one accessible lift shall be included in all buildings over 1 storey		
<p>An accessible lift shall comply to the following:</p> <ul style="list-style-type: none"> • The lift shall be large enough to accommodate a wheelchair and provide access to main foyer/lobby, entrance, main circulation corridor and other public areas • Call buttons should be within reach and visible to all users. • Call buttons should give positive feedback both in visual (lighting) and audible forms • At each landing station there must be a clear circulation space of 1550 x 1550 mm • The control buttons must be located in a contrasting panel, which contrasts with the surrounding wall • Pushbuttons should be around 20-30 mm in width • Button legends must be raised at least 1 mm from the face of the button to give tactile representation of numeral or include Braille • Minimum numeral height should be 15 mm and 3 mm wide 		
Horizontal circulation		
All paths of travel to have a general lighting level of 200 lux		
All general circulation paths to have a minimum clear trafficable width of 1200 mm, but preferably 1500 mm. This will be wide enough to allow wheelchair users to make 90° turns into a doorway or opening with a clear opening width of 750 mm, i.e. 1200 mm		
Where walking surfaces are less than 1500 mm, passing spaces shall be provided at every 5000 mm. Passing spaces shall be 1550x1550 mm in size.		
No revolving doors, gates and turnstiles shall form part of an accessible route		
Pause spaces with suitable seating shall be provided adjacent to paths at 25 m intervals		
Accessible routes are free of obstructions reducing the clear width of route		
Hanging elements/objects that protrude into circulation spaces have a clearance of 2 m above trafficable surface		
No windows or doors will open across walkway, corridor, stair or ramp		
<p>Wall-mounted fire-extinguishers, hose reels, telephones, letter bins and other wall mounted fittings:</p> <ul style="list-style-type: none"> • Can be easily seen • Are shielded or recessed to prevent injuries • Have a feature warning persons using a cane or stick of potential hazard 		

Social housing with interior public spaces

All paths to have stable and firm floor finishes		
All walking surfaces to be smooth and level		
All surfaces to be hard and resilient, and should have non-slip surfaces		
Carpet, carpet tiles and all finishes to be securely attached and level across all types of pile		
Pile height of carpets do not exceed 3 mm		
Openings in floor finish or ground surface do not exceed 13 mm in diameter, or are placed perpendicular to path of travel if larger than 13 mm in diameter		
Vertical change in level between surfaces do not exceed 5 mm in height		
Cobbles, gravel sand and other raised or loose finishes do not form part of accessible route		
All paths and surrounding environment to have colour contrast between wall and floor, and wall and ceiling		
Public Spaces		
<p>Laundry areas must apply to the following requirements:</p> <ul style="list-style-type: none"> • All machines must be front-loading to reduce the need to stoop or lean over • All controls to be on the front of the appliance for ease of access • All machines to be placed on pedestals of 250-300mm to allow appliances to be operated from a seated position or a non-bent stance • There should be a clear space of 1200 mm across the full width in front of the washer and dryer that also extends 500 mm beyond the right and left sides to provide easier access from a seated position • Working surfaces must have a lighting level of 500 lux 		
Seating must be provided within 5 m of amenities, such as water fountains, public telephones, waste receptacles, restrooms, laundry areas		
All amenities must be fully accessible by either providing facilities at heights accessible from a seated position, or be provided in facilities of various heights		
Amenities should be indicated clearly with signage		
General lighting level to be 500 lux		

<p>There shall be seating provided in public spaces. This seating shall comply to the following:</p> <ul style="list-style-type: none"> • Access to seating should be direct and unobstructed • All seating should be on a level ground or floor surface • A clear space should be provided to the side of fixed seating, minimum size to be 900 mm wide and 1400 mm deep • There shall always be seats with backs available • Seating in reception areas shall have cushioned seating • Seating should visually contrast with the surrounding surfaces • Seating with armrests shall be provided 		
A wheelchair turning circle of 1550 mm shall serve as a benchmark for open areas in the public spaces		
There shall be a strong contrast between freestanding elements and the adjacent floor finish		
There shall be a strong contrast between the floor and wall finishes, and wall and ceiling finishes		
Signage shall indicate the entrance to the public space from the main circulation area		
Signage shall indicate the exit to the main circulation area and be visible throughout the public space		
Where dedicated activities/functions such as a play area is located within a public space, the edges of this space shall be indicated with a tactile warning strip on the floor and adjacent walls, where applicable		
The ambient noise levels will not be more than 45 dB in public spaces.		
The signal to noise ratio of all public spaces shall be equal to or less than 15 dB		
Barriers such as walls, columns and entrances shall be indicated with a tactile warning strip on the floor, and, where applicable, on an uninterrupted wall surface. The tactile warning shall not create a tripping hazard. The manner of application, placement distances from obstacles and finish shall be consistent throughout the whole building.		

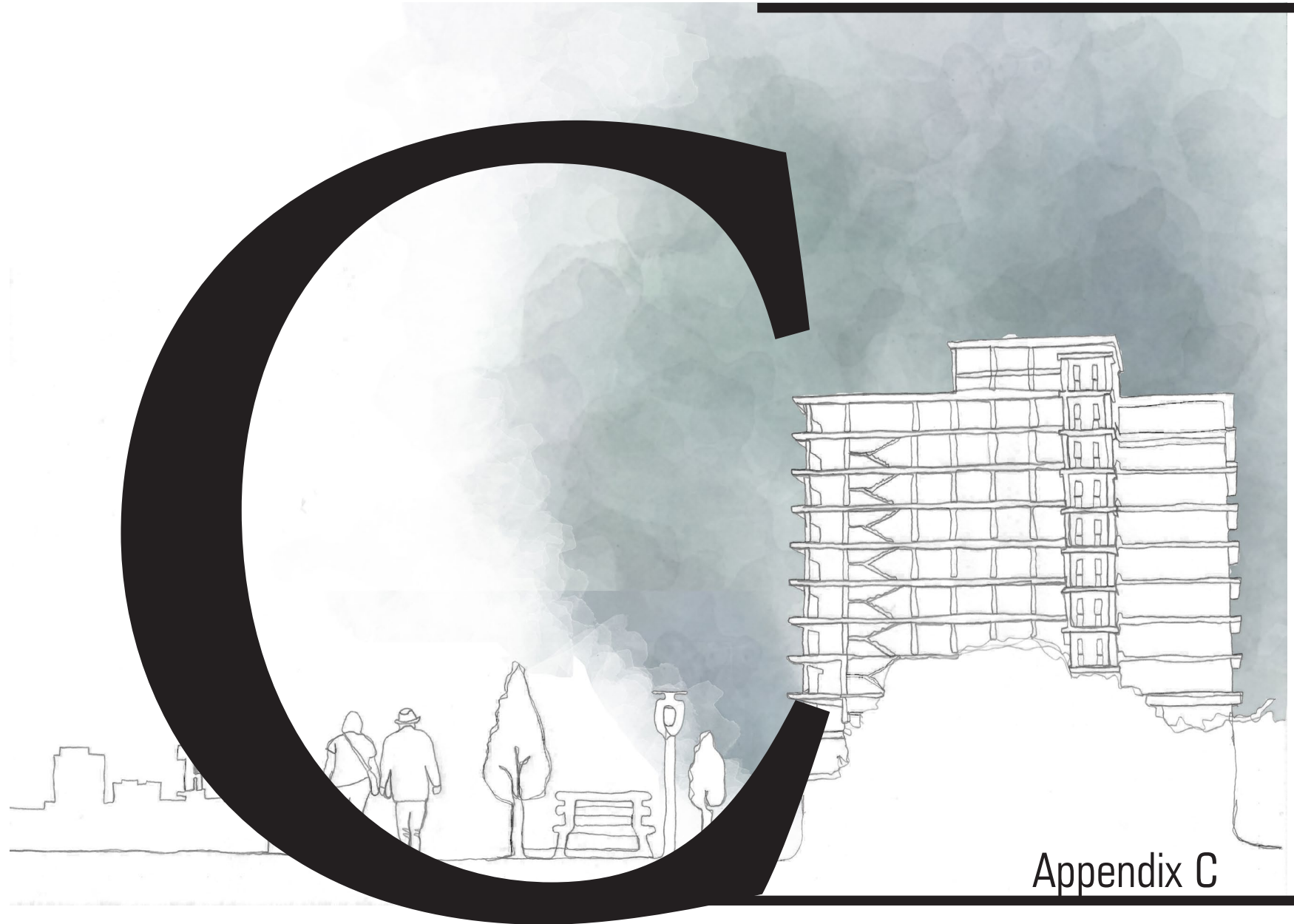
Social housing with interior public spaces

<p>Study rooms shall comply to the following:</p> <ul style="list-style-type: none"> • Provide seating with and without armrests • Provide seating of adjustable height • Provide desks at a height of 760 mm AFFL • Provide a general lighting level of 500 lux on working surfaces • Provide stations with dedicated task lighting • Wall finishes which are pattern-heavy should be avoided • Some walls can be finished with moderately reflective surfaces to allow hearing impaired users to see people approaching from the back • Meeting tables shall have a depth of 650 mm for wheelchair use • The maximum ambient noise level must be less than 45 dB 		
Signage		
<p>International symbol for access for specific inclusive facilities located at:</p> <ul style="list-style-type: none"> • Main entrance • Suitable positions en route towards these facilities • Symbol not less than 110 mm in height • Sign in clear, visible and tactile format <p>Signs indicating direction and name of accessible facility must have:</p> <ul style="list-style-type: none"> • Incorporation of international symbol • Lettering not less than 50 mm • Lettering size increased accordingly for viewing distances larger than 10 m 		
<p>Signage next to doors or on walls located at level of 1,4 – 1,7 m AFFL on the latch side of the door</p>		
<p>Signage indicating amenities must be between 1,4-1,7 m AFFL with tactile, with lettering raised 2 mm above the surface</p>		
<p>Marks and signs must comply with the requirements set out in SANS 1186-1</p>		
<p>Signs to be lit at 50 lux above the surrounding environment to ensure target value</p>		
<p>All signs with lettering must have a combination of upper- and lowercase lettering</p>		

