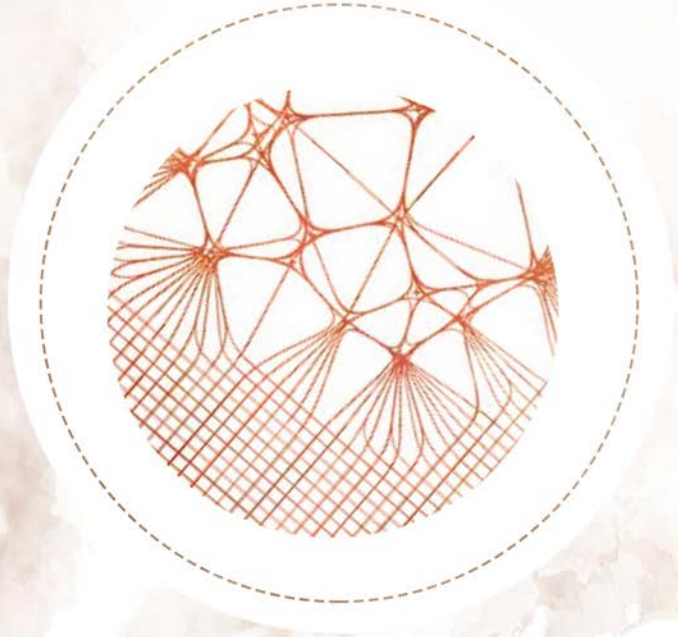


# THE SECRET LIFE OF *Streets*

...deployable domesticity  
tested along Minnaar Street, Pretoria



NADIA GHILLINO  
13035534

*thank you*  
dankie  
**grazie**  
chokran

## [ ABSTRACT ]

This dissertation investigates the issue of homelessness by considering its relevance to the scope of the interior architecture discipline. The theoretical premise driving the investigation is based on the 'urban interior' and its relation to the South African streetscape. Thereafter, the notion of deployable domesticity is tested on Minnaar Street. Here, Minnaar Street is merely the testing ground, showcasing a universal issue, and therefore the proposed design has the potential to roll-out to areas of a similar social script.

Urban domesticity is unpacked across a spectrum of scales: product; space; and system to accommodate an array of street occupants (temporary to permanent). These scales materialise in the conceptual strategy based on principles of: deployability, adaptability, scalability, old vs. new interface, closed loop systems and placement of control cores.

The design technification however, places emphasis on the bodily scale through its investigation of deployability which considers:

1. Materiality: material combination and joinery techniques.
2. Assembly: ergonomics, modularity, fabrication methods, sequence of assembly, and assembly both off and on site.
3. System: fitting of sanitation services, use of standard components, furniture systems, and relation of one module to the whole spatial scenario.

The three areas of investigation ensure that deployability is not only perceived as portability but also: transformability; flexible accommodation of services; adaptability to context; and potential for disassembly.

The interaction between various role-players and the proposed design reflects the translation of domestic actions into the urban realm. Moreover, scenario testing in various locations reflects on the degree of deployability achieved by the design.

In closing, the dissertation promotes urban domesticity and urban interiors as valuable avenues of future investigation within the discipline of interior architecture.



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

Department of Architecture  
University of Pretoria  
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**TITLE:** The Secret Life of Streets

**PROGRAMME:** Urban domesticity

**SITE:** Between 142 and 240 Minnaar Street, Pretoria

**LATITUDE:** -25°45'14.04"

**LONGITUDE:** 28°11'15.36"

**RESEARCH FIELD:** Human Settlement and Urbanism

**CLIENT:** Tshwane Homeless Forum

**THEORETICAL PREMISE:** The Urban interior

**KEYWORDS:** Street Homelessness; Urban Interior; Deployability; Domesticity

**STUDY LEADER:** Anika van Aswegen

**YEAR CO-ORDINATOR:** Catherine Karusseit

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.

**Nadia Ghillino**

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## PERSONAL MANIFESTO

So often we perceive good design as an idealistic state, with just the right amount of light glowing off the supremely white floor; an uninhabited space where one dares not place their flower pot on the window sill because then the design is completely ruined... But in my opinion: good design should appeal to the humanity and imagination of the user. Good design is saying 'bring your pot of flowers to the window sill' because therein lies relevance of the design itself. ***It is about creating accessibility in both product and process.***

Here, the primary focus is placed on the needs of the user and the social forces that impact them rather than the limitations of architectural form. Therefore, by abandoning the role of the 'all-knowing, solution-generating' designer, one can become the enabler and facilitator of solution-generating thinking in others. Here, the design process ***crafts links between unlikely partners*** to generate an understanding of a problem with a different mind-set than what created it. This results in taste and personal style being subordinate to the creation of context-connected interiors.

My design process stems from reverse -transfunctionalisation (Konigk, 2015; 272) i.e. the generation of meaning through connotation is primary; and the function merely becomes the vehicle for these associations. The generation of these connotations is controlled by the designer but allows for post-interpretation regeneration of meaning.

***The design process is 'unlimiting'; it does not end with production. Through this, design becomes the catalyst for turning normality and routine, into the disruption of order in the welfare of change; where chaos demands growth and reveals things that order tries to hide.***

## THE SECRET LIFE...

'The Secret Life of Streets' views design as an experimental tool to engage with the real-life complexities of society and the role the built environment could play. Unlike a typical design scheme, the method and process of reaching a final design, is of more importance than the final design itself.

'The Secret Life of Streets' looks towards the design of a system rather than a building, with the understanding that a system can translate to and impact more than one context. It questions the feasibility of a permanent architecture in socially-turbulent conditions and considers a 'nomadic' architecture instead.

'The Secret Life of Streets' attempts to provide enough in the design such that its full potential is realized but still incorporate a degree of flex to create a sense of belonging and ownership.

'The Secret Life of Streets' investigates interior architecture's response, not only to inside spaces or small-scaled intervention, but to its foundry programme of domesticity in whatever context or scale it may exist.

'The Secret Life of Streets' seeks to marry the archetype of domestic space with that of public amenities. Thus creating an interface between public urbanity and the domestic interior. It reflects on the discipline's unique ability to manipulate the user interface through design.

***'The Secret Life of Streets' is not a secret at all.***

## VII CHAPTER OVERVIEW

The dissertation comprises of four parts: **Part A:** The Introduction; **Part B:** The Argument; **Part C:** The Expression; and **Part D:** The Reflection. The diagram that follows highlights the chapters that make up the four parts and how each chapter develops in terms of sub-headings.

**[PART A]** Chapter 1 sets out to *introduce* the **general and design problem** and frame the overarching research questions. The scope of the study is further unpacked creating an outline and boundary for the dissertation.

**[PART A]** Chapter 2 unpacks the **approach** to investigating the project proposal stated in Chapter 1. Here, building on existing research, data collection and scale variation are discussed.

**[PART A]** Chapter 3 is the **contextual analysis** comprising of both physical and social context. The investigation begins at a precinct scale and focuses on a smaller area based on findings that suit the project proposal.

**[PART B]** Chapter 4 unpacks the **theoretical discourse** focusing specifically on: *The Notion of Home, The Urban Interior, Domesticity* and *Civic Agency*. These topics are all expressed within the continuum of interior architectural theory.

**[PART B]** Chapter 5 draws from the theoretical informants that surfaced in Chapter 4, and analytically investigates **precedents** of various scales that showcase some of the informants.

**[PART C]** Chapter 6 extends from the theoretical findings in Chapter 4 and their practical feasibility in Chapter 5 and intends to outline the overarching **conceptual approach** and strategy.

**[PART C]** Chapter 7 investigates the application of **human-centered design** informants mentioned in Chapter 6. Here, initial design layouts, relationships, programming and overall feasibility is explored.

**[PART C]** Chapter 8 reacts the initial design proposed in Chapter 7 by considering design informants more concerned with **systematic and pragmatic** outcomes.

**[PART C]** Chapter 9 draws from the proposed design in Chapter 8 and develops it **technically**. This investigation aligns to an identified technical issue and strategy to combat it.

**[PART D]** Chapter 10 is a reflection of the eventual design by testing if the various role-players gain value from using the proposed amenities. This is communicated as a series of spatial **storyboards**.

**[PART D]** Chapter 11 tests the feasibility of the proposed design in a **scenarios** where context change and not all amenities are required.

**[PART D]** Chapter 12 concludes the investigation by reflecting on the dissertation's contribution, recommendations for further development and closing thoughts.

# approach DISSERTATION STRUCTURE

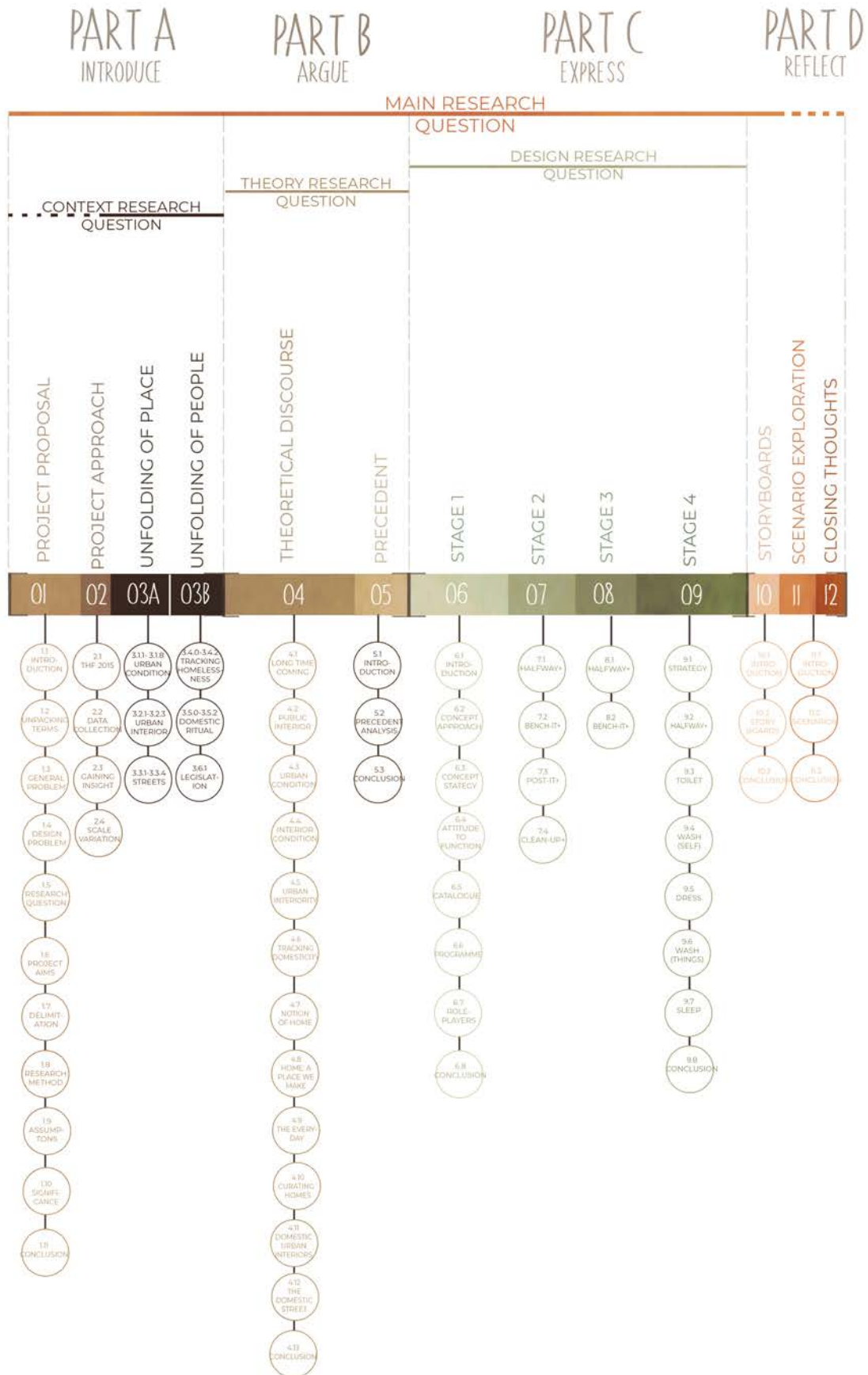


Figure vii: Dissertation structure

*introduce* identifies a design problem effecting a variety of national and international contexts. For the sake of this investigation, however, a specific site showcasing the design issue, is identified and analysed.

The contextual analysis commences as a two-fold investigation, interrogating both the physical and social complexities of the show-casing site.

Due to the universal nature of the design problem, the contextual investigation is documented as a series of steps for analysis. Thereby, rendering the methodology for contextual analysis transferable to other sites showing symptoms of the same design problem.



part



*introduce*

CHAPTERS 1;2;3

[INTRODUCING THE PROBLEM,  
PROPOSAL, AND CONTEXTUAL  
INVESTIGATION]

01

*introduce*  
PROJECT PROPOSAL

## 1.1 INTRODUCTION

This chapter introduces the topic of investigation and frames it within a general and design problem. This problem is expressed as an overarching research question and three sub-questions. The scope of the scheme is further defined as a series of project aims which, when fulfilled, create significance for both the discipline and the context of investigation.

This chapter serves as the premise upon which all following chapters build.

## 1.2 UNPACKING TERMINOLOGY

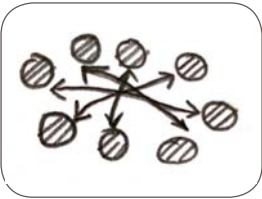


Figure 1.2.1: Civic Agency

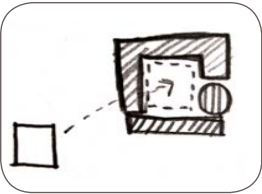


Figure 1.2.2: Deployability

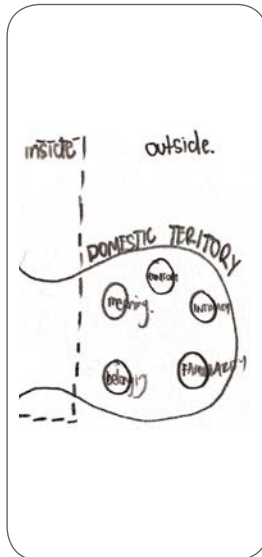


Figure 1.2.3: Urban Domesticity

### **CIVIC AGENCY:**

A different kind of politics that draws from the capacity of human communities and groups to act co-operatively and collectively on common problems and challenges (Boyte, 2002; 1-15).

### **DEPLOYABILITY:**

A military term meaning to move strategically or appropriately. It is derived from the French word 'déployer' meaning to unroll or unfold (Vandegriend, 2007).

### **[urban] DOMESTICITY:**

Urban domesticity is the understanding that the relation between interior architecture and the urban environment creates a potential for domestic territories. Domesticity is often connected with ideas of comfort, intimacy, familiarity, and hence belonging; and how these are transferred outside the house through need, which may also produce political as well as social collective cultures (Mace, 2014; 56-75). The domestic boundaries of inside-outside are continually shifting in response to the relationship between bodies (users, inhabitants, citizens) and objects within spaces (both temporary and permanent).



Figure 1.2.4: Street Homelessness

### **STREET HOMELESSNESS:**

Street homelessness refers to all individuals physically living without any form of shelter, on the street, on pavements, in bushes, in city parks or in other vacant urban spaces. This includes 'temporary overnight sleepers' (De Beer & Vally, 2015).

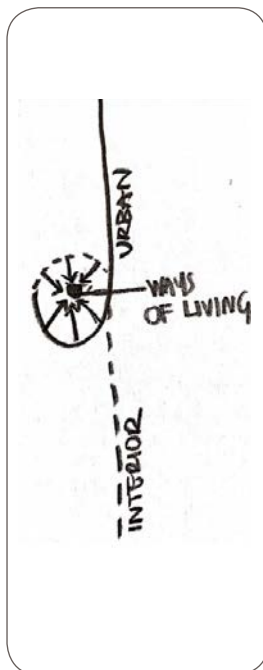


Figure 1.2.5: Urban Interior

### **URBAN INTERIOR:**

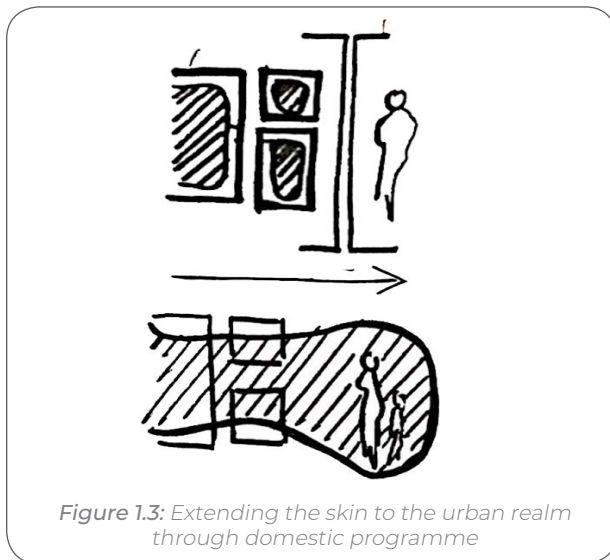
Combining urban and interior spatial practices provides a new way of considering multi-scalar, multi-cultural, multi-discipline approaches to the built environment. 'Interior' is introduced here in an expanded sense where the defining characteristics of enclosure, form and structure are opened to other possibilities extending the inner skin (Attiwill et al, 2015; 3). Urban + interior is a critical concept particularly in a context where the inhabitation of urban environments and cities extends to the public streets. Thus despite urban interiors not necessarily being framed by an architectural context, they focus on ways of living, questions of wellbeing and belonging, and socio-cultural practices (Attiwill et al, 2015; 6).

## 1.3 THE GENERAL PROBLEM

The discipline of interior architecture grew out of the need for better design surrounding day to day domestic activities (Rice, 2007). But for the most part, this scope of work has been restrained within the inner skin of the built environment.

However, with over 200-000 people in the South African context residing outside of this skin (WPI, 2015) and practicing domesticity in the public domain, it becomes evident that domesticity extends beyond the interior/ exterior boundary to affect urban life.

As a result of the programmatic extension, there is a blurring of boundary between insides and outsides.



Here, the notion of **urban interior** is adopted. The urban interior provides a platform for identifying spaces that are not inside yet possess the spatial qualities of interior-ness (McCarthy, 2005). Whilst this notion provides a useful way extending interior architecture's disciplinary skin, Christian Tietz (2017) suggests that it is the streets defining these urban interiors that really drives domesticity into the urban realm.

Therefore, this investigation focuses on the street's potential to accommodate domesticity.

## 1.4 THE DESIGN PROBLEM

Streets, their furniture, corners, squares and sidewalks define our cities. All of these attributes have inherent formal functions connected to them. (i.e. bench is for sitting, sidewalk for walking.) Over and above this function, people layer appropriated functions in the form of domestic rituals performed on/ under/ around/ within/ or alongside streets.

**However, the designs of streets are static as they merely accommodate a formal function and ignore their social and civic role.**

Christian Tietz (2017) suggests, a mono-functional approach to the design of public space only supports a narrow social script; and therefore streets that are only designed to accommodate a formal function, run the risk of redundancy. Benches lie empty; lampposts stand without power, squares remain pristinely untouched, and sidewalks become a thoroughfare to pass through but never really stay.



*Figure 1.4:* Design of streets and their new function don't match anymore

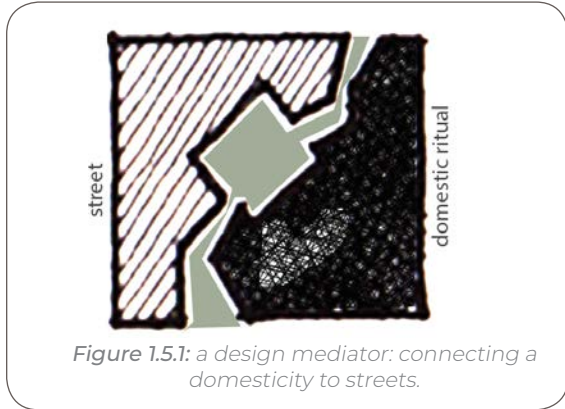
In no way is this a unique problem, yet the argument is well demonstrated when considering Minnaar Street in the inner city of Pretoria. This will be further unpacked in Chapter 3. On Minnaar Street, it is evident that a new, informal, domestic function has emerged. Here, people loosely attach themselves to streets as tools for territoriality, domesticity and belonging. However, the street does very little to reciprocate.

Surely, a balance between design that responds to both the formal and informal domestic functions of streets should be established. Moreover, such a design thinking could draw from its social context and not just its physical context. Thereby rendering such a design thinking, applicable to various contexts.

# 1.5 RESEARCH QUESTIONS

*What can be added to the existing design of Minnaar Street (and other socially similar streets) to better accommodate its informal, domestic function?*

*And in doing so, extend the disciplinary 'skin' to include urban interiors...*



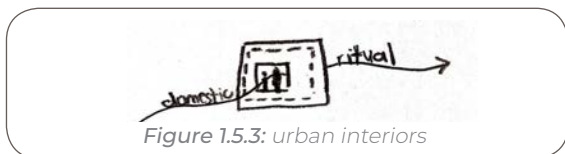
## context and place-making

What can interior architecture, most intensely felt at a bodily scale, contribute to the urban condition, that can strengthen the built environment's connection to the social reality of the city?



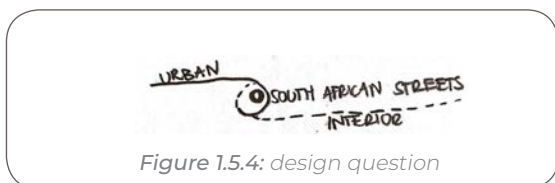
## theory

How can the theory of urban interiors drive interiority and urban domesticity on South African streets?



## design

How can a design intervention at a product, spatial and systematic scale, accommodate urban domestic ritual, whilst emphasizing a sense of empowerment and belonging? (for both the individual and the collective)





## 1.6 PROJECT AIMS

**The aim of the investigation is twofold:**

Firstly, it unpacks the notion of the urban interior and its relation to streets focusing specifically on how this bond crafts domestic territories. This part of the investigation aims to:

i) Define, identify and create types of urban interiors based on their domestic natures.

ii) Define, identify and create a hierarchy of street components based on their relationship to the user and the domestic rituals they perform.

iii) Overlay findings between place and people, and extract relationships between urban interiors and streets based on scenarios where domestic territories exist at their intersection.



Secondly, it explores the making of domestic interiors by latching design (temporary and semi-permanent) onto streets to accommodate informal, domestic functions. This part of the investigation aims to:

i) Examine the components and qualities of the street within domestic territories investigated in iii above, by considering them as a site with functional, structural and psychological integrity inherently linked. This forms the basis for design to latch on to.

ii) Explore the notion of resilience through self-reliance by looking at all potential role-players within the context and establishing a web of reciprocity between them. And in so doing, ensure a production process that empowers, includes, and creates a sense of belonging and identity.

iii) Consider various scales of design solutions in an urban system and the array of potential role-players the design could effect.

iv) Conceptualise all scales of design but technify those aspects most related to domesticity with the potential translate to other contexts.

iv) Reflect on the design process but testing its feasibility in various contexts and with a variety of model inhabitants (users).

## 1.7 DELIMITATIONS

\_This study seeks to identify and accommodate domestic activity surrounding streets rather than attempt to solve issues such as homelessness, illegal inhabitation, drugs, prostitution and sanitation.

\_This study focuses on urban interiors, streets and domesticity specifically surrounding Minnaar Street in Pretoria CBD. Despite the issues of homelessness being universal, both the data collection and design exploration adhere primarily to Minnaar Street. The roll-out and universal application of the proposed design is explored in Part D.

\_No ethical clearance is required for this dissertation as no interviews or interactions with participants are undertaken. Only site and user observations are conducted.

## 1.8 ASSUMPTIONS

\_ Since the South African Constitution was instated in 1996 until the present, legislation and policy regarding homelessness does not support life on the street. While, all of these policies attempt at eradicating homelessness, none support the wellbeing of the homeless until eradication is possible. Therefore, it is assumed the 2015 Tshwane Homeless Forum's (THF) 2015 '**Guideline's for Policy-Making**' is adopted. The implications of this are further explored in [3.6.1] **Legislation.**

\_In the design of Halfway+, it is assumed that the area where a municipal water and electrical connection is indicated, is a possible point for this connection.

## 1.9 RESEARCH METHOD

In *Part A: Introduce*, the **'Behavioral Mapping'** research method is adopted. This entails observing human activity and translating it to systematically documented annotated maps (Martin & Hanington, 2012; 18). Here, qualitative (observation-based mapping) and quantitative (theoretical synthesis) aspects are observed and recorded in a series of *'Place-centered mapping'* and *'Individual-centered mapping'* (Martin & Hanington, 2012; 19). The *'Individual-centered mapping'* makes use of the **'Design Ethnography'** research method to observe and record "people in their natural settings" and create "qualitative patterns" (Martin & Hanington, 2012; 60). The investigation remains observation-based and does not include any confrontation with the sample group.

In *Part B: Argue*, an **'Extended Literature Review'** is compiled, supported by applicable analysis of case studies. As Erik Hofstee (2006; 121) suggests, a literature review provides an theoretical overview of a topic. Here, it is suggested that it is structurally best to have a solid theoretical foundation upon which other sub-theories can stem to build and strengthen the argument.

*Part C: Express* makes use of **'Stakeholder/Role-player Mapping'** to "visually consolidate and communicate key constituents" by "setting the stage for user centered design development" (Martin & Hanington, 2012; 166). Thereafter, **'Prototyping'** is undertaken where "a tangible series of artifacts at various levels of resolution" (Martin & Hanington, 2012; 138) are developed at an array of scales. This ensures the feasibility, use and weak-points of the proposed design are tested. Thus, creating a iterative design investigation.

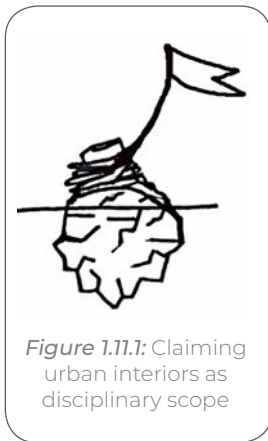
*Part D: Reflect* adopts the research methods of **'Storyboards'** and **'User Journey Mapping'** to provide a visual narrative that captures the individual's feelings and actions towards the "social, environmental and technical factors of the proposed design" (Martin & Hanington, 2012; 196). Lastly, the research method of **'Scenarios'** explores the "future use of the proposed design" (Martin & Hanington, 2012; 152) in various social or physical contexts as a tool for reflection.

*\*No ethical clearance is required to complete the dissertation as there is an existing body of relevant data, statistics and theory to engage with. Therefore, no interviews or interactions with sample groups are necessary.\**

## 1.10 SIGNIFICANCE

Based on the proceedings of the [in] arch Conference (2018) that took place in Indonesia, as well as the ongoing discussion within the Interior Design Educators Association (IDEA) Journal; it is evident that there is a growing discussion surrounding the topic of the urban interior globally.

This discussion calls for re-evaluation of the interior architecture discipline that extends past the confined internality of architectural spaces. Therefore, the urban interior and domesticity presents a means of engaging with space, that challenges the boundaries of the discipline. Here, interior architecture is encouraged to claim this as a disciplinary realm.



Moreover, domesticity is something with its history woven into the interior architecture profession, and through this study it is evident that domestic activity attaches itself not only to traditional interior spaces. Thus, domesticity can be reclaimed as a powerful foundry programme stretching the scope of interior architecture into the urban realm.

Lastly, there is potential for several contexts, both physical and social, to grow in value through the establishment of a deployable design solution accommodating domestic ritual.

## 7.11 CONCLUSION

In this chapter, the topic of investigation is proposed, outlining the scope of work to follow. This chapter places emphasis on the “what” and the “why”. However, the chapter that follows sets out to unpack the “how”. This will demonstrate the practical application of Chapter 1 by formulating a project approach.

02

*introduce*

PROJECT APPROACH

## 2.1 TSHWANE HOMELESS FORUM [EXTENDING ON EXISTING RESEARCH]

To ensure a thorough understanding of the social context, specifically regarding homelessness, the Tshwane Homeless Forum's extensive research is consulted. This forum is the collaborative effort of University of Pretoria, the University of South Africa, the City of Tshwane, and representatives from several homeless communities.

As a result of their combined endeavors, a research report was compiled called "[Finding] Pathways out of Homelessness (2015)." The findings within this report are the result of many interviews, meetings, observations and statistic reviews. The in-depth, cyclical process is depicted in the diagram that follows:

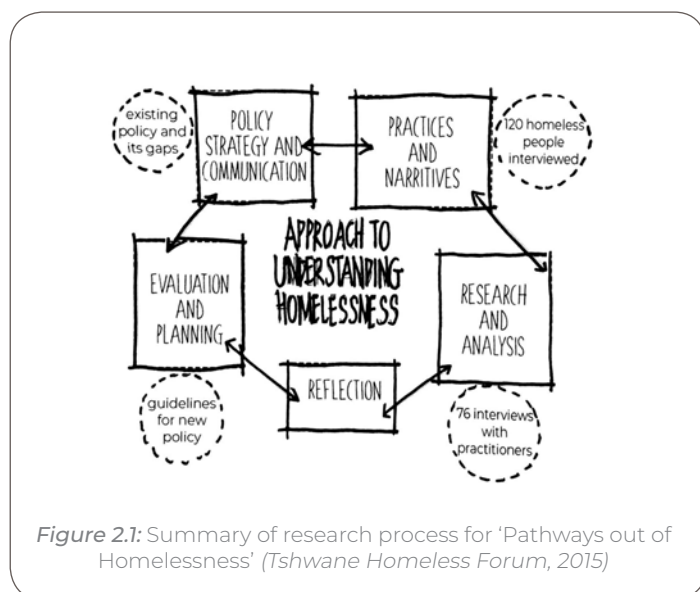


Figure 2.1: Summary of research process for 'Pathways out of Homelessness' (Tshwane Homeless Forum, 2015)

All of the data compiled in the report is specifically relevant to the City of Tshwane and therefore is applicable to the social context Chapter 3: *Unfolding of People* of this dissertation. The extension of existing research is favoured in comparison to performing personal interviews. This is due to forum's extensive sample group size and their developed relationship with the homeless and community centers in the inner city of Pretoria.

Applicable aspects of the 2015 research report are unpacked on page 45 and 46 to better understand the social context.

## 2.2 DATA COLLECTION TIMELINE

The graph alongside depicts at what stage certain data is collected and at what scale this data is mapped. Thus, this diagram serves as a summary of the mapping completed, and the layering of data from Part A '*introduce*' right through to Part D '*reflect*'.

It is evident that Part A '*introduce*' and Part C '*express*' sections are the most mapping-rich, where the Part B '*argue*' and Part D '*reflect*' sections focus more on textual and diagrammatic synthesis.

Despite the linear nature of graphing, the process of mapping is cyclical in some instances where a map is created, further data becomes evident at a later stage and as a result a new layer is added to the original map. This is demonstrated in several instances such as 3.2, 3.3 and 3.4.

*NOTE: Numbering in Figure 2.2.1 is used to indicate the sequence and does not align with the dissertation chapter numbers.*



# Timeline DATA PRODUCTION

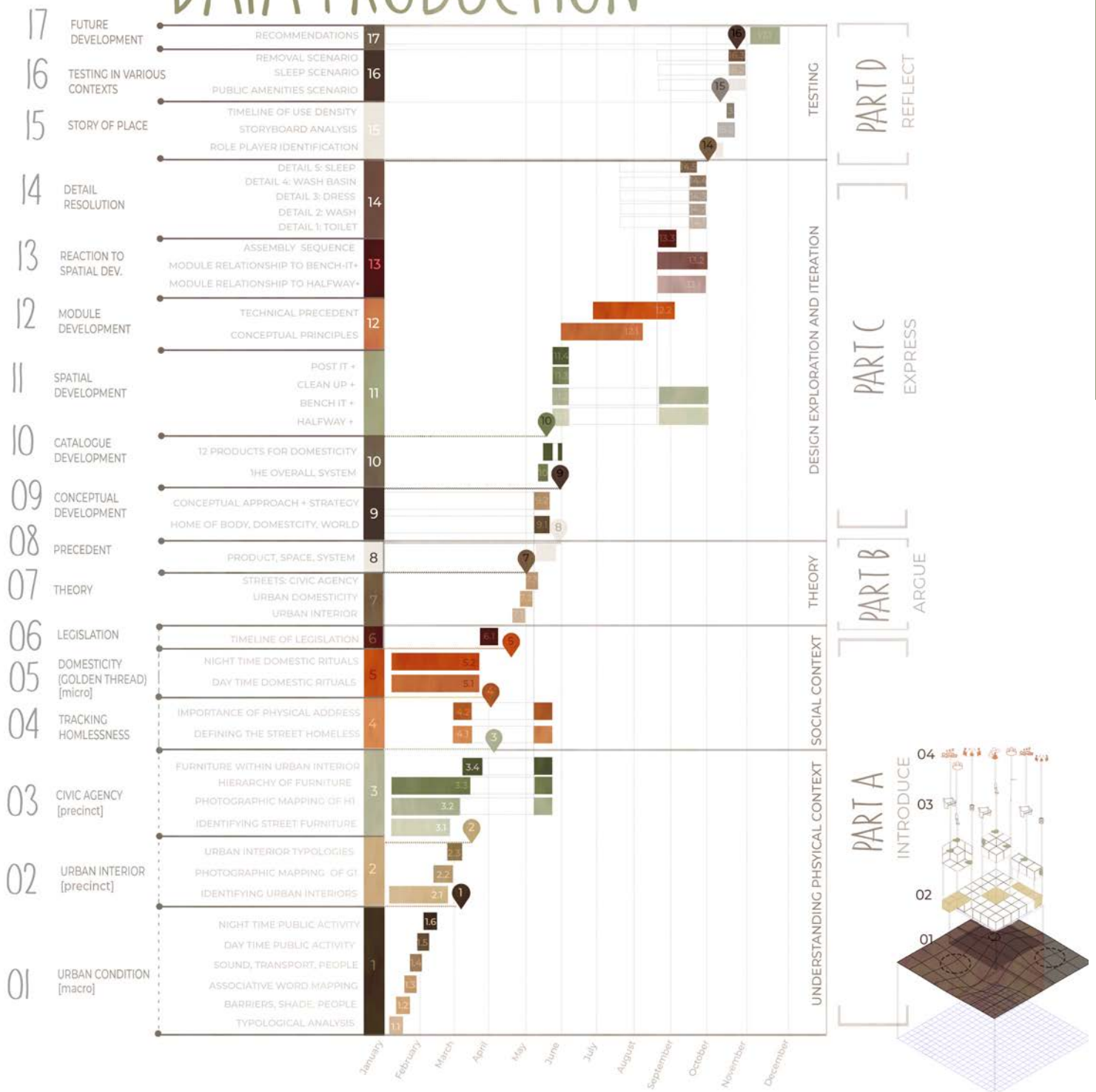


Figure 2.2.1: Data collection timeline

“

*[Design] Practice, then, is about making the ordinary special and the special more widely accessible — expanding the boundaries of understanding and possibility with vision and common sense. (Hamdi, 2004;7)*

”

## 2.3 GAINING INSIGHT

The quote alongside and my personal manifesto support a hands-on approach to design with shared value at its core.

However, because of the private nature of domesticity and the vulnerability of those who live on the streets, a literature review is compiled to better understand the social context. This was chosen as the most sensitive, least intrusive and thorough approach to gaining insight into homelessness.

Observation - based studies are performed in the investigated context such that both urban and domestic patterns can be recorded in the least confrontational way possible. These studies, in conjunction with the literary review, create an accurate reading of the social condition in Pretoria's inner city.

## 2.4 SCALE VARIATION

The nature of such a scheme requires scalar variety ranging from system design at an urban scale to detail design at a product scale.

The small scale of the detail design lends itself to testing through scaled prototypes and thorough detail resolution. The larger, systematic designs are showcased as urban visions which remain somewhat speculative, conceptual and scenario-based. These larger, systematic scale design implications serve in boosting the overall feasibility of the proposed design.

However, it is the spatial and product scale aspects that will be detailed appropriately degree to satisfy the typical interior architecture degree of resolution.

03

*introduce*

CONTEXTUAL ANALYSIS

[UNFOLDING OF PLACE]



Figure 3.0: Outlining the precinct

**SUMMARY:** Part One of the contextual investigation unpacks the broader urban condition and uncovers existing patterns and relationships between various facets of urban life. This includes: pedestrian activity, sound, transport, barriers, typology, shade, associations, and day and night time public activity.

These patterns and relationships are initially illustrated as six mapping exercises. They are then synthesized into summary maps of day time and night time conditions which are further reduced to written conclusions. These conclusions serve as the base for Part Two of this contextual analysis.

**RELATION TO OTHER CONTEXTS:** Part One's methodology is translatable to an array of urban contexts and is the first step of investigation when trying to identify an appropriate site showcasing the design problem stated in 1:4 (on page 08). Each mapping layer presented in Part One is necessary in focusing the area of investigation from a macro to a precinct scale.

## 3.1.1 *examining* BUILDING TYPOLOGY



Figure 3.1.1: Typological analysis

**MINI CONCLUSION:** The study area is dominated by the residential typology towards the East and governmental typologies towards the Western and Northern sides. Informal trading occurs in close proximity to government buildings and recreational spaces suggesting that these appeal to the public as the accessible, active areas within the context.

3.1.2

relationship  
BARRIERS. SHADE. PEOPLE



Figure 3.1.2: Barriers, shade and people

**MINI CONCLUSION:** Pedestrian activity is restricted by man-made barriers such as fences and wall; while parking and foliage barriers restrict pedestrian activity to a lesser degree. Whilst pedestrians walk predominantly up Paul Kruger street, their walking becomes slower and more leisurely when in the shade and within the 'green lungs' of this study area.

### 3.1.3 relationship SOUND. TRANSPORT. PEOPLE

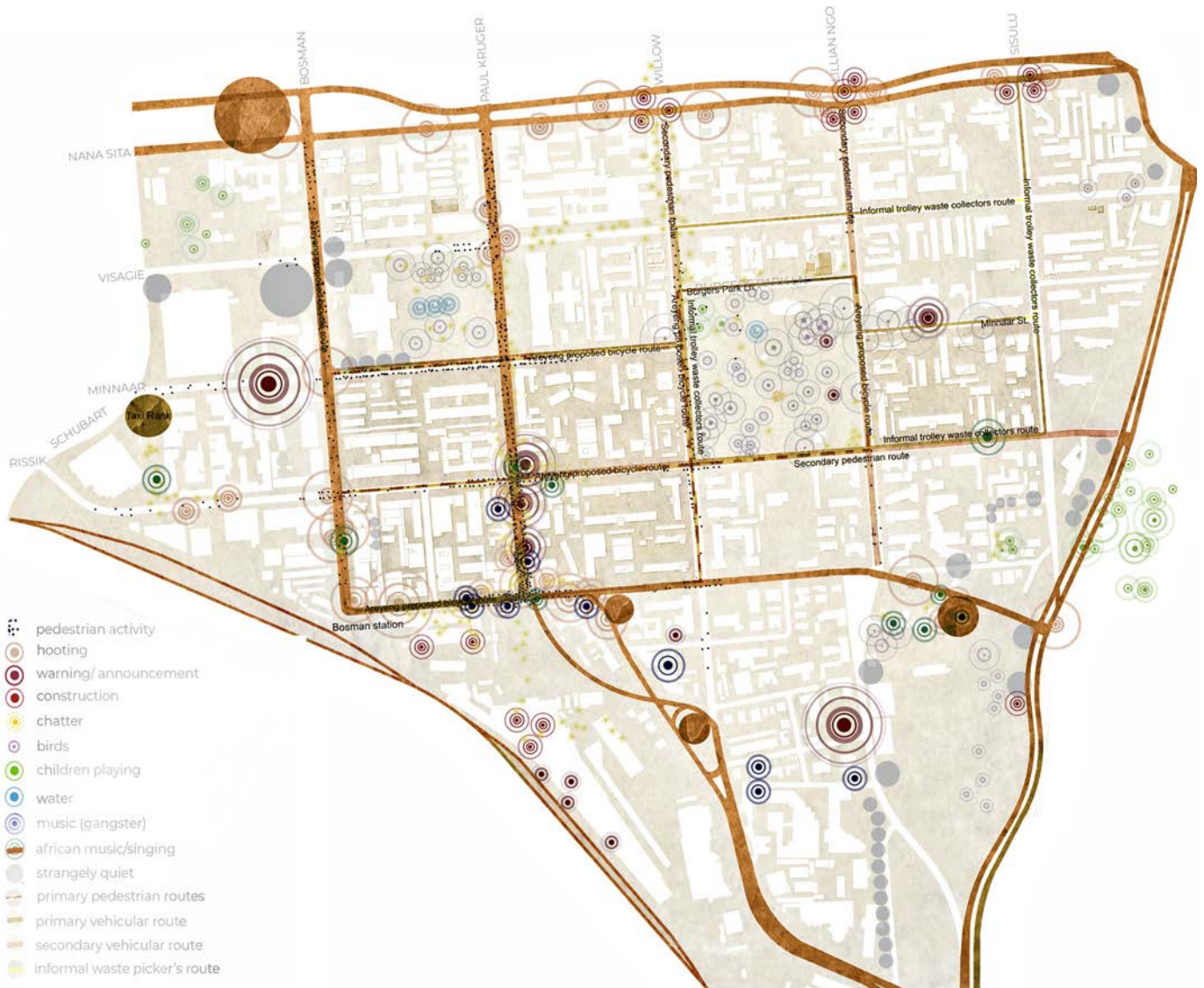


Figure 3.1.3: Sound, transport and people

**MINI CONCLUSION:** The movement of pedestrians is mutually exclusive to the type of sounds in the immediate surroundings (both pleasant and unpleasant sounds). Yet, where people choose to gather, have their lunch, and spend a little more time typically happens away from the route of major transport stations and construction and rather amidst nature and its sounds.



### 3.1.4 illustrating WORD ASSOCIATION



Figure 3.1.4: Word association mapping

**MINI CONCLUSION:** This mapping exercise was done with a bias and thus communicates qualitative aspects rather than fact-based. In some areas that were mapped, the actual name of a place outweighs any association it may have (for example Burgers Park) but in other instances, the qualitative association dominates (for example City Hall: a large symbol within the inner city that is publicly inaccessible and elitist and thus is illustrated as an 'exclamation mark' in the landscape.)