The font should be of such a ratio that the height of the lowercase letter 'x' is 75% of the height of the capital letter		
Internal signs must be at least 25 mm capital height, with directional signs to be at least 37 mm (capital height) for a viewing distance of 5 m.		
External signs must be a minimum of 75 mm capital height for directional signs.		
All signs must have surface finishes that are low-gloss in nature		
Signs must have a high target value, which is achieved by ensuring high contrast between the lettering and background		
The contrast between the sign and its background must have a high target value. This can also be achieved by placing a contrasting border around the applicable sign		
Directional signs with arrows, must be justified to the side of the direction of the arrow. I.e. left pointing arrows and text to be flush left and be displayed first, and for right-pointing arrows and text to be displayed next and flush right. Where text and arrows indicate a direction straight ahead, they should be placed at the top and arrows to be placed on both sides pointing straight on		
All directional signs within the building must be placed at a consistent height		
Lower placement band for tactile signs to be at 1300-1600 mm AFFL		
All lift and stair floor signs should have 100 mm high lettering indicating the floor number on sign, and top of sign at 1600 mm AFFL		
Braille shall be applied to large information signs that are within reach, at central and key points of the building. All other signs to have only raised lettering		
A tactile map should be provided at the entrance area of the building to help users orient themselves before entering the main building		
Symbols are used as far as possible, and supplemented with text		
All glazing and glazed doors must have markings at 1600 mm AFFL (eye-level)		
Egress		
Emergency warning signals, such as smoke detection, fire alarms and evacuation signals, need to be both audible and visible.		
Where a fire safe lift is present, it must be clearly indicated with signage		

Social housing with interior public spaces

<p>The provision of emergency exits as well as the design of these routes must comply with the SANS 10400 Part T: Fire Protection. All fire escape designs and applications must be approved by a fire design specialist.</p>		
<p>A fire hose will be provided for every 500 m² of floor surface, or part thereof. The placement and design of these elements shall strictly comply to all regulations set out above with regards to obstacles in the main route of travel.</p>		
<p>In buildings over 3 storeys, an Evac-chair shall be provided for each fire escape and clearly indicated with signage indicating the location of the chair. For buildings of 5 storeys or more, 2 additional chairs shall be added per 5 storeys.</p>		
<p>Each fire escape shall have a refugee area where a person with a disability can wait out of the way of traffic for assistance, with signage clearly indicating that the fire escape is accessible. The evac-chair must be visible from this area to allow users in need of assistance can point it out and ask for assistance.</p>		



Appendix C

Social housing with interior public spaces

Requirements/Guidelines	Complies (x)	Comments
Entrance from the street	2/7	
The entrance to the building should be within 40m of the street (Newman 1972:83).	X	
From street level, there must be a clear line of sight to either the secondary access door, main vertical circulation, or to the first point of contact for information - preferably a manned reception counter (Newman 1972:83).	X	
The entrance shall have an overhang of at least 1200 mm on the exterior of the building to provide a sheltered waiting area (Nussbaumer 2012:110)		
A minimum of 1550x1500 mm level, clear space shall be provided on the outside of the building to serve as a waiting area (Nussbaumer 2012:110)		
The access doors shall be automatic, movement activated sliding doors. Where doors cannot be automatic sliding doors, they shall be fitted with a door closer that does not require more than 25 Newtons of power exerted by a user to open.		
The clear opening width of the doorway or access point shall not be less than 900 mm.		
The access route from the street to the main entrance of the building shall be fully accessible. It must: <ul style="list-style-type: none"> • Have a clear, trafficable surface width of at least 1200 mm • Have a non-slip surface finish in both dry and wet weather conditions • Where a level change is required, a gentle slope or ramp with a maximum incline of 1:15, but preferably of 1:20 shall be provided • Have a general illuminance of not less than 200 lux on the walking surface. • Be provided with a tactile warning strip before any barriers such as entrance doors or level changes • Be provided with a handrail according (see requirements below) on both sides of the main access path 		
Entrance lobby and reception	1/7	
There shall be a level, clear, unobstructed space of 1550 x 1550 mm directly inside the entrance point/door: allowing users to step aside, if needed, or pause to orientate themselves without obstructing others entering or exiting the building (Nussbaumer 2012:110).		
All directional signage shall be visible and readable being sized, oriented and designed to be viewed from this primary viewing angle. These include signs indicating lifts, stairs, principal circulation routes, WCs, and reception desk/information panels.		

<p>Where space permits, there shall be a reception counter that complies to all of the following:</p> <ul style="list-style-type: none"> Counters should be located away from large sources of noises such as entrance doors, or large gathering spaces Counters should not be located directly in front of exterior windows where faces can be silhouetted Backgrounds which are pattern-heavy or reflective surfaces should be avoided There shall be a clear manoeuvring space on either side of the counter. This space shall be 1800x1200 mm As far as possible, both the visitor and staff member serving them should be on the same floor level Counters should be provided at 950-1100 mm for standing use. A section of minimum 1000mm long counter should be dropped to 760mm AFFL with 700mm AFFL space underneath to allow for leg-room. Knee recesses should be 500 mm on the customer side, and 650 mm deep on staff side Counter depth, where an allowance has been made for wheelchair use, should be at least 700 mm There should be a colour contrast between the counter surface, edgings, and adjacent wall and floor surfaces All counter edges are rounded In the case of an enclosed reception desk, a fully openable section of glazing should be provided to allow for ease of communication. If this is not possible, a voice amplification system shall be installed Lighting should be designed to adequately light both the staff members' and customer/visitor's face to enable lip-reading Staff to have access to controls that control glare, direct sun and minimises direct and indirect glare Artificial light controls are within reach and operable from a wheelchair, and operable with a closed fist or open hand Provision to be made for artificial task lighting for staff 		
<p>All routes to amenities and other functions from the entrance area shall have a clear, unobstructed width of at least 1200 mm</p>	<p>X</p>	
<p>Seating should be provided in a designated waiting area. This seating shall:</p> <ul style="list-style-type: none"> Access to seating should be direct and unobstructed All seating should be on a level ground or floor surface A clear space should be provided to the side of fixed seating, minimum size to be 900 mm wide and 1400 mm deep There shall always be seats with backs available Seating in reception areas shall have cushioned seating Seating should visually contrast with the surrounding surfaces 		
<p>Vertical Circulation</p>	<p>6/15</p>	
<p>All changes in level shall have a handrail on both sides of the level change</p>	<p>X</p>	

Social housing with interior public spaces

Ramps will have an incline of maximum 1:15, with an optimal incline of 1:20	X	
Ramps will not have a trafficable width less than 1100 mm		
Ramps will have a level landing at the top and bottom of 1,2m at the top and bottom in length and with a width not less than that of the ramp		
Ramps will have a central rail if the width of the ramp is more than 2400 mm	N/A	
All stairways will have a minimum width of 900 mm, with an optimal width of 1200 mm	X	
All stair treads to have a maximum riser of 170 mm, and a minimum tread of 250 mm	X	
The tread and riser of stairways shall be of contrasting colours		
All stairways shall have solid risers	X	
All stairways shall have contrasting nosings of 40 mm depth, and be inset from the edge by 10 mm		
Maximum height of flight of stairs not more than 1530 mm	X	
Landing serving two flights of stairs in a straight line at least 1,1 m long	N/A	
There is to be no lip or overhang on any stair, as they would create tripping hazards	N/A	
Tactile warning strips should be placed at the beginning and end of every level change		
<p>All handrails to comply to the following regulations:</p> <ul style="list-style-type: none"> • Handrails have an elliptical gripping surface of at least 50 mm wide and 40 mm deep, or a circular profile not less than 35 mm or more than 50 mm • Height to top of railing is between 900 to 1000 mm AFFL and is consistent along length of stairway or ramp • Handrails to be securely fixed and rigid • Surface free of abrasive and sharp elements • Clear width of 60 mm between handrail and adjacent wall • Handrails extend 300 mm horizontally beyond top and bottom of the ramp or stairway and returns to supporting structure or is finished with a positive return • Handrails are continuous across landings where they don't create a hazard • Handrails supported centrally from below not less than 50 mm between the underside of the handrail and the top of the support 		TO BE REFURBISHED