### 3.1.5 *unpacking* DAY TIME PUBLIC ACTIVITY



Figure 3.1.5: Day time public activity

**MINI CONCLUSION:** Day time activity revolves predominantly around social green space and transport hubs and thus pedestrian movement occurs between these active areas. Social areas in the day revolve predominantly along sidewalks, social pavement, green spaces, mixed use commercial buildings, educational buildings and transport hubs. However, inactive spaces during the day align to government and residential typologies.

## 3.1.6 *unpacking* NIGHT TIME PUBLIC ACTIVITY



Figure 3.1.6: Night time public activity

**MINI CONCLUSION:** Pedestrian activity gravitates towards food hubs in the evening leaving what were social pavements during the day, as sleep corridors at night. Positive activity has shifted towards the southern part of the study area in the evenings because of the 24-hr nature of food hubs and bars in this region. Burgers Park gets locked up and whilst being a positive, active space in the day, it becomes a negative area in the evenings with the surrounding roads becoming a niche for drug-dealing and prostitution.

## synthesis DAY TIME CONDITION



Figure 3.1.7: Synthesis of day time condition

## conclusion DAY TIME CONDITION

- i The precinct is dominated by **typological activity** during the day with the surrounding recreational space as active nodes.
- ii **Pedestrian activity, transport hubs, and inner city construction** all add to the noise within this precinct. The recreational spaces **buffer** these noises by washing them out with sounds of nature and water.
- iii Between Burgers Park and Pretorius Square, a **social pavement** is created as the result of **informal trading, pedestrian activity and proximity to government/ museum** building types.

# synthesis

## NIGHT TIME CONDITION



Figure 3.1.8: Synthesis of night time condition

# conclusion

## NIGHT TIME CONDITION

- i* The precinct is defined by **boundary and sidewalk activity** nodes at night.
- ii* Contrasting the typological functioning of buildings during the day, their **lack of evening programme** results in 'dead' pockets within the precinct.
- iii* Pedestrian **activity migrates south** of the precinct towards food hubs and bars. This **exodus of activity** creates a **sleep corridor along Minnaar street**.

# part two

## THE URBAN INTERIOR

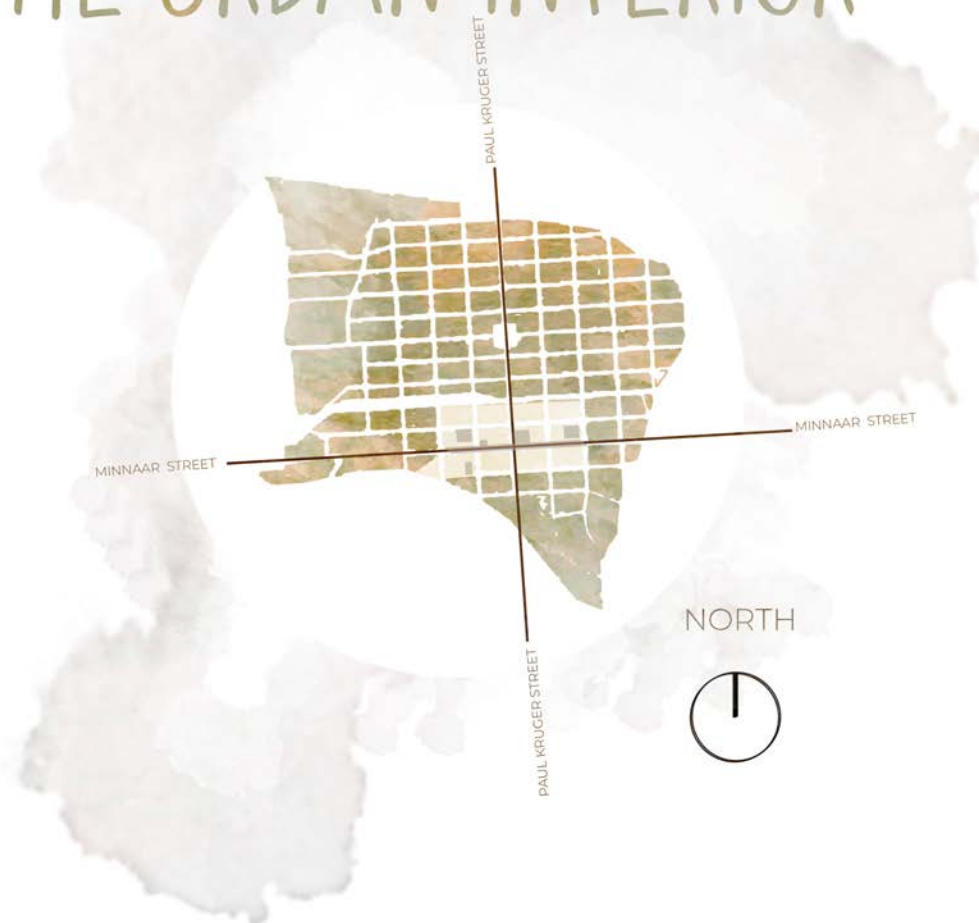


Figure 3.2.0: Narrowed area of investigation

**SUMMARY:** Part Two of the contextual investigation explores urban interiors that exist within the precinct identified in Part One. The first aspect of this section deals with the identification of urban interiors. Following this, the identified spaces are unpacked as a series of photographs and sketches. Finally, patterns are explored with the aim of creating urban interior typologies. The typologies are investigated as graphic patterns and then reduced to written conclusions. These conclusions serve as the base for Part Three of the contextual analysis.

**RELATION TO OTHER CONTEXTS:** After mapping all layers for Part One, a precinct within the macro context can be identified for housing the most complex and dense day time and activity and the most domestic activities at night. Part two overlays the notion of urban interior with the identified precinct in Part One. The overlaying process should materialise as a Nolli map highlighting spaces that are outside, yet possess the spatial qualities of inside. The spatial patterns identified in 3.2.3 can be used to give a 'name' and 'type' to the identified urban interiors within the investigated precinct.

## 3.2.1 *identifying* URBAN INTERIORS



Figure 3.2.1: Identifying urban interiors in study area

**IDENTIFYING URBAN INTERIORS:** In her article “Sensing the Urban Interior”, Valerie Mace (2014; 56) describes urban interiors as spaces that sit on the boundaries between inside and outside, private and public, enclosed and open space. This position, be it physical or psychological, is always dominated by the feeling of inwardness or interiority. The position in a physical sense is obvious to identify. But the psychological position is best described as a connection between people and the city. Here, people define a personal territory, enabling them to “develop a sense of identity and engage in the rituals of communication and recognition” (Madanipour, 2003; 34).

### **URBAN INTERIORS WITHIN THE PRECINCT:**

The above map draws from the typical Nolli map that marks all public places as positive space and all private places as negative place. Here, however, all urban interiors that meet the requirements stated alongside, are marked as positive space (white) instead.

Identification of urban interiors was done for the broader areas as depicted above, yet the precinct identified in the synthesis maps from Part One (page 29 and 30) is the area of focus. Urban interiors identified in this area are unpacked in [3.2.2] that follows.

## 3.2.2 analysing PHOTOGRAPHS OF URBAN INTERIORS

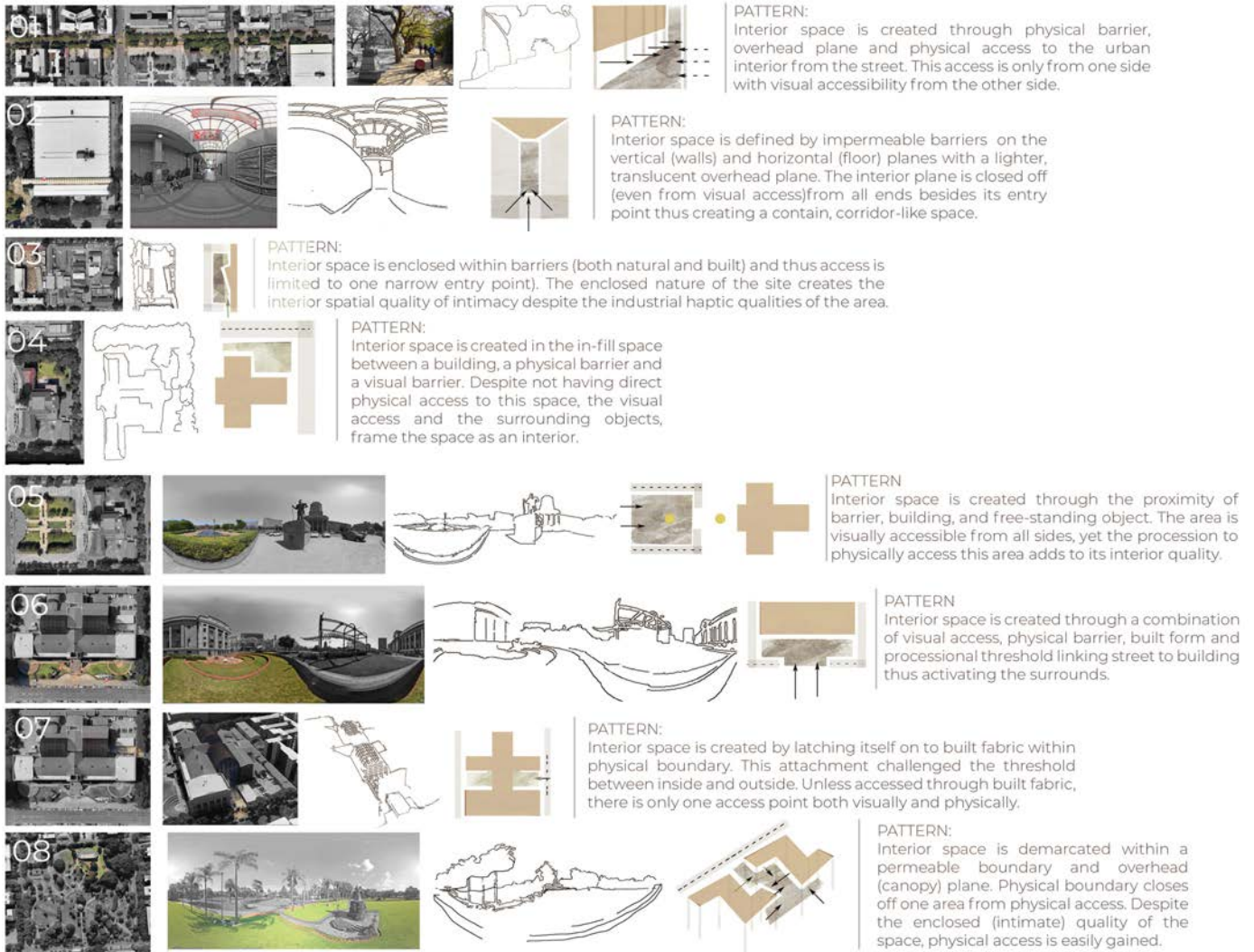


Figure 3.2.2 Photographic mapping of urban interiors

**FROM PHOTOGRAPH TO PATTERN:** Each urban interior identified within the highlighted area in [3.2.1], is unpacked above. The analysis begins with an aerial photograph which is easy to relate to back to the locality map in [3.2.1]. In some instances such as [03] and [04], an aerial photograph is the best way to assess the interior spatial qualities of the area. However, in most instances, a street view photograph assists in highlighting interior qualities. A simple wire diagram accompanies the photographs only illustrating the overarching spatial qualities. The last step in the analysis deals with the distillation of interior qualities and their representation as a *parti* diagram. A written conclusion is constructed for each urban interior in the form of a pattern. It is this pattern in conjunction with the parti diagram that lead to the analysis and conclusions in [3.2.3].



## 3.2.3 *creating* URBAN INTERIOR TYPES

**RECURRING PATTERNS:** The analysis performed in [3.2.2] demonstrated patterns that recurred throughout the precinct. It was noted that three patterns exist and occur in various parts of the precinct. The diagram below depicts the location of the three pattern types. The three urban interior types are assessed on two levels: the spatial patterns and the interior spatial qualities. From this, the typologies are named and conclusions are drawn.

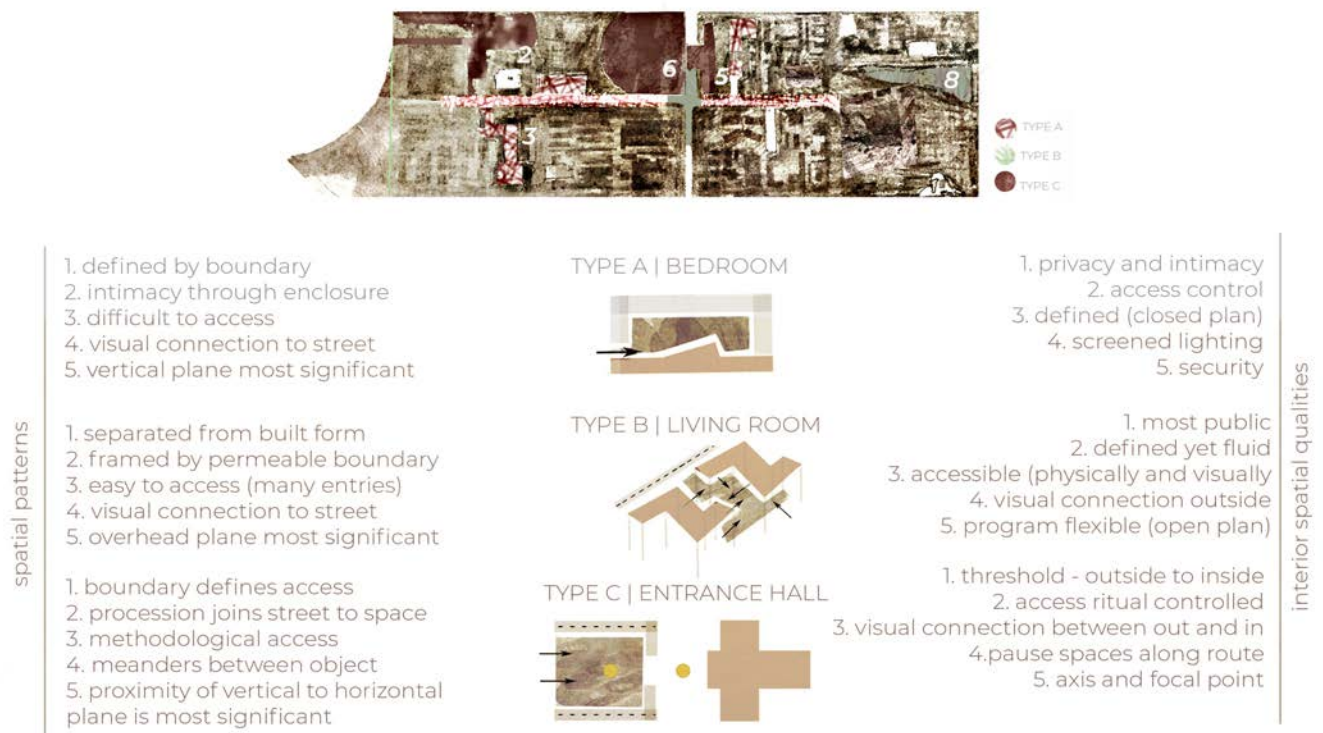


Figure 3.2.3 Types of urban interiors

## *conclusion* URBAN INTERIOR

The **spatial qualities** of the identified urban interiors have a **strong resemblance of rooms** within a home and these typologies can be summarized as follows:

- i* **The Bedroom:** the private, enclosed, intimate space with controlled access.
- ii* **The Living Room:** the most public, multifunctional, flexible space which is easy to access
- iii* **The Entrance Hall:** a linear access ritual, with access filtered from most public to most private. The separation between urban exterior and interior.

# part three STREETS



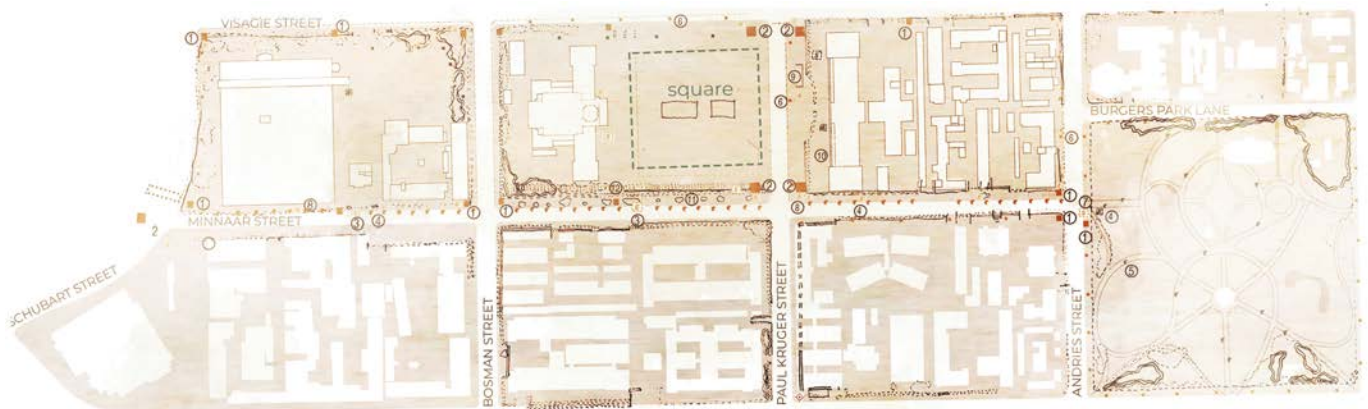
Figure 3.3.0 Precinct outline

**SUMMARY:** Part Three of the contextual investigation zooms in to investigate the components of streets in the highlighted precinct. Initially, all components of streets within the precinct are identified. However, through a process of photographic analysis and defining the potential in each component, hierarchy is created. This encourages the focusing of the study. [3.3.4] investigates the overlaying of the findings from Part Two with that of Part Three. Here, the inherent relationship between urban interiors and streets is evident.

**RELATION TO OTHER CONTEXTS:** Part Two will have identified urban interior 'pockets' within a precinct. Part Three initially identifies all components that make up streets, and then create a hierarchy based on the component's ability to accommodate informal activity. Lastly, the urban interior 'pockets' and the hierarchy of street components can be overlaid. Resultantly, a street or series of streets is identified as the appropriate one for intervention.

## 3.3.1 *identifying* URBAN FURNITURE

**STREET COMPONENTS:** In order to conduct a thorough analysis, all street components are mapped as shown below. This includes components on the street but also components within enclosed (private) spaces. From the illustration below, it is evident that the majority of mapped components are on the street due to the public nature of streets. Moreover, there is a lot of repetitive component design. Therefore, instead of numbering each object to be analyzed in [3.3.2], each component with a new design is marked instead, such that the variety is documented. This ensures the analysis is not diluted by repetition.



### STREET COMPONENTS

#### 1. COMPONENTS SEPARATE FROM STREET

- bench
- [S] signage
- [E] electrical mini substation
- [B] rubbish bin
- lamp post

#### 2. COMPONENTS ON STREET

- bench
- [S] signage
- [E] electrical mini substation
- [B] rubbish bin
- lamp post
- [T] telephone booth
- bus stop
- ▨ billboard

#### 3. COMPONENTS DEFINING EDGES

- half wall, half fence
- foliage
- full length fence
- half length fence
- loose object
- full length wall
- half length wall
- fence with spikes
- ▨ parking
- paving

Figure 3.3.1 Mapping street components

## 3.3.2 *potential in* URBAN FURNITURE

### PHOTOGRAPHIC ANALYSIS:

As stated above, street components numbered in map [3.3.1] are unpacked below photographically. Thereafter, the potential in each piece of furniture is described. This potential ranges from design form and materiality to locality and programme. The components analysed house a number of functions from way-finding and lighting to fireplaces and sleep spaces. The functions that the objects house becomes imperative to [3.3.3] where function drives the creation of hierarchy.



#### POTENTIAL IN:

- 1 | Dominant form that repeats throughout study area
- 2 | Over-design allows for functions such as signage and storage to latch on to central core.
- 3 | Same design language and materiality as other ornaments in this study area.



#### POTENTIAL IN:

- 1 | Dominant form that repeats throughout study area
- 2 | Over-design allows for functions such as signage and storage to latch on to central core.
- 3 | Same design language and materiality as other ornaments in this study area.



#### POTENTIAL IN:

- 1 | Dominant form that repeats throughout study area
- 2 | Heat generated from back used as heater in winter
- 3 | outer skin as canvas for signage and graffiti
- 4 | Access door welded shut and therefore inside is inaccessible



#### POTENTIAL IN:

- 1 | Dominant form that repeats throughout study area
- 2 | Functional appropriation and tools for territoriality.
- 3 | Same design language and materiality as other ornaments in this study area.
- 4 | Depending on location, they appear in various stages of destruction.
- 5 | They have been stripped of all monetary and material value, yet they still hold a sense of place.



**POTENTIAL IN:**  
 1 | Day time use being partly unsuccessful due to their dislocation from the shaded areas of the park.  
 2 | Contrast with the benches above as tools for territoriality.  
 3 | Same materiality as other ornaments in this study area.



**POTENTIAL IN:**  
 1 | Day time they are not in use and could be latched on to.  
 2 | Repetition throughout precinct  
 3 | Users rely on their existence and when they don't work its quickly noticed



**POTENTIAL IN:**  
 1 | Dominant gate where majority enter and exit  
 2 | Entrance becomes platform for vendors, performances and social interaction.  
 3 | Signage repeats outside City Hall, Melrose House other important landmarks in this area.



**POTENTIAL IN:**  
 1 | Repetition around the precinct.  
 2 | Objects used in protests, to make fires, graffiti  
 3 | Same materiality as other ornaments in this study area.



**POTENTIAL IN:**  
 1 | Form that repeats throughout Tswane  
 2 | Used for other functions tht weren't intended  
 3 | Same design language and materiality as other ornaments in this study area.  
 4 | Location on Paul Kruger Street.



**POTENTIAL IN:**  
 1 | Dominant form that repeats throughout study area  
 2 | Over-design allows for functions such as signage and storage to latch on to central core.  
 3 | Same design language and materiality as other ornaments in this study area.  
 4 | Location on Paul Kruger Street.



**POTENTIAL IN:**  
 1 | Paving that separates street, furniture and walkway  
 2 | Relationship between trees, benches and where people sleep  
 3 | How edge condition and natural elements create security and privacy such that people sleep in this area.



**POTENTIAL IN:**  
 1 | Fence serving as spa division between private a public.  
 2 | Latching on to sidewalks ; selling, games, entertainme and social interaction.  
 3 | Pop up umbrella structur and the produce display below take on an exhibiti stand typology.

Figure 3.3.2: Photographic analysis of urban furniture

### 3.3.3 *creating* HIERARCHY

#### FOCUSING THE STUDY AREA:

Up until this point in Part Three's investigation, equal emphasis has been placed on all street components. Section [3.3.3] seeks to create hierarchy in order to focus the study area. Two factors are considered in creating a hierarchy. Firstly, the functions pertaining to the street component (formal-bench as seating, or informal-bench as bed). Secondly, is the function attached or detached from the street components itself? All street components are plotted on a graph below based on these two parameters. From this, quadrant 4 (as highlighted) is identified as the "sweet spot" and therefore the street components mapped below focus the study area to Minnaar and Paul Kruger Street.

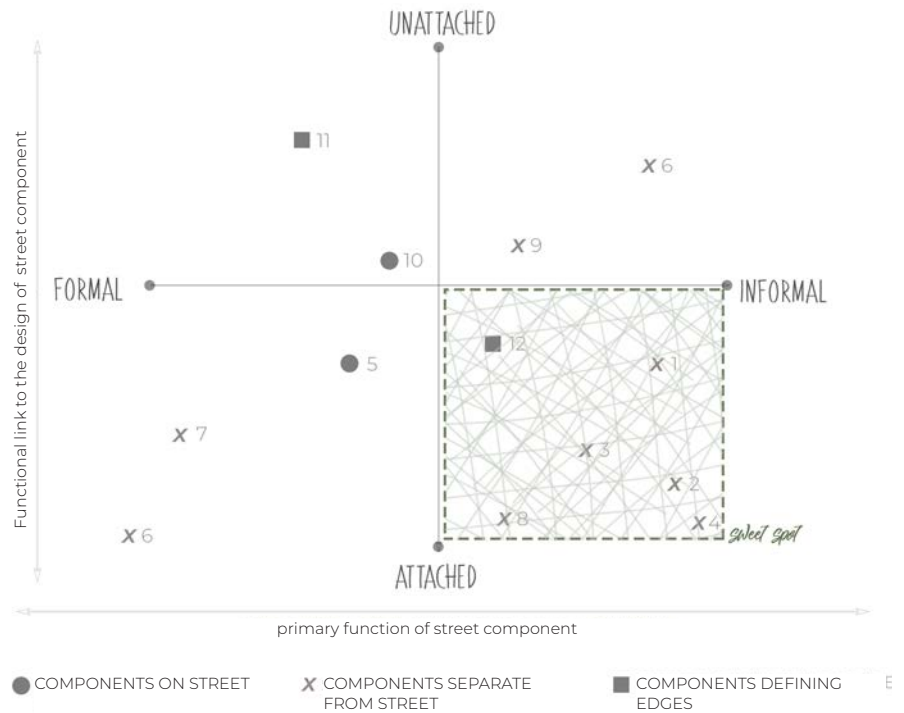


Figure 3.3.3.1 Plotting street components against two perimeters



Figure 3.3.3 Mapping the street components that were in quadrant four

*part three*

# SYNTHESIS AND CONCLUSION



### 3.3.4 *overlying* STREETS AND URBAN INTERIORS

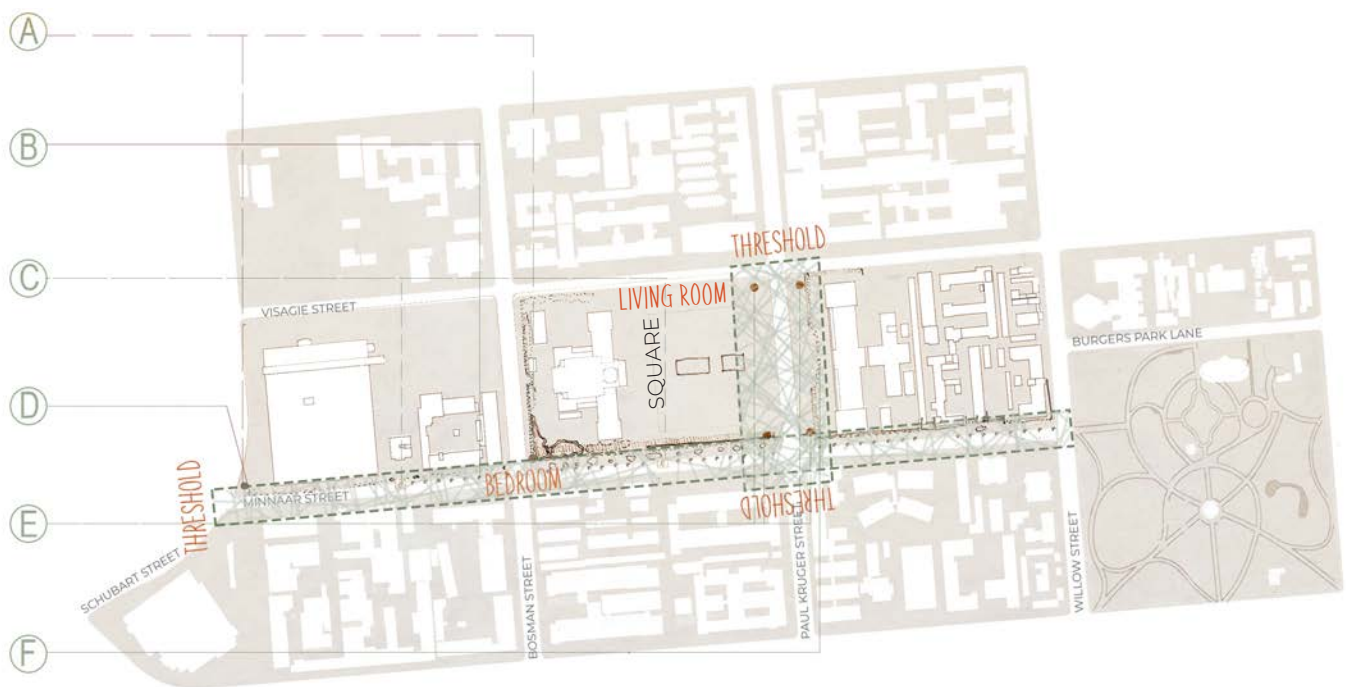
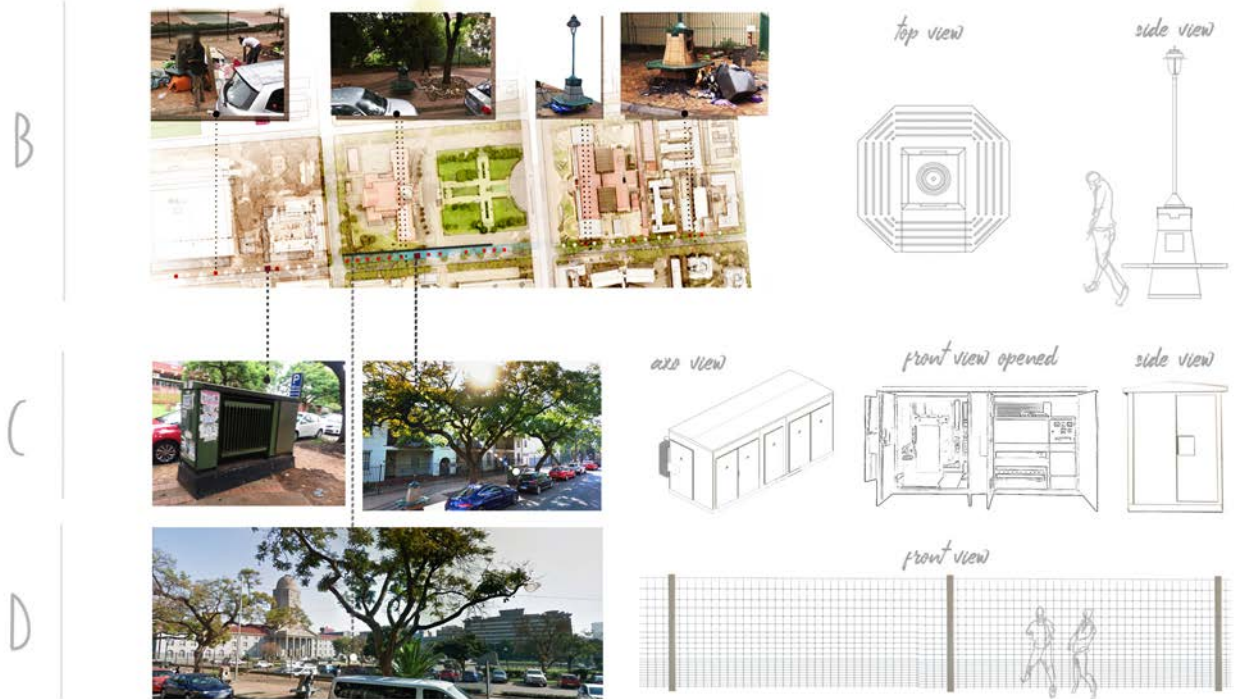


Figure 3.3.4.1 Overlying streets with urban interiors

**AN UNMISSABLE RELATIONSHIP:** The above map shows the intersection of street components from Figure 3.3.3 and urban interiors. The urban interiors identified in Part Two have a direct relationship to the street components in [3.3.3]. This relationship exists despite the fact that the urban interiors were identified purely for the interior spatial qualities they possess, and the street components only for their functional aspects. This finding is interesting because now, instead of only having 'bedrooms' and 'entrance thresholds' identified in Part Two; there are benches used as 'beds' located within 'bedroom' typologies, and lampposts where people gather defining 'entrance thresholds'. The key street components with direct relationships to the urban interior in which they sit, are illustrated in [3.3.4] above.



## THE BEDROOM AND ITS STREET COMPONENTS



## ENTRANCE THRESHOLD AND ITS STREET COMPONENTS



Figure 3.3.4.2 Unpacking 'rooms' and their components

## conclusion STREETS

Streets with their **primary function** being **informal** where this function being **directly attached** to the design of the streets itself:

- \_ aid in **focusing the study** area and guide the site selection within the precinct
- \_ have a **direct relationship** to the **urban interiors** identified in mapping 3.2.

*introduce* 03  
CONTEXTUAL ANALYSIS  
[UNFOLDING OF PEOPLE]

# part four

## TRACKING HOMELESSNESS

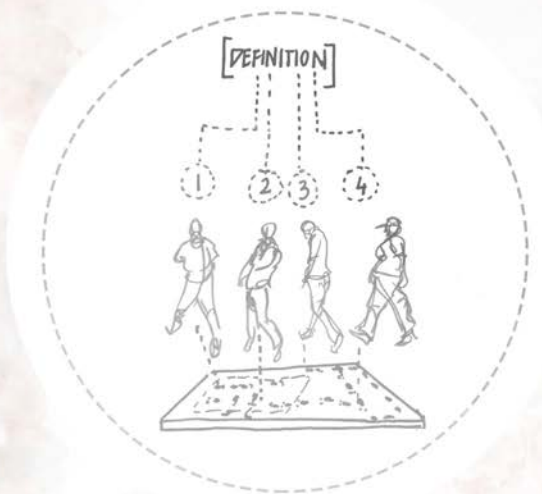


Figure 3.4.0 Tracking Homelessness

**SUMMARY:** Part Four is the first step in shifting the focus from the physical conditions explored in the first three parts, to the social context. In this part, homelessness is unpacked through the assistance of the Tshwane Homeless Forum’s “*Pathways Out of Homelessness*” 2015 report. Firstly, the report will be summarised in terms of its intention, method and statistics. Secondly, the definition and types of homelessness are considered. Lastly, the importance of a home is addressed as a way of understanding reciprocity in cities.

## 3.4.0 *review of* PATHWAYS OUT OF HOMELESSNESS

“

*[The] street homeless are the proverbial skeletons at the feast, the excluded poorest who enter unobserved and stand by gaunt and starved. Terrifying to the invited guests but deprived of any capacity to join the party*

[Cross, et al, 2010].

”

### 2015 RESEARCH REPORT'S INTENTION:



Figure 3.4.0.1 Forming partnership  
(Tshwane Homeless Forum, 2015)

The 2015 Research Report unpacks the notion of homelessness as more than a lack of shelter and rather as an expression of social, economic and spatial inequality. This research ties in to the National Development Plan 2030 which is focuses on creating a society built on the foundation of social justice (De Beer & Vally, 2015; 386).

Incentive driving the research came about in 2014 when 600 residents living in a shelter in the City of Tshwane were handed an eviction notice and only one day's notice to leave. With no alternative accommodation offered, different parties collaborated to challenge this inhumanity at a meeting between the Tshwane Homelessness Forum and the MMC for Social Development. During this meeting, not only did the City of Tshwane admit to gaps in policies specifically addressing homelessness, but agreed that a social contract needed to be established as a collaboration of many role-players to ensure that the basic rights were implemented.

De Beer and Vally (2015; 2) suggest that addressing homelessness requires more than just an innovative approach and look towards social justice instead of charitable “handout”. This, in turn, demands broadening representativity to include academic institutions, the City of Tshwane, NGO's, FBO's, as well as people who are, or were homeless.

The Tshwane Homelessness Forum is the umbrella structure under which the various representatives act. The forum aims to: “prevent and reduce street homelessness through effective, appropriate and holistic responses both addressing emergencies and creating long-term infrastructure to break the cycle of homelessness” (Tshwane Homelessness Forum, 2015; 7). The long term infrastructure looks towards social housing and permanent dwelling. However, it is the temporal scenarios that the eventual design proposal will investigate.

By setting out to achieve their aim, the forum hopes “to humanize the approach to street homelessness and identify needs for care and support, facilitate the provision of care, and prevent homelessness whenever possible.” The objective frames the emergency/temporal scenario of homelessness as discussed above. Moreover, they hope to find “sustainable, long term solutions to homelessness through a holistic re-integration strategy and action programme” (Tshwane Homelessness Forum, 2015; 7).

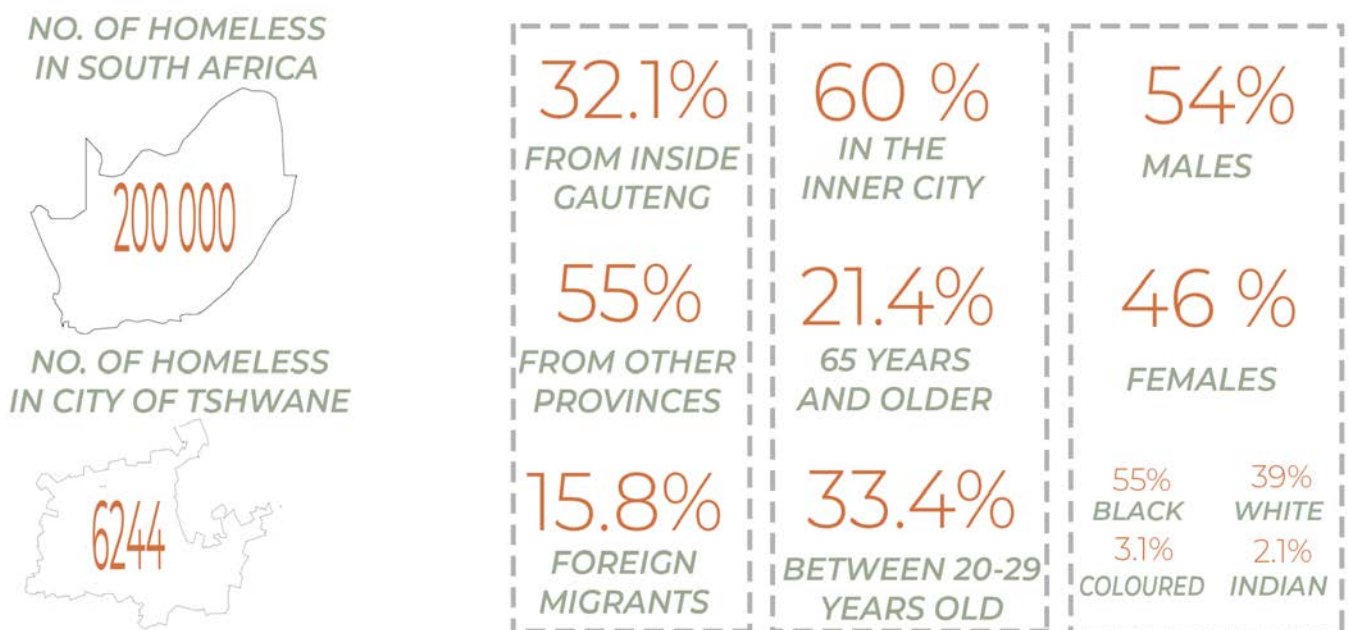


Figure 3.4.0.2 Summarized statistics

### SUMMARIZING STATISTICS:

By uncovering 2011s figures on homelessness from Statistics South Africa, the severity, complexity and urgency of homelessness becomes evident. De Beer and Vally (2015, 5) suggest that while Statistics South Africa [2011] record the number of street homeless people in the City of Tshwane at 6,244, this is a conservative estimate which since 2011 has, without a doubt, increased. The diagram above summarizes statistics relevant to the area of study. Here, it becomes evident that of the homeless in the City of Tshwane, only 32,1% are from inside Gauteng; 52,1% from other provinces in South Africa; and 15,8% are foreign migrants. Another shocking statistic is that the second most common age group associated with homelessness is the elderly who are 65 years+ old (Statistics South Africa, 2011).

The Tshwane Homelessness Forum addresses these figures by looking beyond statistics and beyond community engagement. Therefore, a broad-based collaboration vehicle is designed bringing together universities, homeless, the private sector and the local community; in the hope of contributing to on-going evidence-based research (De Beer & Vally, 2015; 59).

## 3.4.1 *defining* STREET HOMELESSNESS

**TOWARDS A DEFINITION:** Homelessness in South Africa has changed considerably between 1994 and the present and because of this De Beer and Vally (2015; 5) state that defining street homelessness in a way that would make sense in the South African context proves to be a challenge. However, the pair have synthesized previous definitions from various contexts to suggest a definition suitable for this context. This is stated below and is further broken up into the four types of homelessness they have defined. Since no information exists disclosing which types of homeless exist along Minnaar Street, all four of these types will be considered as model inhabitants.

Street homelessness refers to **all individuals physically living without any form of shelter**, on the street, on pavements, in bushes, in city parks or in other vacant urban spaces. This includes '**temporary overnight sleepers**'.

*Stephan de Beer & Rehana Vally (2015,1)*

1

### ECONOMIC HOMELESS

People who are *homeless and unemployed*, sometimes even having a home in another part of the country but being on the streets of the city in search for a sustainable livelihood. People might earn a *small income* but cannot access affordable housing in the market.



2

### SITUATIONAL HOMELESS

Situational homelessness refers to people who are *homeless as a result of domestic violence or abuse, refugees or asylum seekers, people released from prison or psychiatric hospitals with no place to go to, conflict within families and across generations over properties, inheritances, or accusations of witchcraft.*



3

### CHRONIC HOMELESS

Chronic homelessness refers to people who are on the streets as a result of chronic mental health or substance abuse problems. Access to *employment is therefore a problem* and therefore also access to sustainable housing options.



4

### NEAR HOMELESS

People who are in particularly *precarious circumstances and at risk of becoming homeless any day*. They include people in correctional services and psychiatric hospitals, due for release or discharge; children from child-headed households; and young women who are in "sex for money" relationships.



Figure 3.4.1. Types of Homelessness

## 3.4.2

### establishing reciprocity

## THE IMPORTANCE OF A PHYSICAL ADDRESS

**MORE THAN A HOME:** The diagram below displays a scale defining home on one end and homelessness on the other. Here, a home speaks of security, rootedness and access to rights. While on the other end of the spectrum, homelessness speaks of rootlessness, instability and vulnerability. Minnaar Street is placed in between these two extremes because like those with a “home”, the people who sleep along Minnaar Street return night after night to the same place. This creates a sense of permanency despite the lack of infrastructure or physical address.

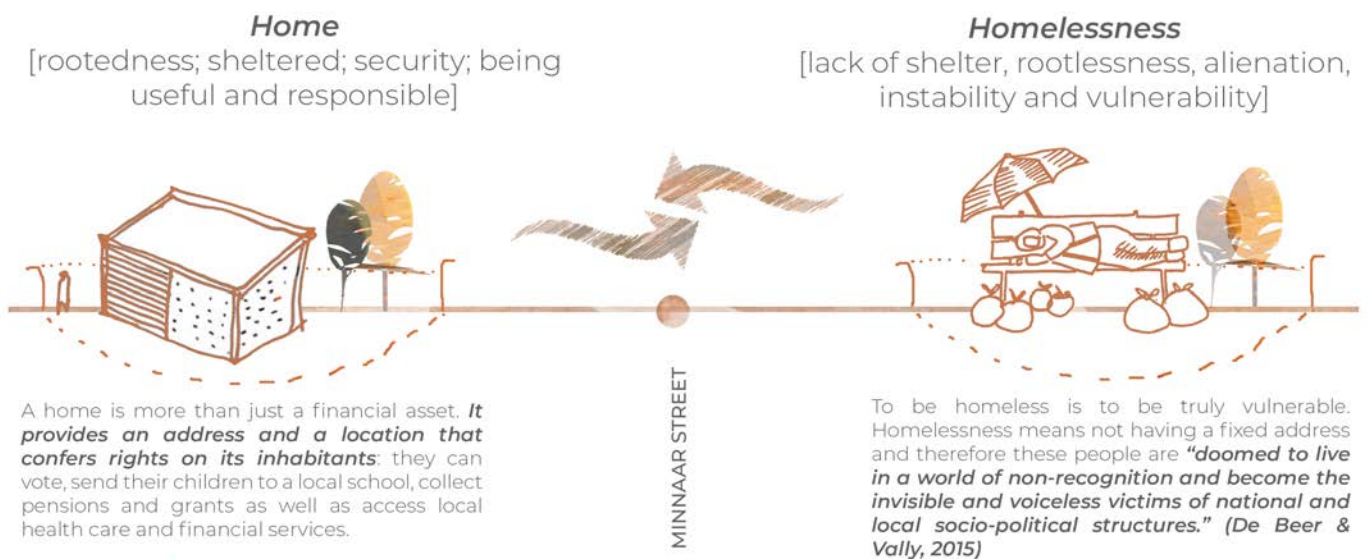


Figure 3.4.2 Scale between home and homelessness

**THE IMPORTANCE OF RECIPROCITY:** The Tshwane Homelessness Forum stresses the importance of the involvement of homeless in participating in the activities bettering their situation. De Beer and Vally (2015; 45) suggest there is a need for “policy formulators to involve the population affected rather than side-lining them when formulating programmes for them”. People impacted by homelessness are viewed as essential to the development of effective solutions to homelessness (Norman 2013). The White Paper Act on Welfare (1997) promotes the eradication of poverty by “discouraging dependency” and promoting the “active involvement” of people in their own development. Here, social workers are encouraged to pay attention to clients’ strengths rather than deficits and help them to realise their potential for personal growth (Midgely, 2010; 6). This suggests a need to do away with ‘treatment’ and rather focus skills possessed by the homeless. Saleebey (2009;7) explains that focusing on the strengths perspective promotes the “rousing of hope, of tapping into the visions and the promise that the individual holds.”

## conclusion

### HOMELESSNESS

Street homelessness predominantly exists within the inner city and combines groups of people living on the street for various reasons from chronic to economic. **What these people have in common along Minnaar Street is that they return night after night to sleep in the same spot.** Without there being a physical house built, there is evidence of home and belonging and thus a residential address for this area should be established.

# part five

## DOMESTIC RITUAL

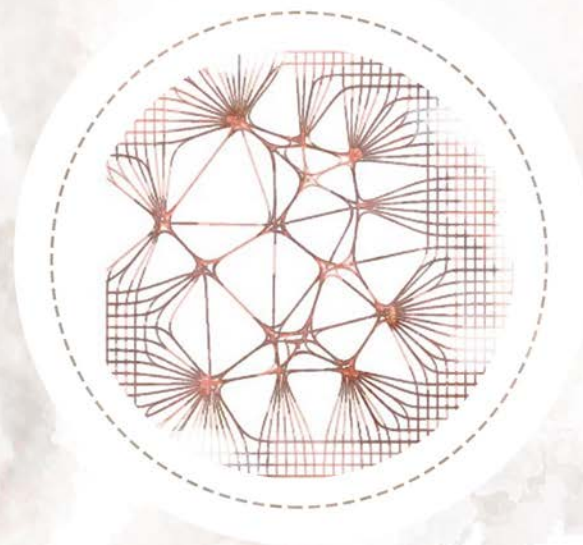


Figure 3.5.0 Domestic ritual

**SUMMARY:** Part Five overlays findings from Part Three and Part Four in an attempt to understand domestic rituals surrounding Minnaar Street. This is done by considering how domestic rituals change during the day and at night. Here, the street acts as the controlled variable and the domestic rituals surrounding them, alter. The domestic activities identified are explored as photographic “happenings” and then further investigated as a series of relational diagrams.



### 3.5.1 *identifying* DOMESTIC RITUAL

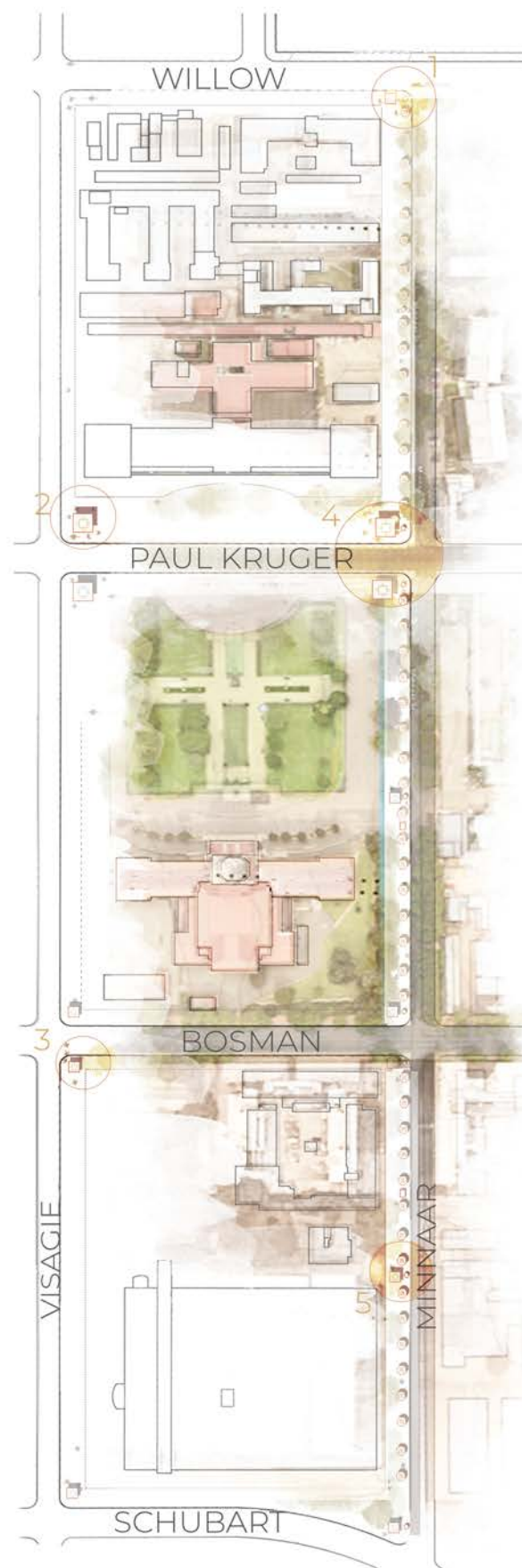
#### DOMESTIC RITUAL + STREETS

Although street components were identified in a hierarchal fashion in Part Three, this section aims to uncover domestic rituals surrounding Minnaar Street. The diagram alongside highlights five key street components that are then analyzed based on their day and night time domestic functions.

Bart Verschaffel (2010; 5) explains that for one to understand domesticity, the 'domus' must be understood as more than just a place and extends to define centrality, stability, territory and continuity. Paolo Boccagniani and Andrea Brighenti (2017; 23) extend of this way of thinking but applying it to everyday street-side living spaces and the way in which inhabitants 'cultivate home'. The pair further state that in contexts characterized by circumstantial victims, economic segregation and social isolation, domesticity is the potential to create meaningful places and a sense of belonging.

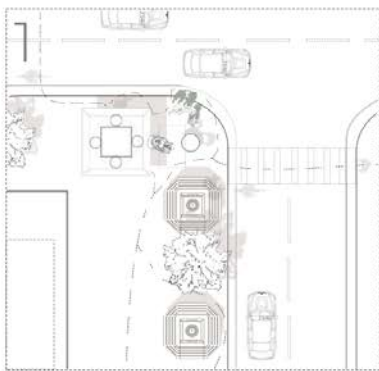
Therefore, the identification of domestic rituals goes beyond activities that would normally happen in a home (eating, sleeping, etc.), and stretches to include happenings where social engagement is encouraged and a sense of 'neighborhood' and community is created (making fireplaces, gambling, street performance, selling products, etc).

Figure 3.5.1 Locality map



## 3.5.2 *domestic rituals* DAY TIME SCENARIO

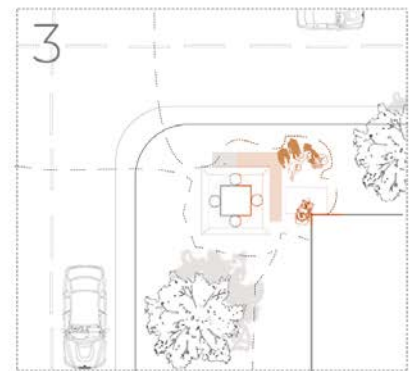
**DAY TIME DOMESTICITY:** Below, five day time scenarios of domesticity are unpacked. The most prominent street component anchoring daytime domesticity, is the lamppost and square. The most common domestic activity surrounding the lampposts, is the preparing, selling and eating of food. The benches along Minnaar Street are not very prominent and, where they do feature, they also accommodate rituals of selling and eating food. Along Paul Kruger Street performance and exhibition unpack in the form of gambling games and the selling and making of street art.



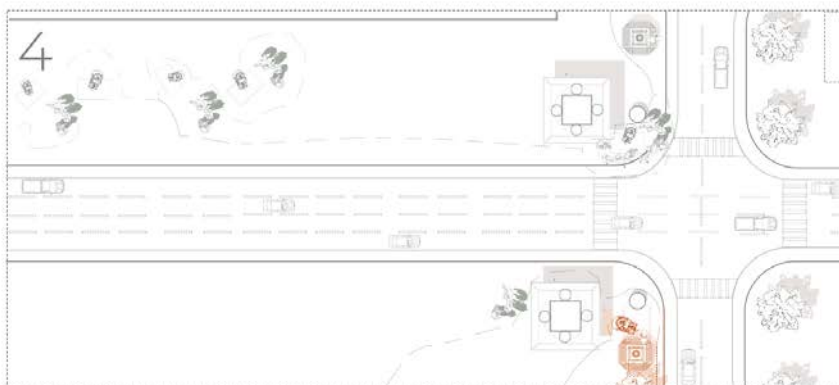
VENDOR SELLING SNACKS  
OUTSIDE BURGERS PARK



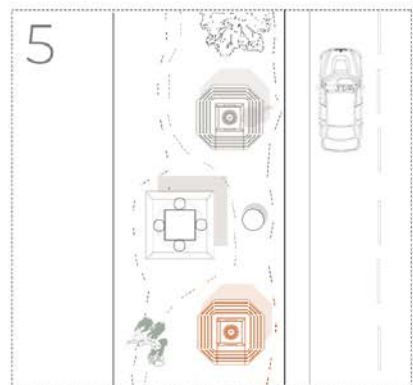
HOT MEALS PREPARED  
AND SOLD FROM 10AM



FRUIT & VEG, CIGARETTES  
AND CRISPS ON SALE



GAMBLING GAME UNPACKS NEXT TO LAMPPOST, STREET  
ARTISTS SELL THEIR WORK AND SNACKS ARE SOLD



VENDOR SELLING SNACKS  
OUTSIDE BURGERS PARK

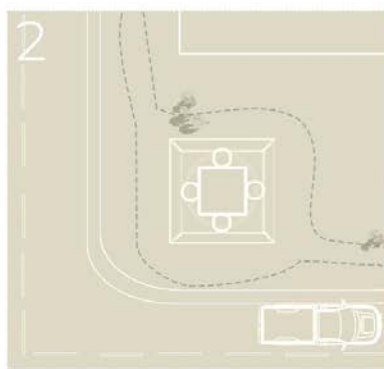
Figure 3.5.2 Day time domestic ritual

### 3.5.3 *domestic rituals* NIGHT TIME SCENARIO

**NIGHT TIME DOMESTICITY:** Below, five night time scenarios of domesticity are unpacked. The most prominent street component anchoring night time domesticity is the bench; and the most common domestic activity surrounding these benches is the sleeping and gathering. The lampposts are not as prominent as they are during the day, but still accommodate social activities such as drinking and chatting. During the winter months, fires get made inside dustbins situated in close proximity to the benches where people sleep. This attracts many of the homeless in the area therefore also anchors social engagement.



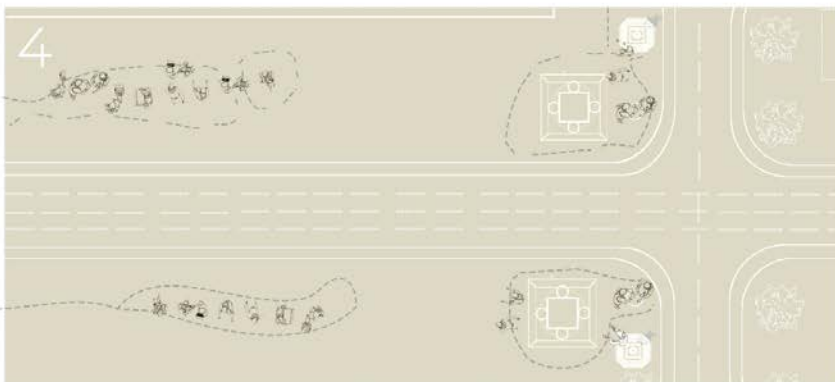
1  
FIRES MADE IN DUSTBIN & DRUGS SOLD ON CORNER



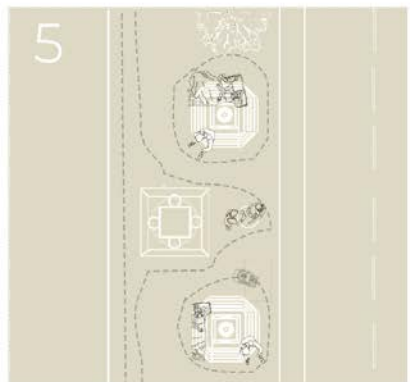
2  
EXPOSED & THUS HARDLY ANY EVENING ACTIVITY



3  
MEETING POINT WHERE PEOPLE DRINK AND CHAT



4  
EATING AND GATHERING SPACES. SLEEPING NOT IDEAL BECAUSE MANY PEOPLE WAIT NEAR HERE FOR TAXI'S.



5  
SLEEPING & EATING SPACES AND IN WINTER FIRE IS MADE

Figure 3.5.3.1 Night time domestic ritual



# photographic exploration OF DOMESTIC RITUAL



view from 1 [night scenario]



view from 2 [day scenario]



view from 3 [day scenario]



view from 4 [day scenario]



view from 5 [day scenario]

Figure 3.5.3.2 Photographic exploration

## conclusion DOMESTIC RITUAL

Street components take on various functions throughout the study area during the day and the night. During the day these functions predominantly **revolve around the buying and selling of food and social gathering** activities such as gambling and street art. However, during the night these social activities move away from Minnaar street and the **predominant function is that of keeping warm and sleeping.**

# part six

## LEGISLATION

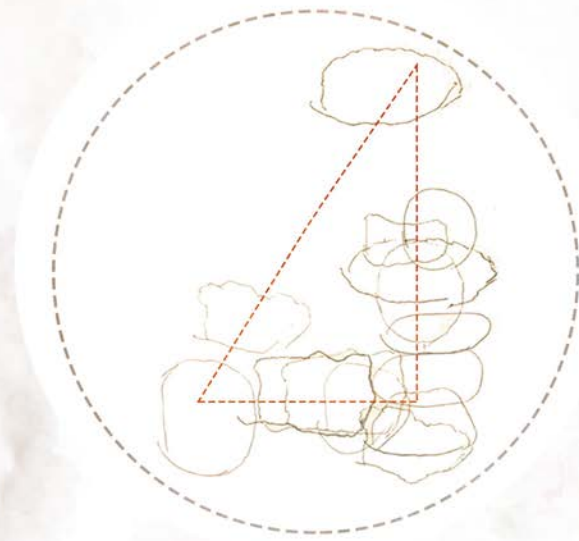


Figure 3.6.0 Legislation

**SUMMARY:** Part Six considers policies and legislation surrounding homelessness in terms of health, economics, psycho-social aspects, housing and awareness. This investigation looks to identify a legal infrastructure to support the well-being of people living on the street.

### 3.6.1 *timeline of* LEGISLATION

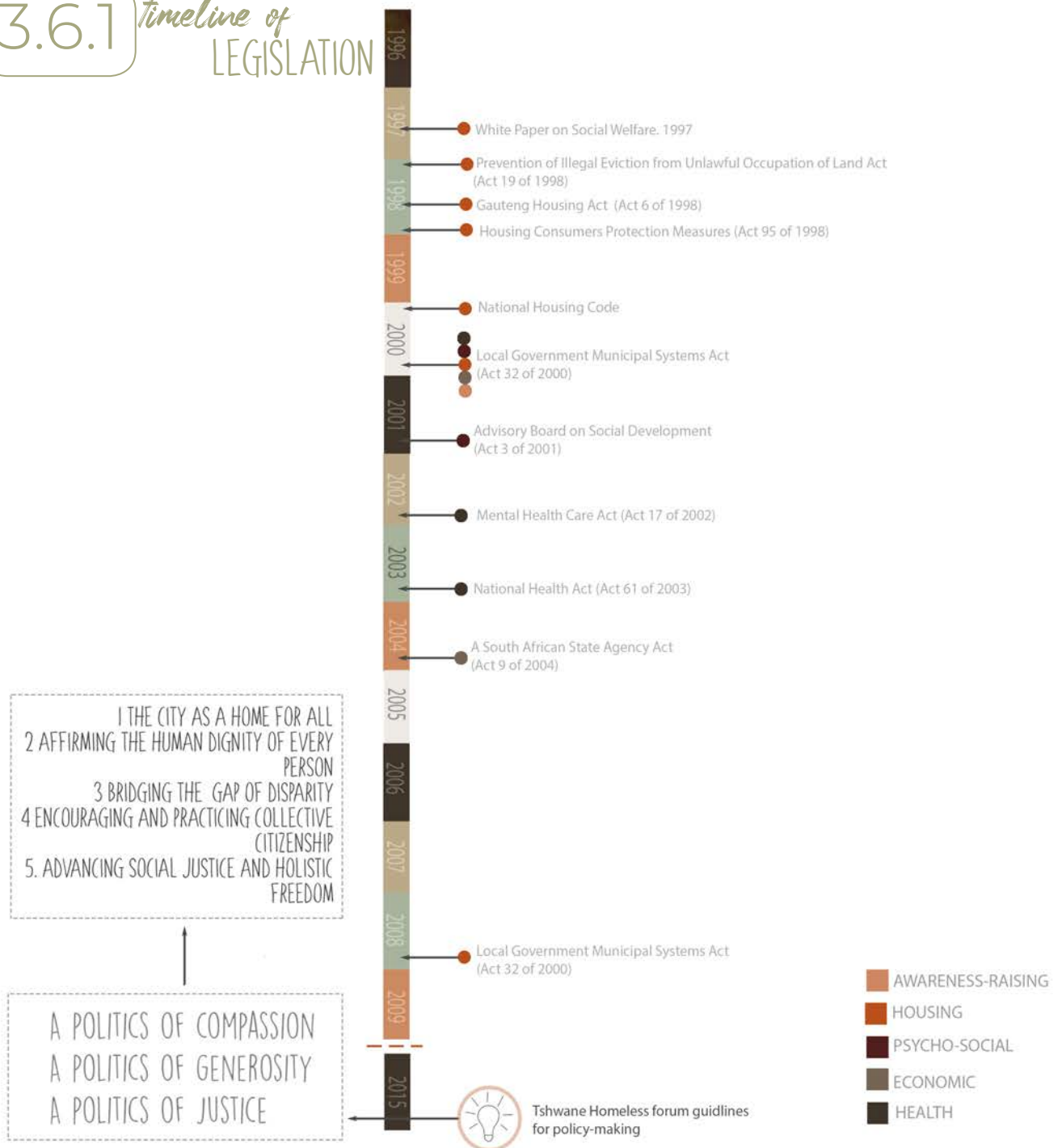


Figure 3.6.1 Timeline of legislation

### *conclusion* LEGISLATION

Since 1996 when our Constitution was adopted, 12 legal acts have been put forward, of which the Local Government Municipal Systems Act of 2000 was the most successful umbrella act in dealing with health, housing, psycho-social, economic and awareness. **However, none of these acts protect the wellbeing of people living on the street and in fact disregard their existence.** Therefore, it is assumed that the guideline's for policy creation set forward by the T.H.F are adopted moving forward.

# GRAPHIC SUMMARY OF CONTEXT ANALYSIS

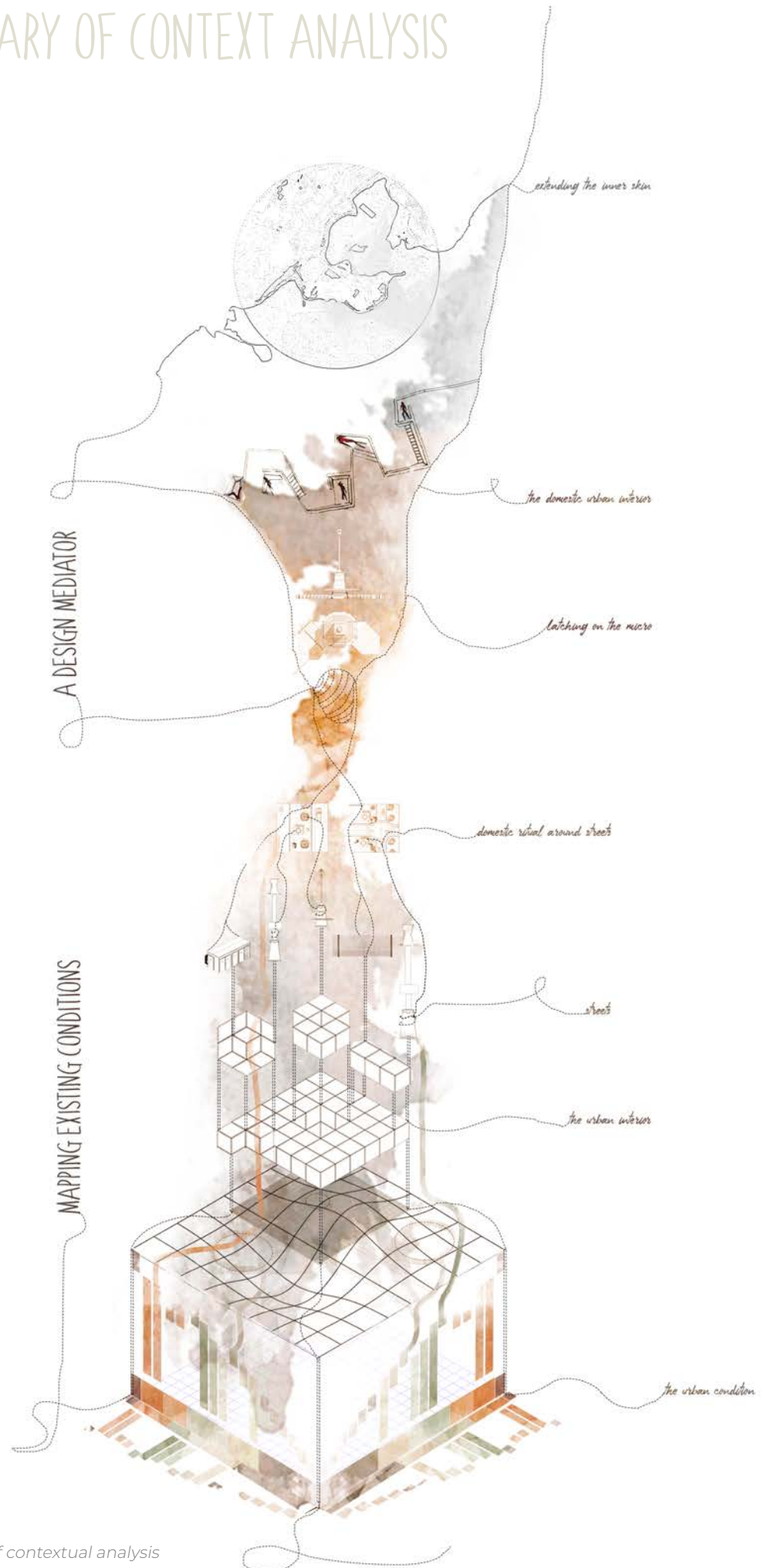


Figure 3.6.2 Abstract summary of contextual analysis



## 3.7 APPLICATION OF METHODOLOGY TO OTHER CONTEXTS

Chapter 3's contextual analysis becomes a method to identify similar sensitive sites in any city/context and therefore the infographic below can be used as a summative tool to translate this methodology to the site of investigation. Thus, supporting the deployable nature of the proposed design.

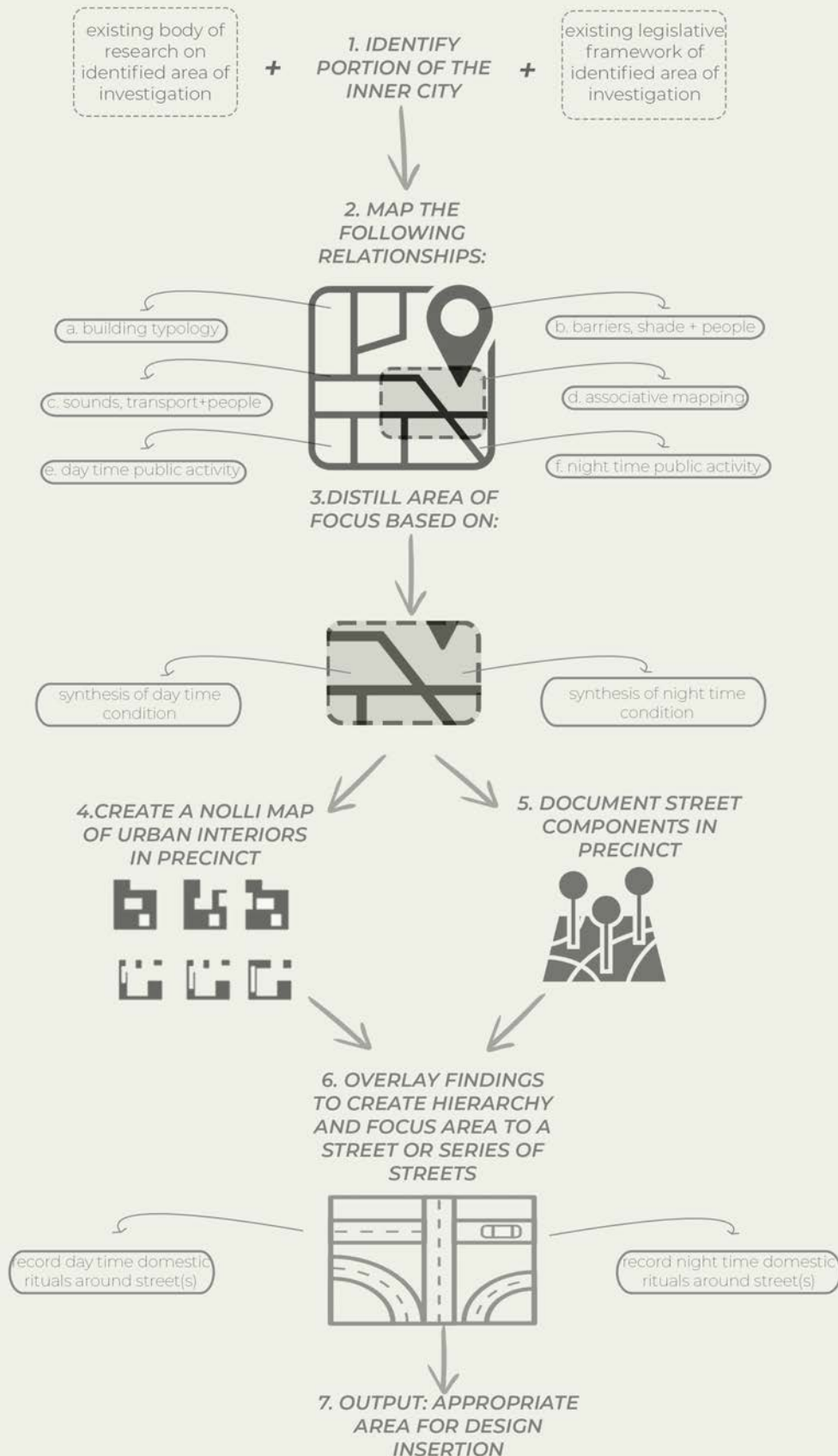


Figure 3.7.1 Infographic of context analysis method





*argue* synthesizes the theory supporting the relevance of ‘urban interior’ within the discipline of interior architecture, and its potential to accommodate urban domestic ritual. Part B considers how the theory of urban interiors can drive interiority and domesticity on South African Streets.

Theoretical informants are identified and are used to analyse practical design examples of interiority and domesticity across a spectrum of scales.

part



*argue*

CHAPTERS 4+5

[THEORETICAL ANALYSIS  
AND PRACTICAL SYNTHESIS  
THROUGH PRECEDENT]

04

*argue*  
THEORETICAL DISCOURSE

# 4.1 A LONG TIME COMING

The figure below highlights both the general stylistic development of the interior architecture discipline and well as the theoretical development of the concept of urban interior. Despite being written about profusely in recent times, the origins of 'urban interior' date back to 1745 through the notion of 'public interior.'

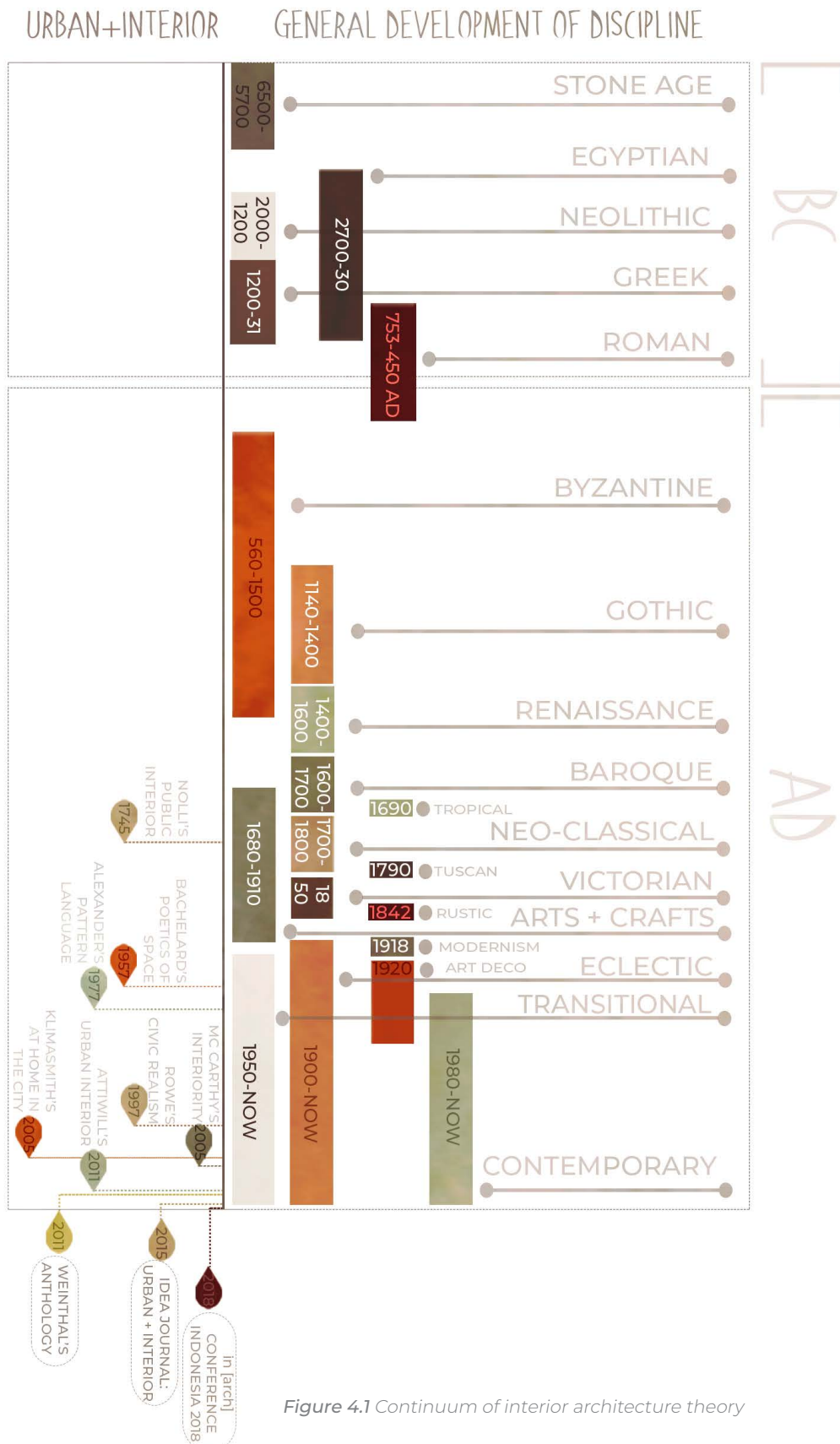


Figure 4.1 Continuum of interior architecture theory

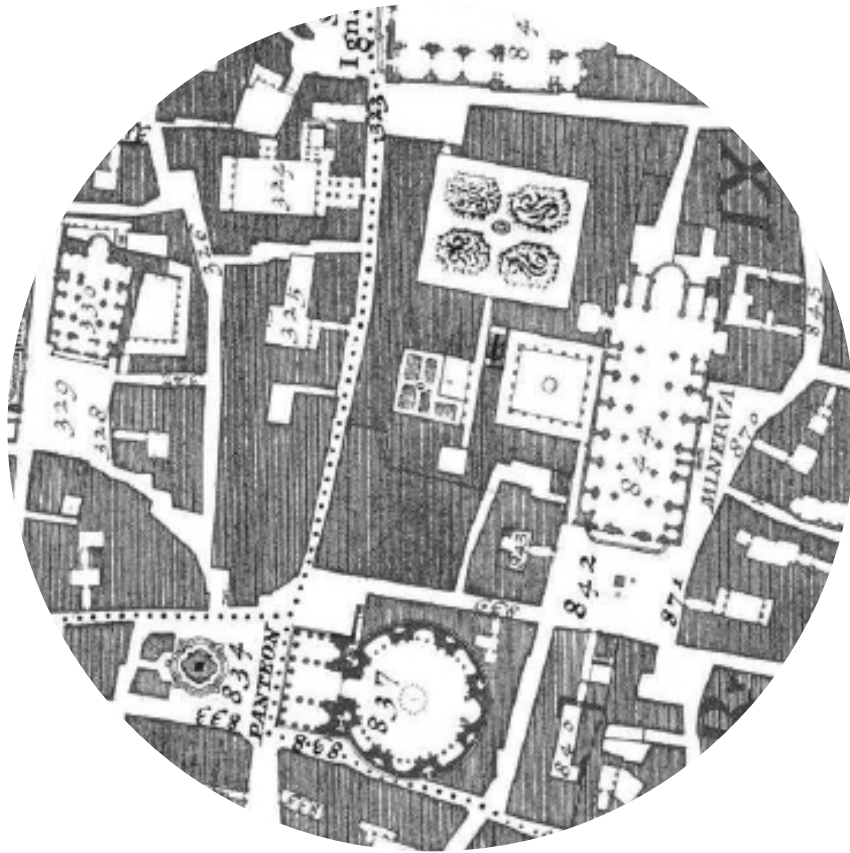


Figure 4.2 Nolli map of Rome (Mapping Cultural Space, 2015)



## 4.2 THE PUBLIC INTERIOR

From Giambattista Nolli's 1784 map of 18th century Rome alongside, it is evident that the notion of 'public interior' is not a contemporary ideal but rather is deeply entwined within the historical study of public space. Nolli, in what has become an iconographic mapping technique, uses positive and negative space to discern between what is public (white) and private (shaded). In the illustration, it is evident that not just traditional squares and streets are represented in white, but also the interiors of the public buildings.

Therefore, publicly-accessible interiors are said to fall within the public realm. Thus, this map serves as one of the first illustrations challenging the boundaries between public and private spaces (Poot, Van Acker, De Vos, 2015; 48).

The 19th century gave rise to a capitalistic and secular urban condition, and with this came a crossroads in how the public realm was perceived (Poot, et al., 2015; 49). Architect Johann Geist, describes Walter Benjamin's arcades as "the material expression of nineteenth-century bourgeois society" (Geist, 1985; 210). The arcades he describes brought about the marriage of the public (exterior) realm and the private (interior) domestic realm.

However, it was Manuel de Solà-Morales who first questioned the elitist nature of the public interiors and suggested that there ought to be social value instilled within 'collective spaces' (1992; 3-8). His thoughts are culminated into the following quote:

"The civic, architectural, urban and morphological richness of a contemporary city resides in the collective spaces that are not strictly public or private, but both simultaneously. These are public spaces that are used for private activities, or private spaces that allow for collective use, and they include the whole spectrum in between."

Therefore, he suggests that the quality of a place, and its integral role within the public realm, is not determined by the public or private nature of a place itself. Rather, it is the blurring of private and public that allow for 'greater shared value' through the design of public interiors (Soenen; 2010; 110-116).

Moreover, another key theorist challenging the exclusive and 'undemocratic' nature of public interiors of this time, was Lyn Lofland. Her seminal work, *'A World of Strangers'*, looks away from the public-accessibility of semi-private space, and rather towards the privatisation of public spaces (Poot, et al., 2015; 50). She describes how people's activities typically performed within private interiors can spread to of the public realm (Lofland, 1985; 52-96). This introduces the intersection of 'urban' and 'interior'.

## 4.3 THE URBAN CONDITION

Within the field of urban design, public and private space, and their relation to the urban condition, is traditionally linked. Poot, et al. suggest that in order to comprehend the relationship between private and public space, the 'top-down' approach needs to be replaced by a 'bottom-up' (2015; 50). This encourages the study of micro urban patterns and the territories they define. Thus, the interior architecture disciplinary lens is adopted because it draws attention to relationships between private and public spaces on a micro level.

Christopher Alexander's *'Pattern Language'* unpacks the 'macro-to-micro' analysis of space. Here, a great emphasis is placed on threshold spaces allowing for connected transitions between urban outsides and (semi)-private interior spaces (Alexander, 1977). Urban designer, William Whyte reinforces the importance of the entrance as a filter between 'urban outsides' and 'urban insides' and goes on to suggest that entrances 'invite' people into intimate territories (Whyte, 2001; 79).

In addition to the importance of urban thresholds, both collective (shared) space and intimate (personal) space are deemed important in the creation of urban territory (Poot, et al., 2015; 50). Architect John Habraken takes this further to suggest that urban success is measured for by 'territorial depth' which assesses the "number of boundary crossings needed to move from the outer space to the innermost territory" (Habraken, 1998; 215).



## 4.4 THE INTERIOR CONDITION

The discipline of interior architecture originally focused on the private home, i.e. the interior of the private realm (Königk; 2010; 11-15). Over time the profession has broadened to include elements of public space and therefore extending the interior 'skin' to effect urban life is a rational and necessary step forward. Poot, et al. suggest that the discipline has expanded to not only cover space and objects, but 'user behaviour and the events that take place within that space' (2015; 51).

In her editing of the 'Anthology of Interior Design,' Lois Weinthal identifies eight layers that constitute the interior architecture profession. These layers exist at a range of scales and include: Body and Perception; Clothing and Identity; Furniture and Objects; Surfaces and Colour; Mapping the Interior; Private Chambers; Public Performance; and Bridging Interior and Exterior (Weinthal, 2011). It is evident in the last two layers that the meeting of interior and exterior realms is an essential building block in the interior architecture discipline.

Moreover, Poot, et al. (2015; 51) suggest that by viewing the urban interior as a layered environment, we are encouraged to collaborate across many other disciplines benefiting the design of these urban interiors. Elena Guinta concurs by suggesting that the role of the interior architect, in this collaborative effort, designs an interface between object, user and space (2009; 52-61).



Figure 4.3 The 'new' interior

## 4.5 URBAN INTERIORITY

From the argument above it is clear that the urban interior exists out of the feeling of intimate 'inwardness' on a bodily and urban scale. This 'inwardness' or interiority is theoretically uncovered on both of these scales below.

As previously described, interior architecture plays an integral role in both the value and function of urban spaces. The role of interior architecture is to mediate between people and spaces within 'psychological and physical parameters' (IFI, 2011). This definition expresses an intrinsic understanding of interiority belonging both to the individual and the physical space.

Therefore, by appealing to the interiority on both of these levels, the discipline of interior architecture can extend its scope to effect the urban environment.

Walter Benjamin writes of the bond between the individual and the city. Benjamin describes '*the collector*' as "the true resident of the interior" and 'the interior' therefore becomes a refuge for the 'private individual'; protecting them from the 'public world' (2002; 19). Thus, interiors and interiority are associated with the private 'insides' drawing people away from the shared 'outsides' (Perolini, 2011; 5-9).