At least one accessible lift shall be included in all buildings over 1 storey		
<p>An accessible lift shall comply to the following:</p> <ul style="list-style-type: none"> The lift shall be large enough to accommodate a wheelchair and provide access to main foyer/lobby, entrance, main circulation corridor and other public areas Call buttons should be within reach and visible to all users. Call buttons should give positive feedback both in visual (lighting) and audible forms At each landing station there must be a clear circulation space of 1550 x 1550 mm The control buttons must be located in a contrasting panel, which contrasts with the surrounding wall Pushbuttons should be around 20-30 mm in width Button legends must be raised at least 1 mm from the face of the button to give tactile representation of numeral or include Braille Minimum numeral height should be 15 mm and 3 mm wide 		
Horizontal circulation	13/19	
All paths of travel to have a general lighting level of 200 lux		
All general circulation paths to have a minimum clear trafficable width of 1200 mm, but preferably 1500 mm. This will be wide enough to allow wheelchair users to make 90° turns into a doorway or opening with a clear opening width of 750 mm, i.e. 1200 mm	X	
Where walking surfaces are less than 1500 mm, passing spaces shall be provided at every 5000 mm. Passing spaces shall be 1550x1550 mm in size.	X	
No revolving doors, gates and turnstiles shall form part of an accessible route	X	
Pause spaces with suitable seating shall be provided adjacent to paths at 25 m intervals		
Accessible routes are free of obstructions reducing the clear width of route	X	
Hanging elements/objects that protrude into circulation spaces have a clearance of 2 m above trafficable surface	X	
No windows or doors will open across walkway, corridor, stair or ramp	X	
<p>Wall-mounted fire-extinguishers, hose reels, telephones, letter bins and other wall mounted fittings:</p> <ul style="list-style-type: none"> Can be easily seen Are shielded or recessed to prevent injuries Have a feature warning persons using a cane or stick of potential hazard 		

Social housing with interior public spaces

All paths to have stable and firm floor finishes	X	
All walking surfaces to be smooth and level	X	
All surfaces to be hard and resilient, and should have non-slip surfaces	X	
Carpet, carpet tiles and all finishes to be securely attached and level across all types of pile	X	
Pile height of carpets do not exceed 3 mm	X	
Openings in floor finish or ground surface do not exceed 13 mm in diameter, or are placed perpendicular to path of travel if larger than 13 mm in diameter	X	
Vertical change in level between surfaces do not exceed 5 mm in height		
Cobbles, gravel sand and other raised or loose finishes do not form part of accessible route	X	
All paths and surrounding environment to have colour contrast between wall and floor, and wall and ceiling		
Public Spaces	3/16	
<p>Laundry areas must apply to the following requirements:</p> <ul style="list-style-type: none"> • All machines must be front-loading to reduce the need to stoop or lean over • All controls to be on the front of the appliance for ease of access • All machines to be placed on pedestals of 250-300mm to allow appliances to be operated from a seated position or a non-bent stance • There should be a clear space of 1200 mm across the full width in front of the washer and dryer that also extends 500 mm beyond the right and left sides to provide easier access from a seated position • Working surfaces must have a lighting level of 500 lux 		
Seating must be provided within 5 m of amenities, such as water fountains, public telephones, waste receptacles, restrooms, laundry areas	X	
All amenities must be fully accessible by either providing facilities at heights accessible from a seated position, or be provided in facilities of various heights		
Amenities should be indicated clearly with signage		
General lighting level to be 500 lux		

<p>There shall be seating provided in public spaces. This seating shall comply to the following:</p> <ul style="list-style-type: none"> • Access to seating should be direct and unobstructed • All seating should be on a level ground or floor surface • A clear space should be provided to the side of fixed seating, minimum size to be 900 mm wide and 1400 mm deep • There shall always be seats with backs available • Seating in reception areas shall have cushioned seating • Seating should visually contrast with the surrounding surfaces • Seating with armrests shall be provided 		
A wheelchair turning circle of 1550 mm shall serve as a benchmark for open areas in the public spaces		
There shall be a strong contrast between freestanding elements and the adjacent floor finish	X	
There shall be a strong contrast between the floor and wall finishes, and wall and ceiling finishes	X	
Signage shall indicate the entrance to the public space from the main circulation area		
Signage shall indicate the exit to the main circulation area and be visible throughout the public space		
Where dedicated activities/functions such as a play area is located within a public space, the edges of this space shall be indicated with a tactile warning strip on the floor and adjacent walls, where applicable		
The ambient noise levels will not be more than 45 dB in public spaces.		
The signal to noise ratio of all public spaces shall be equal to or less than 15 dB		
Barriers such as walls, columns and entrances shall be indicated with a tactile warning strip on the floor, and, where applicable, on an uninterrupted wall surface. The tactile warning shall not create a tripping hazard. The manner of application, placement distances from obstacles and finish shall be consistent throughout the whole building.		

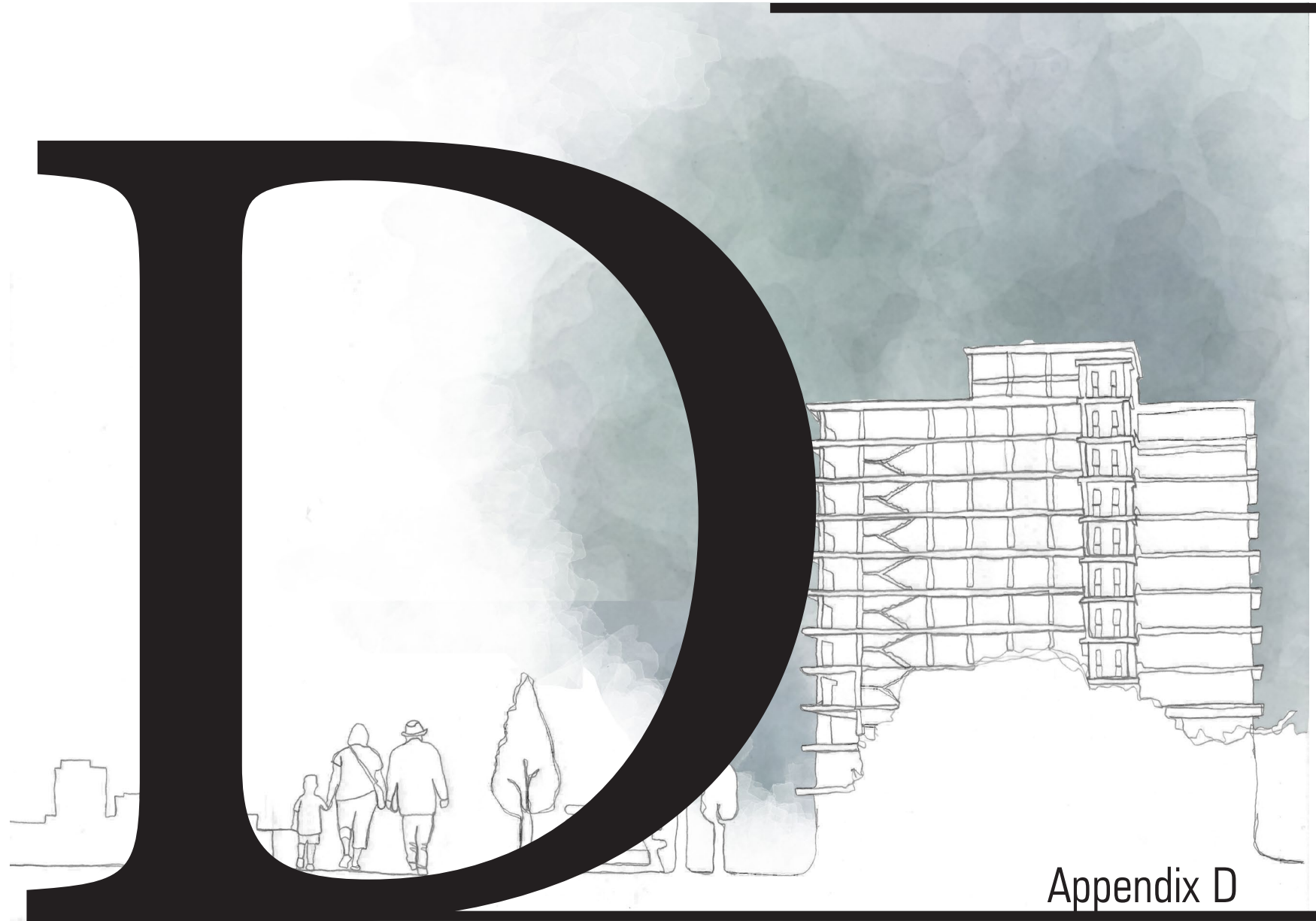
Social housing with interior public spaces

<p>Study rooms shall comply to the following:</p> <ul style="list-style-type: none"> • Provide seating with and without armrests • Provide seating of adjustable height • Provide desks at a height of 760 mm AFFL • Provide a general lighting level of 500 lux on working surfaces • Provide stations with dedicated task lighting • Wall finishes which are pattern-heavy should be avoided • Some walls can be finished with moderately reflective surfaces to allow hearing impaired users to see people approaching from the back • Meeting tables shall have a depth of 650 mm for wheelchair use • The maximum ambient noise level must be less than 45 dB 		
Signage	0/20	
<p>International symbol for access for specific inclusive facilities located at:</p> <ul style="list-style-type: none"> • Main entrance • Suitable positions en route towards these facilities • Symbol not less than 110 mm in height • Sign in clear, visible and tactile format <p>Signs indicating direction and name of accessible facility must have:</p> <ul style="list-style-type: none"> • Incorporation of international symbol • Lettering not less than 50 mm • Lettering size increased accordingly for viewing distances larger than 10 m 		
<p>Signage next to doors or on walls located at level of 1,4 – 1,7 m AFFL on the latch side of the door</p>		
<p>Signage indicating amenities must be between 1,4-1,7 m AFFL with tactile, with lettering raised 2 mm above the surface</p>		
<p>Marks and signs must comply with the requirements set out in SANS 1186-1</p>		
<p>Signs to be lit at 50 lux above the surrounding environment to ensure target value</p>		
<p>All signs with lettering must have a combination of upper- and lowercase lettering</p>		