Contrasting this, Richard Sennett looks beyond interiority as a 'private' condition pertaining to 'insides' and uncovers interiority in the urban environment (Sennett, 2017). Sennett challenges Walter Benjamin's perception of interiority as a 'refuge from the outside' by investigating interiority in an outdoor setting. By exploring 'urban interiority', the inside-outside divide, is said to be made by the street, rather than be removed from the street (Sennett, 2017, 13).

Sennett promotes an emphasis on social space as a way of creating interiority through familiarity (Sennett, 2017, 16). Thus, urban interiority is not a withdrawal from the shared 'exterior' as Benjamin describes, but an engagement with familiarity and intimacy within the vastness of urbanity. The 'familiarity' Sennett describes can be associated with a feeling of 'home'.



## 4.6 TRACKING DOMESTICITY

The feeling of 'home' is said to be primarily a matter of everyday practices enacted in a familiar place (Boccagni & Brighenti, 2015; 7). The form that the feeling of 'home' takes, varies considerably, but its strong bond with domestic activity remains unquestionable.

Attiwill (2013; 107–116) suggests that domesticity reveals itself through 'taming, mastering, and owning'. She continues to explain that all of the activities are 'performed' within environments that allow us the opportunity to organize space according to our desires (Attiwill, 2013; 107–116). For the most part these environments are one's that can be 'owned' and therefore are traditionally residential.

When investigating the concept of interior, domesticity is a repeated reference. McCarthy (2005; 112–125) argues that an interior is assembled through the understanding of interiority as something intimate, and therefore, familiar.

Domesticity enters the argument where Power (2014; 10–15) suggests that 'the familiar' is constructed by engaging with the 'routine' of the everyday. Therefore, it is domestic ritual ('routine' of the everyday) anchoring feelings of 'familiarity' and 'intimacy' deemed to be the main drivers of interiority.

Domesticity and inhabitation go hand in hand when considering 'nesting' that Gaston Bachelard describes in 'The Poetics of Space'. Bachelard (1958; 90–104) defines this as a withdrawal from an unfamiliar 'outside', to a familiar and intimate 'inside'. Therefore, the act of 'nesting', can create (the feeling of) home or domestic space within the public (urban) realm (Khosasih, 2018; 151).



Figure 4.4 Interiority

## 4.7 NOTION OF HOME

“The need for home lies deep in the human heart: when our homeland is threatened we go into action to defend it, and when our family house is violated we are profoundly offended. We spend our lives trying to “make a home” - building, buying, renting, borrowing houses, staying in the old family homestead or moving from house to house according to the winds of fate. Few things are more important than finding a home and working at it constantly to make it resonate with deep memories and fulfill deep longings.” (Moore,1996; 43)

In Bachelard’s “The Poetics of Space”, he explores the interface between physical and psychological space by drawing a parallel between the home and the human psyche. He believes that the “soul is an abode.” And that by “remembering houses and rooms, we learn to abide within ourselves.” But more than this, the house is considered too for the emotional experiences of belonging, internal workings of domesticity and layers of memory it envelops (1958; 2-22).

Through his writings, it becomes evident that ‘home’ lies at the intersection of place and personal ritual. In addition, this notion of ‘home’ is not restrained to four walls and a roof; and that “all really inhabited space bears the essence of the notion of home (Bachelard, 1958; 5).

Furthermore, rituals such as daydreaming, imagining and sharing are all “invoked by the house”, reviving the past and uniting it with the present (Barrie, 2011; 3-6). Here, Bachelard suggests that memories of the house, its rooms and furniture, are not actually something remembered but rather something intrinsic with the present-day and therefore contribute to our growing sense of security and belonging (1958; 23-29).



## 4.8 HOME AS A PLACE WE MAKE

“Every corner in a house, every angle in a room, every inch of secluded space in which we like to hide, or withdraw into ourselves, is a symbol of solitude for the imagination; that is to say, it is the germ of a room, or of a house” (Bachelard 1958, 136).

A key concept introduced by Bachelard is that of ‘topoanalysis’ which he defines as a “psychological study of the sites of our intimate lives” (Bachelard, 1958; 8). The word ‘topoanalysis’ stems from ‘topophilia’ meaning ‘the love of place’. ‘Topoanalysis’ therefore, exposes the love of places through analysis. Bachelard’s analysis pertains to spaces of intimacy found predominantly in the house.

As previously mentioned, the house is acknowledged firstly, as the most intimate of all spaces and secondly, as a protection for ‘blissful dwelling’. Here, ‘blissful dwelling’ refers to the feeling of ease or sense of belonging. Therefore, Bachelard’s ‘topoanalysis’ attempts to bring the intangibility of ‘blissful dwelling’ into tangibility. This technique can then be used as a valuable tool guiding the homeless to find or create a sense of place.

Bachelard was among many seminal theorists to contemplate ‘a sense of place’ (Perkins, Thorns, Winstanley, Newton, 2002). In 1960, Kevin Lynch wrote *The Image of the City* highlighting the fundamental role of a sense of place. He implies that every human ritual “encourages the deposit of a memory trace” (Lynch, 1960; 9-10).

Layering on this, Emmanuel Levinas looks beyond home and a ‘sense of place,’ and towards dwelling as “a retreat home with oneself as in a land of refuge, which answers to a hospitality, an expectancy, a human welcome” (1971; 156).

“The home, as a building, belongs to a world of objects. But this ‘belongingness’ does not nullify the bearing of the fact that every consideration of objects, and of buildings too, is produced out of a dwelling” (Levinas, 1971; 151). Here, neither dwelling nor home pertains solely to buildings, but rather to a sense of place that serves as an intimate refuge where one feels they belong.

Figure 4.5 Home as the inner psyche



## 4.9 ACCOMMODATING THE EVERYDAY

The act of dwelling is explored as a psychological condition rather than an activity. In this section, the notion of domesticity and ritual are through the philosophical writings of Thomas Moore. This informs the accommodation of the 'everyday' in the places we design.

In his book *'The Re-Enchantment of Everyday Life'*, Thomas Moore describes home as an "emotional state, a place of the imagination where feelings of security, belonging, placement, family, protection, memory, and personal history abide" (Moore, 1996; 77). For Moore, like Bachelard, the feeling of truly being "at home" is among the most significant and meaningful. But, ironically, these feelings are often accessed through everyday rituals and domesticity "fully experienced and appreciated, simply for what they are" (Moore, 1996; 85).

Thomas Moore recalls the writing of Heidegger by referring to the earth as a home and argues that 'home is the psychic interior that houses our soul, the place of intimate and sensual domesticity' but also 'the broader home of our culture, homeland and even universe' (Moore, 1996; 42). Charles Moore aligns with Thomas Moore's views by suggesting that "you bind the goods and trappings of your life together with your dreams to make a place uniquely your own. In doing so you build a semblance of the world you know, adding it to the community that surrounds you" (1974; vii).

Drawing from the understanding of the varying guises of home, Thomas Barrie (2011; 5) proposes three key forms of 'home':

1. The home of our bodies: This refers to the inner psyche of people encompassing memories, dreams, and identity.
2. The domestic home: This refers to a place of comfort, rest, belonging, family, meals and intimacy. In essence this encompasses everyday activity and domestic ritual.
3. The home of the world: This refers to an extended sense of community and connection with others as well as the natural environment. This suggests that home is not only a internalized place protecting us from the outer world, but also a place that connects us.

The third type extends from Moore's definition of the word "inhabit" as a derivative of giving and receiving. Thus, metaphorically 'home' is a place that looks both inward and outward but is always pacified by the rituals of the everyday.





## 4.10 CURATING HOMES

“The journey into intimacy is neatly evoked by drawers, cupboards, wardrobes and above all locks” (Bachelard, 1958; 42).

In the introductory chapter of ‘The Poetics of Space’ Gaston Bachelard stresses the importance of the interior domestic space and specifically its components; referring here to the various rooms and the furniture in them. For Bachelard, ‘home objects’ are overflowing with ‘mental experience.’ “A cabinet opened is a world revealed, drawers are places of secrets, and with every habitual action we open endless dimensions of our existence”. (Bachelard, 1958; 42).

Stemming from this importance of objects in constituting a home, Irene Cieraad suggests that a ‘home’ need not be fixed in time and space, but instead, is “reinvented time after time in different locations”(2010; 1).

Here, objects are used to project memories and encourage the ‘performance’ of everyday activities. However, the psychological bond between memories of past homes and the display of present through domestic rituals is not always as simple as it sounds. This can be demonstrated by considering the homeless.



Figure 4.6 Home as ta collection of actions and objects

## 4.11 DOMESTIC URBAN INTERIORS A FUTURE PROSPECT FOR SOUTH AFRICAN STREETS

As previously described, domesticity is often connected with feelings of intimacy and familiarity. However, how these are relocated outside of the traditional 'home' is a growing topic in understanding the role of 'home' and 'domesticity' today (Ralph & Staeheli, 2011; 517-530).

Montgomery (2014) explains that our cities have converted themselves into opportunity hubs of employment and entertainment, and because of these opportunities, people are drawn to cities but are forced to reside within public realm (Farelley & Mitchell, 2011).

Traditional domestic space relates closely to intimacy, ownership, and isolation (Power, 2014; 10-15) and thus the transposition of domestic space into public realm creates an overlap of the domestic interior and urbanity. Consequently, the domestic urban interior is born.

Attiwill (2013; 107-116) suggests that the domestic urban interior opens up possibilities of temporary domestic space in urban realm. This suggestion makes sense in terms of McCarthy's description of what 'makes' an interior. This is because, the urban realm is a site of the 'everyday', and therefore a sense of 'familiarity' is inherently linked to it. It is this familiarity that McCarthy (2005; 112-125) suggests is vital to the making of an interior.

Hondagneu-Sotelo (2017) takes this one step further by examining how familiarity, together with protectiveness and inclusiveness, come into being through appropriation of urban space to create micro-territories. Her studies are concluded by proposing three types of home-making considerations for domestic urban interiors. These include: social reproduction; recreation of home atmosphere; and local leisure sociability (Hondagneu-Sotelo, 2017; 13-28). The three considerations set out by Hondagneu-Sotelo can be used as tools driving the design of community-centered streets accommodating a civic and domestic agenda locally.



## 4.12 ACHIEVING THE DOMESTIC STREET

“For me, the interior begins with the elements that are closest to the body, forming concentric and more complex layers as it progresses from the body into spaces where larger scales are accommodated without losing their relatedness to the body and emotion” (Weinthal, 2011; 19).

In the previous discussion surrounding ‘interiority’, it was established that interiority encourages the collaboration of body, object and space. These three parties are recognized as an intimate network, rather than a set of detached entities. In the typical ‘indoor world’ of domesticity, the ‘object’ here, primarily refers to the world of furniture (Turnbull, 2004; 158).

However, the previously discussed concept of domestic urban interiors recognizes the diverse living practices that emerge from different social and economic contexts. This shifts the focus from the traditional ‘indoor world’ of domesticity, towards domestic happenings outdoors. Consequently, the ‘object’ assisting the interiority network, shifts from indoor furniture to street objects.

Given the appropriate social context, streets house the properties and potential to redefine themselves as ‘domestic, everyday spaces’ rather than a ‘thing of commodity’ (Knorr-Cetina, 1997; 24).

Through this redefining of function, streets can become places where people “can gather, share and experience life together” and by doing so, empower a city to “come together as a community” (Yücel, 2013; 641).

Over and above this new domestic function, streets that tap into their civic duties affords the creation of identity within the public realm and develops a ‘sense of place’ around it (Telford, 2000; 26).

Markus Berger (2018; 63-72) uses the word prosthesis to describe an ‘addition’ that “enhances and transforms” the capability and value of built space. Therefore, when applied to the function of streets, the domestic function serves as a prosthetic that latches on to the original (formal) function of the street, and by doing so, serves to enhance and transform the capabilities and value that streets house.



Figure 4.7 Domesticity outside

Elena Giunta suggests that “the interior architecture discipline is called upon to enlarge its territories, to start considering cities’ interiors as fields of application.” She suggests that in doing so, the profession can “generate a credible, independent, response to contemporary needs.” And further re-envision the notion of “inhabiting in a way that is suitable the current paradigms of our society.” Here, Giunta defines this paradigm as “a permanent uncertainty where transition is a stable reality and liquidity is a permanent state” (2009; 5).

Giunta’s thoughts align with the writings of many theorists but also some architectural practice. One such example is MOTOElastico, who (architecturally) investigate the notion of a ‘borrowed city’ by tapping in to the private use of public space in Seoul. Here, streets are viewed as urban “rooms that are furnished by its inhabitants”. The domestic occupation of spaces within the city can often be traced back to: activity; temporary assembly of objects and materials; and the relationships that are formed (Fryatt & Kemp, 2018; 102).

In a South African context, we can use MOTOElastico’s lens in viewing streets as urban rooms accommodating an array of domestic rituals. In addition, as Fryatt and Kemp suggest, looking towards domestic activity, deployable systems, assembly methods and well-considered materials will enable us to achieve the domestic South African street.



## 4.13 CONCLUSION



Figure 4.8 The portable home

The interior architecture discipline comprises of layers dealing specifically with interior-exterior relationships and thus it is within the scope of our profession to design within urban interiors. In addition, the consideration of urban interiors should be a collaborative one. Here, the interior architect's role within the design process is to create an interface between object, user and space.

By considering these three components as a network, urban interiority is achieved through the establishment of familiarity and intimacy within the public realm.

Additionally, 'home' does not subscribe purely to four walls and a roof, but is rather a condition of the human psyche that speaks of intimacy and familiarity. This enables the notion of 'home' to extend beyond the traditional interior and affect urban life. Here, urban interiors are identified as pockets of privacy, intimacy and familiarity. Within these interiors, atypical performances of domestic ritual can be displayed making use of streets as the anchoring of domesticity.

Moreover, domestic ritual, or the 'routine' of the everyday is what encourages the feelings of 'familiarity' and 'intimacy' deemed to be the main drivers of interiority within interior architecture discipline. With the aim of the discipline enlarging its territories to adhere to contemporary needs of inhabitation, the domestic occupation of outdoor (urban) space is considered.

Therefore, when considering domesticity within urban interiors, the creation of temporary domestic space and diverse living practices is opened up to the urban realm. These diverse living practices shifts the scope of interior architecture from the traditional, 'indoor world' of domesticity, towards domestic happenings outdoors.

Consequently, the anchor point of domesticity in a South African context can be shifted from traditional indoor space to street space. This shift sees the redefining of the function of streets as more than its original, formal function. Here, the new, informal, domestic function is said to encourage people to share and experience domestic life together within the public realm. Thus, the new domestic functions surrounding streets can serve as a prosthetic that enhances and transforms the capabilities and value of domestic urban interiors.

Therefore, it is concluded that the theory of urban interiors can provide a platform for the interior architecture discipline not only investigate South African streets' domestic potential, but also add value to the discipline and context in doing so.

05

*argue*  
PRECEDENT ANALYSIS

## 5.1 INTRODUCTION

This chapter serves as an extension of Chapter 4: Theoretical Discourse and therefore makes use of the following theoretical informants to assess the relevance of the precedents that follow:

**POP-UP COMMUNITY:** notion of communal and temporal living

**URBAN DOMESTICITY:** domesticity extending outside of the traditional interior

**EXTENSION OF SELF:** 'home' as something wearable and portable

**SHARED VALUE:** private interior meets urban interior for the wellbeing of the collective

**RITUAL + OBJECT:** curating a sense of home through action and object

**INTERIORITY:** an inward and private projection of self

**URBAN INTERIOR:** interior spatial qualities and practices in outdoor conditions

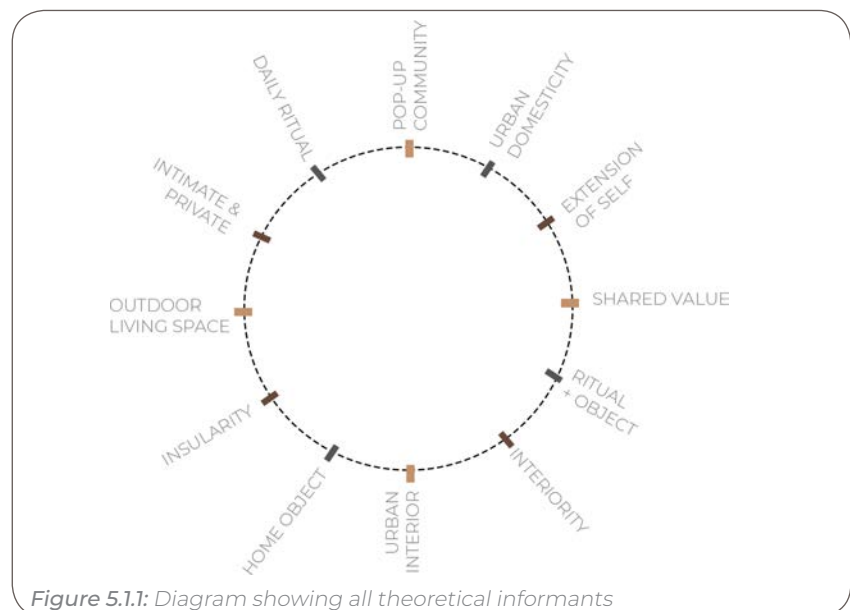
**HOME OBJECT:** objects around which domesticity is curated

**INSULARITY:** home as an analogy of our inner psyche

**OUTDOOR LIVING SPACE:** accommodation of street domesticity

**INTIMATE + PRIVATE:** domesticity as a collection of memory thresholds

**DAILY RITUAL:** daily routine as collection of domestic actions



The degree to which the 12 informants are relevant to the precedent, are depicted as a polygon resembling the one above. The closer the polygon is to a full circle connecting all theoretical points, the more aligned the precedent is to the eventual design.

In addition, the project intentions are expressed as diagrams summarizing the **urban** and **design vision**.

This chapter analyses ten design examples that each favour different theoretical informants.

# 1 COMPONENTS IN KIT

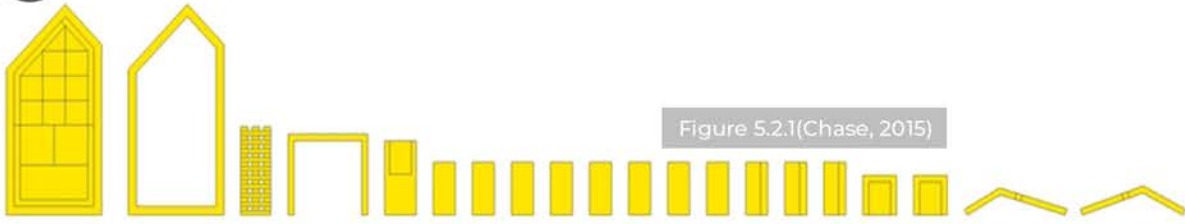


Figure 5.2.1(Chase, 2015)

# 2 TRANSPORTATION

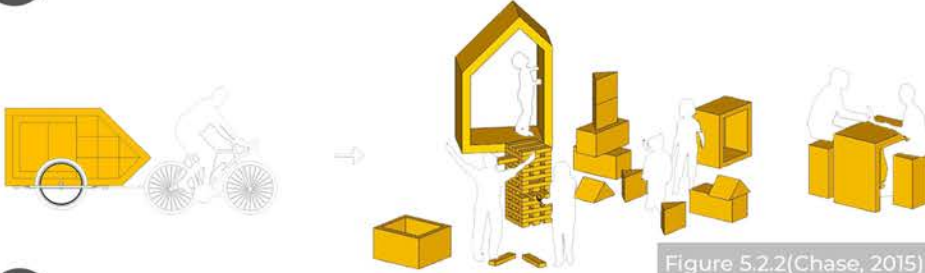
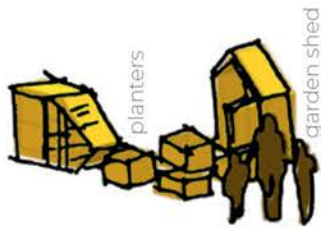


Figure 5.2.2(Chase, 2015)

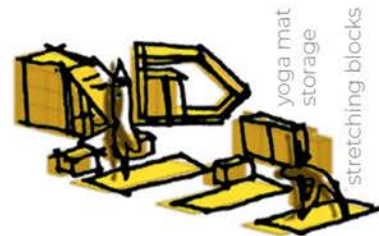
# 3 DESIGN VISION



KIT OF PARKS **PLAY**



KIT OF PARKS **GROW**



KIT OF PARKS **STRETCH**



KIT OF PARKS **EAT**

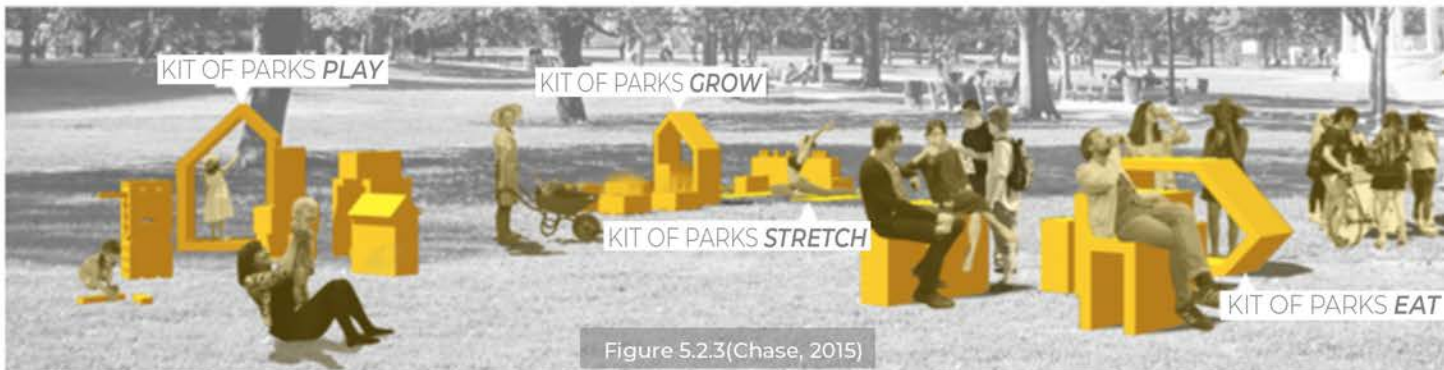


Figure 5.2.3(Chase, 2015)

# 4 VARIOUS SCENARIO'S



Figure 5.2.4(Gebo, 2016)

Parts arrive at an inactive site in the city in a compact form transported by bicycle



Figure 5.2.5(Reese, 2016)

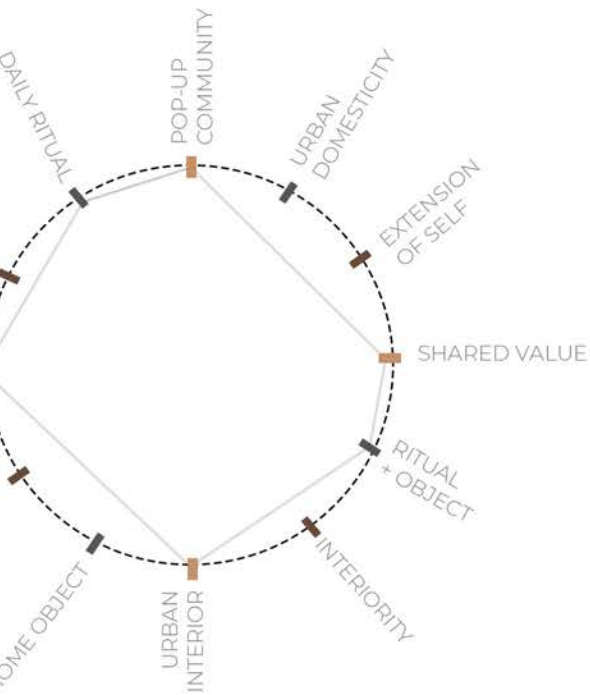
Community members then configure the parts into the park they desire.



Figure 5.2.6(Reese, 2016)

Both the assembly process and use of the 'kit' encourages social interaction within communities





MARKS EAT



### PROGRAMME

- 4 design variations:**
- PLAY:**  
Geared for constant reconfiguration and predominantly for kids play.
- GROW:**  
Community gardening in parks. Less frequent reconfiguring
- STRETCH:**  
For exercise and yoga encouraging people to use to park collectively
- EAT:**  
Made up of tables and chairs of various sizes, all community members are encouraged to eat outside



Figure 5.2.7(Reese, 2016)

The parts are light and small enough to be managed by children



Figure 5.2.8(Gebo, 2016)

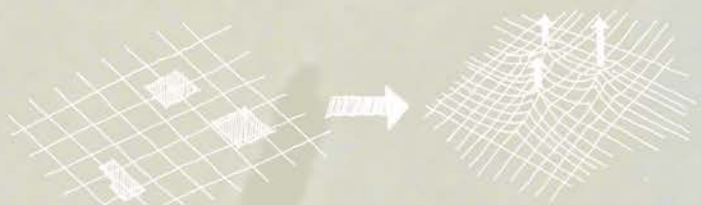
The parts are light and small enough to be managed by children

# KIT OF PARKS

## FAST FACTS

- PHILLIP DUGDALE  
NINA CHASE
- BROOKLYN, MA
- CNC ROUTERED  
LIGHT-WEIGHT  
PLASTIC COMPOSITE

## URBAN VISION



INSTANTLY ACTIVATING POCKETS OF THE CITY

## DESIGN VISION



A KIT OF PARTS TO MAKE AN INSTANT PARK

## PROJECT SUMMARY

Kit of Parks' 63 yellow plastic parts aim at activating pockets of underutilized urban space in Boston through colour, play and experimental fun (WLA, 2016). The kit itself includes games (such as Jenga), building blocks, stools and a table; all of which are designed to fit within a 'house-shaped' carrier. The main design requirements were for the kit to be completely packable, lightweight and mobile. In terms of mobility, the kit can be latched on to the back of a bicycle and dropped anywhere in need of a little activity (Sasaki, 2015). Four design variations exist fulfilling the PLAY, GROW, STRETCH and EAT programmes unpacked alongside. Designer, Nina Chase (2015) suggests that all programmes and design variations encourage participation in their configuration and

# 1 CONCEPTUAL DIRECTION



Figure 5.2.9 (Orta, 2015)

# 2 DESIGN IMPLEMENTATION



Figure 5.2.10 (Orta, 1993)

## REFUGE WEAR | INHABITENT (1992-1993)

[MATERIALS] Aluminium coated polyamide, polar fleece, telescopic aluminium poles, whistle, lantern, compass



Figure 5.2.11 (Orta, 2002)

## BODY ARCHITECTURE - FOYER D (2002)

[MATERIALS] (Dome) aluminium coated polyester, 3 telescopic aluminium armatures (6 Units) Clerprem Solden lycra, various fabrics, silkscreen print, zippers, 6 armatures



## NO BO...

[MATERIALS] (Dome) aluminium armatures, various fabrics, silkscreen print, zippers

# 3 MORE FROM THE COLLECTION



Figure 5.2.13 (Orta, 2015)

Exploring the notion of home as a collection of personal items of clothing.



Figure 5.2.14 (Orta, 2015)

Using these items of clothing to produce an inhabitable area.



Figure 5.2.15 (Orta, 1993)

Considering how our bodily home connects with others.



Figure 5.2.16 (Orta, 1993)

Life jackets are used in creating a sleeping bag.

# BODY ARCHITECTURE

## FAST FACTS

-  LUCY ORTA
-  VARIOUS
-  VARIOUS (SEE IMAGES)

## URBAN VISION



THE BODY AND ITS RELATION TO THE COLLECTIVE

## DESIGN VISION



A DESIGN SKIN BETWEEN BODY AND OUTSIDE

## PROJECT SUMMARY

Lucy Orta sees clothes as an expression of a person's "essential and fundamental reality" (Orta, 1993). Her Refuge Wear explores how one defines one's space, and produces a spatial condition. In this way, as underlined by Jerome Sans (1993), "to inhabit a space is to assimilate it to a body". The body is seen as a building, and society serves as the connection between body architecture. In her Body Architecture series, the individual's need for personal space and privacy are expressed as a catalogue of design items that allow the wearer to isolate themselves from the world and create a place of reflection and meditation (Bahuon, 2013). In this way, her clothing items serve as temporary shelters. The Refuge Wear series was developed in conjunction with the homeless whose paths were followed over a number of years. Here, Orta investigates the reality of 'loose living' and what it takes to survive.

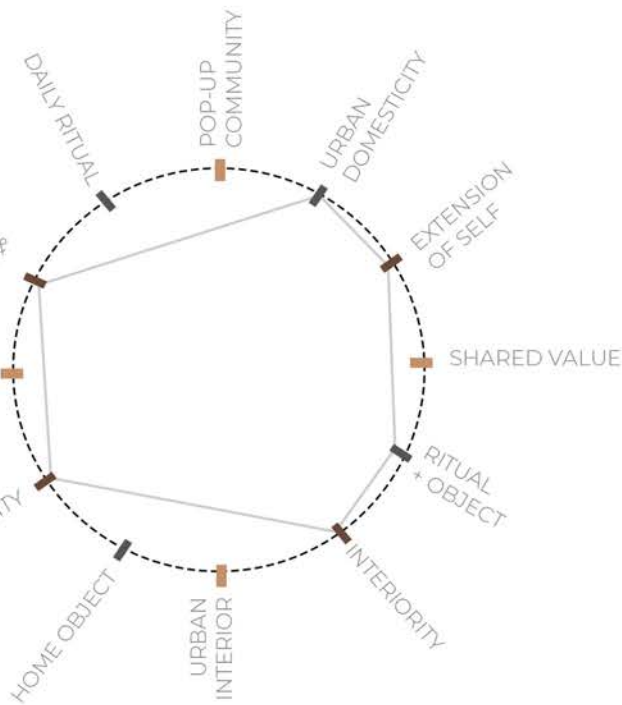


Figure 5.2.12 (Orta, 2015)

## ORDERS - DISPLACEMENT (2015)

(the) aluminium coated polyester, 3 telescopic poles (6 Units) Clerpremsolden lycra, various fabrics, poles, flags



Figure 5.2.17 (Orta, 1993)

Exploring survival kits as transportable and inhabitable spaces

# 1 MAKING AND ASSEMBLY OF PRODUCT



Figure 5.2.18 (Hovsepian, 2010)



# 2 DESIGN



Figure 5.2.19 (Peters, 2013)



Figure 5.2.20 (Hovsepian, 2010)

inside view: enough space to feel enclosed but not contained. Security is however, not convincing as well as the influx of natural light.

outside view: weatherproofing of the groundsheet could be a more durable solution. In the event of rain the shelter is not waterproof despite a thin water-proof coating.

# 3 DEPLOYED TO VARIOUS CONDITIONS



Figure 5.2.21 (Hovsepian, 2010)



Figure 5.2.22 (Hovsepian, 2010)



Figure 5.2.23 (Peters, 2013)

Deployed to a sidewalk for the street homeless to use.

Deployed to refugee centres in crisis situations when capacity needs to be extended

Deployed to festival campsites for those who are 'homeless' for the duration of the festival.

# CARDBORIGAMI

## FAST FACTS



TINA HOVSEPIAN



LOS ANGELES



CARDBOARD WITH  
FIRE RETARDANT  
AND WATER-  
RESISTANT COATS

## URBAN VISION



A TEMPORARY SOLUTION AND PROVISION FOR  
A PERMANENT ONE

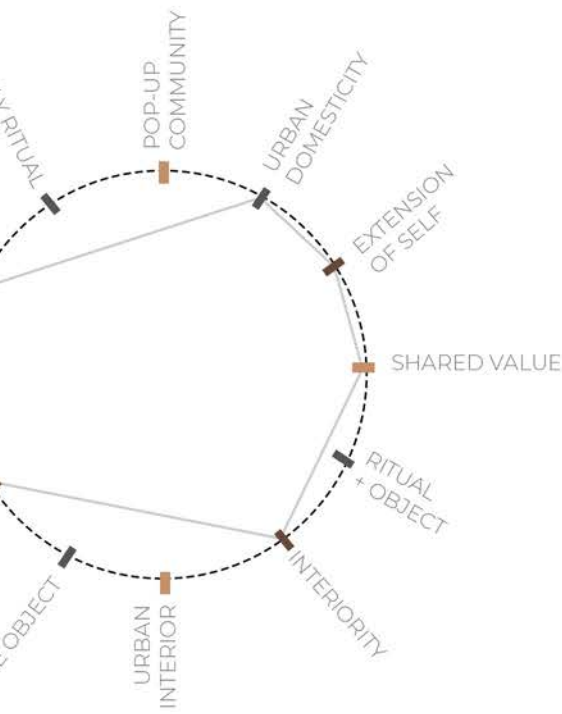
## DESIGN VISION



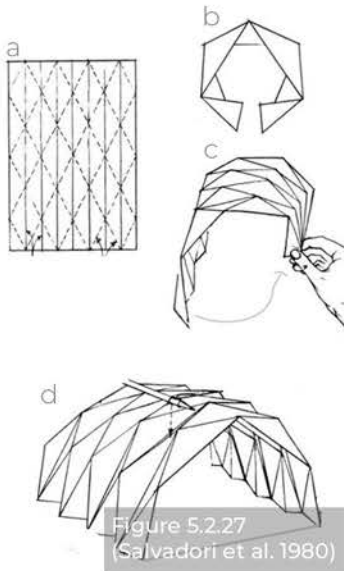
INSTANT SHELTER FOR TEMPORARY DWELLING

## PROJECT SUMMARY

Cardborigami is an origami-inspired, instant, temporary shelter that designer, Tina Hovespian (2010), envisions as the first step for the homeless to find more permanent housing. Cardboard is used for the entire product firstly, for its insulation properties; and secondly, for its lightweight and recyclable properties. In addition to this, the cardboard is finished with fire-retardant and water-resistant coatings enhancing the durability of the product (Hickman, 2017). Cardborigami weighs less than 5kgs making it a personal object that folds up and is carried from place to place and can be assembled in under a minute by one person (Peters, 2013). The investigation of a Cardborigami Outreach Center is underway. This programme focusses on empowering the homeless by learning how to produce and use the shelter properly (Hickman, 2017).



... could create a ...  
... er is ruined



how stability is achieved:  
basic folding process at a  
micro scale.



Figure 5.2.24 (Peters, 2013)

Deployed to post-natural disaster sites  
where people need immediate shelter.

# 1 LATCHING ON TO HOMES ELSEWHERE



Figure 5.2.25 (Heureux, 2008)

Cart can connect to houses and serve to extend space or store belongings



Figure 5.2.26 (G Studio, 2012)

Carts can connect to each other to accommodate friends, family, couples, etc.



# 3 DESIGN VISION



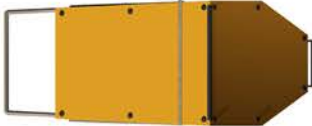
Front view when moving



Side view when moving



Back view when moving



Top view when moving



Top view in sleep configuration

Figure 5.2.27 (Heureux, 2008)



Figure 5.2.28 (Heureux, 2008)

Exploded axo of cart and its parts

# 4 CUSTOMISING AND TRANSPORT



Figure 5.2.29 (G Studio, 2012)

Cart linked to bicycle and loaded with personal belongings.



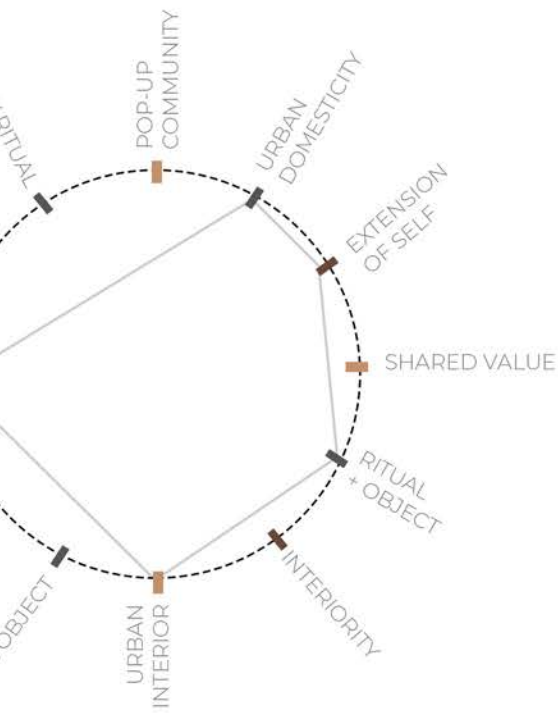
Figure 5.2.30 (G Studio, 2012)

Cart in sleep configuration fitted out with personal belongings



Figure 5.2.31 (G Studio, 2012)

Top view of inside of cart showing intimate interior



### PROGRAMME

#### MOVE:

Cart functions as a trolley that attaches to various modes of transport.

#### STORE:

Cart functions as a locker where valuables can be safely stored inside during transport.

#### SLEEP:

When cart is stationary it flips over to become sleep space that can be customized internally.



Figure 5.2.32 (Heureux, 2008)

Various forms of transport that the cart can attach to

# ROOM ROOM

## FAST FACTS

 ENCORE HEUREUX  
G STUDIO

 BEIJING, CHINA

 POWDER-COATED  
ALUMINUM AND  
LIGHT-WEIGHT  
ACRYLIC

## URBAN VISION



JOINING CARTS TO FORM MINI NEIGHBORHOODS

## DESIGN VISION



A CART DESIGNED TO MOVE, STORE AND SLEEP

## PROJECT SUMMARY

One year after the Wenchuan earthquake Encore Heureux + G studio considered what people need most in critical moments after a crisis when they are without roof (Heureux, 2008). Room Room was the result of this design exploration.

The project was a first publically exhibited at the The National Art Museum of China (NAMOC) in May 2009 in Beijing. In its essence, the idea of home is explored as a transportable and adaptable cart that allows people to move, store and sleep inside it (G Studio, 2008).

# 1 PRODUCT ADAPTABILITY



Figure 5.2.33(Wodiczko, 1988)

Rest position: vehicle extends to adhere to sleep, cook and wash functions



Figure 5.2.34 (Wodiczko, 1988)

On-the-go position: vehicle contracts to adhere to move and store functions



Figure 5.2.35(Wodiczko, 1988)

Metal nose serves as privacy hatch, an emergency exit, a basin and a braai.

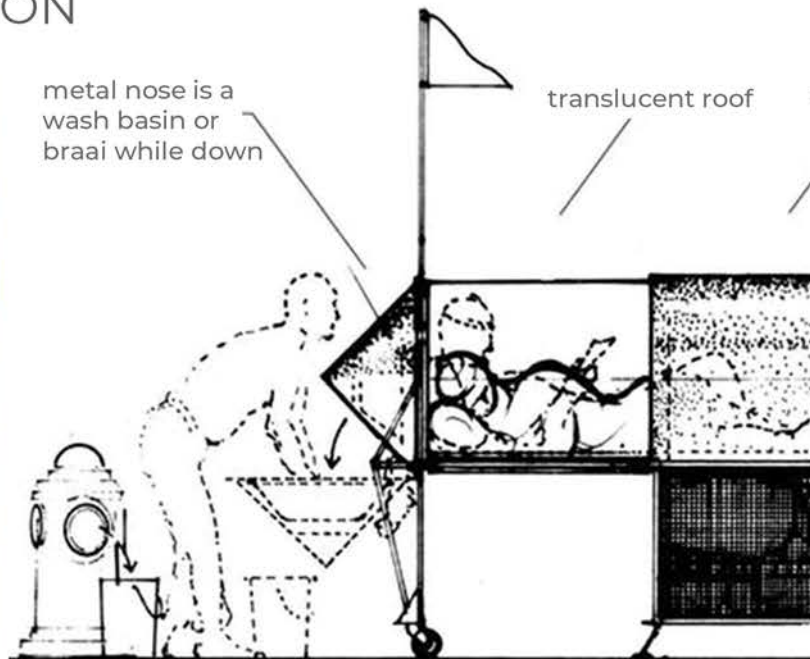
INTIMATE & PRIVATE  
OUTDOOR LIVING SPACE  
INSULARITY

# 2 DESIGN IMPLEMENTATION



Figure 5.2.36 (Hebdidge, 2012)

[storing, moving and compact position]



[washing, sleeping and resting position]

# 3 PROTOTYPES



Figure 5.2.38 (Wodiczko, 1988)

Design attempt one: testing ergonomics, materiality and user comfort



Figure 5.2.39 (Hebdidge, 2012)

Design attempt final: testing durability, materiality, strength and usability



Deploying the design in York to test its feasibility



# HOMELESS VEHICLE

## FAST FACTS

-  KRZYSZTOF WODICZKO
-  NEW YORK, USA
-  LIGHT-WEIGHT METAL, MESH, ACRYLIC, WATERPROOF FABRIC

## URBAN VISION



COMMUNAL WASHING, COOKING AND SLEEPING

## DESIGN VISION



PORTABLE HOME WHERE DOMESTICITY CAN BE PRACTICED

## PROJECT SUMMARY

Homeless Vehicle strives to make it easier for the homeless to meet their fundamental needs, and by doing so, improves the quality of their lives. The Homeless Vehicle was not only a tool to improve everyday existence on the street, but also to allow for a coming into existence, for an "appearance" in public space (Hebdidge, 2012). The homeless become 'actors, orators, workers,' who's stories are worth expressing on the urban stage (Wodiczko, 1988). In essence, Homeless Vehicle is a metal vehicle, which extends to provide sleeping, washing, and toilet facilities as well as a storage compartment. The product had been tested by a panel of homeless people and adapted to the programmatic requirements of prospective users (Sural, 2017). Design iterations were made based on the testing prototypes. It is this revised design that is analysed alongside.

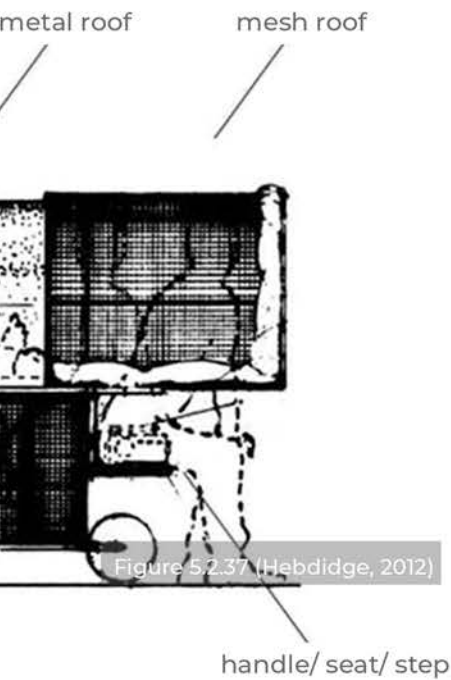
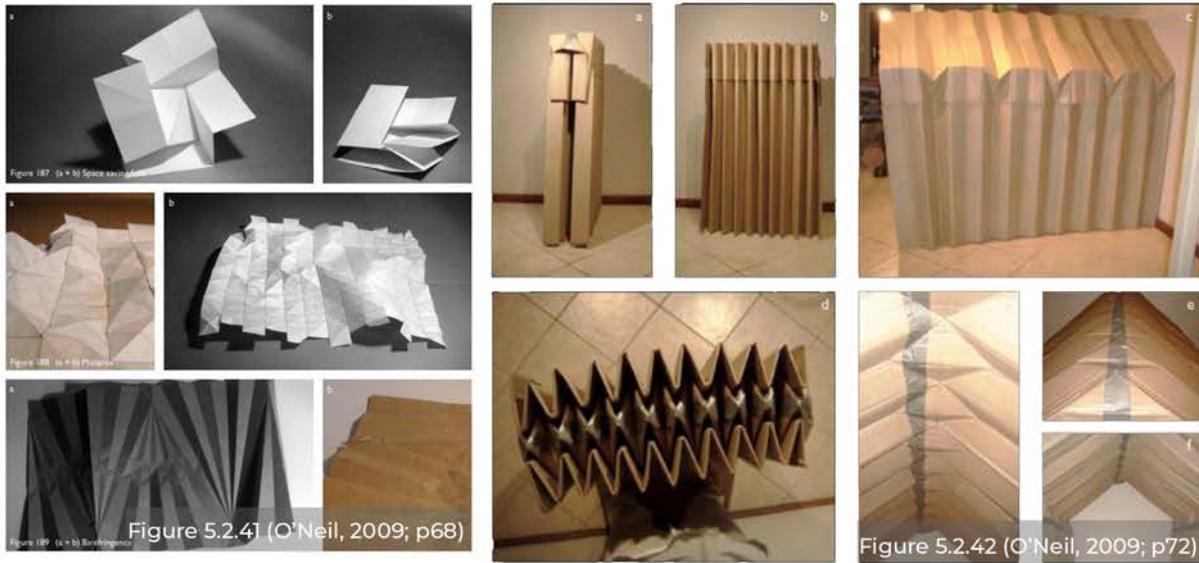


Figure 5.2.40 (Wodiczko, 1988)

...to the streets of New York City in real life conditions

# 1 MATERIALITY INVESTIGATION



# 3 DESIGN DEVELOPMENT

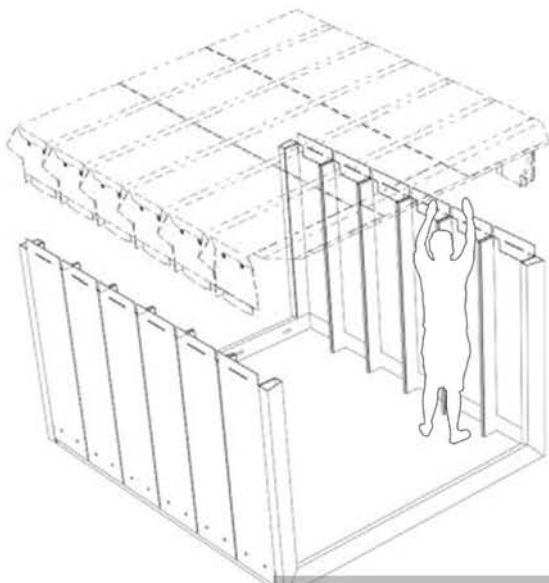


Figure 5.2.43 (O'Neil, 2009; p83)

One person can assemble the shelter due to its light-weight materiality and ease of assembly

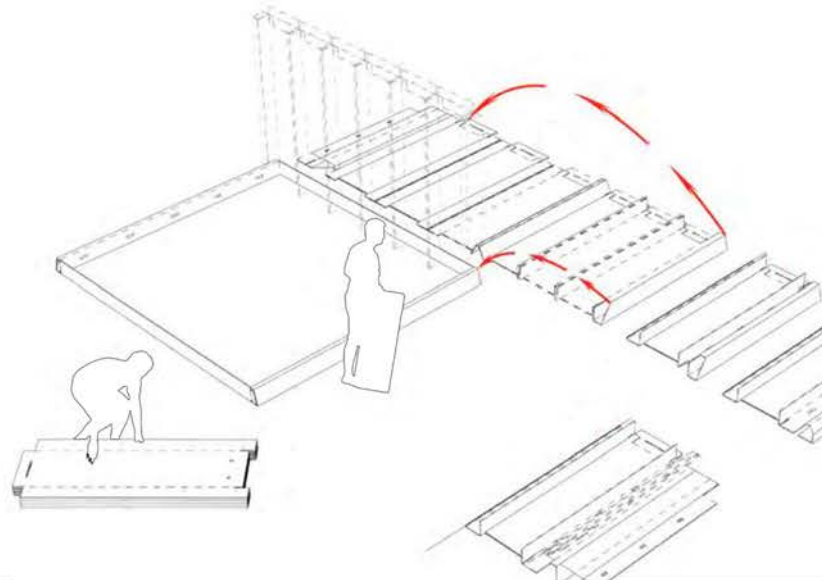


Figure 5.2.44 (O'Neil, 2009; p84)

Assembly process is intuitive and sequential. Joinery techniques are uniform and therefore easy to repeat.

# 4 BEYOND SHELTER



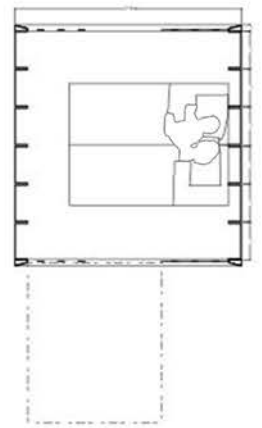
Figure 5.2.46 (O'Neil, 2009; p95)

Branding opportunities on outside skin of shelter (corporate buy-in)



Figure 5.2.47 (O'Neil, 2009; p81)

Component sizes are scaled to fit in a container such that deployment is simple.



Investigating interior space requirements for a variety of user requirements

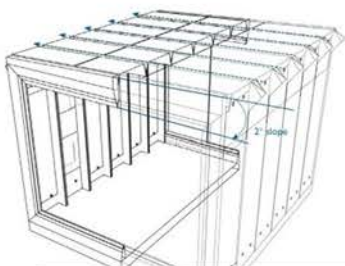
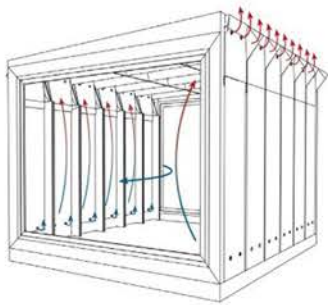
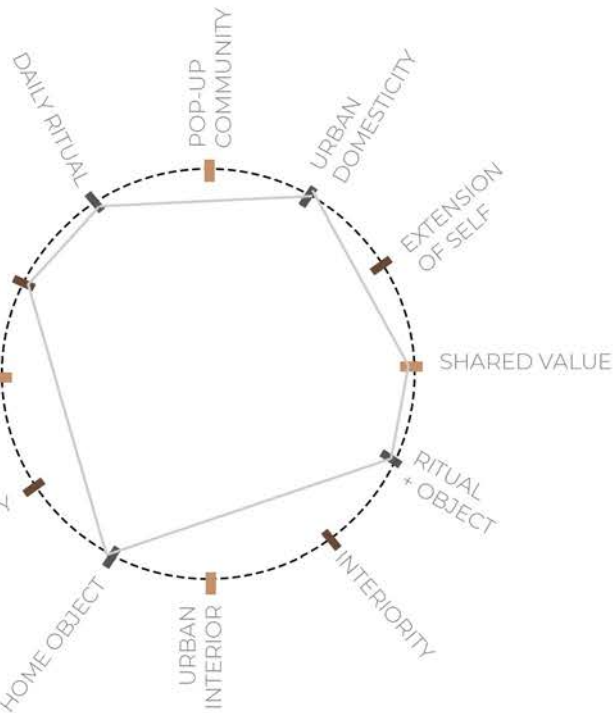


Figure 5.2.45 (O'Neil, 2009; p87)  
Ventilation and rain water run off considerations

9; p82)  
niques

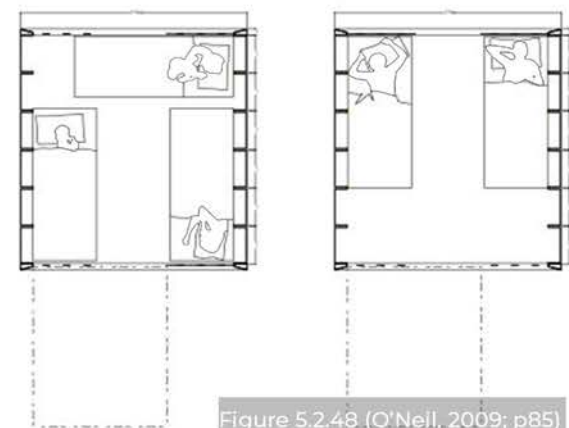


Figure 5.2.48 (O'Neil, 2009; p85)

leep scenarios to best accommodate a wide  
nents

# GRACE UNDER PRESSURE

## FAST FACTS

-  ELONAH O'NEIL
-  SOUTH AFRICA
-  CARDBOARD

## URBAN VISION



STARTER KIT IN REBUILDING LIFE AFTER DISASTER

## DESIGN VISION



A KIT OF PARTS TO MAKE AN DEPLOYABLE HOME

## PROJECT SUMMARY

The project aims to design a shelter after disaster as a 'starter kit' with the potential of becoming a home. While acknowledging that design in this scope cannot be site specific, the proposal responds directly to regional disasters within Tshwane. Here, Elonah O'Neil constructed a thorough investigation of context and climate through selected case studies. The design investigation draws from modular design but puts a flexible and innovative twist on it. A major design requirement is rapidly deployment of the structure and the investigation of cardboard as an alternative building material (O'Neil, 2011; piii).

# 1 COMPONENTS IN KIT

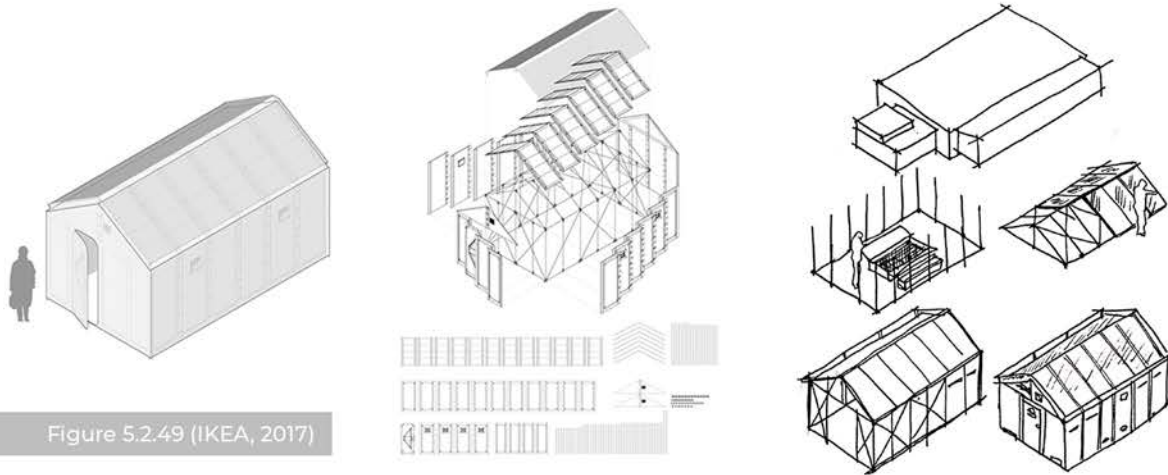


Figure 5.2.49 (IKEA, 2017)

Each shelter consists of a kit of flat packed parts which configure into a structurally-sound home

Arriving in 2 boxes, the shelter is assembled sequentially building the frame first and then the in-fill

INTIMATE & PRIVATE  
OUTDOOR LIVING SPACE  
INSULATED

# 2 DESIGN SPECIFICATIONS



Figure 5.2.50 (Fairs, 2017)

[The outside view of a complete shelter]

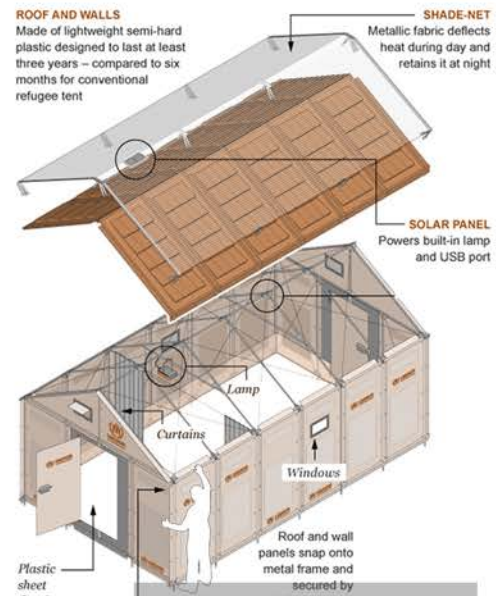


Figure 5.2.51 (IKEA, 2017)

[Materiality and features of components]

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charges a  
charged, th  
also charg  
\_ One s  
\_ T  
\_ One B  
\_ Since 2015

# 3 DEPLOYABLE DOMESTICITY



Figure 5.2.52 (IKEA, 2017)

Instant community formed when several shelters are installed collaboratively and in close proximity



Figure 5.2.53 (Fairs, 2017)

Better Shelter deployed to Ethiopia and provides shelter for those without it



The interior established items

# BETTER SHELTER

## FAST FACTS



IKEA

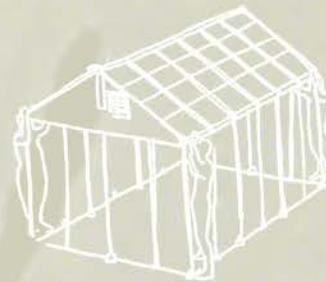


FIRST DEPLOYED TO ETHIOPIA



LIGHT-WEIGHT  
PLASTIC, STEEL,  
SHADE NET

## URBAN VISION



COMMUNITIES COMING TOGETHER TO BUILD THEMSELVES UP AFTER CRISIS

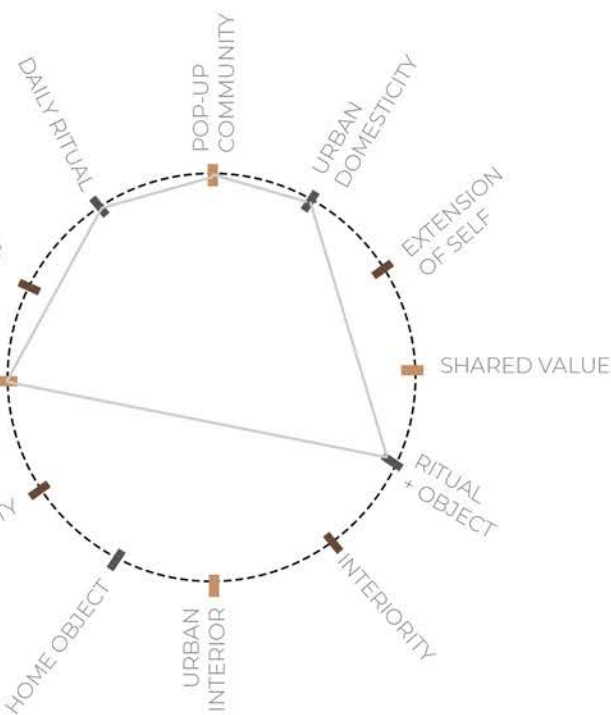
## DESIGN VISION



A KIT OF PARTS TO MAKE AN INSTANT HOUSE FOR 5

## PROJECT SUMMARY

Better Shelter aims at providing an emergency shelter for natural disaster victims and refugees. The shelter was designed with deployability in mind and therefore is made from a lightweight galvanized steel frame (IKEA, 2017). The steel frame is modular, and many of the structure's components are interchangeable. The roof and walls are made of polyolefin panels treated with UV protection to reduce deterioration caused by strong sunlight (Fairs, 2017). The shelter is delivered in two cardboard boxes which have been packed to reflect the order in which components will be used in construction. The two boxes can be lifted by four people and also contain all necessary tools and instruction manuals (IKEA, 2017). The shelter takes approximately 4hrs to build.



## SUMMARY OF DESIGN SPECIFICATIONS

The shelter is delivered in 2 flat pack boxes, which each weigh about 80 kg.

It takes 4 persons 4 hours to build a Better Shelter. No additional tools are required and most components are assembled by hand.

The shelter kit includes a solar panel, which provides an LED light during the day. Once fully charged, the light can be used for 6-48 hours and can charge a mobile phone through a USB port.

The shelter is designed to host 5 persons. The shelter is 17.5 square metres.

The Better Shelter weighs 162 kilograms.

To date, Better Shelter has delivered more than 17 000 units worldwide.



Figure 5.2.54 (Fairs, 2017)

The shelter is a 'canvas' upon which identity can be built through the use of home objects and personal items.

# 1 DAY TIME SCENARIO



Figure 5.2.55 (Gundu, 2015)

During the day the box unfolds like the covers of a book and spills out into the surrounding green space.



Figure 5.2.56 (Gil, 2015)

Box easily unfolds and is secured for day time period.

INTIMATE & PRIVATE  
OUTDOOR LIVING SPACE  
INSULARITY

# 2 DESIGN



Figure 5.2.57 (Gundu, 2015)

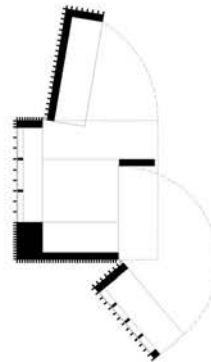


Figure 5.2.58 (Gundu, 2015)



[As users move around the box (opened or closed), the gaps between its vertical slats change. The tightest spacing appears larger gaps, filled with transparent acrylic, allow light and views to filter through to the interior. The largest gaps have the shelves, exposing the spines of the books and encourages eager readers to enter]

# 3 NIGHT TIME SCENARIO



Figure 5.2.60 (Gundu, 2015)

At night the pod folds into a box and the interior only remains visually accessible to the public.



Figure 5.2.61 (Gundu, 2015)

When the sun goes down, solar-powered LEDs turn on and pod glows from within.



The pod is placed on a green lawn and is surrounded by greenery to read outside of the

# STORY POD

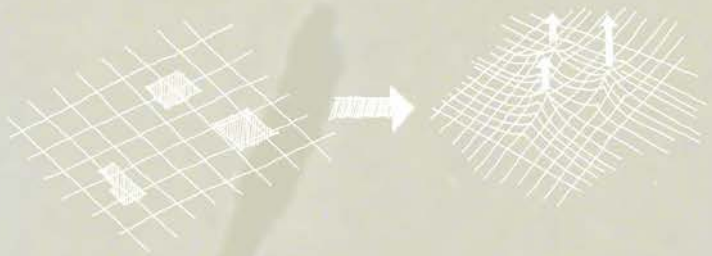
## FAST FACTS

 AKB ARCHITECTS  
(Atelier Kastelic Buffey)

 NEWMARKET, CANADA

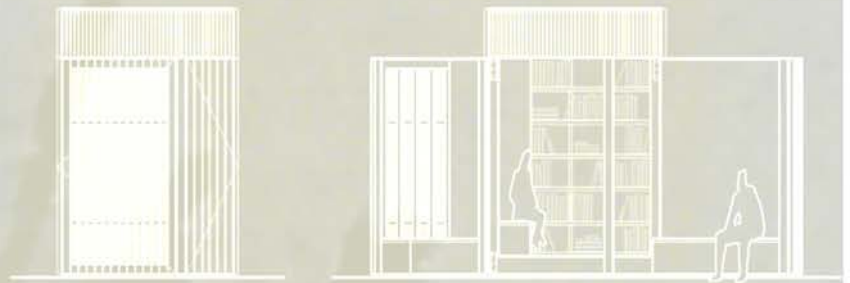
 TIMBER, STEEL,  
ACRYLIC, TEXTILE

## URBAN VISION



INJECTING NEW PROGRAMME INTO PUBLIC SPACE

## DESIGN VISION



A DAY-TIME BOOK EXCHANGE SPACE THAT FOLDS AWAY

## PROJECT SUMMARY

The Story Pod is a community-based lending library that aimed to add something new and exciting to the Town of Newmarket. The Story Pod encourages residents from the Main Street nearby to get the most out of their city (Greil, 2016). Apart from the functional and aesthetic drivers, AKB Architects focused on the ecological and economical agenda too. Here, they used standard sized timber and plywood to minimize production waste (AKB Architects, 2015). During the day, the interior space spills outside. At night, the box is reconfigured and locked and LED lights, powered by solar panels on the roof, glow from the inside through the timber slats (resembling a lantern). This becomes a beacon of light sustaining outdoor markets, events, running events, etc (AKB Architects, 2015). Due to the heavy snow in the winter months, the pod is stored off-site. Here, channels have been designed at the base of the pod for efficient transportation by a forklift.



Figure 5.2.59 (Gil, 2015)

bars as a solid wall; while the  
strategically been placed by



Figure 5.2.62 (Gil, 2015)

the edge of public square  
greenery encouraging people  
pod too

# 1 INSIDE THE ROOM



Figure 5.2.63 (Bernouilly, 2017)

Desert-like interior scene with small peep-hole creating vistas of the city



Figure 5.2.64 (Bernouilly, 2017)

The Room has one circular entrance measuring 2 meters in diameter.

INTIMATE & PRIVATE  
OUTDOOR LIVING SPACE  
INSULARITY

# 2 DESIGN SPECIFICATIONS



Figure 5.2.65 (Bernouilly, 2017)

[Positioned to disrupt usual pedestrian flow and create interaction]



Figure 5.2.66 (Bernouilly, 2017)

[A dream-like and tranquil interior creating insularity and enclosure in comparison to urbanity outside]



Figure 5.2.67 (Bernouilly, 2017)

[Gradient of enclosure encourages use and see the city]

# 3 OUTSIDE OF ROOM

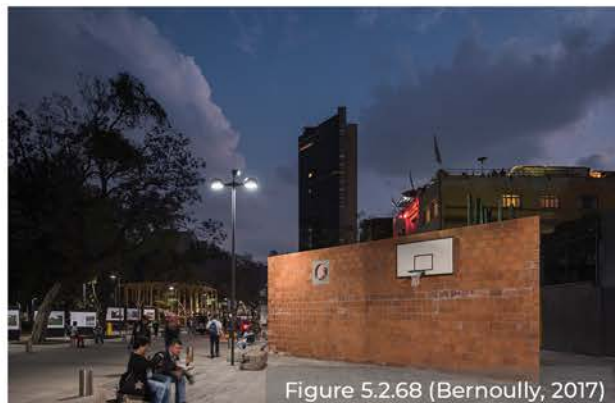


Figure 5.2.68 (Bernouilly, 2017)

Loose objects such as basketball hoops can be attached to the outside skin encouraging community engagement.



Figure 5.2.69 (Bernouilly, 2017)

A ladder offers another opportunity to view the city in a different way as well as engage with the interior of the room without being inside.



Street furniture such as bollards encourages people to spend a moment in the room.

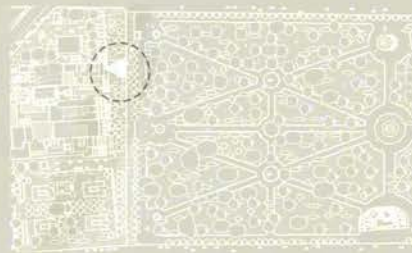


# A ROOM

## FAST FACTS

-  SALOTTOBUONO  
ENRICO DUSI ARCHITECTURE
-  CENTRAL ALAMEDA  
PARK, MEXICO
-  CONCRETE BLOCKS,  
PAINT, SAND, ARTIFICIAL  
SUCCULENTS

## URBAN VISION



SMALL INTERIOR WHERE THE URBAN PRESSURE OF MEXICO CITY IS BOTH ABSORBED AND SUSPENDED.

## DESIGN VISION



TEMPORARY PAVILION ANCHORING A STREET EXHIBITION

## PROJECT SUMMARY

A Room is a small (43 square meter) triangular space enclosed by 4 meters-high concrete block walls (Ghidoni, 2017). Conceptually, A Room aims to separate interior from an exterior space (Dusi, 2017). Here, the interior space strives at creating intimacy and insularity while the outside walls provide 120 square meters of total exhibition surface. However, when there is nothing to exhibit, the outside walls can be painted, hold temporary structures, used for advertisement, or used for street art (Ghidoni, 2017). The interior space is dominated by a sense of tranquility and “desertification” which is said to hold memory of the city’s past. Temporary in its original intention, the pavilion can be reconstructed and its construction material can be collected and recycled. New concrete blocks can be produced from the old ones. However, the pavilion’s success thus far suggests it may stay longer than intended (Dusi, 2017).

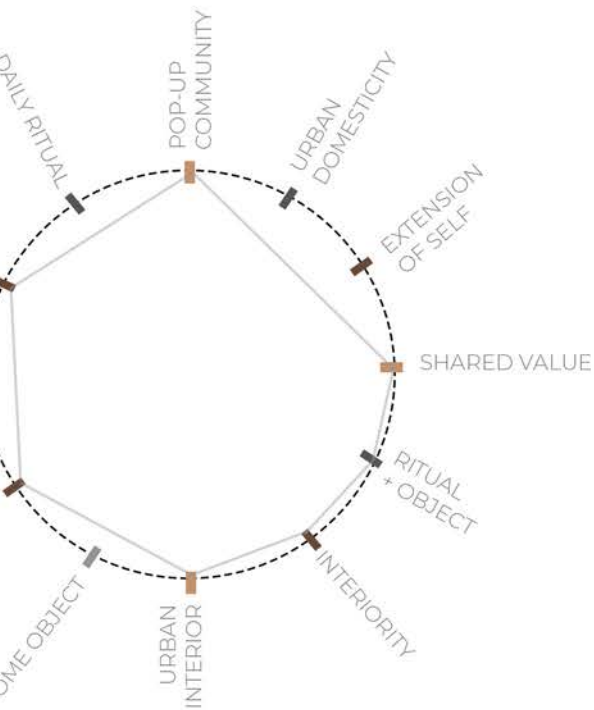
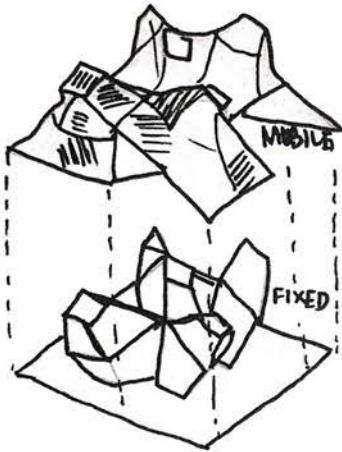


Figure 5.2.67 (Bernouilly, 2017)  
[The interior topography  
encourages people to walk to the top  
of the pavilion in a different way]



Figure 5.2.70 (Bernouilly, 2017)  
[The surrounding public space  
encourages people to spend  
a little more time in that area.]

# 1 ENCROACHMENT: CONCEPTUAL DRIVER



Designing new skin to improve the old industrial fabric



tactical urbanism to encroach on public space



# 2 DESIGN VISION



Figure 5.2.71(BM-Architects, 2017)

The 10 year vision of Kera and the growth of its public sphere. The image depicts the site in winter where ice-rinks define public squares. CO-OP envisions public spaces to infiltrate into the residential parts of the city



Figure 5.2.72(WSP, 2018)

One of the first projects implemented was pop-up community gardens and encouraged people to spend their weekend outdoors getting to know the community and work towards a common goal.

## CITY VISION LAYERS



# 3 WHAT'S NEXT



Figure 5.2.73(BM-Architects, 2017)

Kera envisions greenhouses where communal gardening can take place and the produce can be enjoyed by all.



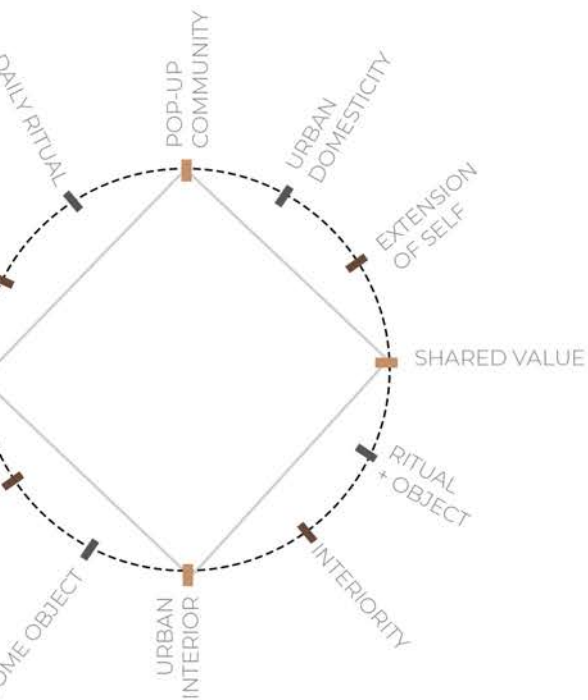
Figure 5.2.74(BM-Architects, 2017)

Pedestrianized streets where socializing and pop up activities are encouraged



Figure 5.2.75 (BM-Architects, 2017)

Portable planters to activate 'dead' industrial pockets in the city.



**URBAN:**

The existing industrial layer of Kera to which the new 'skin' will be layered on to.

**GREEN:**

Turning abandoned spaces into both outdoor and indoor communal green spaces.

**FUNCTIONAL:**

Macro reprogramming of the city to accommodate for collective space and shared value

**SOCIAL:**

Investigating how these new functions accommodate a functional, interactive agenda



Figure 5.2.76 (BM-Architects, 2017)

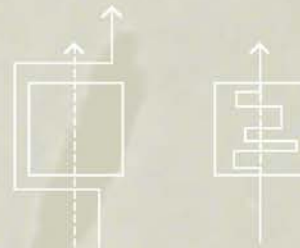
Public squares connect all interventions and serve as the living room of Kera despite their programmed nature.

# CO OP CITY

## FAST FACTS

-  BM-ARCHITECTS  
WSP FINLAND
-  KERA, FINLAND
-  VARIOUS

## URBAN VISION



LIVING THROUGH THE CITY AS OPPOSED TO AROUND IT

## DESIGN VISION



ENGROACHING ON PUBLIC SPACE TO CREATE AN URBAN INTERIOR SPINE

## PROJECT SUMMARY

CO-OP City was the winning proposal for the Nordic Built Cities challenge. The proposal focuses on claiming back public space and encourages community participation in doing so. CO-OP investigates the potential of the town of Kera, its past industrial shackles, and abandoned workshop spaces (WSP, 2018; pp. 2-6). A new life for the town is explored by injecting new programme into underutilized public spaces, bringing people out from their private interiors and allowing them to live through the city (Koponen, 2017). BM- Architects (2017) explains that the project vision emphasizes the broadening of public spaces over a 10 years span. Interventions in the early stages focus on the development of a strong identity for Kera, different temporary programmes, and the role of public art in the community building process.

### [5.3] CONCLUSION

The analysis in 5.2 showcased various theoretical informants through a series of design precedent ranging from a product to urban scale. The scalar variation implies that the success of the eventual design proposal, should be measured against various scales.

Design that draws from the bodily condition (at a product scale); design that draws from ritual and programme (at a spatial scale); and design that draws from the urban condition (at a system scale). Therefore, the design proposal going forward should appeal to an isolation or layering of the scales stated above. In doing so, the design will align with all theoretical drivers and perform as the diagram below suggests:



Figure 5.3.1: Ideal design measured against theoretical informants

The scale at which each theoretical informant exists, is plotted alongside. Here, it is evident that informants such as “interiority” are best showcased in product scale interventions. While informants such as “shared value” are implemented into large, system scaled intervention. Some informants, however, appeals to the complete spectrum of design scale. The scale at which theoretical informants are best made tangible, is a consideration that will drive the eventual design.

Simply put, the proposed design should appeal to all three scales, showcasing specific theoretical informants at the most appropriate scale depicted alongside.

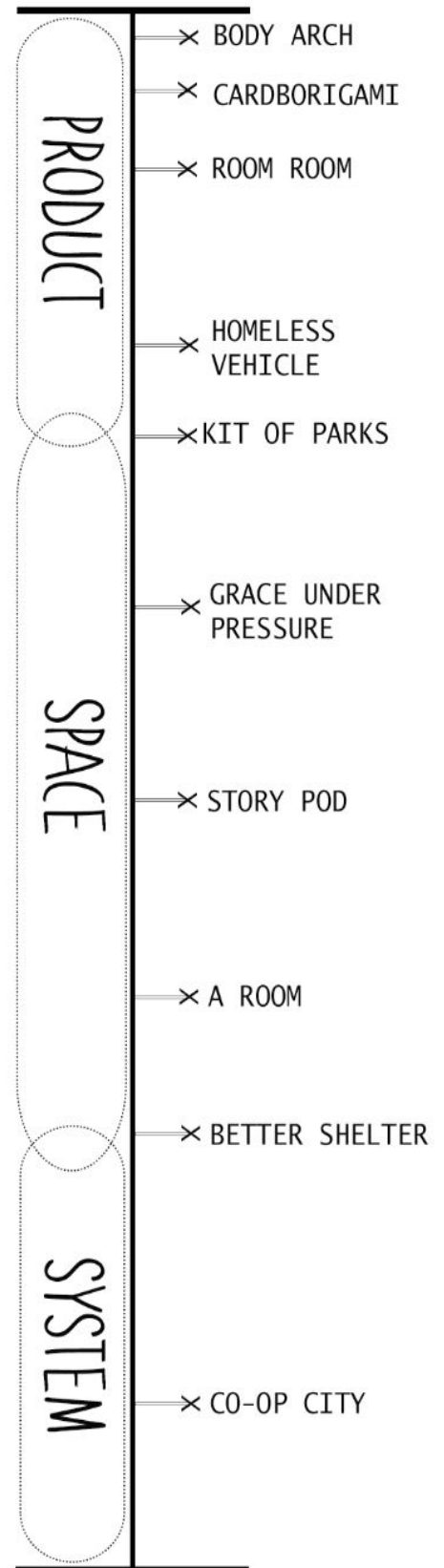


Figure 5.3.2: Plotting the scalar nature of each precedent

THEORETICAL INFORMANT	Kit Of Parks	Co-Op City	Body Arch	Card-borigami	Room Room	Better Shelter	Grace Under Pressure	Homeless Vehicle	A Room	Story Pod
Pop-Up Community	X	X				X			X	X
Urban Domesticity			X	X	X	X	X	X		X
Extension of self			X	X	X					
Shared Value	X	X		X			X		X	X
Ritual + Object	X		X		X	X	X	X	X	
Interiority			X	X					X	
Urban Interior	X	X			X			X	X	X
Home Object							X			
Insularity			X	X					X	X
Outdoor Living		X		X		X		X		X
Intimate + Private	X		X	X		X			X	X
Daily Ritual	X					X	X	X		

Figure 5.3.3: Precedents and the theoretical informants that they best showcase

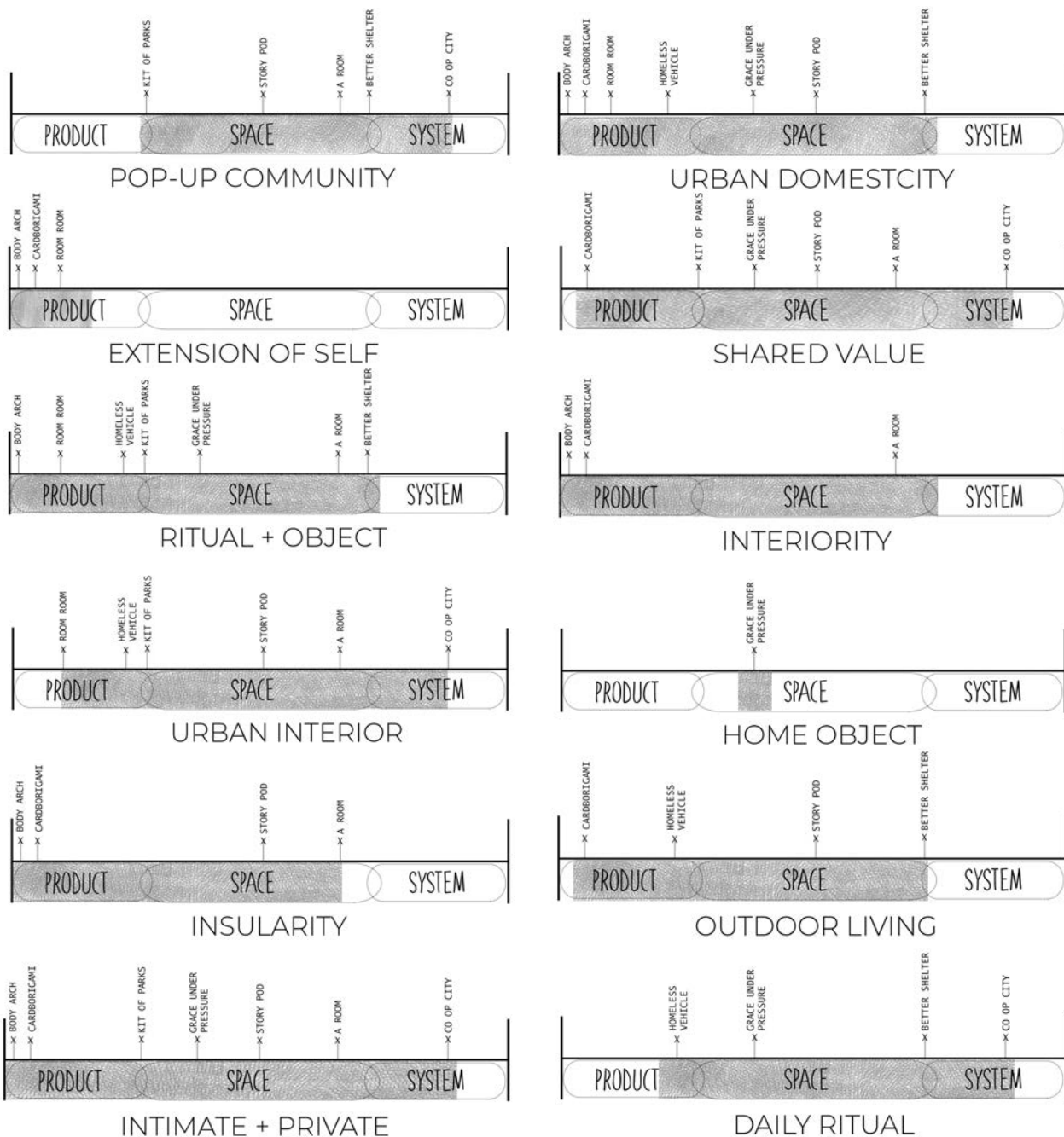
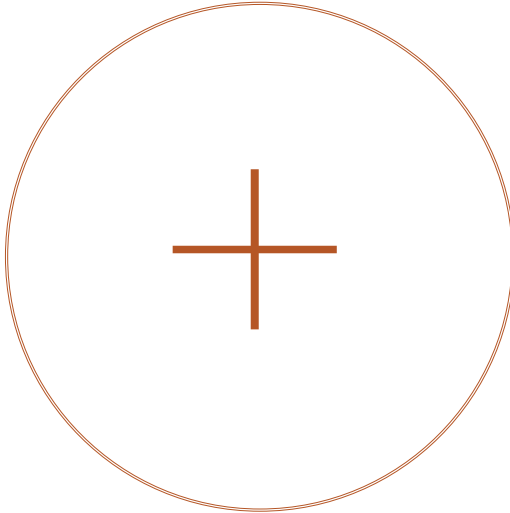


Figure 5.3.4: Assessing the scale at which each theoretical informant is best showcased





*express* comprises of four stages. Stage 1 sets out the conceptual premise. Stage 2 is a spatial response to three of the six conceptual drivers identified in Stage 1. This materializes as an overall systematic and spatial design responding predominantly to **human-centered** informants.

In Stage 3, the final three conceptual drivers are considered. This materialises as a **modular** reaction to the design proposed in Stage 2.

Lastly, the final spatial design from Stage 3 is technically resolved in Stage 4. The technical focus is placed on the notion of **deployability**. Five details are explored in response.



part



*express*

CHAPTERS 6;7;8

[CONCEPTUALISATION, DESIGN  
DEVELOPMENT, ITERATION  
AND TECHNIFICATION]

06

*express*

STAGE I : CONCEPTUAL OVERVIEW

## [6.1] INTRODUCTION

This chapter extends from the theoretical findings in Chapter 4 and their practical feasibility in Chapter 5. The intention of this chapter is to:

1. Outline the overarching conceptual approach in 6.2.
2. Transform this approach into a conceptual strategy in 6.3.
3. Unpack the architectural attitudes towards function for the strategy in 6.4
4. Conceptualize a catalogue for urban domesticity in 6.5.
5. Construct a 24 hour programme from the catalogue activities in 6.6.
6. Establish a list of role players, how they benefit and their role in developing reciprocity in the system in 6.7.
7. Lastly, synthesize the findings from above as a conclusion from which the design development (Stage 2 and 3) can build in 6.8.