The font should be of such a ratio that the height of the lowercase letter 'x' is 75% of the height of the capital letter		
Internal signs must be at least 25 mm capital height, with directional signs to be at least 37 mm (capital height) for a viewing distance of 5 m.		
External signs must be a minimum of 75 mm capital height for directional signs.		
All signs must have surface finishes that are low-gloss in nature		
Signs must have a high target value, which is achieved by ensuring high contrast between the lettering and background		
The contrast between the sign and its background must have a high target value. This can also be achieved by placing a contrasting border around the applicable sign		
Directional signs with arrows, must be justified to the side of the direction of the arrow. I.e. left pointing arrows and text to be flush left and be displayed first, and for right-pointing arrows and text to be displayed next and flush right. Where text and arrows indicate a direction straight ahead, they should be placed at the top and arrows to be placed on both sides pointing straight on		
All directional signs within the building must be placed at a consistent height		
Lower placement band for tactile signs to be at 1300-1600 mm AFFL		
All lift and stair floor signs should have 100 mm high lettering indicating the floor number on sign, and top of sign at 1600 mm AFFL		
Braille shall be applied to large information signs that are within reach, at central and key points of the building. All other signs to have only raised lettering		
A tactile map should be provided at the entrance area of the building to help users orient themselves before entering the main building		
Symbols are used as far as possible, and supplemented with text		
All glazing and glazed doors must have markings at 1600 mm AFFL (eye-level)		
Egress	1/5	
Emergency warning signals, such as smoke detection, fire alarms and evacuation signals, need to be both audible and visible.	X	
Where a fire safe lift is present, it must be clearly indicated with signage	N/A	

Social housing with interior public spaces

<p>The provision of emergency exits as well as the design of these routes must comply with the SANS 10400 Part T: Fire Protection. All fire escape designs and applications must be approved by a fire design specialist.</p>		
<p>A fire hose will be provided for every 500 m² of floor surface, or part thereof. The placement and design of these elements shall strictly comply to all regulations set out above with regards to obstacles in the main route of travel.</p>		
<p>In buildings over 3 storeys, an Evac-chair shall be provided for each fire escape and clearly indicated with signage indicating the location of the chair. For buildings of 5 storeys or more, 2 additional chairs shall be added per 5 storeys.</p>		
<p>Each fire escape shall have a refugee area where a person with a disability can wait out of the way of traffic for assistance, with signage clearly indicating that the fire escape is accessible. The evac-chair must be visible from this area to allow users in need of assistance can point it out and ask for assistance.</p>		



Appendix D

Social housing with interior public spaces

Requirements/Guidelines	Complies (x)	Comments
Entrance from the street	7/7	
The entrance to the building should be within 40m of the street (Newman 1972:83).	X	
From street level, there must be a clear line of sight to either the secondary access door, main vertical circulation, or to the first point of contact for information - preferably a manned reception counter (Newman 1972:83).	X	
The entrance shall have an overhang of at least 1200 mm on the exterior of the building to provide a sheltered waiting area (Nussbaumer 2012:110)	X	
A minimum of 1550x1500 mm level, clear space shall be provided on the outside of the building to serve as a waiting area (Nussbaumer 2012:110)	X	
The access doors shall be automatic, movement activated sliding doors. Where doors cannot be automatic sliding doors, they shall be fitted with a door closer that does not require more than 25 Newtons of power exerted by a user to open.	X	
The clear opening width of the doorway or access point shall not be less than 900 mm.	X	
The access route from the street to the main entrance of the building shall be fully accessible. It must: <ul style="list-style-type: none"> • Have a clear, trafficable surface width of at least 1200 mm • Have a non-slip surface finish in both dry and wet weather conditions • Where a level change is required, a gentle slope or ramp with a maximum incline of 1:15, but preferably of 1:20 shall be provided • Have a general illuminance of not less than 200 lux on the walking surface. • Be provided with a tactile warning strip before any barriers such as entrance doors or level changes • Be provided with a handrail according (see requirements below) on both sides of the main access path 	X	
Entrance lobby and reception	5/5	
There shall be a level, clear, unobstructed space of 1550 x 1550 mm directly inside the entrance point/door: allowing users to step aside, if needed, or pause to orientate themselves without obstructing others entering or exiting the building (Nussbaumer 2012:110).	X	
All directional signage shall be visible and readable being sized, oriented and designed to be viewed from this primary viewing angle. These include signs indicating lifts, stairs, principal circulation routes, WCs, and reception desk/information panels.		

<p>Where space permits, there shall be a reception counter that complies to all of the following:</p> <ul style="list-style-type: none"> Counters should be located away from large sources of noises such as entrance doors, or large gathering spaces Counters should not be located directly in front of exterior windows where faces can be silhouetted Backgrounds which are pattern-heavy or reflective surfaces should be avoided There shall be a clear manoeuvring space on either side of the counter. This space shall be 1800x1200 mm As far as possible, both the visitor and staff member serving them should be on the same floor level Counters should be provided at 950-1100 mm for standing use. A section of minimum 1000mm long counter should be dropped to 760mm AFFL with 700mm AFFL space underneath to allow for leg-room. Knee recesses should be 500 mm on the customer side, and 650 mm deep on staff side Counter depth, where an allowance has been made for wheelchair use, should be at least 700 mm There should be a colour contrast between the counter surface, edgings, and adjacent wall and floor surfaces All counter edges are rounded In the case of an enclosed reception desk, a fully openable section of glazing should be provided to allow for ease of communication. If this is not possible, a voice amplification system shall be installed Lighting should be designed to adequately light both the staff members' and customer/visitor's face to enable lip-reading Staff to have access to controls that control glare, direct sun and minimises direct and indirect glare Artificial light controls are within reach and operable from a wheelchair, and operable with a closed fist or open hand Provision to be made for artificial task lighting for staff 	X	
<p>All routes to amenities and other functions from the entrance area shall have a clear, unobstructed width of at least 1200 mm</p>	X	
<p>Seating should be provided in a designated waiting area. This seating shall:</p> <p>Access to seating should be direct and unobstructed</p> <p>All seating should be on a level ground or floor surface</p> <p>A clear space should be provided to the side of fixed seating, minimum size to be 900 mm wide and 1400 mm deep</p> <p>There shall always be seats with backs available</p> <p>Seating in reception areas shall have cushioned seating</p> <p>Seating should visually contrast with the surrounding surfaces</p>	X	
<p>Vertical Circulation</p>	11/15	
<p>All changes in level shall have a handrail on both sides of the level change</p>	X	

Social housing with interior public spaces

Ramps will have an incline of maximum 1:15, with an optimal incline of 1:20	X	
Ramps will not have a trafficable width less than 1100 mm	X	
Ramps will have a level landing at the top and bottom of 1,2m at the top and bottom in length and with a width not less than that of the ramp	X	
Ramps will have a central rail if the width of the ramp is more than 2400 mm	N/A	
All stairways will have a minimum width of 900 mm, with an optimal width of 1200 mm	X	
All stair treads to have a maximum riser of 170 mm, and a minimum tread of 250 mm	X	
The tread and riser of stairways shall be of contrasting colours		
All stairways shall have solid risers	X	
All stairways shall have contrasting nosings of 40 mm depth, and be inset from the edge by 10 mm		
Maximum height of flight of stairs not more than 1530 mm	X	
Landing serving two flights of stairs in a straight line at least 1,1 m long	N/A	
There is to be no lip or overhang on any stair, as they would create tripping hazards		
Tactile warning strips should be placed at the beginning and end of every level change		
<p>All handrails to comply to the following regulations:</p> <ul style="list-style-type: none"> • Handrails have an elliptical gripping surface of at least 50 mm wide and 40 mm deep, or a circular profile not less than 35 mm or more than 50 mm • Height to top of railing is between 900 to 1000 mm AFFL and is consistent along length of stairway or ramp • Handrails to be securely fixed and rigid • Surface free of abrasive and sharp elements • Clear width of 60 mm between handrail and adjacent wall • Handrails extend 300 mm horizontally beyond top and bottom of the ramp or stairway and returns to supporting structure or is finished with a positive return • Handrails are continuous across landings where they don't create a hazard • Handrails supported centrally from below not less than 50 mm between the underside of the handrail and the top of the support 	X	

At least one accessible lift shall be included in all buildings over 1 storey	X	
An accessible lift shall comply to the following: <ul style="list-style-type: none"> The lift shall be large enough to accommodate a wheelchair and provide access to main foyer/lobby, entrance, main circulation corridor and other public areas Call buttons should be within reach and visible to all users. Call buttons should give positive feedback both in visual (lighting) and audible forms At each landing station there must be a clear circulation space of 1550 x 1550 mm The control buttons must be located in a contrasting panel, which contrasts with the surrounding wall Pushbuttons should be around 20-30 mm in width Button legends must be raised at least 1 mm from the face of the button to give tactile representation of numeral or include Braille Minimum numeral height should be 15 mm and 3 mm wide 	X	
Horizontal circulation	18/19	
All paths of travel to have a general lighting level of 200 lux	X	
All general circulation paths to have a minimum clear trafficable width of 1200 mm, but preferably 1500 mm. This will be wide enough to allow wheelchair users to make 90° turns into a doorway or opening with a clear opening width of 750 mm, i.e. 1200 mm	X	
Where walking surfaces are less than 1500 mm, passing spaces shall be provided at every 5000 mm. Passing spaces shall be 1550x1550 mm in size.	X	
No revolving doors, gates and turnstiles shall form part of an accessible route	X	
Pause spaces with suitable seating shall be provided adjacent to paths at 25 m intervals	X	
Accessible routes are free of obstructions reducing the clear width of route	X	
Hanging elements/objects that protrude into circulation spaces have a clearance of 2 m above trafficable surface	X	
No windows or doors will open across walkway, corridor, stair or ramp	X	
Wall-mounted fire-extinguishers, hose reels, telephones, letter bins and other wall mounted fittings: <ul style="list-style-type: none"> Can be easily seen Are shielded or recessed to prevent injuries Have a feature warning persons using a cane or stick of potential hazard 		