The chapter outline is graphically depicted below:

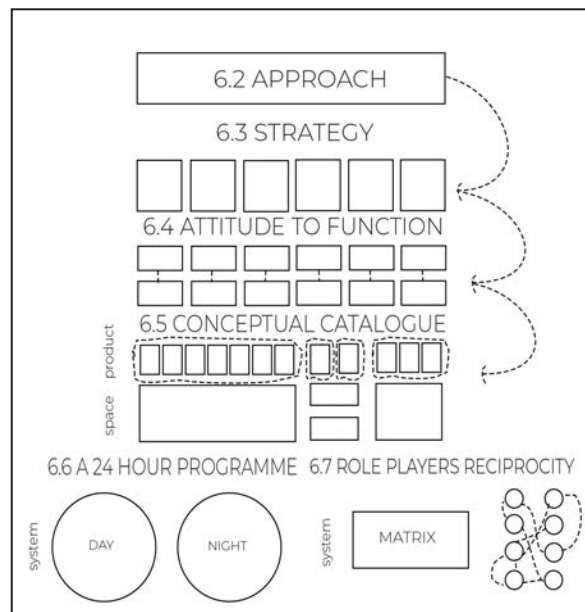


Figure 6.1.1: Diagrammatic overview of chapter

## [6.2] CONCEPTUAL APPROACH

In Chapter 5, it was concluded that the eventual design (to come in Stage 3), should appeal to the three scales of product, space and system. A product-scaled design intervention is predominantly concerned with the individual. Therefore, a product can be seen as a designed extension of the self which enables or enhances a specific functional or aesthetic attribute. In a domestic sense, the product scale aligns with what theorist Thomas Barrie (page 71) coined as '*Home of the Body*'.

A space-scaled intervention extends beyond the individual to encompass their actions too. Therefore, space can be seen as an extension and accommodation of personal rituals and intangible practices. In a domestic sense, the space scale aligns to Barrie's '*Domestic Home*'.

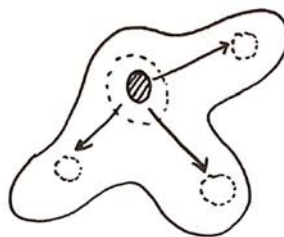
A system-scaled intervention is concerned with all potential role players and their contribution and benefit from the system as a whole. Therefore, a system can be seen as the most macro, holistic and strategic of all 3 scales, placing emphasis on the collective and notion of 'shared value'. In a domestic sense, the system scale aligns with Barrie's '*Home of the World*'.

*Home of the Body*, *The Domestic Home* and *Home of the World* serve as the conceptual themes that tie the 'product-space-system' spectrum together to the notion of domesticity. The conceptual strategy developed in 6.3 alongside, unpacks principles pertinent to all three scales.

[THE INDIVIDUAL]



[THE INDIVIDUAL + ACTIONS]



[THE COLLECTIVE]

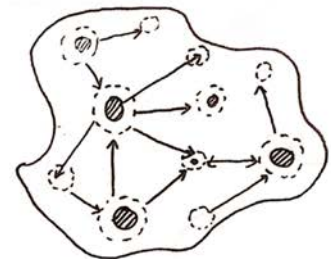


Figure 6.2.1: Relationship between scale and the role of the individual

### [6.3] CONCEPTUAL STRATEGY

The principles are derived from various contextual, theoretical and case study based informants; and serve as overarching tools grounding design decisions made in Chapter 7. All the principles depicted below are to be applied to the entire spectrum of scales described in 6.2.

1. **Scalability:** Acknowledge monumental scale of context and respond with street-scaled strategy.
2. **Old + New:** A sensitive interface between old + new within systematic, spatial and product additions.
3. **Core +:** Hierarchy of the system, spaces and products are created by fundamental cores and extensions.
4. **Adaptability:** The system, spaces and products are living organisms accommodating various scenarios.
5. **Deployability:** The system, spaces and/or products can be reconfigured and relocated elsewhere.
6. **System:** A closed loop system encouraging reciprocity and empowerment in space and product.

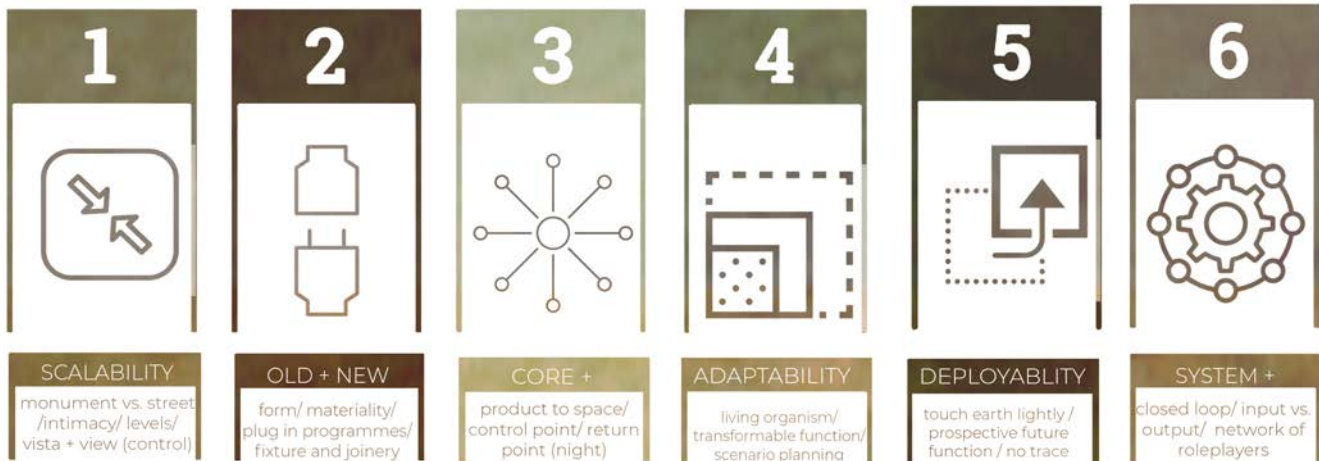


Figure 6.3.1: Principles and keywords defining the conceptual strategy

### [6.4] ARCHITECTURAL ATTITUDES TOWARDS FUNCTION

Due to the broad and somewhat abstract nature of the principles above, each one has been broken down and expressed as both a 'formal' and 'psychological' attitude towards function. The 'formal' attitude serves as the denotation of function; or the literal and tangible translation of function into form. The 'psychological' serves as the connotation of function; or the figurative and sensory translation of function into form. Below, the six principles from 6.3 above, are both denoted and connoted. This reinforces the base from which design decisions stem.



Figure 6.4.1 Formal and psychological attitudes towards function

### [6.5.1] CONCEPTUALIZING A CATALOGUE FOR URBAN DOMESTICITY

Building on the premise of 'formal' and 'psychological' attitudes towards function set out in 6.4, a catalogue for urban domesticity is conceptualized below. Here, twelve activities, domestic and urban in nature, are unpacked in isolation and then grouped into four spatial configurations. Each individual activity is expressed as a formal attitude (1st) and a psychological attitude (2nd) (Konigk,2015; 80). Thereafter, these expressions are plotted on a simple graph highlighting the importance of the *individual vs. collective* (y axis) and the depth of meaning associated with the activity (x axis).

**Half-way +** | Overall, Half-way + is conceptualized as a predominantly public space emphasizing the collective more than the individual. The collective and public emphasis is demonstrated in the store, social, grow, and cook activities. The importance of privacy and the individual is demonstrated in the wash and dress activities. The space as a whole is injected with meaning ranging from extremely superficial to very deep. This means that the Half-way + space can be used entirely superficially but becomes a richer experience when internalized on a deeper, psychological level. This shift ensures 'house' becomes 'home'.

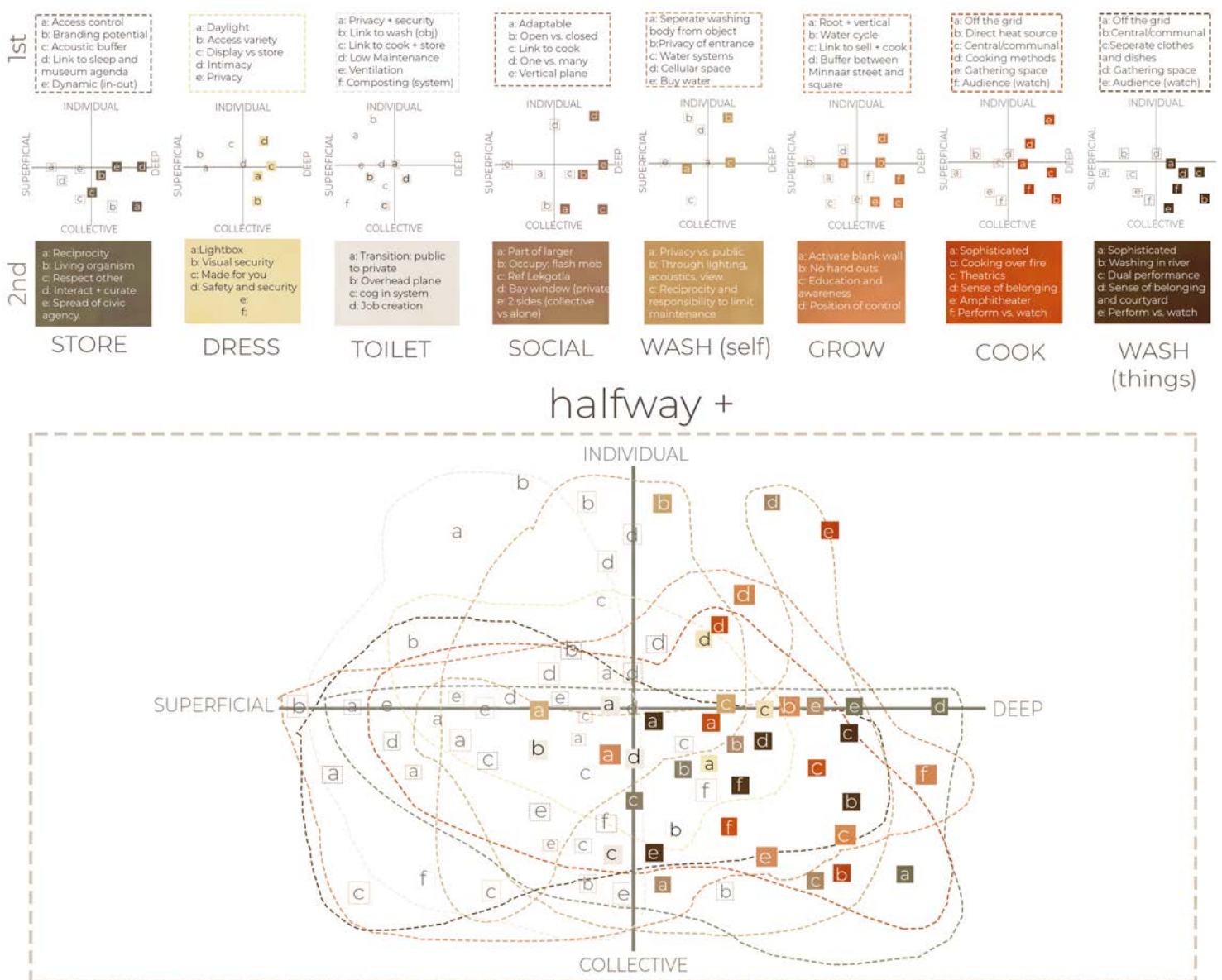


Figure 6.5.1: Plotting the collective nature of the components within Half-way +

**Post-it +** | Post-it+ is conceptualized as emphasizing both the collective and individual. The collective and public emphasis is demonstrated in the sending of mail and the importance of privacy and the individual is demonstrated in the receiving of mail. The space is layered with meaning that is predominantly superficial but also extends to the deeper spectrum.

**Clean-up +** | Clean-up+ is conceptualized with emphasis placed on the collective with some aspects pertaining to the individual. Similar to Post-it+, the space is layered in predominantly superficial meaning but extends to the deeper spectrum.

**Bench-it +** | Overall, Bench-it+ is conceptualized as a emphasizing the individual more than the collective. The importance of privacy and the individual is demonstrated in the sleep and break-away activities. The collective and public emphasis is demonstrated in the drink (water-point) activity. The space is laced with meaning ranging from superficial to deep. However, more attributes promote a deeper, psychological experience than a superficial one.

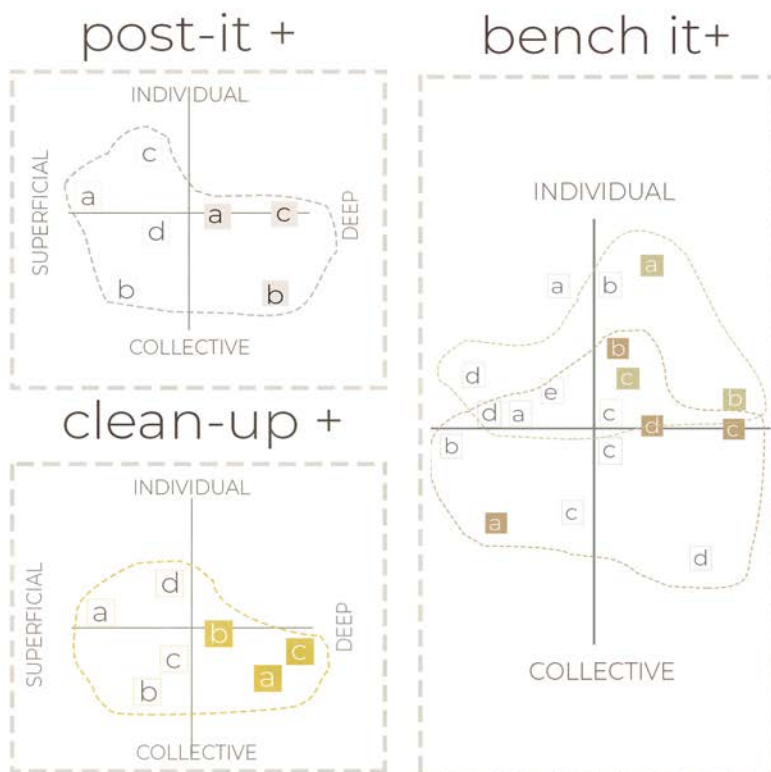
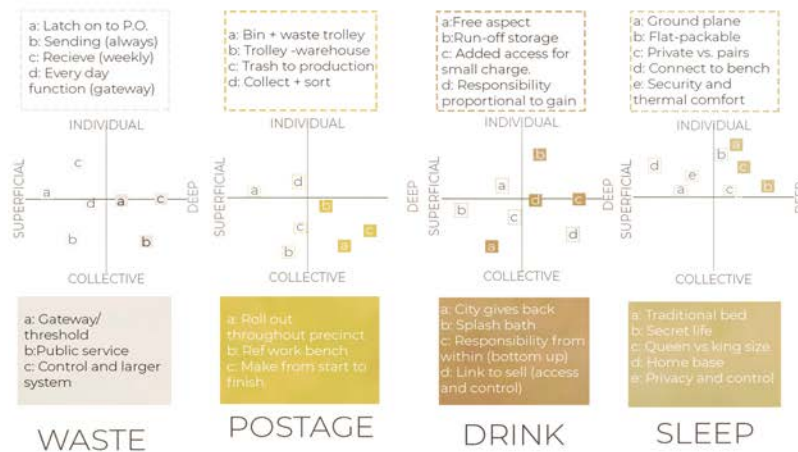


Figure 6.5.2: Plotting the nature of Post-it+ ; Clean-up+ and Bench-it+

**[6.5.2] CONCEPT MEETS MINNAAR STREET**

In 6.5.1 twelve activities were conceptualized and divided into four spatial scenarios. In figure 6.5.3 below, the four spaces are plotted along Minnaar Street. In figure 6.5.4 alongside, the four spaces are further explored by plotting the catalogue activities that happen within them. The spatial zoning is a crucial base upon which the design in Chapter 7 and 8 builds.

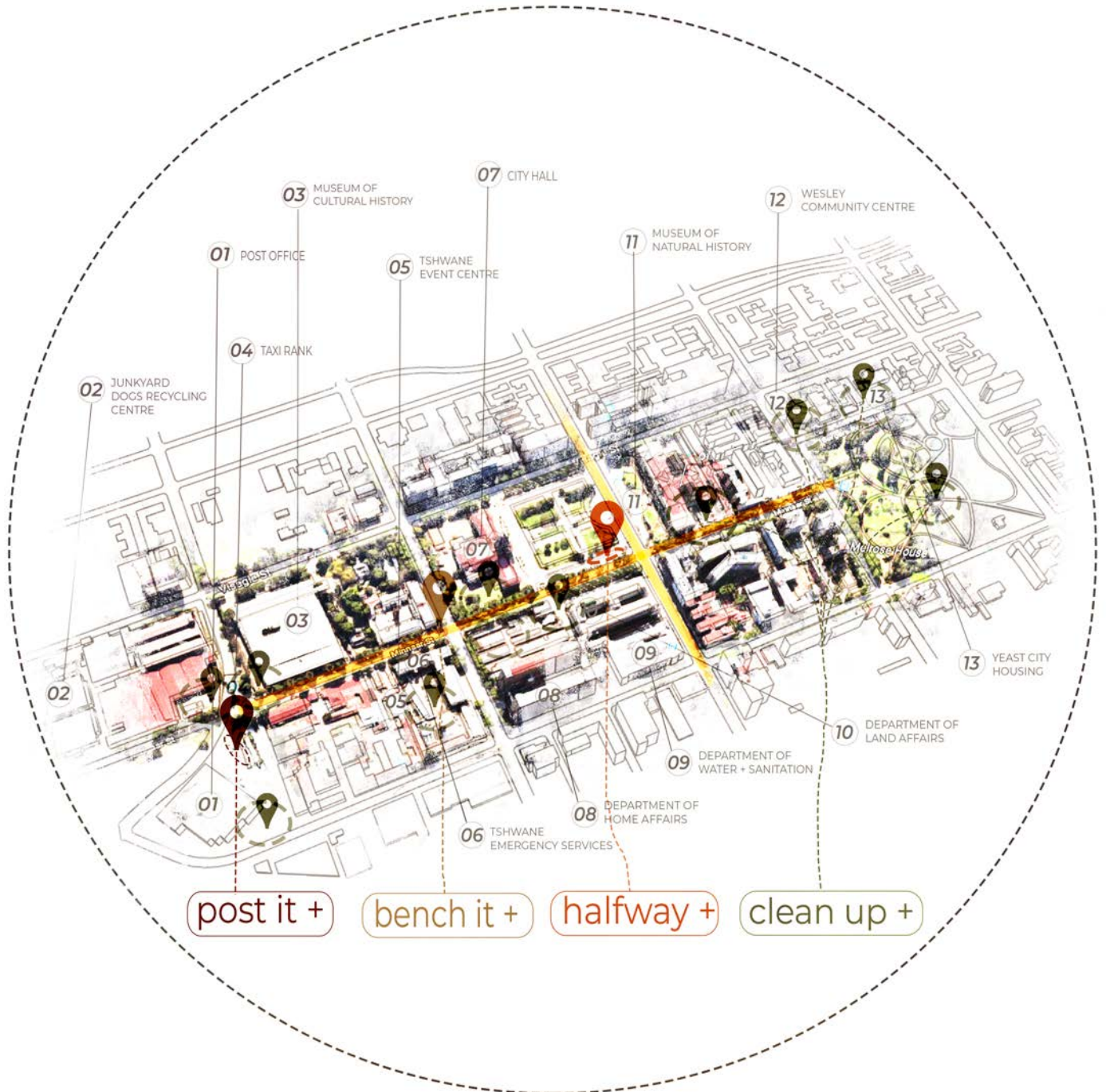


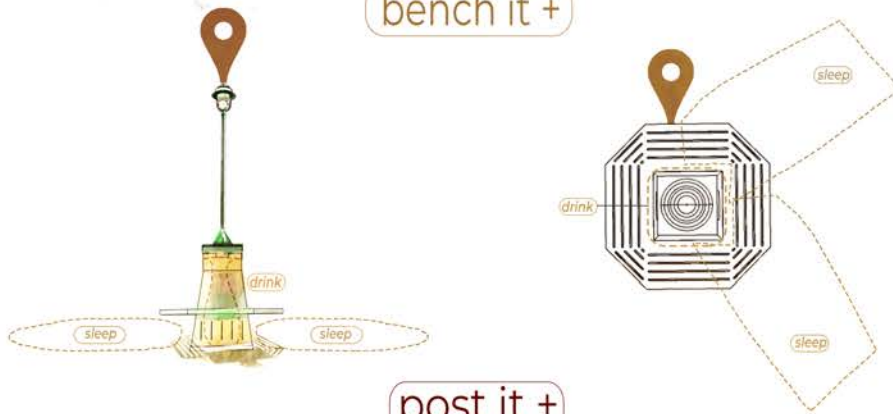
Figure 6.5.3: Conceptualization of Minnaar Street



halfway +



bench it +



post it +



clean up +



Figure 6.5.4: Four spatial configurations for Minnaar Street

**[6.6] SHAPING A 24 HOUR PROGRAMME**

DAY TIME PROGRAMME: The day time programme is predominantly shaped by the overlapping of public Half-way+ activities around meal times and the continuous running of more private, background activities throughout the day.

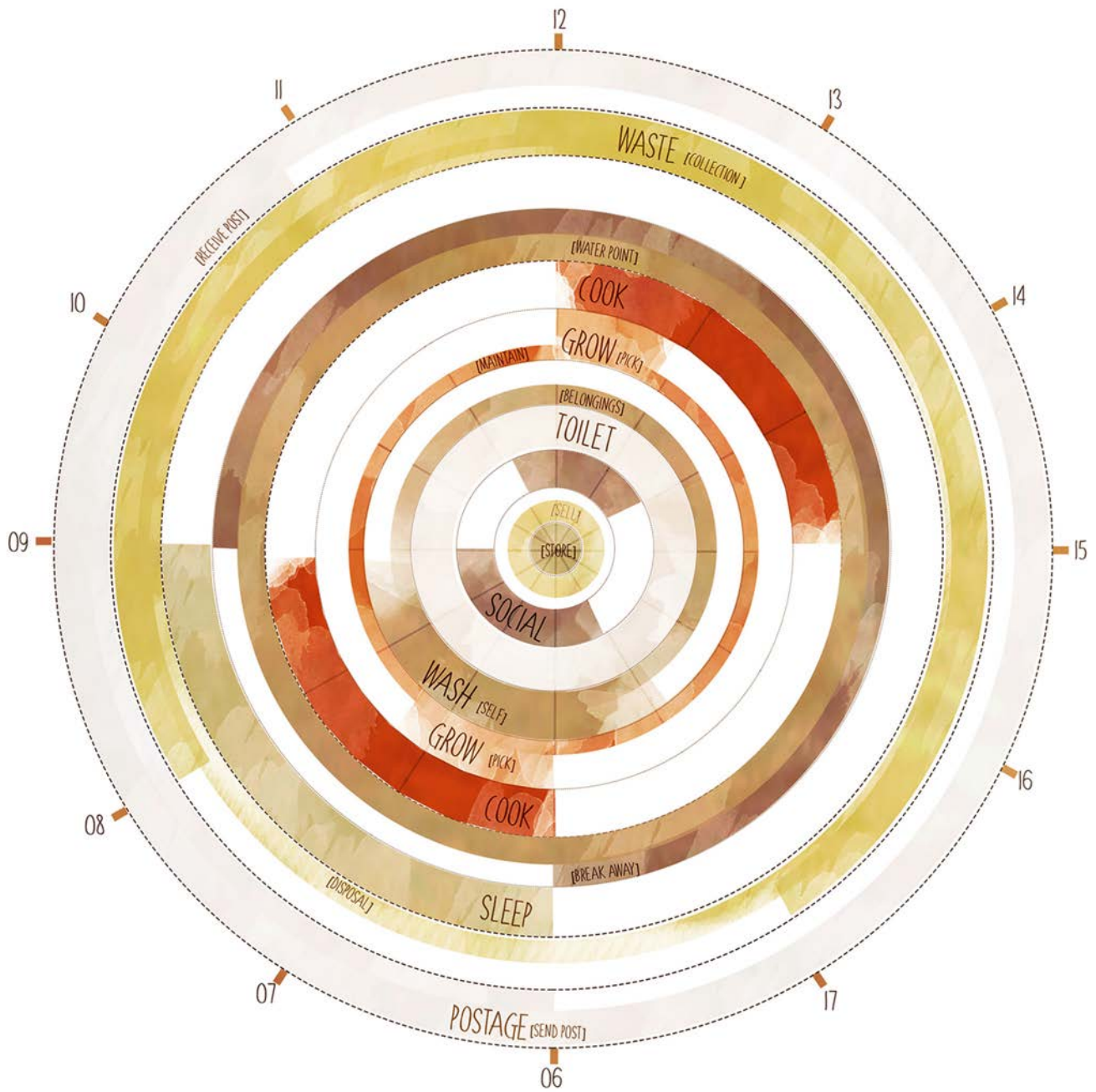


Figure 6.6.1: Day time programme

NIGHT TIME PROGRAMME: The night time programme is predominantly shaped by the public Half-way+ activities around supper time. However, after 22:00 the programme is dominated by the sleep activity within the Bench-it+ spaces until 5:00 when activity shifts again.

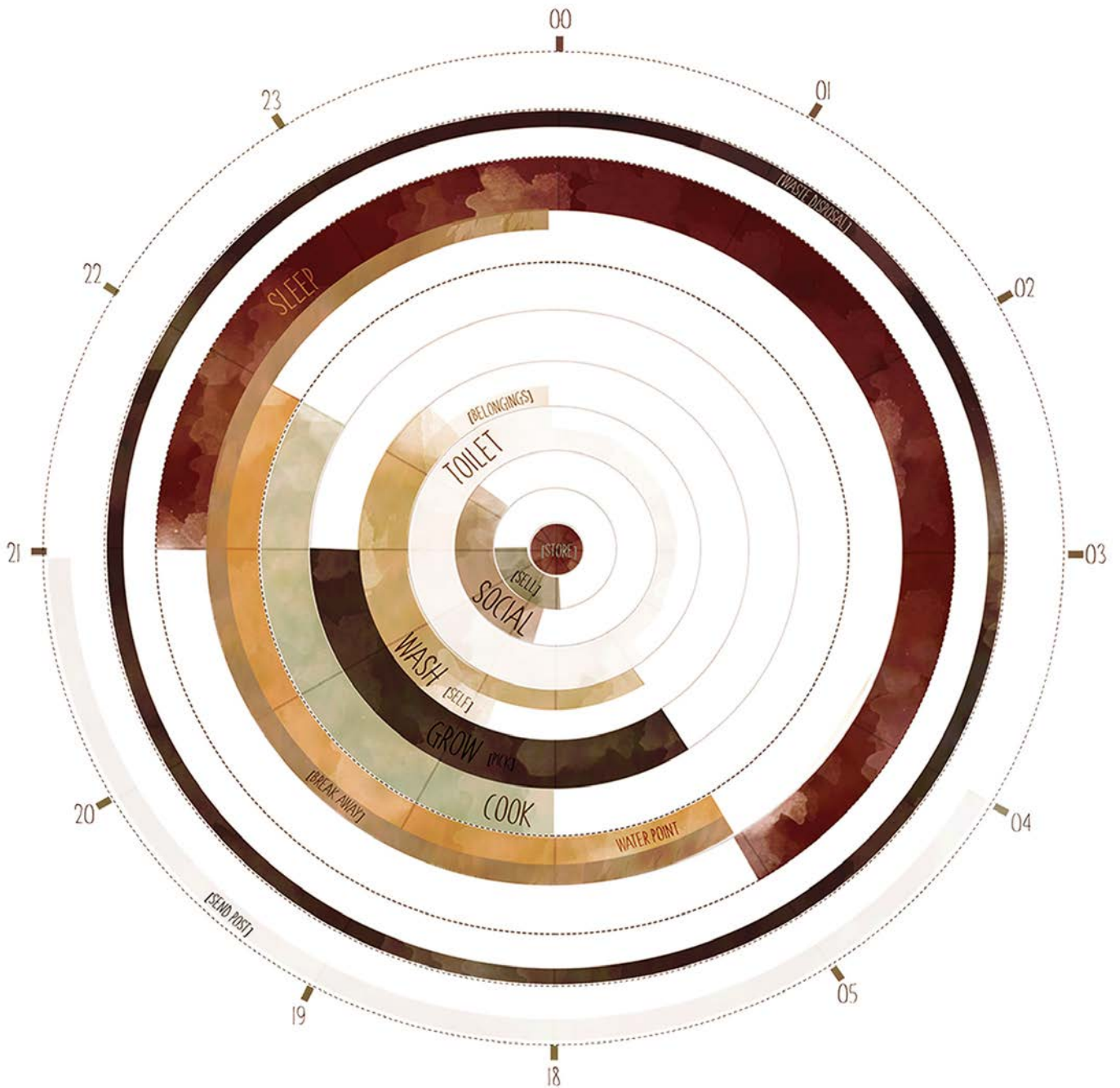


Figure 6.6.2: Night time programme

### [6.7] ROLE PLAYERS AND A WEB OF RECIPROCITY

In the table below, all of the systematic role players are listed and it is indicated which of the twelve activities are utilized by the role player. This information is the platform on which figure 6.7.2 develops. Figure 6.7.2 is an expression of the notion of reciprocity in the system. Here, each role player is again listed, as well as what they gain and what they give to the system. Thereafter, summative findings are expressed in 6.8.

ROLE PLAYERS	SLEEP	SELL	SOCIALISE	COOK	TOILET	WASH (SELF)	POST BOX	WASH (THINGS)	WASTE	GROW	STORAGE	DRINK
Homeless	x	x	x	x	x	x	x	x	x	x	x	x
Waste pickers	x	x	x	x	x	x	x	x	x	x	x	x
Ditsong Museum		x	x		x			x	x		x	x
Yeast City Housing	x		x				x		x			
Nearby Residents		x	x		x				x	x	x	x
Nearby Workers		x	x		x	x		x	x		x	x
Security + car guards		x	x					x				
Taxi drivers		x	x		x	x	x	x				x
City of Tshwane	x	x	x	x	x	x	x	x	x	x	x	x
Tshwane Homeless Forum	x	x	x	x	x	x	x	x	x	x	x	x
Postal Service		x			x		x		x			x
Dep. Of Water + Sanitation			x		x	x	x	x	x			x
Junkyard Dogs Recycling		x			x		x		x		x	
Dep. Of Home Affairs		x	x		x		x		x		x	x

Figure 6.7.1: Benefit of role players from amenities

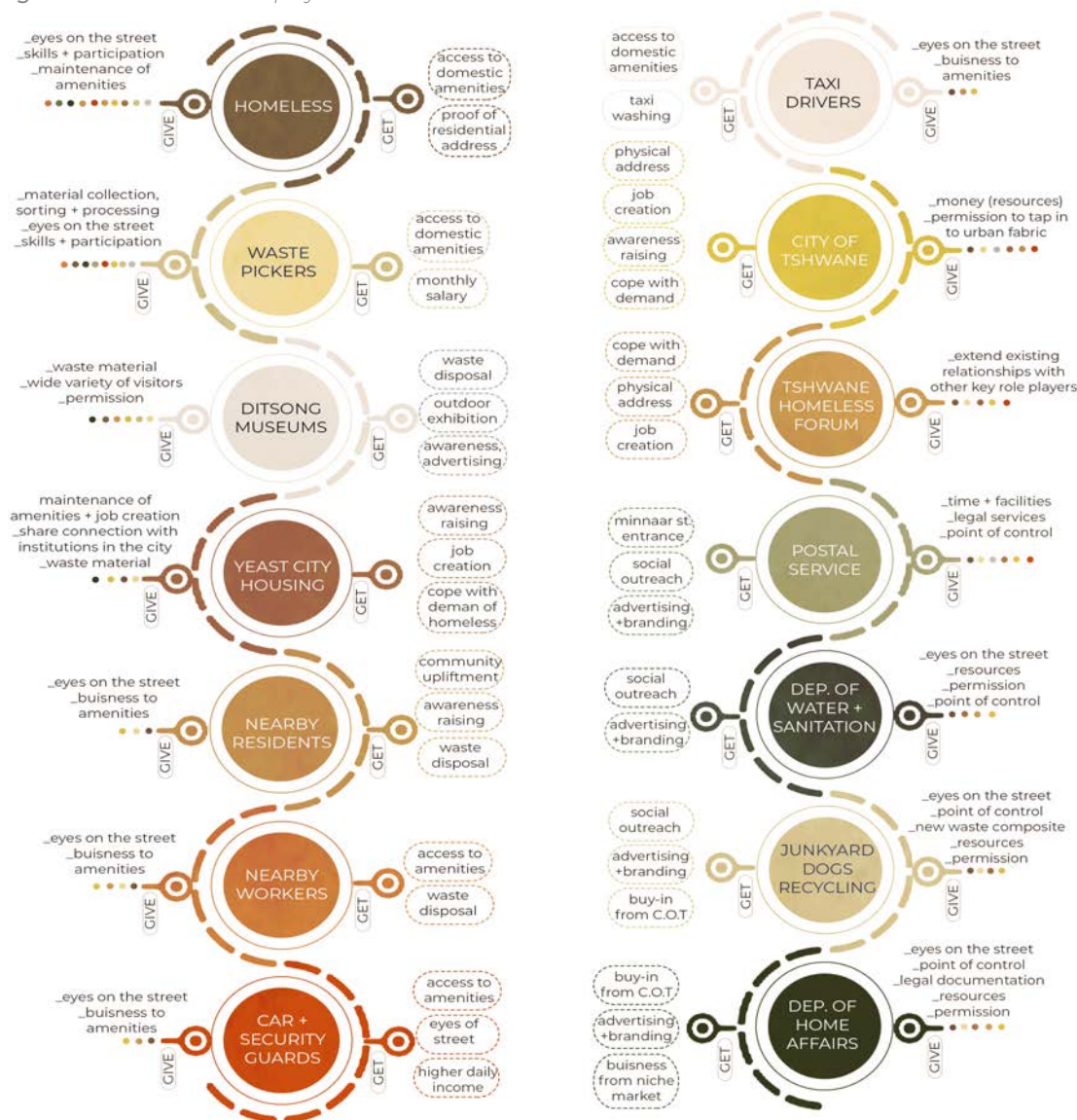


Figure 6.7.2: Web of reciprocity between role-players

## [6.8] CONCLUSION

From Chapter 6 it can be concluded that:

1. The theoretical concepts of '*Home of the Body*', '*The Domestic Home*' and '*Home of the World*' set out by Thomas Barrie, serve as a feasible conceptual approaches that tap into all aspects of the product, space and system scale spectrum.
2. The six principles of **core +**, **old and new**, **scalability**, **adaptability**, **deployability** and **system** act as the glue binding all three design scales together. They also drive the design decisions that follow in Stage 2 (Chapter 7) and Stage 3 (Chapter 8).
3. By exploring and expressing these six principles as both formal and psychological attitudes towards function, the concept takes on both a tangible (denotative) and emotive (connotative) face.
4. The catalogue is conceptualized as twelve activities that are divided up into four spatial typologies: Halfway+; Post-it+; Clean-up+ and Bench-it+. Halfway+ performs as the most collective (public) space, and Bench-it+ as the most individual (private) space.
5. All twelve activities are shaped into a 24 hour programme predominantly concerned with public, social activity during the day; and private, intimate activity at night.
6. The 24 hour programme is sustained and maintained by fourteen key role players. There is a directly proportional relationship to what each role player gives to the system and what they get from it. Therefore, reciprocity is established in the form of symbiotic relationships between role players.

These six findings above serve as the foundation upon which the design develops in the next chapter.

## BRAND DEVELOPMENT

**Disclaimer:** The proposed brand design is for the purpose of this dissertation and is not designed by a graphic designer. The branding serves to communicate the intention of the spatial-human interface.

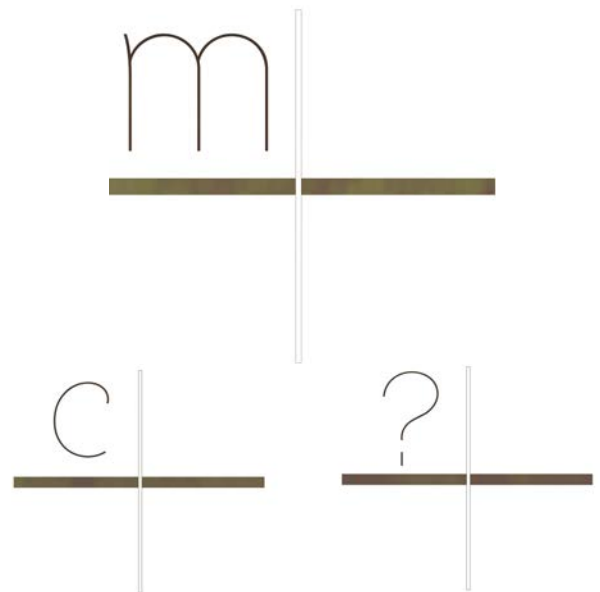
**Conceptualisation:** The + plus brand hopes to make a positive addition to the urban environment through domestic services and creating a sense of refuge and belonging. The + serves as a recognisable symbol is the public domain that speaks of “positivity” and “addition.”

**The m+ logo:** The logo is a plus sign with a slightly longer horizontal segment than vertical segment. The vertical segment is made up of two thin lines, whereas the horizontal a solid, thicker line.

The logo extends beyond the symbolism associated with a plus sign and references street intersections, networks and modularity. This is depicted in the figures alongside. The + is used as the recognisable symbol in a roll-out scenario. The first letter of the street name where the intervention will occur (Minnar Street in this instance), is used in the top left quadrant.

**Areas of incorporation:** Branding is incorporated in 3 ways: design communication, corporate marketing, and spatial signals.

01 | Design communication refers to the logo's use in communicating the design scheme and the spaces it includes (Halfway+, Post-it+, Bench-it+ and Clean-up+). This incorporation of branding is communicative for the purposes of the dissertation only.



## 01 | communication



## 02 | marketing



02 | Corporate marketing refers to the incorporation of the + logo in conjunction with existing role-player's logos that wish to be associated with the m+ system.

03 | Spatial signals refers to the use of branding to express spatial use, circulation, adaptability and intention. The attributes feature predominantly in space planning and joinery. As the diagrams alongside suggest, the + brand is more recognizable on a small scale through material combination and joinery. At the space planning scale, branding is less noticeable.

**Overlap with Red Cross brand:** The notion of refuge and service providing extends from the Red Cross brand. Red Cross provides assistance emergency, disaster relief, and education on disaster preparation, internationally.

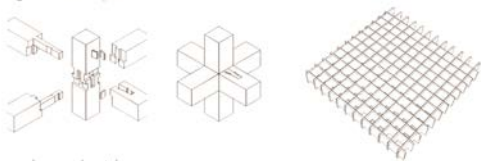
The logo, as the name suggests, is a red cross, with horizontal and vertical arms of equal length, on a white background. One of its main design objectives was to adopt a single distinctive symbol indicative of "army medical services, volunteers with first aid societies and the victims of armed conflicts" (International Committee of the Red Cross, 2017). Further, the symbol needed identifiable from a distance and universally recognizable.

Most importantly, the logo needed to reflect neutrality and was therefore informed by reversing the colours of the Swiss flag. Furthermore, the white background remains a symbol of surrender.

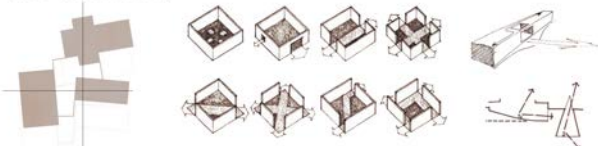
The Red Cross brand explicitly states that it has no religious or political preferences. The same absence of religious or political preference, as well as the association with providing refuge in desperate situations, is adopted in the +plus brand.

## 03 | spatial signals

[joinery]



[circulation]



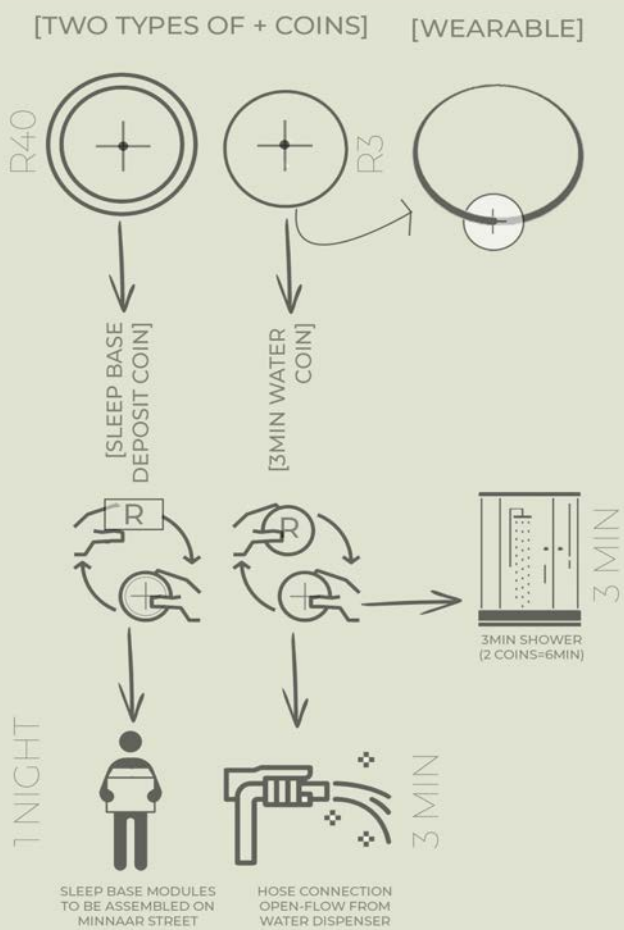


Figure 6.7.3: Diagram of token system



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### **TOKEN SYSTEM | + COINS**

**Why:** By introducing a token system within m+, the security challenges related to cash-based systems are avoided, without removing a sense of value within the system.

**Value:** Two types of tokens exist and are illustrated in the diagram alongside: the +water coin used for water (shower and open flow hose connection) and a R40.00 deposit token used to redeem a sleep base. One R3.00 token gives users access to a 3minute shower or 3minutes of open flow water and hose connection for car washing. *Note: all token prices are specific to 2018.*

**Coin design:** The + sleep coin is a nickel coin that resembles the size of a R5.00 coin. The + water coin is a bronze coin that resembles the size of a R2.00 coin. Both coins have a bespoke cut-out with of a + (plus) sign with an opening in the center to allow for a chain, string or keyring to attach to the coin. People can start to wear the coins for safekeeping and to promote a sense of belonging to the m+ system.