Social housing with interior public spaces

All paths to have stable and firm floor finishes	X	
All walking surfaces to be smooth and level	X	
All surfaces to be hard and resilient, and should have non-slip surfaces	X	
Carpet, carpet tiles and all finishes to be securely attached and level across all types of pile	X	
Pile height of carpets do not exceed 3 mm	X	
Openings in floor finish or ground surface do not exceed 13 mm in diameter, or are placed perpendicular to path of travel if larger than 13 mm in diameter	X	
Vertical change in level between surfaces do not exceed 5 mm in height	X	
Cobbles, gravel sand and other raised or loose finishes do not form part of accessible route	X	
All paths and surrounding environment to have colour contrast between wall and floor, and wall and ceiling	X	
Public Spaces	8/16	
<p>Laundry areas must apply to the following requirements:</p> <ul style="list-style-type: none"> • All machines must be front-loading to reduce the need to stoop or lean over • All controls to be on the front of the appliance for ease of access • All machines to be placed on pedestals of 250-300mm to allow appliances to be operated from a seated position or a non-bent stance • There should be a clear space of 1200 mm across the full width in front of the washer and dryer that also extends 500 mm beyond the right and left sides to provide easier access from a seated position • Working surfaces must have a lighting level of 500 lux 	X	
Seating must be provided within 5 m of amenities, such as water fountains, public telephones, waste receptacles, restrooms, laundry areas	X	
All amenities must be fully accessible by either providing facilities at heights accessible from a seated position, or be provided in facilities of various heights	X	
Amenities should be indicated clearly with signage		
General lighting level to be 500 lux		

<p>There shall be seating provided in public spaces. This seating shall comply to the following:</p> <ul style="list-style-type: none"> • Access to seating should be direct and unobstructed • All seating should be on a level ground or floor surface • A clear space should be provided to the side of fixed seating, minimum size to be 900 mm wide and 1400 mm deep • There shall always be seats with backs available • Seating in reception areas shall have cushioned seating • Seating should visually contrast with the surrounding surfaces • Seating with armrests shall be provided 	X	
A wheelchair turning circle of 1550 mm shall serve as a benchmark for open areas in the public spaces	X	
There shall be a strong contrast between freestanding elements and the adjacent floor finish	X	
There shall be a strong contrast between the floor and wall finishes, and wall and ceiling finishes	X	
Signage shall indicate the entrance to the public space from the main circulation area		
Signage shall indicate the exit to the main circulation area and be visible throughout the public space		
Where dedicated activities/functions such as a play area is located within a public space, the edges of this space shall be indicated with a tactile warning strip on the floor and adjacent walls, where applicable	X	
The ambient noise levels will not be more than 45 dB in public spaces.		TO TEST
The signal to noise ratio of all public spaces shall be equal to or less than 15 dB		TO TEST
Barriers such as walls, columns and entrances shall be indicated with a tactile warning strip on the floor, and, where applicable, on an uninterrupted wall surface. The tactile warning shall not create a tripping hazard. The manner of application, placement distances from obstacles and finish shall be consistent throughout the whole building.		TO SPECIFY

Social housing with interior public spaces

<p>Study rooms shall comply to the following:</p> <ul style="list-style-type: none"> • Provide seating with and without armrests • Provide seating of adjustable height • Provide desks at a height of 760 mm AFFL • Provide a general lighting level of 500 lux on working surfaces • Provide stations with dedicated task lighting • Wall finishes which are pattern-heavy should be avoided • Some walls can be finished with moderately reflective surfaces to allow hearing impaired users to see people approaching from the back • Meeting tables shall have a depth of 650 mm for wheelchair use • The maximum ambient noise level must be less than 45 dB 		TO SPECIFY
Signage	7/20	
<p>International symbol for access for specific inclusive facilities located at:</p> <ul style="list-style-type: none"> • Main entrance • Suitable positions en route towards these facilities • Symbol not less than 110 mm in height • Sign in clear, visible and tactile format <p>Signs indicating direction and name of accessible facility must have:</p> <ul style="list-style-type: none"> • Incorporation of international symbol • Lettering not less than 50 mm • Lettering size increased accordingly for viewing distances larger than 10 m 		
Signage next to doors or on walls located at level of 1,4 – 1,7 m AFFL on the latch side of the door		
Signage indicating amenities must be between 1,4-1,7 m AFFL with tactile, with lettering raised 2 mm above the surface		
Marks and signs must comply with the requirements set out in SANS 1186-1		
Signs to be lit at 50 lux above the surrounding environment to ensure target value		
All signs with lettering must have a combination of upper- and lowercase lettering	X	

The font should be of such a ratio that the height of the lowercase letter 'x' is 75% of the height of the capital letter	X	
Internal signs must be at least 25 mm capital height, with directional signs to be at least 37 mm (capital height) for a viewing distance of 5 m.	X	
External signs must be a minimum of 75 mm capital height for directional signs.		
All signs must have surface finishes that are low-gloss in nature		
Signs must have a high target value, which is achieved by ensuring high contrast between the lettering and background	X	
The contrast between the sign and its background must have a high target value. This can also be achieved by placing a contrasting border around the applicable sign	X	
Directional signs with arrows, must be justified to the side of the direction of the arrow. I.e. left pointing arrows and text to be flush left and be displayed first, and for right-pointing arrows and text to be displayed next and flush right. Where text and arrows indicate a direction straight ahead, they should be placed at the top and arrows to be placed on both sides pointing straight on	X	
All directional signs within the building must be placed at a consistent height	X	
Lower placement band for tactile signs to be at 1300-1600 mm AFFL		
All lift and stair floor signs should have 100 mm high lettering indicating the floor number on sign, and top of sign at 1600 mm AFFL		
Braille shall be applied to large information signs that are within reach, at central and key points of the building. All other signs to have only raised lettering		
A tactile map should be provided at the entrance area of the building to help users orient themselves before entering the main building		
Symbols are used as far as possible, and supplemented with text		
All glazing and glazed doors must have markings at 1600 mm AFFL (eye-level)		
Egress	4/5	
Emergency warning signals, such as smoke detection, fire alarms and evacuation signals, need to be both audible and visible.	X	
Where a fire safe lift is present, it must be clearly indicated with signage	N/A	

Social housing with interior public spaces

<p>The provision of emergency exits as well as the design of these routes must comply with the SANS 10400 Part T: Fire Protection. All fire escape designs and applications must be approved by a fire design specialist.</p>	X	
<p>A fire hose will be provided for every 500 m² of floor surface, or part thereof. The placement and design of these elements shall strictly comply to all regulations set out above with regards to obstacles in the main route of travel.</p>		
<p>In buildings over 3 storeys, an Evac-chair shall be provided for each fire escape and clearly indicated with signage indicating the location of the chair. For buildings of 5 storeys or more, 2 additional chairs shall be added per 5 storeys.</p>	X	
<p>Each fire escape shall have a refugee area where a person with a disability can wait out of the way of traffic for assistance, with signage clearly indicating that the fire escape is accessible. The evac-chair must be visible from this area to allow users in need of assistance can point it out and ask for assistance.</p>	X	



Social housing with interior public spaces

Requirements/Guidelines	Complies (x)	Comments
Entrance from the street	7/7	
The entrance to the building should be within 40m of the street (Newman 1972:83).	X	
From street level, there must be a clear line of sight to either the secondary access door, main vertical circulation, or to the first point of contact for information - preferably a manned reception counter (Newman 1972:83).	X	
The entrance shall have an overhang of at least 1200 mm on the exterior of the building to provide a sheltered waiting area (Nussbaumer 2012:110)	X	
A minimum of 1550x1500 mm level, clear space shall be provided on the outside of the building to serve as a waiting area (Nussbaumer 2012:110)	X	
The access doors shall be automatic, movement activated sliding doors. Where doors cannot be automatic sliding doors, they shall be fitted with a door closer that does not require more than 25 Newtons of power exerted by a user to open.	X	
The clear opening width of the doorway or access point shall not be less than 900 mm.	X	
The access route from the street to the main entrance of the building shall be fully accessible. It must: <ul style="list-style-type: none"> • Have a clear, trafficable surface width of at least 1200 mm • Have a non-slip surface finish in both dry and wet weather conditions • Where a level change is required, a gentle slope or ramp with a maximum incline of 1:15, but preferably of 1:20 shall be provided • Have a general illuminance of not less than 200 lux on the walking surface. • Be provided with a tactile warning strip before any barriers such as entrance doors or level changes • Be provided with a handrail according (see requirements below) on both sides of the main access path 	X	
Entrance lobby and reception	4/5	
There shall be a level, clear, unobstructed space of 1550 x 1550 mm directly inside the entrance point/door: allowing users to step aside, if needed, or pause to orientate themselves without obstructing others entering or exiting the building (Nussbaumer 2012:110).	X	
All directional signage shall be visible and readable being sized, oriented and designed to be viewed from this primary viewing angle. These include signs indicating lifts, stairs, principal circulation routes, WCs, and reception desk/information panels.		TO SPECIFY