---

07

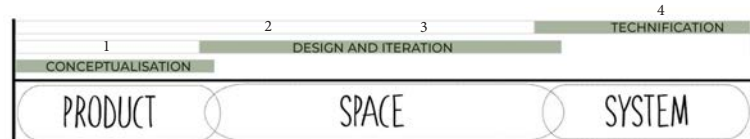
*express*  
STAGE 2 : INITIAL DESIGN

## [7.0] INTRODUCTION

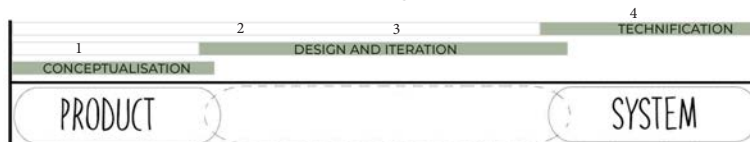
Stage 2 is the spatial application of three conceptual drivers put forward in Stage 1 (Chapter 6). These drivers are: **1. Scalability**; **2. Old vs New interface**; and **3. Core+**. Design informants in Stage 2 are human-centered and include: *circulation, public vs private interface, relation to existing material, relation to existing scale, points of control, safety, and ergonomics*.

In Stage 2, *Halfway +*, *Bench-it+*, *Post-it+* and *Clean-up+* are explored at conceptual and initial design stages. In Stage 3, *Halfway+* and *Bench-it+* are developed further to technical resolution. A summary of the degree of investigation is unpacked below.

7.1. *Halfway +* is the most complex design investigation exploring the product, space and system scales from conceptualisation (Stage 1), and initial design (Stage 2) to design iteration (Stage 3) and technification (Stage 4).



7.2. Similar to 7.1, *Bench-it+* is also explored from conceptualisation (Stage 1) through to technification and prototypical testing (Stage 4). However, the design investigation addresses the product scale predominantly and its role within the overall system.



7.3. *Post-it+* investigates the spatial and systematic scale and materializes in the conceptual (Stage 1) and initial design (Stage 2) phases only. This is because *Post-it+* does not accommodate a domestic programme. Therefore, *Post-it+* serves to assist the overall feasibility of the m+ system.



7.4. Lastly, *Clean-up+* investigates the product and systematic scale and also only materializes in Stage 1 and 2. It, too, does not accommodate a domestic function and therefore, also only serves to assist the overall feasibility of the m+ system.



Figure 7.0: Scope of design resolution

7.1

halfway +

### [7.1.1] REQUIREMENT FOR HALFWAY+

*Halfway+* serves as the center of the m+ system and includes activities such as cook, socialise, wash (self), wash (things), dress, store, grow and toilet. The variety of activities presents a contrasting dynamic between public and private space.

Private activity spaces such as wash (self) and toilet are conceptualised as cellular, intimate interior spaces. Whereas grow, social, cook and wash (things) are celebrated, public 'performances' in open, visible spaces. The spatial transformation of these ideals is depicted in Figure 7.1.1 below.

The approach and access to *Halfway+* from Minnaar Street are important considerations in establishing spatial hierarchy between private and public activities, free and paid services, and points of control.

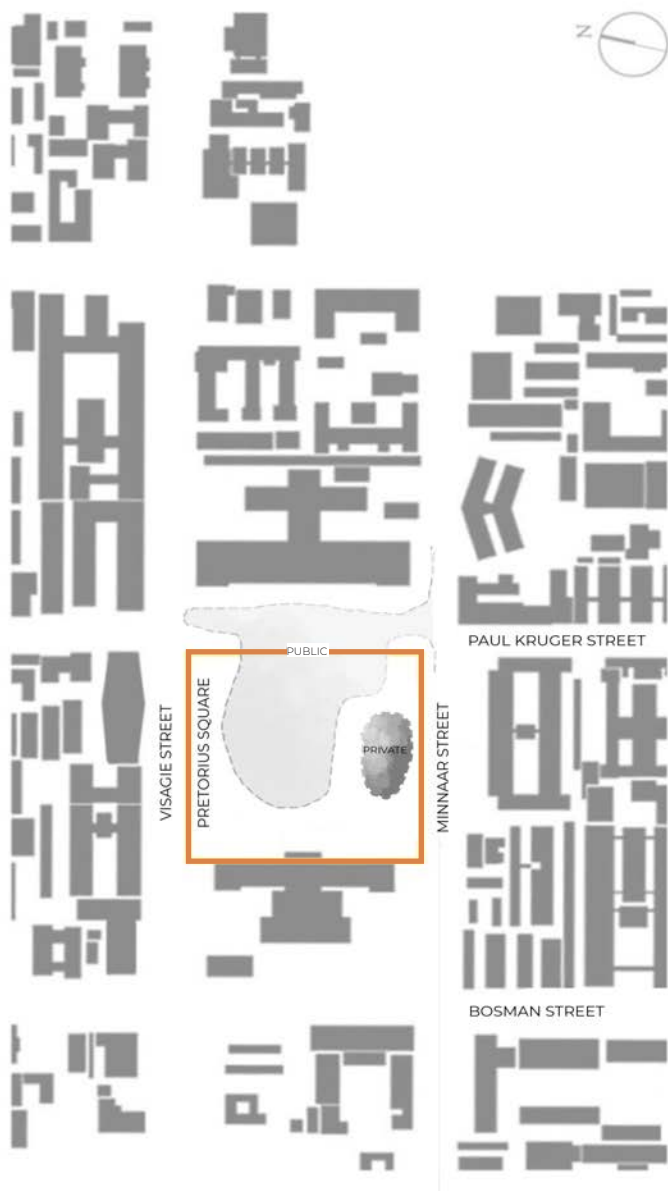


Figure 7.1.1 Diagram highlighting spatial relationships between public and private activities in *Halfway+*

[7.1.2] INITIAL LAYOUT

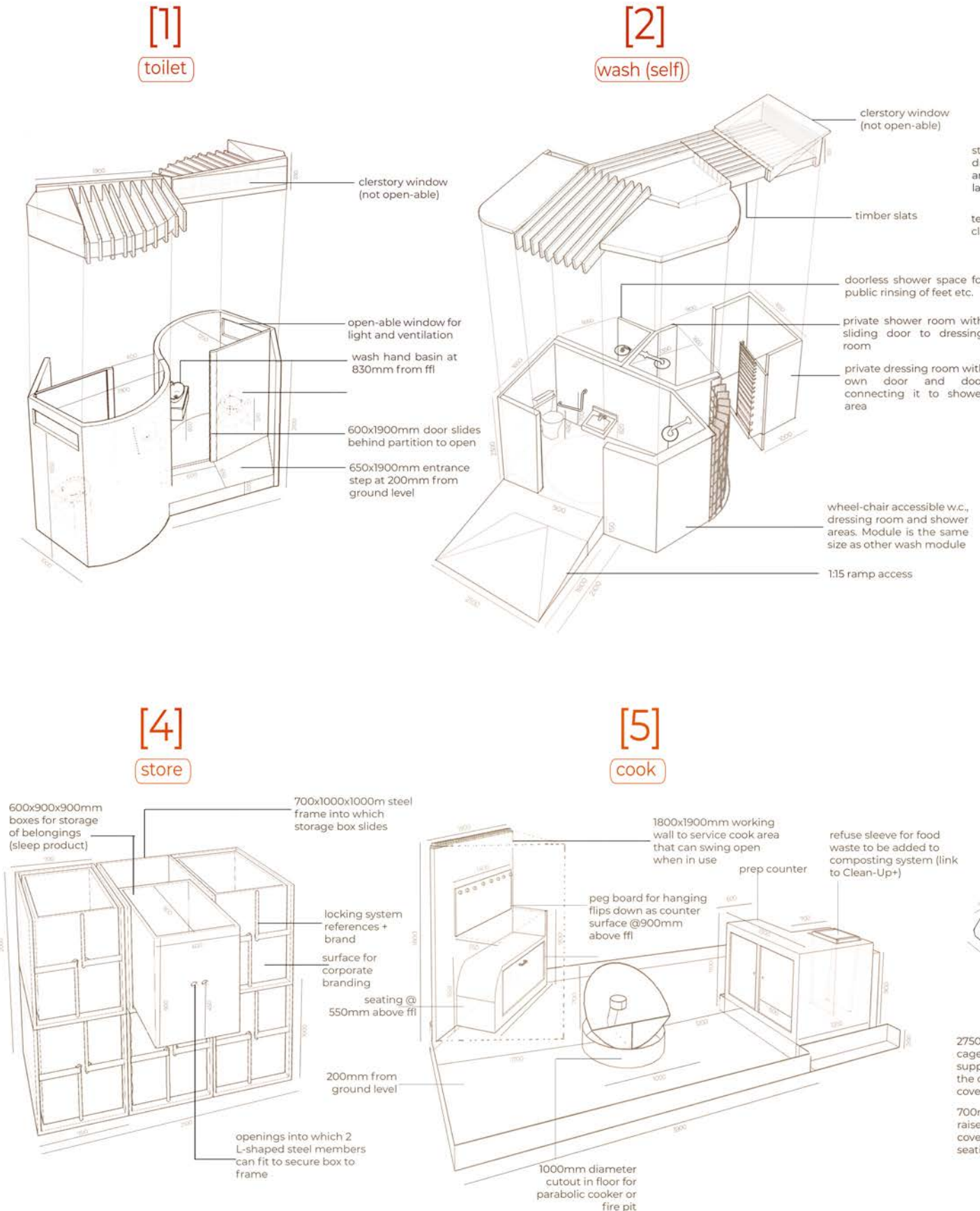
Based on the spatial requirements set out in 7.1.1 and the design informants for Stage 1 set out in 7.0, the following initial layout for *Halfway+* is proposed. The most public activities take place closest to Paul Kruger Street. The point of control is the first point of entry. The wash area is hidden from street view and the toilets are visible from both street and square.





### [7.1.3] BREAKING UP LAYOUT INTO A SERIES OF DOMESTIC ACTIVITIES

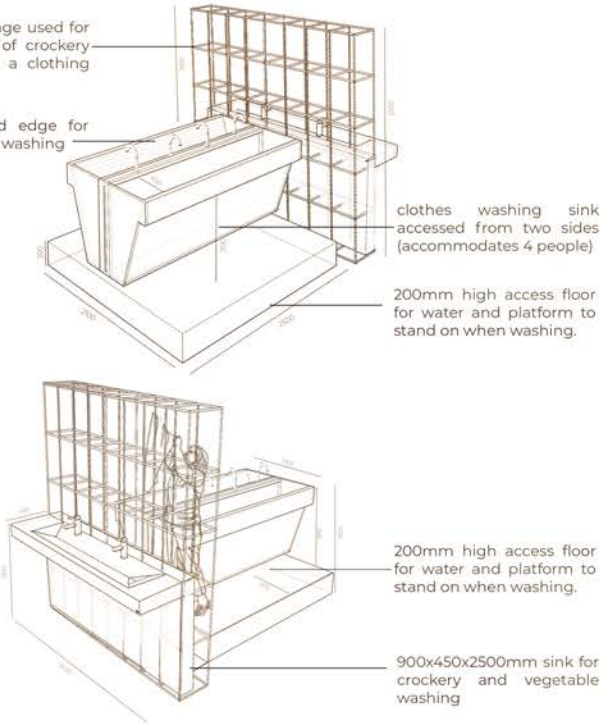
In Stage 1, each domestic activity within Halfway+ was conceptualised as a catalogue item that could be removed from the larger layout and used as a product elsewhere in the urban environment. For example, the toilet item could be rolled-out to a separate location and still function as successfully as it does when part of a larger spatial configuration. Below, the initial catalogue items are depicted. The catalogue for Halfway+ is later revisited and iterated in Stage 3.





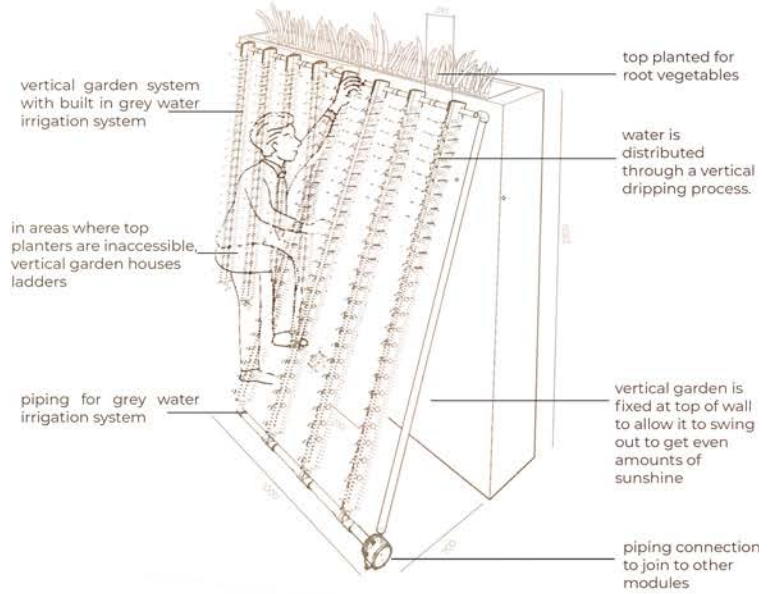
[2]

wash (things)



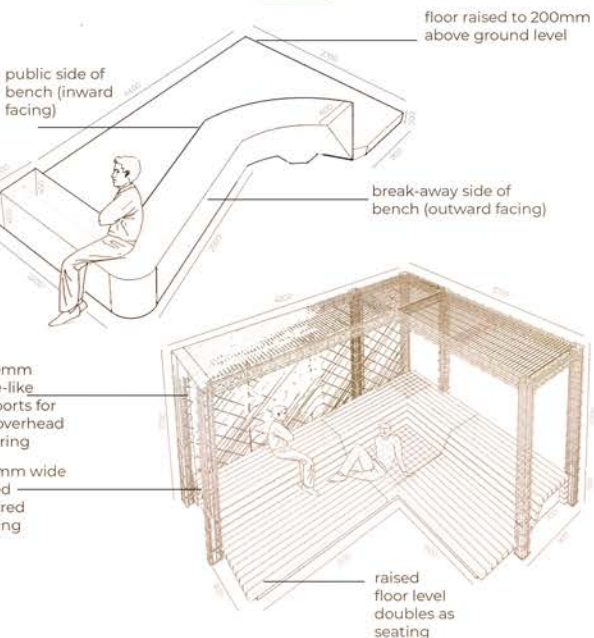
[3]

grow



[6]

social



[7]

sell

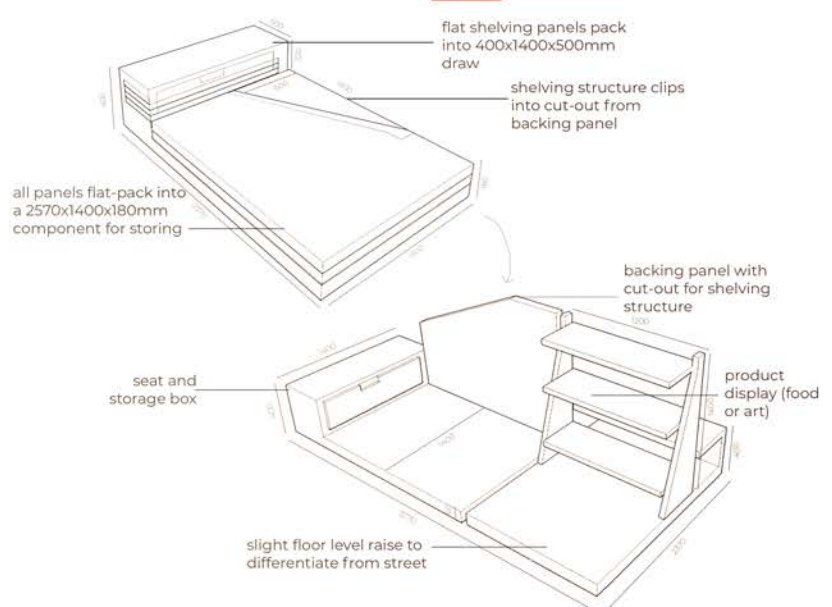
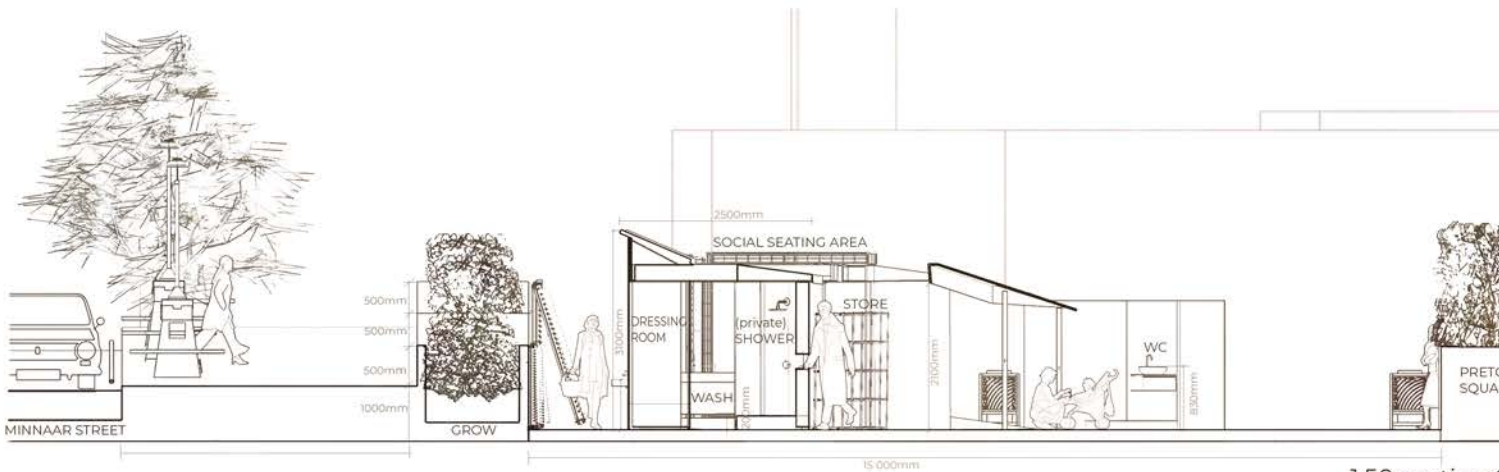
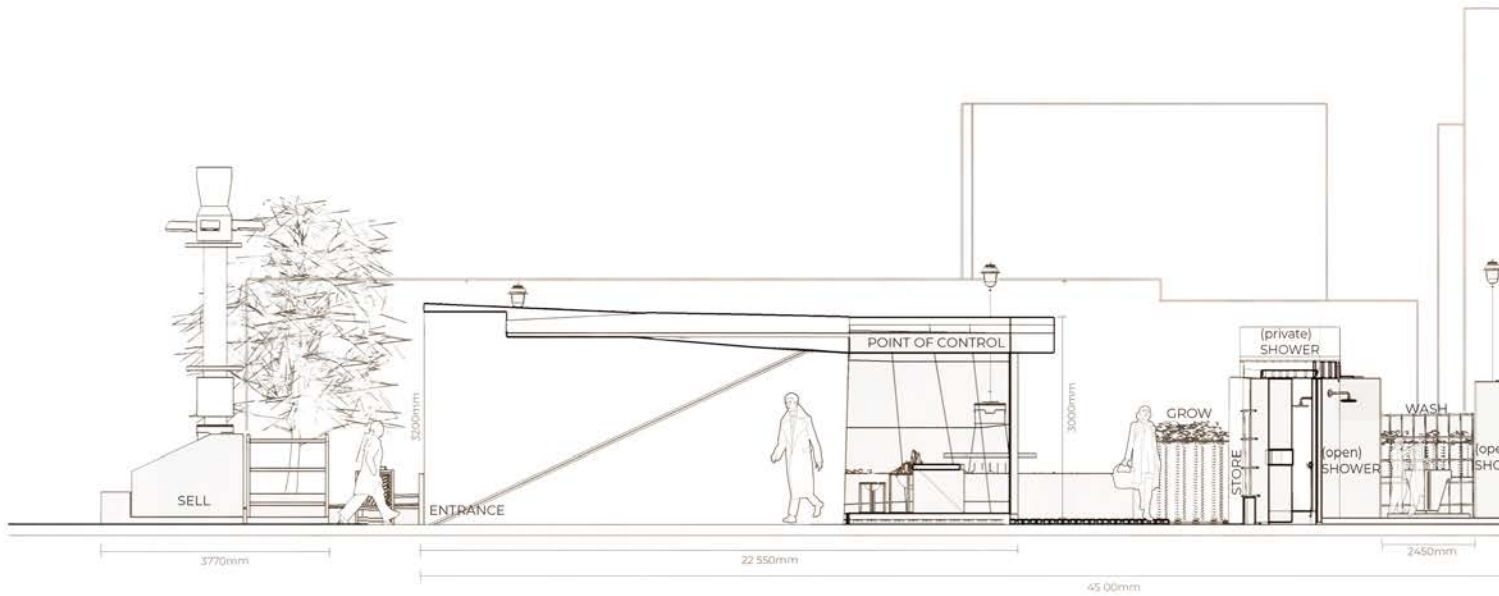
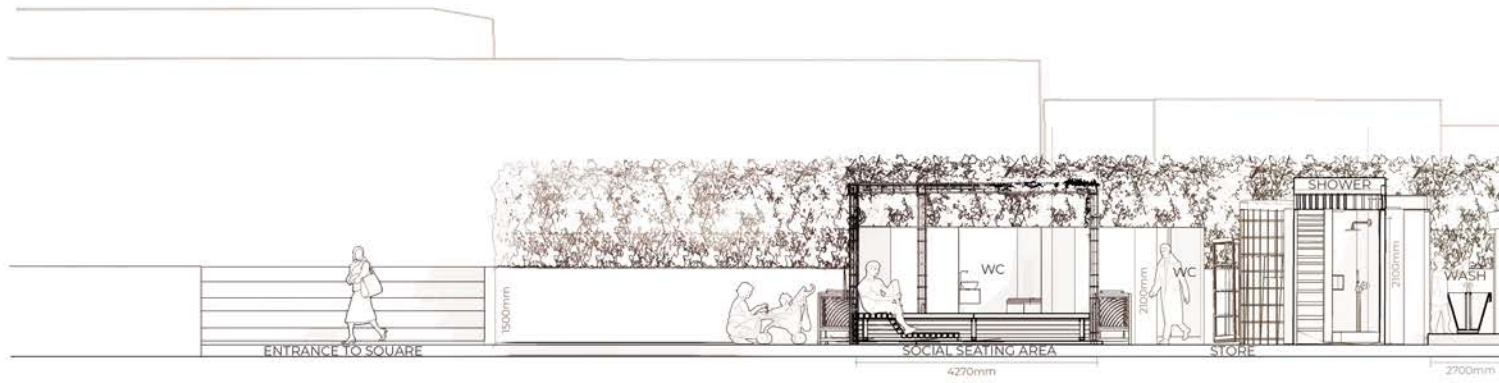


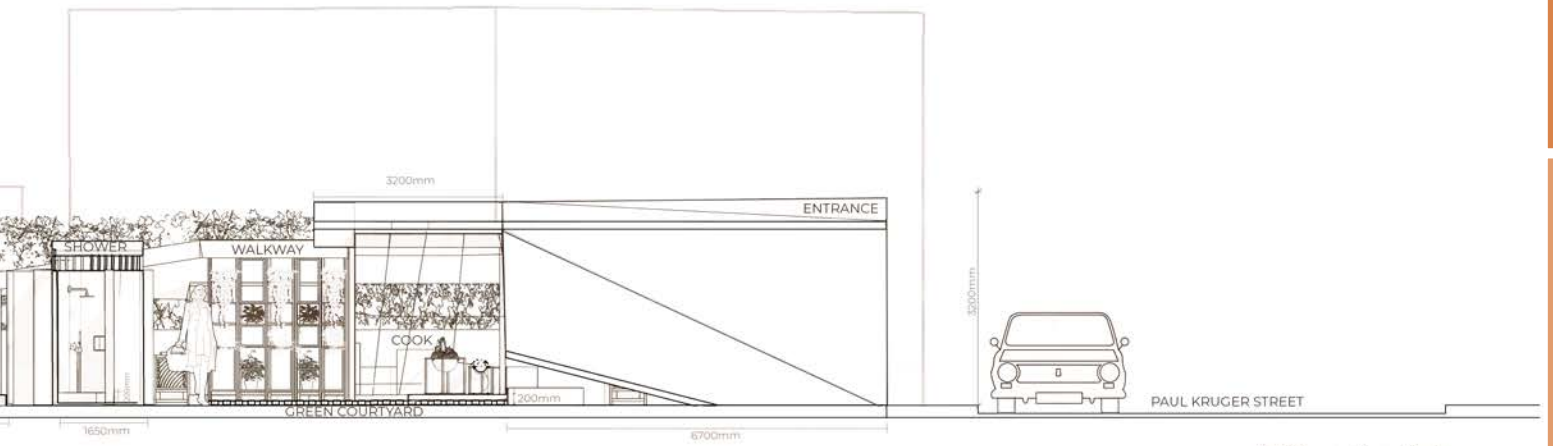
Figure 7.1.3.1 Initial catalogue for urban domesticity

[7.1.4] INITIAL SECTIONAL VIEW

The relationship between each domestic activity and the spaces in which they are performed, is explored as a series of sectional views through the initial layout of *Halfway+*. The overall scale in relation to its urban context is evident through the sections. The intention here is for the new design to contrast the monumental scale and ornate nature of the buildings around it, by creating a submerged, flat, minimalist architecture. Spatial hierarchy is created through threshold heights, vista, spatial sequencing, relation to street and scale of space.



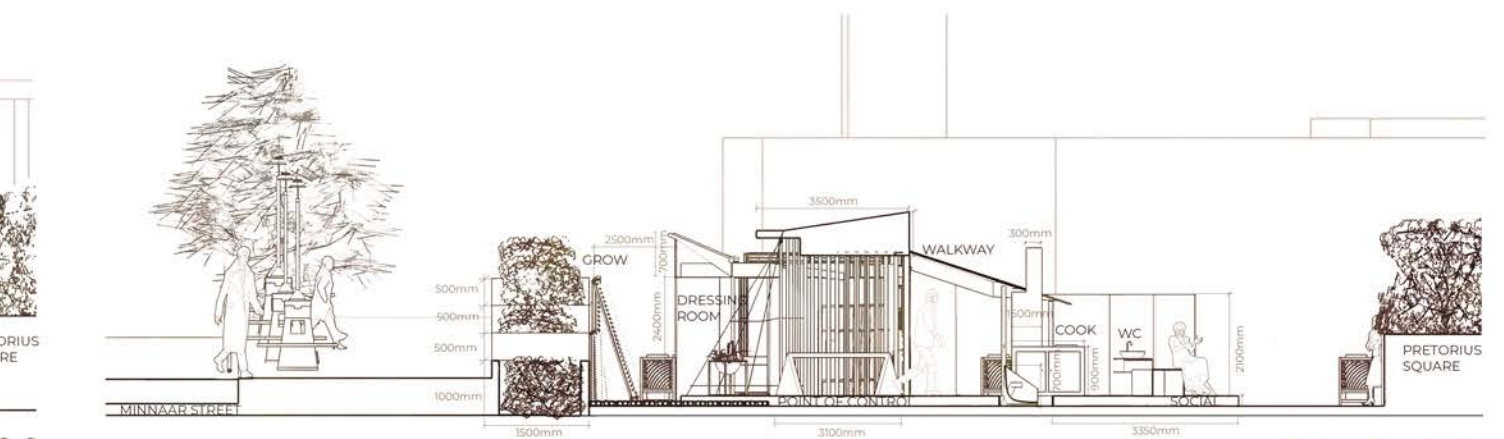
1:50 section C



1:50 section A-A



1:50 section B-B



1:50 section D-D

Figure 7.1.4.1 Sectional views of Halfway+

### [7.1.5] INITIAL 'LOOK AND FEEL'

Materiality is used to indicate what is public and what is private. The initial approach to material is about creating a neutral environment, rich in texture and natural light influx, without projecting a stylistic preference. A material strategy is later revised in Stage 4. Moreover, sight-lines and vistas are used as a tool for both circulation and security.



view fr



view fr



view towards wash space



view towards wash, store and grow areas



view from Paul Kruger Street

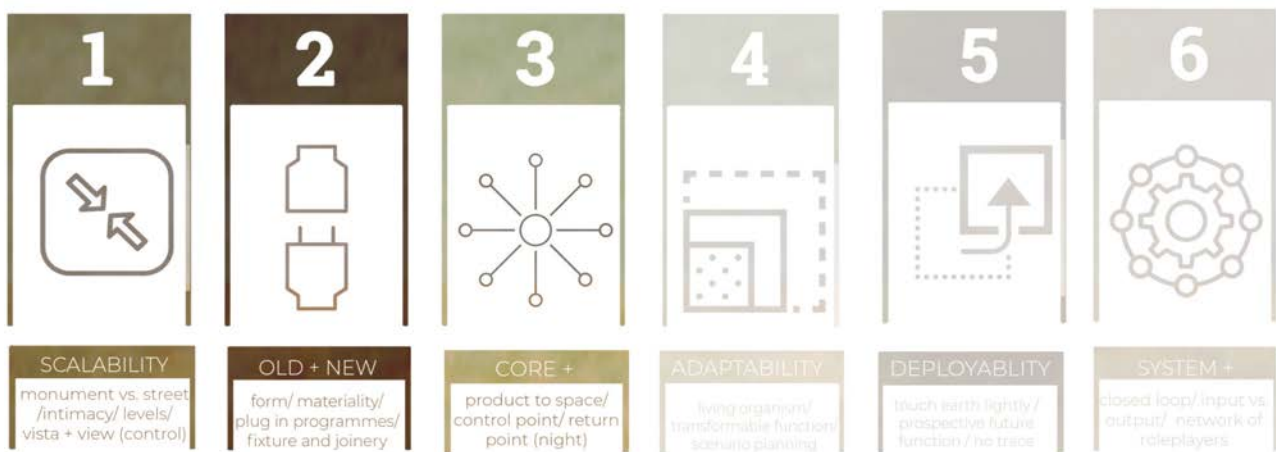


Figure 7.2.5.1 Conceptual drivers for reflection

### **[7.1.6] REFLECTION ON INITIAL DESIGN**

The initial design of *Halfway+* successfully considers the three conceptual drivers in the following way:

#### **1. Scalability:**

- \_Private spaces are smaller than public spaces.
- \_Public activity occurs closest to the street.
- \_Each domestic activity materializes as an independent space.
- \_All spaces are single story with mono-pitch roofs to contrast the monumental scale of the urban context.

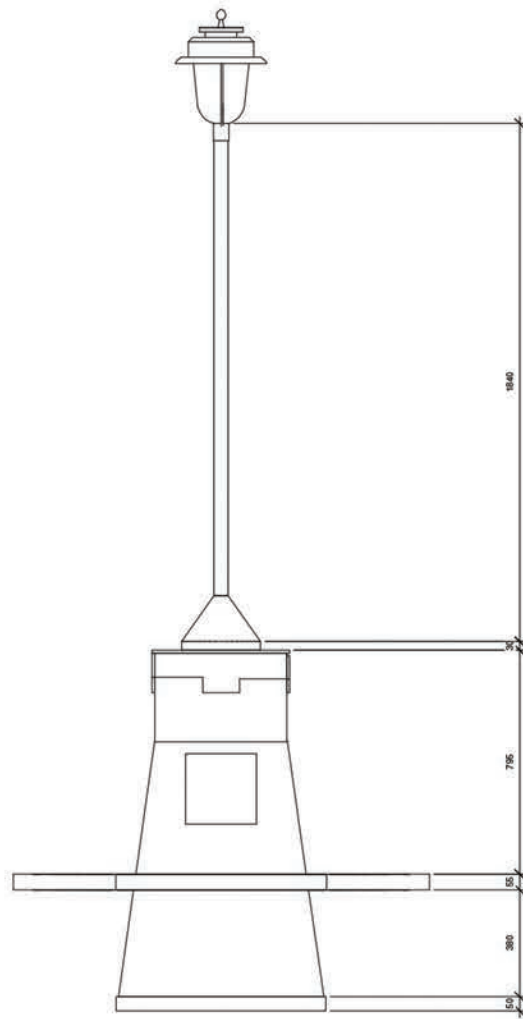
#### **2. Old vs. new interface:**

- \_Linear axis that extends from the context.
- \_Complimenting existing circulatory patterns.
- \_Materiality that does not prescribe a style and contrasts the existing, ornate urban fabric.
- \_No structures that fix to the existing urban fabric.

#### **3. Core+:**

- \_Point of control at entrance
- \_Transparency of public vs private activity
- \_Grouping vulnerable activities (wash) in a courtyard formation for safety
- \_The grouping of services (central service core)
- \_Visual connection between street and *Halfway+*

It can, therefore, be concluded that the initial design for *Halfway+* will serve as the base work upon which Stage 3 will develop. Here, the way in which design informants (*circulation, public vs private interface, relation to existing material, relation to existing scale, points of control, safety, and ergonomics*) were implemented in the Stage 2 design (7.1) will be kept intact when Stage 3 (8.1) commences.



7.2

bench-it +



### [7.2.1] CONCEPTUALISING BENCH-IT+

Two activities are accommodated in the Bench-it + space: drink (a public water point) and sleep (a platform for the homeless to sleep). Both these activities directly relate to the existing design of the benches along Minnaar Street as depicted in Figure 7.2 alongside. Therefore, the designs accommodating the 'drink' and 'sleep' activities, must ensure the current use and integrity of the bench is maintained.

*Drink* is conceptualised as a permanent installation that makes use of the currently vacant service cavity in the center of the bench's base. The installation is repeated along the Minnaar Street benches and offers two options of water dispensary: a free, 250ml capped, bottle-filling, dispensing nozzle; and a token-charged tap into which a hose pipe can be connected for a maximum of 3minutes of open water flow (per token). The open water flow option predominantly accommodates the taxi rank on the end of Minnaar Street by supplying taxi drivers with water to wash their vehicles. The outer casing of the water dispenser can be used by the Department of Water and Sanitation (Minnaar Street) for advertising and notice purposes. Three minutes of continuous water flow uses approximately 27.5litres of water (Moolman, 2018) and costs R2.07. However, each token will cost R3.00 to purchase. The additional 70cents built into the token price covers the 'free' 250ml drinking water. By doing so, paid customers take on a civic role within the Minnaar Street community.

*Sleep* is conceptualised as a temporary installation, comprising of two parts, that loosely attaches to the underside of the bench.

The first part is the base, which is the sturdy platform with qualities of durability, recyclability, light-weight and modularity.

The base component is owned by the m+ system and is stored within the *Halfway+* storage space. A base is redeemed on a first-come first-serve basis where a bed token valued at R40 is handed in as a deposit; and then given back to the client when the base is returned the following morning. This adds an element of responsibility and control and ensures bases can be designed in a more long-lasting, robust way using a stronger and more expensive material.

The second part is the bag, serving as the 'softness' or 'mattress' that sits on top of the base. Again, qualities of durability, recyclability, light-weight and modularity are important in the bag design. However, the bag is owned by the individual and not by the m+ system. In a day scenario, the bag uses a draw-string technique and stores the users' belongings. Here, the notion of Lucy Orta's body architecture (page 81-82) is referenced. In an evening scenario, the bag is flattened out like a pillow case and is stuffed with personal belongings (clothes, blankets, newspaper, etc) to create 'softness' and security for the user and their belongings. Three bags cover the sleep surface area of the base entirely. The manufacturing of the bags fall into the Ditsong Museum of Cultural History's skills development agenda. Here, outdated billboards from within the inner city of Pretoria, will be brought here, to be cut, stitched and distributed to the homeless. Therefore, corporate branding is implicit and companies can indirectly be associated with helping alleviate the condition homeless people sleep in.

Lastly, both the base and the bag operate optimally together but can be used as separate products.

## SKETCH STUDY OF HOW PEOPLE SLEEP

An observation-based study was performed of people sleeping along Minnaar Street and the following sketches were created to highlight important sleep requirements before the initial design of the *Bench-it+* space. The study is purely based on observation. No individuals were consulted in this process.

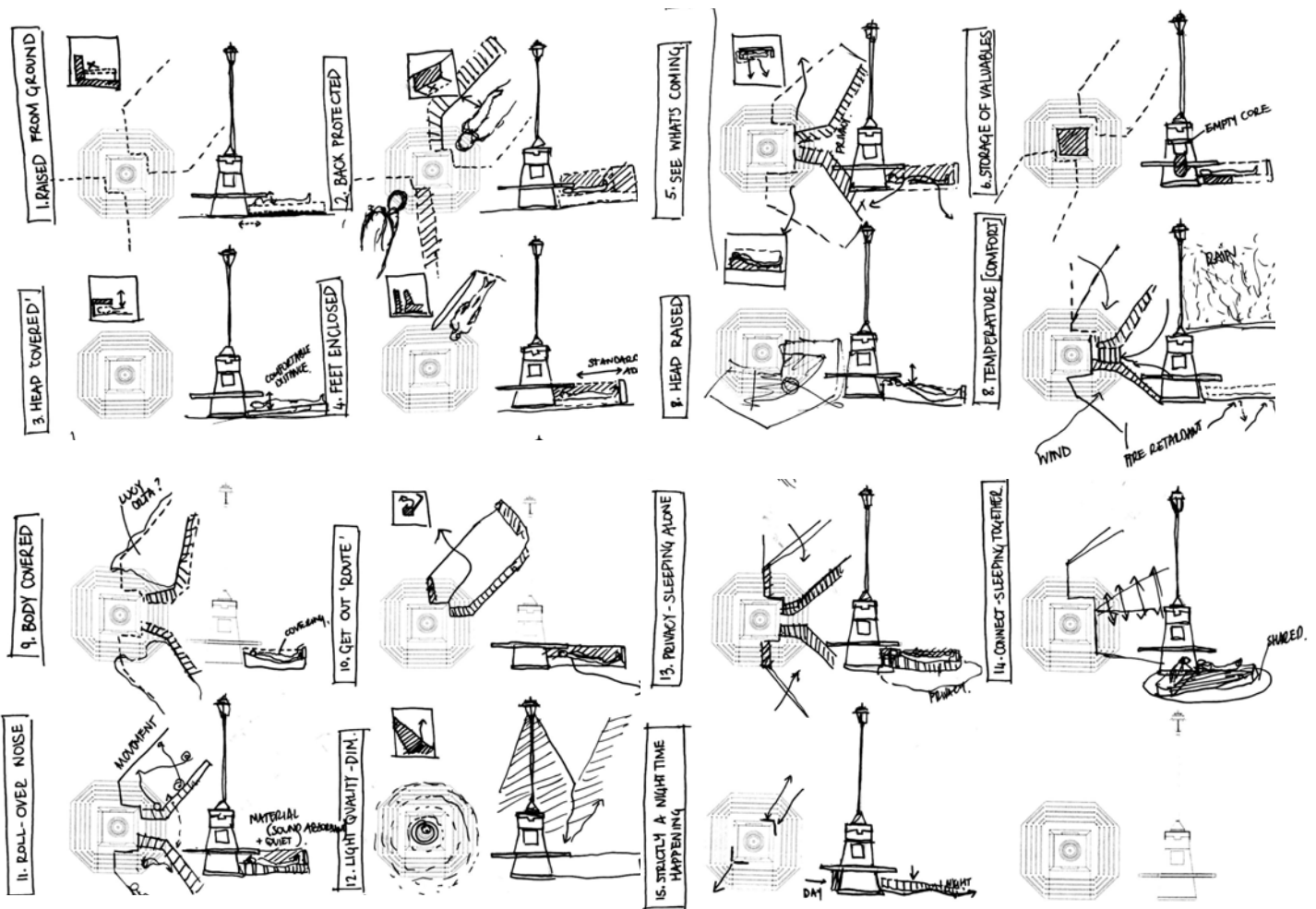


Figure 7.2.1.1 Study of sleep ritual around Minnaar Street bench

From the findings above, 15 design considerations are identified as informants for the design of the sleep space that follows. This includes (not in order of importance):

1. A platform raised from the ground
2. The protection of the one's back
3. The covering of the one's head
4. The enclosure/ protect of one's feet
5. Opportunity to see what is coming (one open edge)
6. Provision for the storage of important valuables
7. A raised head/ inclined base
8. Climatic comfort (water-resistant and thermal comfort)
9. Covering of one's body
10. Provision of an escape route in event of emergency
11. Material that does not make a noise when rolling over on it
12. Shielding of direct street illumination
13. Privacy when sleeping alone
14. Possibility for sleeping together (mother and child; couple; family)
15. Strictly a night time happening (no trace in the day)

The requirements above inform the materiality, form, use and positioning and configuration of the *Bench-it+* design.

## [7.2.2] INITIAL DESIGN

The plan below highlights the arrangement of the sleep spaces around the existing bench and the position of the water dispensers.

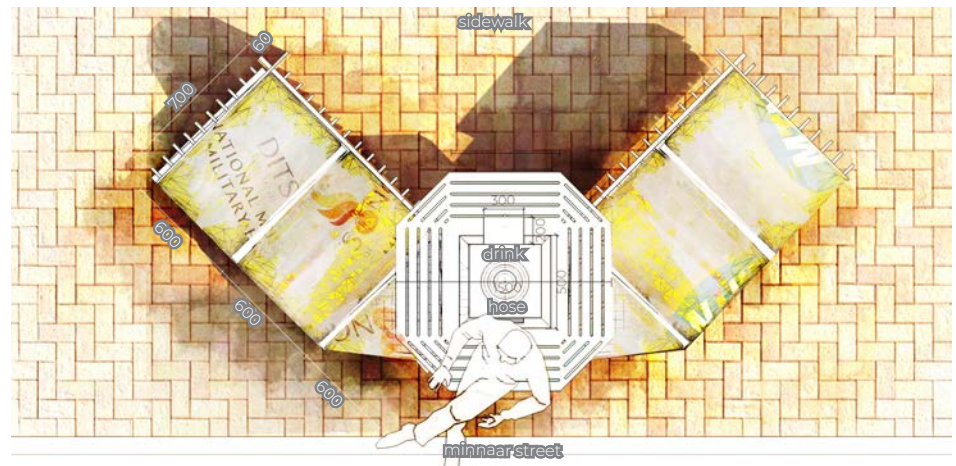


Figure 7.2.2.1 Initial layout of Bench-it+

Here, it is evident that the bed bases are designed in 3 separate modules that connect to form a longitudinal platform. The modularity allows for the base to be disassembled into manageable proportions and for ease of manufacturing. Dry joinery is adopted such that total disassembly into flat-pack panels is possible. Dry joinery also allows for cost and weight to decrease; and further can be used as a way to communicate the '+' brand in a subtle yet distinct way. The detailing, tolerances and testing of dry joinery types used in the base are explored in 8.2. The billboard bags fill the sleeping surface area and fasten to the sleep bases.