<p>Where space permits, there shall be a reception counter that complies to all of the following:</p> <ul style="list-style-type: none"> Counters should be located away from large sources of noises such as entrance doors, or large gathering spaces Counters should not be located directly in front of exterior windows where faces can be silhouetted Backgrounds which are pattern-heavy or reflective surfaces should be avoided There shall be a clear manoeuvring space on either side of the counter. This space shall be 1800x1200 mm As far as possible, both the visitor and staff member serving them should be on the same floor level Counters should be provided at 950-1100 mm for standing use. A section of minimum 1000mm long counter should be dropped to 760mm AFFL with 700mm AFFL space underneath to allow for leg-room. Knee recesses should be 500 mm on the customer side, and 650 mm deep on staff side Counter depth, where an allowance has been made for wheelchair use, should be at least 700 mm There should be a colour contrast between the counter surface, edgings, and adjacent wall and floor surfaces All counter edges are rounded In the case of an enclosed reception desk, a fully openable section of glazing should be provided to allow for ease of communication. If this is not possible, a voice amplification system shall be installed Lighting should be designed to adequately light both the staff members' and customer/visitor's face to enable lip-reading Staff to have access to controls that control glare, direct sun and minimises direct and indirect glare Artificial light controls are within reach and operable from a wheelchair, and operable with a closed fist or open hand Provision to be made for artificial task lighting for staff 	X	
<p>All routes to amenities and other functions from the entrance area shall have a clear, unobstructed width of at least 1200 mm</p>	X	
<p>Seating should be provided in a designated waiting area. This seating shall:</p> <ul style="list-style-type: none"> Access to seating should be direct and unobstructed All seating should be on a level ground or floor surface A clear space should be provided to the side of fixed seating, minimum size to be 900 mm wide and 1400 mm deep There shall always be seats with backs available Seating in reception areas shall have cushioned seating Seating should visually contrast with the surrounding surfaces 	X	
<p>Vertical Circulation</p>	14/15	
<p>All changes in level shall have a handrail on both sides of the level change</p>	X	

Social housing with interior public spaces

Ramps will have an incline of maximum 1:15, with an optimal incline of 1:20	X	
Ramps will not have a trafficable width less than 1100 mm	X	
Ramps will have a level landing at the top and bottom of 1,2m at the top and bottom in length and with a width not less than that of the ramp	X	
Ramps will have a central rail if the width of the ramp is more than 2400 mm	N/A	
All stairways will have a minimum width of 900 mm, with an optimal width of 1200 mm	X	
All stair treads to have a maximum riser of 170 mm, and a minimum tread of 250 mm	X	
The tread and riser of stairways shall be of contrasting colours		
All stairways shall have solid risers	X	
All stairways shall have contrasting nosings of 40 mm depth, and be inset from the edge by 10 mm	X	
Maximum height of flight of stairs not more than 1530 mm	X	
Landing serving two flights of stairs in a straight line at least 1,1 m long	N/A	
There is to be no lip or overhang on any stair, as they would create tripping hazards	X	
Tactile warning strips should be placed at the beginning and end of every level change	X	
<p>All handrails to comply to the following regulations:</p> <ul style="list-style-type: none"> • Handrails have an elliptical gripping surface of at least 50 mm wide and 40 mm deep, or a circular profile not less than 35 mm or more than 50 mm • Height to top of railing is between 900 to 1000 mm AFFL and is consistent along length of stairway or ramp • Handrails to be securely fixed and rigid • Surface free of abrasive and sharp elements • Clear width of 60 mm between handrail and adjacent wall • Handrails extend 300 mm horizontally beyond top and bottom of the ramp or stairway and returns to supporting structure or is finished with a positive return • Handrails are continuous across landings where they don't create a hazard • Handrails supported centrally from below not less than 50 mm between the underside of the handrail and the top of the support 	X	

At least one accessible lift shall be included in all buildings over 1 storey	X	
An accessible lift shall comply to the following: <ul style="list-style-type: none"> The lift shall be large enough to accommodate a wheelchair and provide access to main foyer/lobby, entrance, main circulation corridor and other public areas Call buttons should be within reach and visible to all users. Call buttons should give positive feedback both in visual (lighting) and audible forms At each landing station there must be a clear circulation space of 1550 x 1550 mm The control buttons must be located in a contrasting panel, which contrasts with the surrounding wall Pushbuttons should be around 20-30 mm in width Button legends must be raised at least 1 mm from the face of the button to give tactile representation of numeral or include Braille Minimum numeral height should be 15 mm and 3 mm wide 	X	
Horizontal circulation	17/19	
All paths of travel to have a general lighting level of 200 lux		TO TEST
All general circulation paths to have a minimum clear trafficable width of 1200 mm, but preferably 1500 mm. This will be wide enough to allow wheelchair users to make 90° turns into a doorway or opening with a clear opening width of 750 mm, i.e. 1200 mm	X	
Where walking surfaces are less than 1500 mm, passing spaces shall be provided at every 5000 mm. Passing spaces shall be 1550x1550 mm in size.	X	
No revolving doors, gates and turnstiles shall form part of an accessible route	X	
Pause spaces with suitable seating shall be provided adjacent to paths at 25 m intervals	X	
Accessible routes are free of obstructions reducing the clear width of route	X	
Hanging elements/objects that protrude into circulation spaces have a clearance of 2 m above trafficable surface	X	
No windows or doors will open across walkway, corridor, stair or ramp	X	
Wall-mounted fire-extinguishers, hose reels, telephones, letter bins and other wall mounted fittings: <ul style="list-style-type: none"> Can be easily seen Are shielded or recessed to prevent injuries Have a feature warning persons using a cane or stick of potential hazard 		TO SPECIFY

Social housing with interior public spaces

All paths to have stable and firm floor finishes	X	
All walking surfaces to be smooth and level	X	
All surfaces to be hard and resilient, and should have non-slip surfaces	X	
Carpet, carpet tiles and all finishes to be securely attached and level across all types of pile	X	
Pile height of carpets do not exceed 3 mm	X	
Openings in floor finish or ground surface do not exceed 13 mm in diameter, or are placed perpendicular to path of travel if larger than 13 mm in diameter	X	
Vertical change in level between surfaces do not exceed 5 mm in height	X	
Cobbles, gravel sand and other raised or loose finishes do not form part of accessible route	X	
All paths and surrounding environment to have colour contrast between wall and floor, and wall and ceiling	X	
Public Spaces	8/16	
Laundry areas must apply to the following requirements: <ul style="list-style-type: none"> • All machines must be front-loading to reduce the need to stoop or lean over • All controls to be on the front of the appliance for ease of access • All machines to be placed on pedestals of 250-300mm to allow appliances to be operated from a seated position or a non-bent stance • There should be a clear space of 1200 mm across the full width in front of the washer and dryer that also extends 500 mm beyond the right and left sides to provide easier access from a seated position • Working surfaces must have a lighting level of 500 lux 	X	
Seating must be provided within 5 m of amenities, such as water fountains, public telephones, waste receptacles, restrooms, laundry areas	X	
All amenities must be fully accessible by either providing facilities at heights accessible from a seated position, or be provided in facilities of various heights	X	
Amenities should be indicated clearly with signage	X	
General lighting level to be 500 lux		TO TEST

<p>There shall be seating provided in public spaces. This seating shall comply to the following:</p> <ul style="list-style-type: none"> • Access to seating should be direct and unobstructed • All seating should be on a level ground or floor surface • A clear space should be provided to the side of fixed seating, minimum size to be 900 mm wide and 1400 mm deep • There shall always be seats with backs available • Seating in reception areas shall have cushioned seating • Seating should visually contrast with the surrounding surfaces • Seating with armrests shall be provided 	X	
A wheelchair turning circle of 1550 mm shall serve as a benchmark for open areas in the public spaces	X	
There shall be a strong contrast between freestanding elements and the adjacent floor finish	X	
There shall be a strong contrast between the floor and wall finishes, and wall and ceiling finishes	X	
Signage shall indicate the entrance to the public space from the main circulation area		
Signage shall indicate the exit to the main circulation area and be visible throughout the public space		
Where dedicated activities/functions such as a play area is located within a public space, the edges of this space shall be indicated with a tactile warning strip on the floor and adjacent walls, where applicable		TO SPECIFY
The ambient noise levels will not be more than 45 dB in public spaces.		TO TEST
The signal to noise ratio of all public spaces shall be equal to or less than 15 dB		TO TEST
Barriers such as walls, columns and entrances shall be indicated with a tactile warning strip on the floor, and, where applicable, on an uninterrupted wall surface. The tactile warning shall not create a tripping hazard. The manner of application, placement distances from obstacles and finish shall be consistent throughout the whole building.		

Social housing with interior public spaces

<p>Study rooms shall comply to the following:</p> <ul style="list-style-type: none"> • Provide seating with and without armrests • Provide seating of adjustable height • Provide desks at a height of 760 mm AFFL • Provide a general lighting level of 500 lux on working surfaces • Provide stations with dedicated task lighting • Wall finishes which are pattern-heavy should be avoided • Some walls can be finished with moderately reflective surfaces to allow hearing impaired users to see people approaching from the back • Meeting tables shall have a depth of 650 mm for wheelchair use • The maximum ambient noise level must be less than 45 dB 		TO SPECIFY
Signage	6/20	
<p>International symbol for access for specific inclusive facilities located at:</p> <ul style="list-style-type: none"> • Main entrance • Suitable positions en route towards these facilities • Symbol not less than 110 mm in height • Sign in clear, visible and tactile format <p>Signs indicating direction and name of accessible facility must have:</p> <ul style="list-style-type: none"> • Incorporation of international symbol • Lettering not less than 50 mm • Lettering size increased accordingly for viewing distances larger than 10 m 		
Signage next to doors or on walls located at level of 1,4 – 1,7 m AFFL on the latch side of the door		
Signage indicating amenities must be between 1,4-1,7 m AFFL with tactile, with lettering raised 2 mm above the surface		
Marks and signs must comply with the requirements set out in SANS 1186-1		
Signs to be lit at 50 lux above the surrounding environment to ensure target value		
All signs with lettering must have a combination of upper- and lowercase lettering	X	

The font should be of such a ratio that the height of the lowercase letter 'x' is 75% of the height of the capital letter	X	
Internal signs must be at least 25 mm capital height, with directional signs to be at least 37 mm (capital height) for a viewing distance of 5 m.	X	
External signs must be a minimum of 75 mm capital height for directional signs.		
All signs must have surface finishes that are low-gloss in nature		
Signs must have a high target value, which is achieved by ensuring high contrast between the lettering and background	X	
The contrast between the sign and its background must have a high target value. This can also be achieved by placing a contrasting border around the applicable sign	X	
Directional signs with arrows, must be justified to the side of the direction of the arrow. I.e. left pointing arrows and text to be flush left and be displayed first, and for right-pointing arrows and text to be displayed next and flush right. Where text and arrows indicate a direction straight ahead, they should be placed at the top and arrows to be placed on both sides pointing straight on	X	
All directional signs within the building must be placed at a consistent height		
Lower placement band for tactile signs to be at 1300-1600 mm AFFL		
All lift and stair floor signs should have 100 mm high lettering indicating the floor number on sign, and top of sign at 1600 mm AFFL		
Braille shall be applied to large information signs that are within reach, at central and key points of the building. All other signs to have only raised lettering		
A tactile map should be provided at the entrance area of the building to help users orient themselves before entering the main building		
Symbols are used as far as possible, and supplemented with text		
All glazing and glazed doors must have markings at 1600 mm AFFL (eye-level)		
Egress	4/5	
Emergency warning signals, such as smoke detection, fire alarms and evacuation signals, need to be both audible and visible.	X	
Where a fire safe lift is present, it must be clearly indicated with signage		TO SPECIFY

Social housing with interior public spaces

<p>The provision of emergency exits as well as the design of these routes must comply with the SANS 10400 Part T: Fire Protection. All fire escape designs and applications must be approved by a fire design specialist.</p>	X	
<p>A fire hose will be provided for every 500 m² of floor surface, or part thereof. The placement and design of these elements shall strictly comply to all regulations set out above with regards to obstacles in the main route of travel.</p>		TO SPECIFY
<p>In buildings over 3 storeys, an Evac-chair shall be provided for each fire escape and clearly indicated with signage indicating the location of the chair. For buildings of 5 storeys or more, 2 additional chairs shall be added per 5 storeys.</p>	X	
<p>Each fire escape shall have a refugee area where a person with a disability can wait out of the way of traffic for assistance, with signage clearly indicating that the fire escape is accessible. The evac-chair must be visible from this area to allow users in need of assistance can point it out and ask for assistance.</p>	X	



Appendix F

Social housing with interior public spaces

Requirements/Guidelines	Complies (x)	Comments
Entrance from the street	7/7	
The entrance to the building should be within 40m of the street (Newman 1972:83).	X	
From street level, there must be a clear line of sight to either the secondary access door, main vertical circulation, or to the first point of contact for information - preferably a manned reception counter (Newman 1972:83).	X	
The entrance shall have an overhang of at least 1200 mm on the exterior of the building to provide a sheltered waiting area (Nussbaumer 2012:110)	X	
A minimum of 1550x1500 mm level, clear space shall be provided on the outside of the building to serve as a waiting area (Nussbaumer 2012:110)	X	
The access doors shall be automatic, movement activated sliding doors. Where doors cannot be automatic sliding doors, they shall be fitted with a door closer that does not require more than 25 Newtons of power exerted by a user to open.	X	
The clear opening width of the doorway or access point shall not be less than 900 mm.	X	
The access route from the street to the main entrance of the building shall be fully accessible. It must: <ul style="list-style-type: none"> • Have a clear, trafficable surface width of at least 1200 mm • Have a non-slip surface finish in both dry and wet weather conditions • Where a level change is required, a gentle slope or ramp with a maximum incline of 1:15, but preferably of 1:20 shall be provided • Have a general illuminance of not less than 200 lux on the walking surface. • Be provided with a tactile warning strip before any barriers such as entrance doors or level changes • Be provided with a handrail according (see requirements below) on both sides of the main access path 	X	
Entrance lobby and reception	5/5	
There shall be a level, clear, unobstructed space of 1550 x 1550 mm directly inside the entrance point/door: allowing users to step aside, if needed, or pause to orientate themselves without obstructing others entering or exiting the building (Nussbaumer 2012:110).	X	
All directional signage shall be visible and readable being sized, oriented and designed to be viewed from this primary viewing angle. These include signs indicating lifts, stairs, principal circulation routes, WCs, and reception desk/information panels.	X	

<p>Where space permits, there shall be a reception counter that complies to all of the following:</p> <ul style="list-style-type: none"> Counters should be located away from large sources of noises such as entrance doors, or large gathering spaces Counters should not be located directly in front of exterior windows where faces can be silhouetted Backgrounds which are pattern-heavy or reflective surfaces should be avoided There shall be a clear manoeuvring space on either side of the counter. This space shall be 1800x1200 mm As far as possible, both the visitor and staff member serving them should be on the same floor level Counters should be provided at 950-1100 mm for standing use. A section of minimum 1000mm long counter should be dropped to 760mm AFFL with 700mm AFFL space underneath to allow for leg-room. Knee recesses should be 500 mm on the customer side, and 650 mm deep on staff side Counter depth, where an allowance has been made for wheelchair use, should be at least 700 mm There should be a colour contrast between the counter surface, edgings, and adjacent wall and floor surfaces All counter edges are rounded In the case of an enclosed reception desk, a fully openable section of glazing should be provided to allow for ease of communication. If this is not possible, a voice amplification system shall be installed Lighting should be designed to adequately light both the staff members' and customer/visitor's face to enable lip-reading Staff to have access to controls that control glare, direct sun and minimises direct and indirect glare Artificial light controls are within reach and operable from a wheelchair, and operable with a closed fist or open hand Provision to be made for artificial task lighting for staff 	X	
<p>All routes to amenities and other functions from the entrance area shall have a clear, unobstructed width of at least 1200 mm</p>	X	
<p>Seating should be provided in a designated waiting area. This seating shall:</p> <ul style="list-style-type: none"> Access to seating should be direct and unobstructed All seating should be on a level ground or floor surface A clear space should be provided to the side of fixed seating, minimum size to be 900 mm wide and 1400 mm deep There shall always be seats with backs available Seating in reception areas shall have cushioned seating Seating should visually contrast with the surrounding surfaces 	X	
<p>Vertical Circulation</p>	15/15	
<p>All changes in level shall have a handrail on both sides of the level change</p>	X	

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Ramps will have an incline of maximum 1:15, with an optimal incline of 1:20	X	
Ramps will not have a trafficable width less than 1100 mm	X	
Ramps will have a level landing at the top and bottom of 1,2m at the top and bottom in length and with a width not less than that of the ramp	X	
Ramps will have a central rail if the width of the ramp is more than 2400 mm	N/A	
All stairways will have a minimum width of 900 mm, with an optimal width of 1200 mm	X	
All stair treads to have a maximum riser of 170 mm, and a minimum tread of 250 mm	X	
The tread and riser of stairways shall be of contrasting colours	X	
All stairways shall have solid risers	X	
All stairways shall have contrasting nosings of 40 mm depth, and be inset from the edge by 10 mm	X	
Maximum height of flight of stairs not more than 1530 mm	X	
Landing serving two flights of stairs in a straight line at least 1,1 m long	N/A	
There is to be no lip or overhang on any stair, as they would create tripping hazards	X	
Tactile warning strips should be placed at the beginning and end of every level change	X	
<p>All handrails to comply to the following regulations:</p> <ul style="list-style-type: none"> • Handrails have an elliptical gripping surface of at least 50 mm wide and 40 mm deep, or a circular profile not less than 35 mm or more than 50 mm • Height to top of railing is between 900 to 1000 mm AFFL and is consistent along length of stairway or ramp • Handrails to be securely fixed and rigid • Surface free of abrasive and sharp elements • Clear width of 60 mm between handrail and adjacent wall • Handrails extend 300 mm horizontally beyond top and bottom of the ramp or stairway and returns to supporting structure or is finished with a positive return • Handrails are continuous across landings where they don't create a hazard • Handrails supported centrally from below not less than 50 mm between the underside of the handrail and the top of the support 	X	

At least one accessible lift shall be included in all buildings over 1 storey	X	
An accessible lift shall comply to the following: <ul style="list-style-type: none"> The lift shall be large enough to accommodate a wheelchair and provide access to main foyer/lobby, entrance, main circulation corridor and other public areas Call buttons should be within reach and visible to all users. Call buttons should give positive feedback both in visual (lighting) and audible forms At each landing station there must be a clear circulation space of 1550 x 1550 mm The control buttons must be located in a contrasting panel, which contrasts with the surrounding wall Pushbuttons should be around 20-30 mm in width Button legends must be raised at least 1 mm from the face of the button to give tactile representation of numeral or include Braille Minimum numeral height should be 15 mm and 3 mm wide 	X	
Horizontal circulation	18/19	
All paths of travel to have a general lighting level of 200 lux	X	
All general circulation paths to have a minimum clear trafficable width of 1200 mm, but preferably 1500 mm. This will be wide enough to allow wheelchair users to make 90° turns into a doorway or opening with a clear opening width of 750 mm, i.e. 1200 mm	X	
Where walking surfaces are less than 1500 mm, passing spaces shall be provided at every 5000 mm. Passing spaces shall be 1550x1550 mm in size.	X	
No revolving doors, gates and turnstiles shall form part of an accessible route	X	
Pause spaces with suitable seating shall be provided adjacent to paths at 25 m intervals	X	
Accessible routes are free of obstructions reducing the clear width of route	X	
Hanging elements/objects that protrude into circulation spaces have a clearance of 2 m above trafficable surface	X	
No windows or doors will open across walkway, corridor, stair or ramp	X	
Wall-mounted fire-extinguishers, hose reels, telephones, letter bins and other wall mounted fittings: <ul style="list-style-type: none"> Can be easily seen Are shielded or recessed to prevent injuries Have a feature warning persons using a cane or stick of potential hazard 	X	

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All paths to have stable and firm floor finishes	X	
All walking surfaces to be smooth and level	X	
All surfaces to be hard and resilient, and should have non-slip surfaces	X	
Carpet, carpet tiles and all finishes to be securely attached and level across all types of pile	X	
Pile height of carpets do not exceed 3 mm	X	
Openings in floor finish or ground surface do not exceed 13 mm in diameter, or are placed perpendicular to path of travel if larger than 13 mm in diameter	X	
Vertical change in level between surfaces do not exceed 5 mm in height	X	
Cobbles, gravel sand and other raised or loose finishes do not form part of accessible route	X	
All paths and surrounding environment to have colour contrast between wall and floor, and wall and ceiling	X	
Public Spaces	16/16	
<p>Laundry areas must apply to the following requirements:</p> <ul style="list-style-type: none"> All machines must be front-loading to reduce the need to stoop or lean over All controls to be on the front of the appliance for ease of access All machines to be placed on pedestals of 250-300mm to allow appliances to be operated from a seated position or a non-bent stance There should be a clear space of 1200 mm across the full width in front of the washer and dryer that also extends 500 mm beyond the right and left sides to provide easier access from a seated position Working surfaces must have a lighting level of 500 lux 	X	
Seating must be provided within 5 m of amenities, such as water fountains, public telephones, waste receptacles, restrooms, laundry areas	X	
All amenities must be fully accessible by either providing facilities at heights accessible from a seated position, or be provided in facilities of various heights	X	
Amenities should be indicated clearly with signage	X	
General lighting level to be 500 lux	X	

<p>There shall be seating provided in public spaces. This seating shall comply to the following:</p> <ul style="list-style-type: none"> • Access to seating should be direct and unobstructed • All seating should be on a level ground or floor surface • A clear space should be provided to the side of fixed seating, minimum size to be 900 mm wide and 1400 mm deep • There shall always be seats with backs available • Seating in reception areas shall have cushioned seating • Seating should visually contrast with the surrounding surfaces • Seating with armrests shall be provided 	X	
A wheelchair turning circle of 1550 mm shall serve as a benchmark for open areas in the public spaces	X	
There shall be a strong contrast between freestanding elements and the adjacent floor finish	X	
There shall be a strong contrast between the floor and wall finishes, and wall and ceiling finishes	X	
Signage shall indicate the entrance to the public space from the main circulation area	X	
Signage shall indicate the exit to the main circulation area and be visible throughout the public space	X	
Where dedicated activities/functions such as a play area is located within a public space, the edges of this space shall be indicated with a tactile warning strip on the floor and adjacent walls, where applicable	X	
The ambient noise levels will not be more than 45 dB in public spaces.	X	
The signal to noise ratio of all public spaces shall be equal to or less than 15 dB	X	
Barriers such as walls, columns and entrances shall be indicated with a tactile warning strip on the floor, and, where applicable, on an uninterrupted wall surface. The tactile warning shall not create a tripping hazard. The manner of application, placement distances from obstacles and finish shall be consistent throughout the whole building.	X	

Social housing with interior public spaces

<p>Study rooms shall comply to the following:</p> <ul style="list-style-type: none"> • Provide seating with and without armrests • Provide seating of adjustable height • Provide desks at a height of 760 mm AFFL • Provide a general lighting level of 500 lux on working surfaces • Provide stations with dedicated task lighting • Wall finishes which are pattern-heavy should be avoided • Some walls can be finished with moderately reflective surfaces to allow hearing impaired users to see people approaching from the back • Meeting tables shall have a depth of 650 mm for wheelchair use • The maximum ambient noise level must be less than 45 dB 		TO SPECIFY
Signage	20/20	
<p>International symbol for access for specific inclusive facilities located at:</p> <ul style="list-style-type: none"> • Main entrance • Suitable positions en route towards these facilities • Symbol not less than 110 mm in height • Sign in clear, visible and tactile format <p>Signs indicating direction and name of accessible facility must have:</p> <ul style="list-style-type: none"> • Incorporation of international symbol • Lettering not less than 50 mm • Lettering size increased accordingly for viewing distances larger than 10 m 	X	
Signage next to doors or on walls located at level of 1,4 – 1,7 m AFFL on the latch side of the door	X	
Signage indicating amenities must be between 1,4-1,7 m AFFL with tactile, with lettering raised 2 mm above the surface	X	
Marks and signs must comply with the requirements set out in SANS 1186-1	X	
Signs to be lit at 50 lux above the surrounding environment to ensure target value	X	
All signs with lettering must have a combination of upper- and lowercase lettering	X	

The font should be of such a ratio that the height of the lowercase letter 'x' is 75% of the height of the capital letter	X	
Internal signs must be at least 25 mm capital height, with directional signs to be at least 37 mm (capital height) for a viewing distance of 5 m.	X	
External signs must be a minimum of 75 mm capital height for directional signs.	X	
All signs must have surface finishes that are low-gloss in nature	X	
Signs must have a high target value, which is achieved by ensuring high contrast between the lettering and background	X	
The contrast between the sign and its background must have a high target value. This can also be achieved by placing a contrasting border around the applicable sign	X	
Directional signs with arrows, must be justified to the side of the direction of the arrow. I.e. left pointing arrows and text to be flush left and be displayed first, and for right-pointing arrows and text to be displayed next and flush right. Where text and arrows indicate a direction straight ahead, they should be placed at the top and arrows to be placed on both sides pointing straight on	X	
All directional signs within the building must be placed at a consistent height	X	
Lower placement band for tactile signs to be at 1300-1600 mm AFFL	X	
All lift and stair floor signs should have 100 mm high lettering indicating the floor number on sign, and top of sign at 1600 mm AFFL	X	
Braille shall be applied to large information signs that are within reach, at central and key points of the building. All other signs to have only raised lettering	X	
A tactile map should be provided at the entrance area of the building to help users orient themselves before entering the main building	X	
Symbols are used as far as possible, and supplemented with text	X	
All glazing and glazed doors must have markings at 1600 mm AFFL (eye-level)	X	
Egress	5/5	
Emergency warning signals, such as smoke detection, fire alarms and evacuation signals, need to be both audible and visible.	X	
Where a fire safe lift is present, it must be clearly indicated with signage	X	

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<p>The provision of emergency exits as well as the design of these routes must comply with the SANS 10400 Part T: Fire Protection. All fire escape designs and applications must be approved by a fire design specialist.</p>	X	
<p>A fire hose will be provided for every 500 m² of floor surface, or part thereof. The placement and design of these elements shall strictly comply to all regulations set out above with regards to obstacles in the main route of travel.</p>	X	
<p>In buildings over 3 storeys, an Evac-chair shall be provided for each fire escape and clearly indicated with signage indicating the location of the chair. For buildings of 5 storeys or more, 2 additional chairs shall be added per 5 storeys.</p>	X	
<p>Each fire escape shall have a refugee area where a person with a disability can wait out of the way of traffic for assistance, with signage clearly indicating that the fire escape is accessible. The evac-chair must be visible from this area to allow users in need of assistance can point it out and ask for assistance.</p>	X	

Social housing with interior public spaces

Dankie. Ek sou hierdie twee jaar nie kon aanpak of klaarmaak sonder die ondersteuning van almal om my nie.

My Gesin

Mamma en Pappa, vir al die laataand drukkie en “skouertjies terug, kennetjie op”. Dankie vir al die raad gee en moed inpraat en trane afvee. Julle het my geleer om aan te hou en vas te byt, maak nie saak hoe moeilik dit was nie.

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Interiors

Leandra, Laurika & Mark, this year has been the best I could ever have hoped for, thanks to you. Even in the most difficult times we stood together and helped each other up. This year will become, in time, a good memory, with our friendship as a reminder that even in tough times, the good will always prevail.

Anika

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*“I don’t mean to compare
Those days to these
‘cause these are the best I ever had
in the middle of the hardest years.”*

Plush, “Right Here”