The water dispensers make use of the central service cavity for water supply. However, the dispensing of water is split into two outlet types. The 'free' outlet for drinking is positioned towards the sidewalk attracting pedestrians, while the token-based, hose outlet faces Minnaar Street to allow for serviceability to the taxi rank.

During the day, the only visible attributes are the water dispensers. But at night, each bench becomes the anchor to a set of domestic rituals. Here, traditional rituals such as making a bed and fitting on sheets, is translated to laying out the three modules and fitting a soft layer on to it. In this, a sense of intimacy, routine and belonging is created.

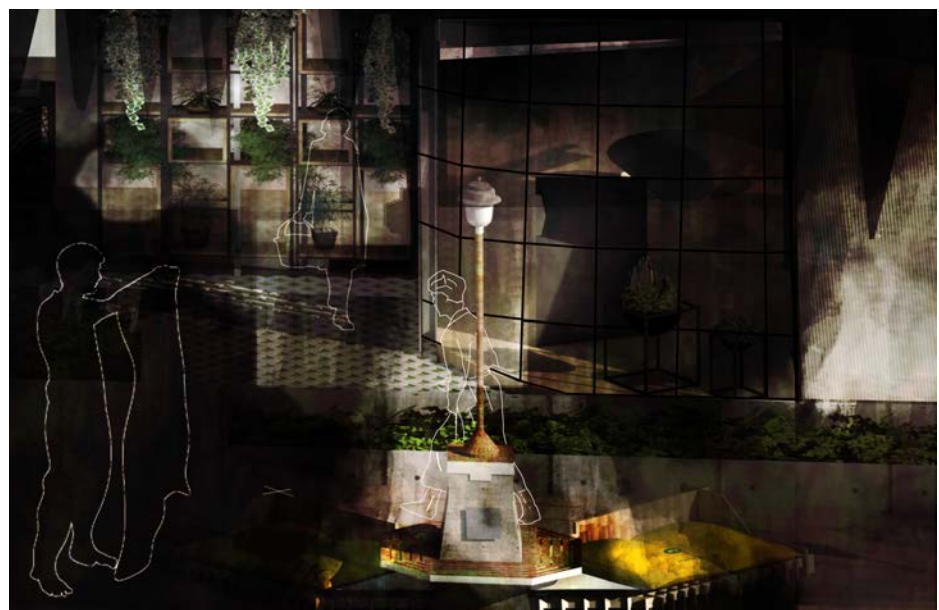


Figure 7.2.2.2 Envisioned domestic ritual at night

[7.2.3] ASSEMBLY OF INITIAL DESIGN

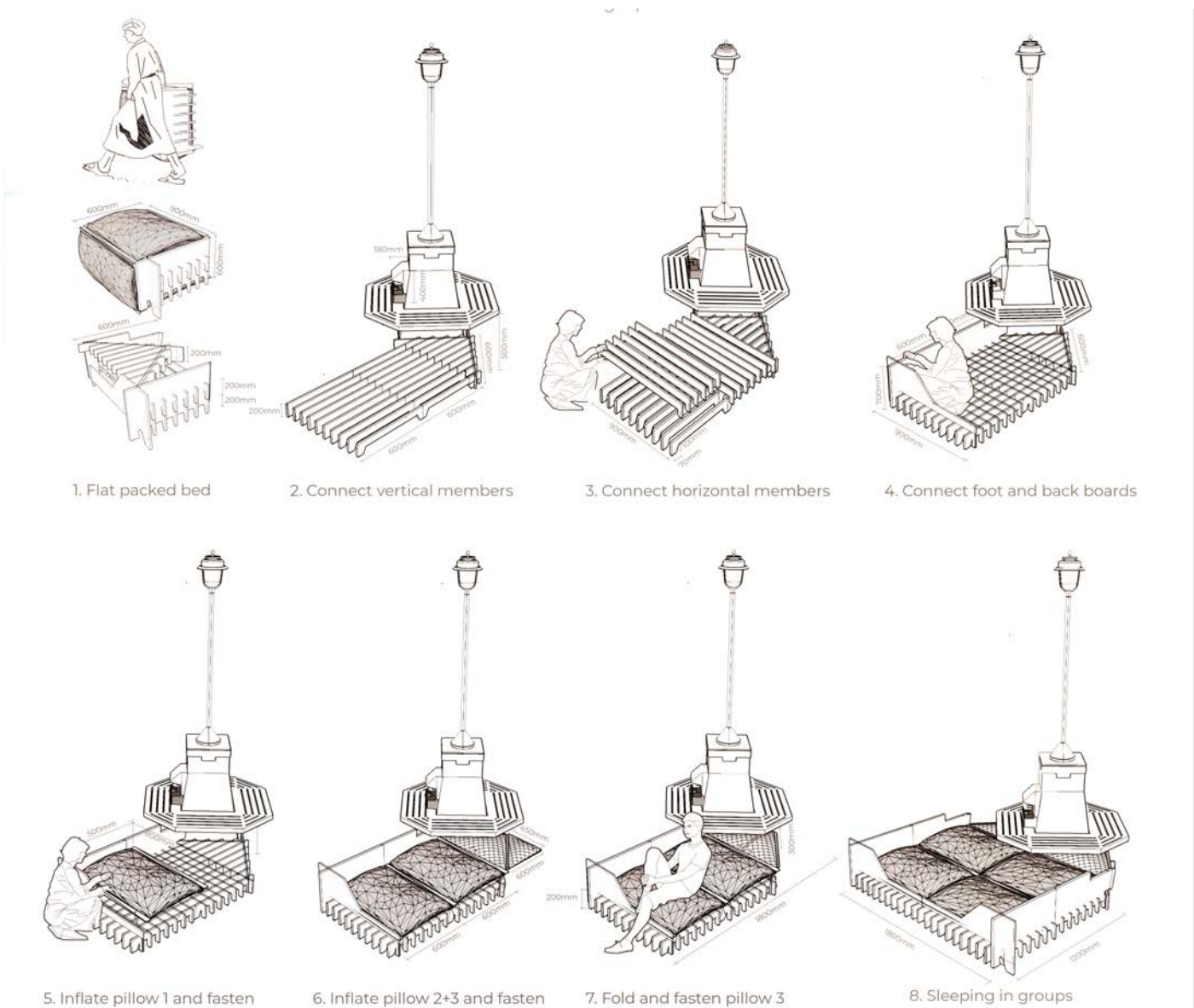


Figure 7.2.3.1 Assembly of initial design

### [7.2.4] RELATIONSHIP WITH CONTEXT

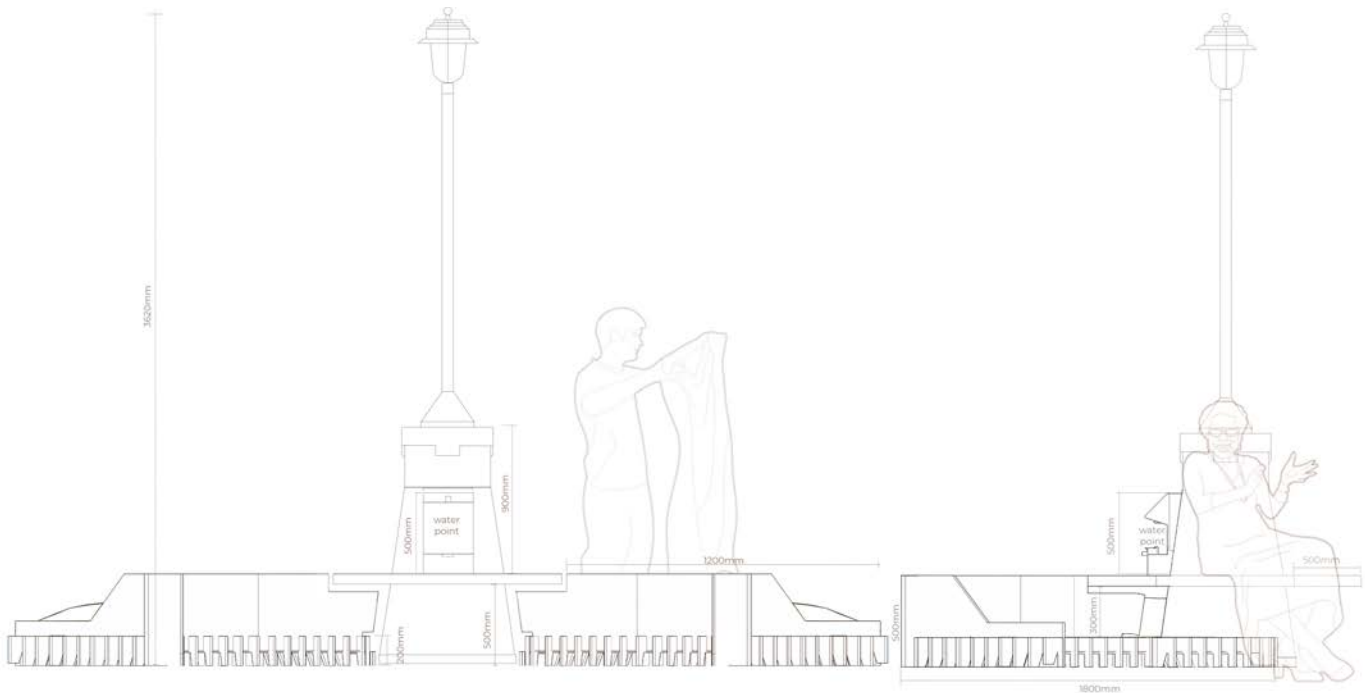


Figure 7.2.4.1 Front and side elevation of Bench-it+

The bed bases' form draws inspiration from the bench that it attaches to and a sense of privacy is created through the inclusion of higher screening members protecting the back and feet of the user. The bed base has a direct relationship with the ground and therefore only the smallest possible surface of each panel touches the ground. The edge that touches the ground is the most susceptible to water and weather damage. Thus, Stage 3's investigation will consider the protection of these edges. The edge condition is prototypes at full scale in Stage 4.

The bags do not interact with any existing urban fabric, but does connect with the bed base. The incorporation of a draw string to both seal the bag and connect it to the base, is developed in Stage 3 and prototyped at full scale in Stage 4

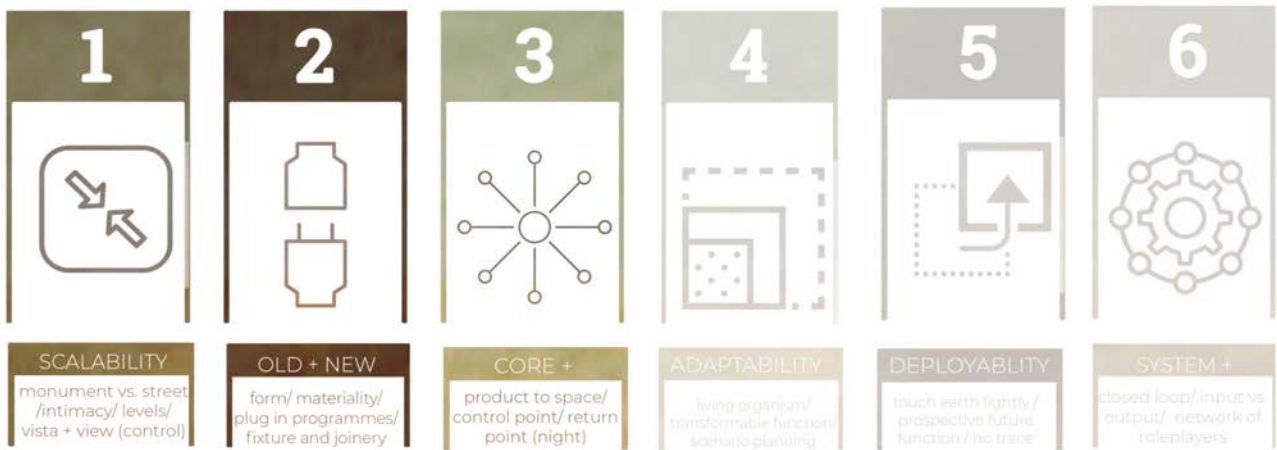


Figure 7.2.5.1 Conceptual drivers for reflection

### **[7.2.5] REFLECTION ON INITIAL DESIGN**

The initial design of *Bench-it+* successfully considers the three conceptual drivers in the following way:

#### **1. Scalability:**

\_The bed base uses repetitive joinery ensuring ease of production and potential for configuration variation.

\_Consideration of people who sleep in groups (families, couples, etc).

#### **2. Old vs. new interface:**

\_The bed does not fasten to the existing bench and therefore is completely temporary. This respects the integrity of the bench's daytime civic function.

\_ The water dispenser makes use of an existing service cavity and thus does not alter the structure of the bench itself.

#### **3. Core+:**

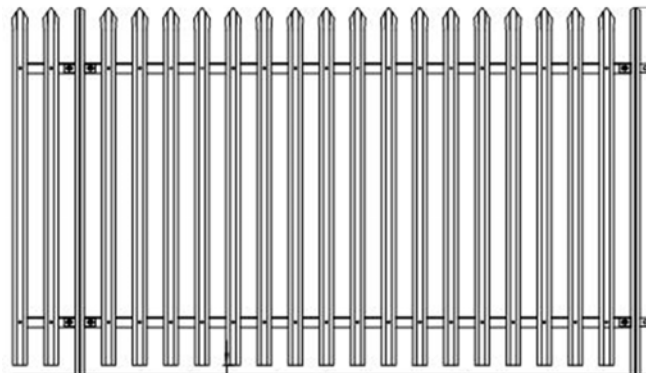
\_The bed base is stored in Halfway+ near the point of control.

\_The bed bag belongs to the individual and therefore, they are responsible for its safety.

\_The bag itself is designed for users to store their personal belongings and safe-guard (control) them.

\_The water dispensary is rationed to fill a 250ml bottle but can be over-ridden with a R3.00 token for three minutes of free-flowing water (21.7 liters).

It can, therefore, be concluded that the initial design for *Bench-it+* will serve as the base work upon which Stage 3 will develop. Here, the way in which design informants (*use, relation to existing material, relation to existing scale, points of control, safety, and ergonomics*) were implemented in the Stage 2 design (7.2) will be kept intact when Stage 3 (8.2) commences.



7.3

post-it +



### [7.3.1] SPATIAL REQUIREMENTS FOR POST-IT

Two activities are accommodated in the *Post-it +* space: post (sending and receiving of post, salaries, letters, etc. for the homeless community of Minnaar Street) and recreation (a well-lit, covered platform for shelter during rain, social interaction and bicycle storage). Both these activities relate to relationship between sidewalk, fence and government institution. Therefore the architecture responds to two contextual factors: the palisade fence dividing sidewalk and institution; and the width of sidewalk.

**Post-it+** is conceptualised as a semi-permanent modular installation that can be repeated along the boundary fence of several governmental institutions within the inner city. Within the m+ system, the Post Office is the chosen institution due to its money transferal capabilities and potential in creating a physical address to which the homeless can be associated with. However, the design is directly translatable to accommodate any other governmental institution such as the Department of Home Affairs, South African Blood Services, the Licensing Department, etc. Provision for branding is considered such that the company and service offered is evident.

**Services offered:** The Post Office's street interface opens twice a week (Tuesday and Friday) where the homeless are invited to collect mail, salaries, or send money elsewhere. To start, two Post Office employees will operate the Post-it+ space. The serviced interior can accommodate up to 15 people at once, but an exterior platform will accommodate queuing. A modular design allows for additional modules to be added/subtracted should capacity need to increase or decrease.

**Known design parameters:** 2100mm high palisade fences are used within the inner city of Pretoria to divide private land (governmental institution) and sidewalk. The standard fence module length is 2550mm from center to center of posts. Structural posts are permanent but vertical uprights are removable. The sidewalks along Minnaar Street have a width of 7200mm, making a sidewalk intervention feasible.

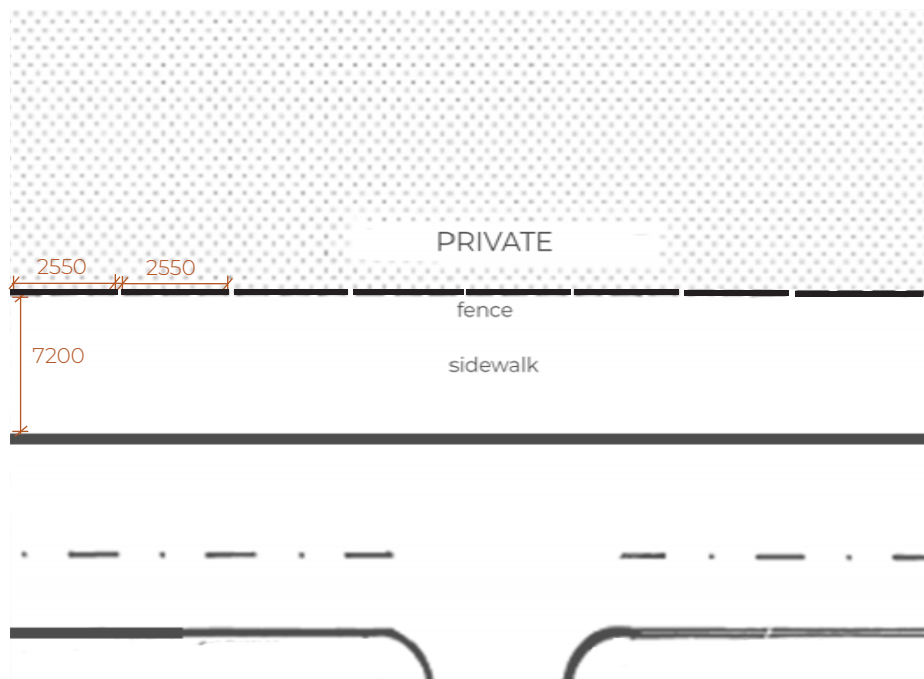


Figure 7.3.1.1 Sidewalk design parameters

### [7.3.2] CONCEPTUALISING THE INTERFACE BETWEEN STREET AND INSTITUTION

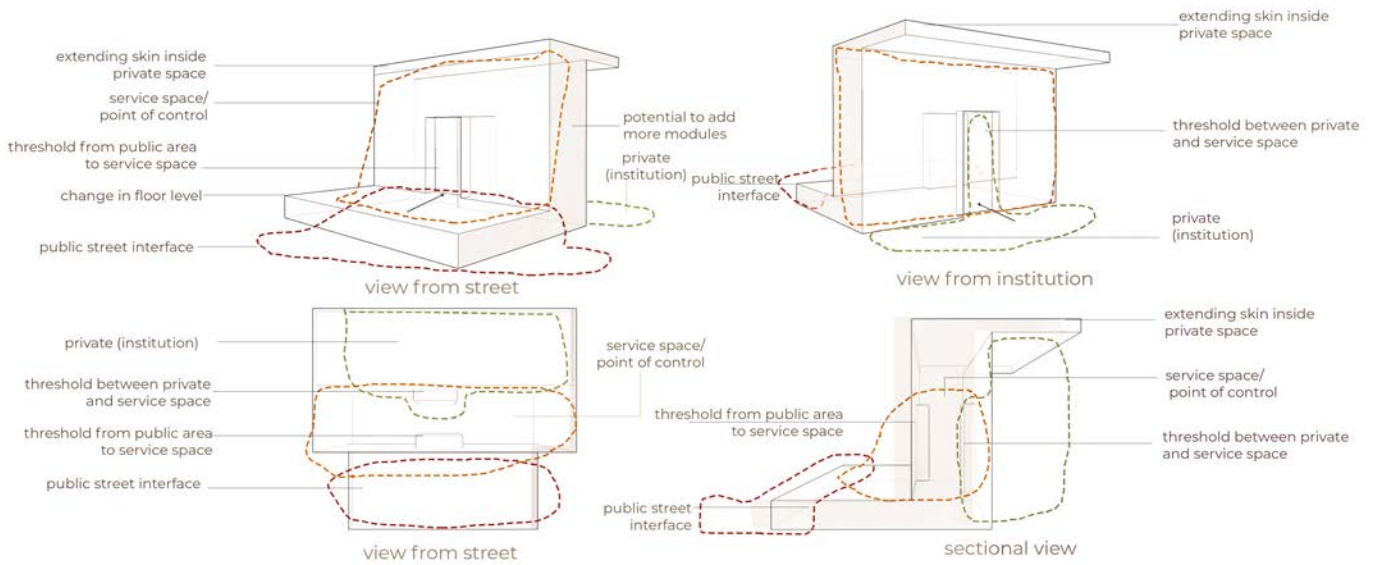


Figure 7.3.2.1 Concept diagrams of interface between street and institution

A modular unit positioned on the sidewalk is conceptualised as the interface between institution and street. The movement through the space is transitional and therefore lends itself to a design that serves as a threshold between the public street edge and the private institution. Thus, the architecture's mass, circulation, and access is based on transitory movement through the module.

Figure 7.3.2.1 above, depicts a raised horizontal floor plane (red) distinguishing the module from the sidewalk in a sensitive way. One walks across the floor plane through a door signifying a threshold from open public space to a serviced, controlled interior (orange). The interior accommodates a professional service (in this instance, a postal service) and is accessed from the sidewalk platform for the public and through a back entrance (green) is symbolic of hierarchy and serves as the only direct connect between the institution's main building and its street interface.

### [7.3.3] A FORMAL POSSIBILITY

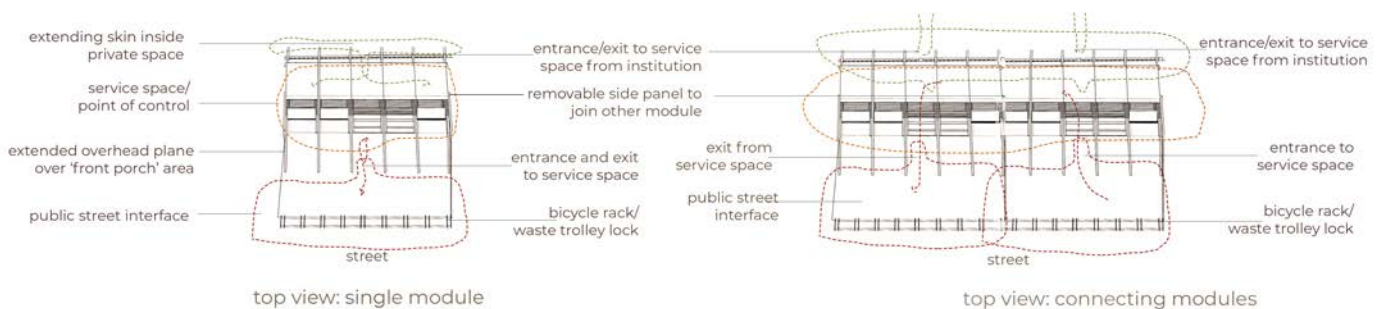


Figure 7.3.3.1 Formal exploration of circulatory requirements

The unit is explored as a single module and as a collection of modules. In the diagram above, circulation is highlighted, indicating spatial hierarchy and public vs. private access. When modules are connected, there is an option to remove the side panel such that the space reads as a continuous interior. However, should the institution require a variety of service activities to take place, the cellular nature of closed modules is possible.

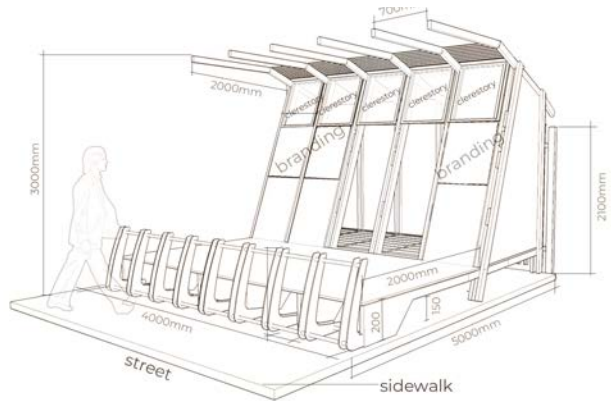


Figure 7.3.3.2 street view: single module

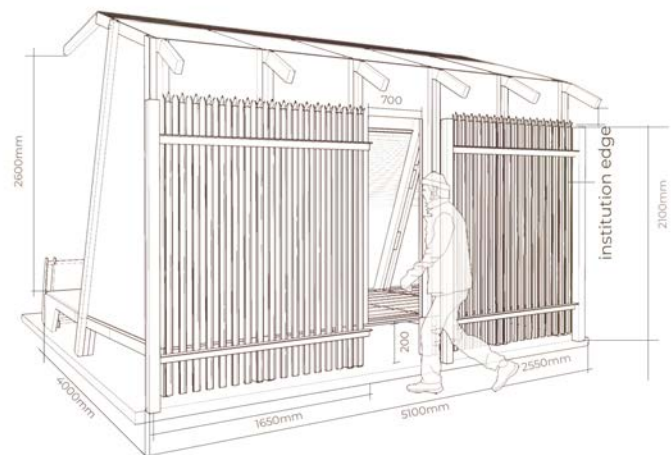


Figure 7.3.3.3 institution view: single module

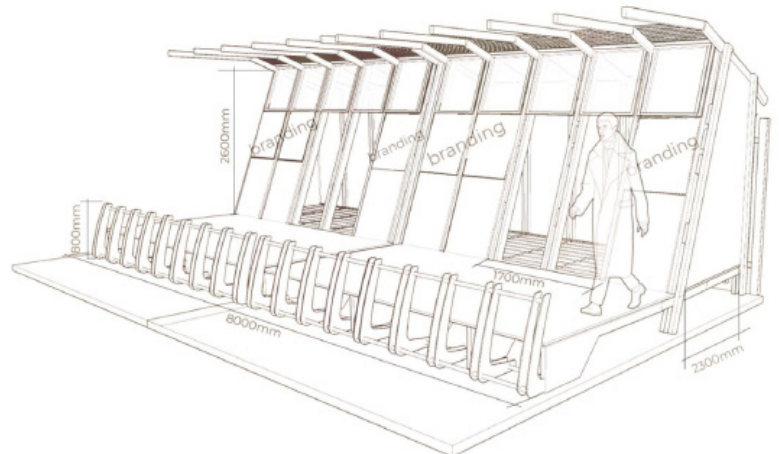


Figure 7.3.3.4 street view: connecting modules

As discussed in 7.3.1, the palisade fence proportions and the width of the sidewalk, are two major design informants. Their influence is demonstrated in the figures alongside. One module is based on the length of two 2550x2100mm fence panels. Twelve vertical uprights are removed from one end of the first panel to make provision for the back entrance door. The second panel remains intact.

Provision for branding is made on the street facing edge as indicated alongside. Public access occurs on the side of the platform in the same direction as pedestrian activity on the sidewalk. A bicycle rack serves as the balustrade along the front edge of the entrances platform.

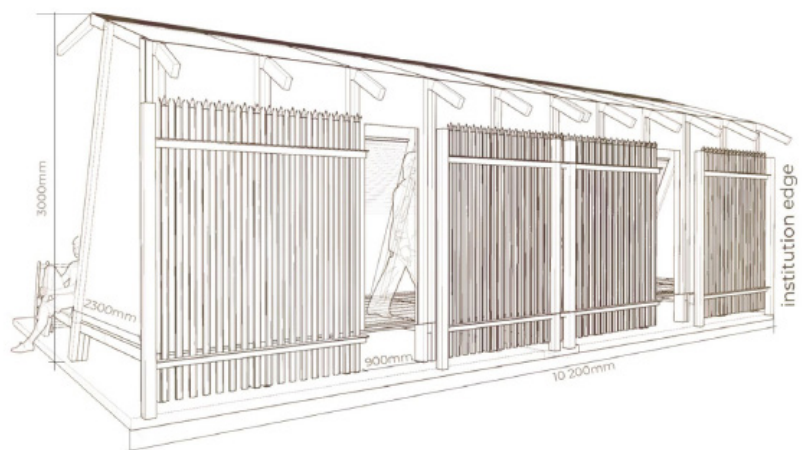


Figure 7.3.3.5 institution view: connecting modules

### [7.3.4.] SCENARIO PLANNING

Below, a typical Tuesday or Friday scenario is depicted illustrating a variety of people using the space differently. Some make use of the postal service, while others use it as a landmark to meeting others, or simply as a WiFi hotspot.

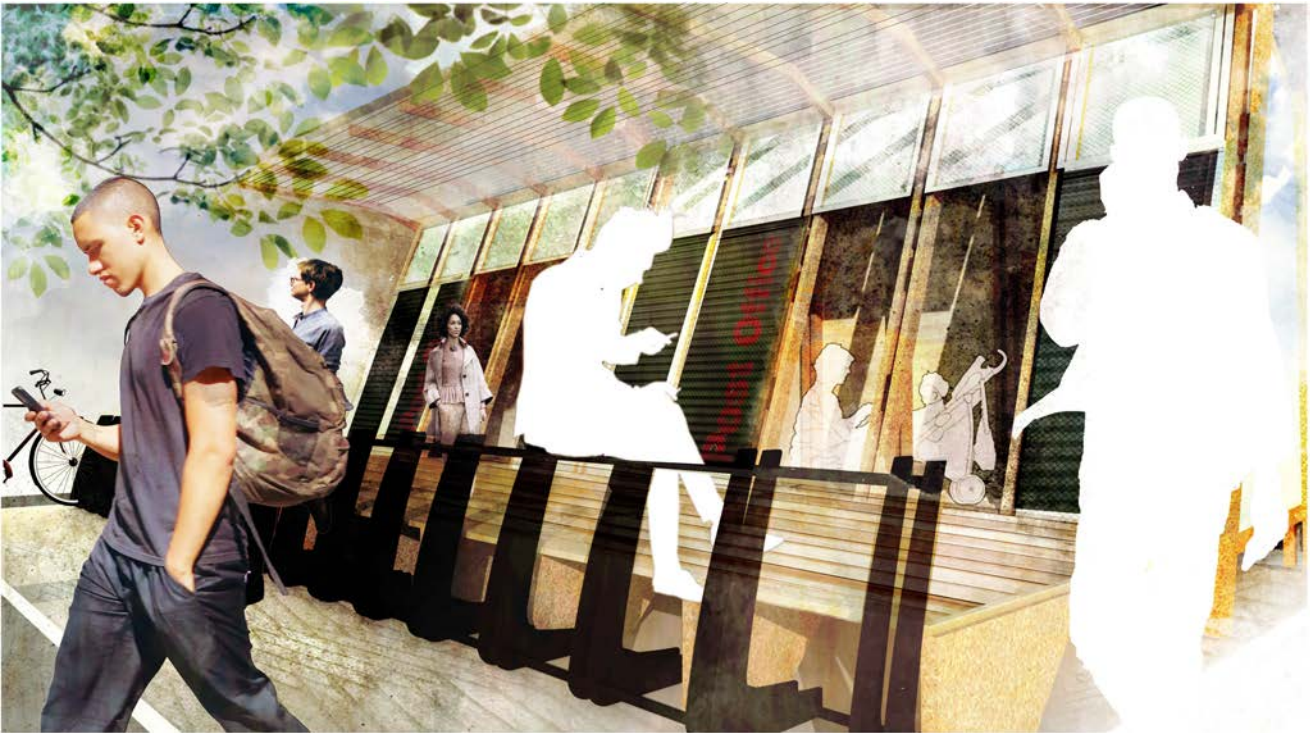


Figure 7.3.4.1 Tuesday/Friday postal service

Below, a typical evening scenario is depicted illustrating a variety of recreational activities happening around the entrance platform. Some wait for a taxi, others gather to share meals with friends, and while some continue to use the area for its light, security and WiFi hotspot.

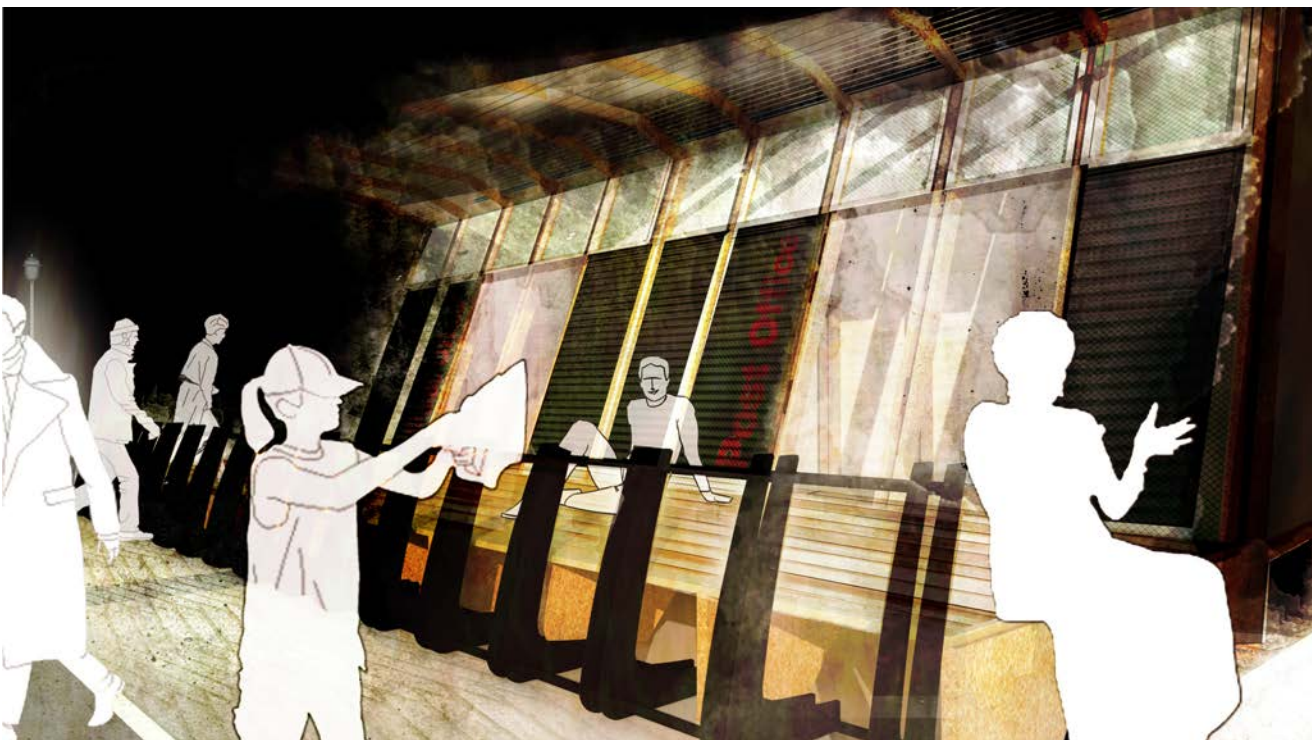


Figure 7.3.4.2 Evening recreation scenario

### **[7.3.5] RECOMMENDATION FOR FURTHER DEVELOPMENT**

As indicated in 7.0, Post-it+ is only developed on a conceptual and initial design level. If someone was to develop upon this (Stage 3 and/or 4), it is recommend that the following factors are explored:

1. The conceptual premise can be expanded upon, iterated and tested in a number of contexts.
2. The design itself can draw from other known parameters (context-specific) and thus, adapt accordingly.
3. Materiality, structure, services, joinery and a general techne strategy can be investigated.
4. The branding interface can be challenged and reconsidered in a way that is more flexible.
5. Environmental comfort properties such as light quality, acoustic properties and ventilation can be used to articulate to form of each module.
6. The module in *Halfway+* can be used to inform scale, ration, materiality and use.
7. Detail design of interior space planning, furniture, lighting, fixtures and finishes.
8. Stage 3's principles of adaptability, deployability and system can be explored as a series of design iterations for *Post-it+*.
9. Stage 4's technical strategy towards achieving deployability can be investigated through a series of technical details, prototyping and testing.

7.4

clean-up +

### [7.4.1] SPATIAL REQUIREMENTS OF CLEAN-UP

The *Clean-up+* space is focused around the production of 15 and 20mm thick KimmoBoard. The board is used primarily for the *sleep base* and then as insulation board within the modules for *Halfway+* and *Post-it+*. The paper pulping, machining, and sheet production occurs in the Junkyard Dogs Recycling factory indicated on page 109. The factory is not a component dealt with in the design investigation. Thus, the *Clean-up+* design investigation focuses on the conceptualisation and initial design of the trolley used for paper collection and as a workshop bench for cutting and assembling modules of the *sleep base*.

Two activities are accommodated in the *Clean-up+* trolley system: paper collection, sorting and categorising and KimmoBoard production (sheet cutting and product assembly). Both these activities need to be mobile. Therefore, the design stems from a typical waste picker's trolley and responds to two size-determining factors: accessibility to paper recycling bins; and the human body's ergonomics. These factors are considered in the design of the trolley.

**Collection requirements:** The main collection requirement is the incorporation of containers that fit snugly within the overall trolley skin. Their purpose is to separate paper waste into various types such that factory processes and paper pulping can begin as soon as the trolley returns to Junkyard Dogs Recycling factory.

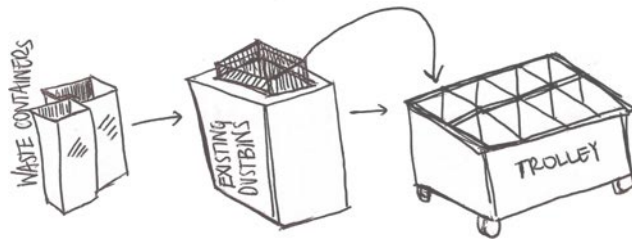


Figure 7.4.1.1 Containers assisting collection process

**KimmoBoard manufacturing system:** KimmoBoard is a paper composite board with a honeycomb core (Kimmo, 2017). Cardboard and paper waste is collected and sorted in the trolley and brought to Junkyard Dogs Recycling Centre to be pulped into the sheet material from which the bed bases can be cut.

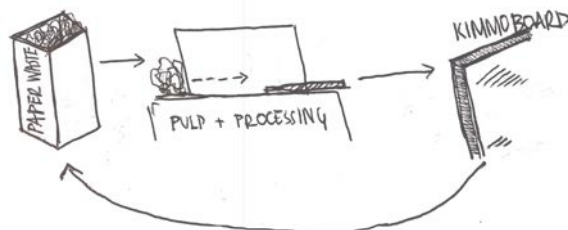


Figure 7.4.1.2 Sheet manufacturing system

**Sheet cutting and product assembly requirements:** A work bench accommodating a place to cut KimmoBoard, store equipment, and store complete *sleep base* modules for delivery to *Halfway+*.

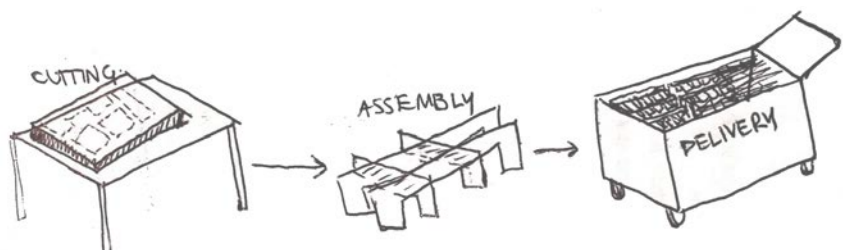


Figure 7.4.1.3 Workshopping of sleep base product

### [7.4.2] CONCEPTUALISATION OF TROLLEY

The trolley is conceptualised as a functional hybrid between storage and workshop space. Collection and sorting of paper and cardboard waste occurs at the front end of the trolley is a series of four KimmoBoard containers. The same container design is repeated as an inner skin for existing dustbin to discern paper waste bins from general waste bins. The back half of the trolley houses a chest of drawers for equipment storage and an attached work-bench table top for cutting and assembling of *sleep base* modules.

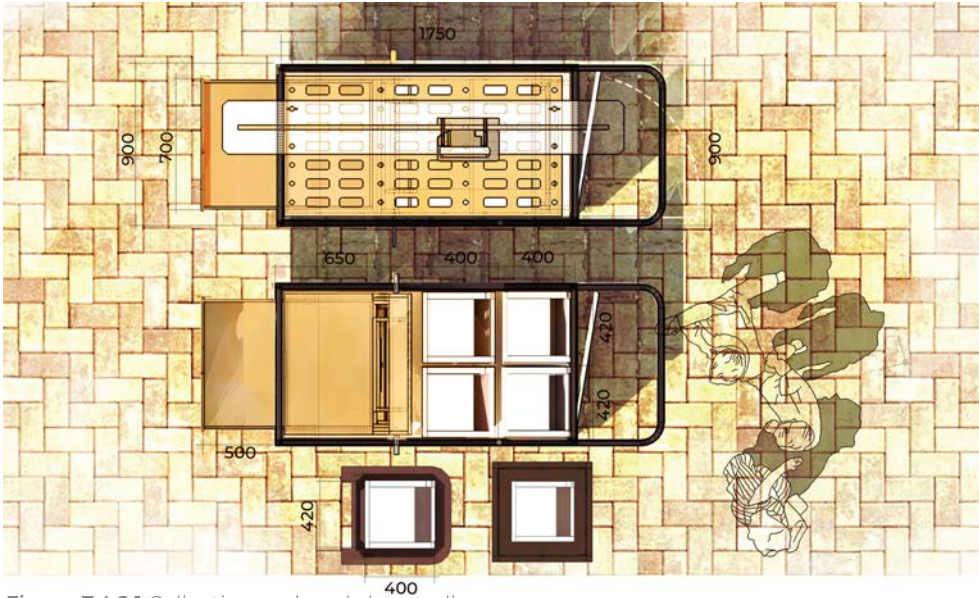


Figure 7.4.2.1 Collection and workshop trolley

The trolley is itself is a steel tube frame with solid base, extended handle and hinged front door where collection containers can be slotted in. The chest of drawers are fully accessible and open-able through the gaps of the steel framework. This allows for a simple collection process. During the work-shopping process, all collection containers are removed and the work-bench folds out to reveal supporting legs creating a flat, workable surface for *sleep base* assembly.



Figure 7.4.2.2 Conceptual render of trolley within Halfway+ space



[7.4.3] TROLLEY DESIGN DEVELOPMENT

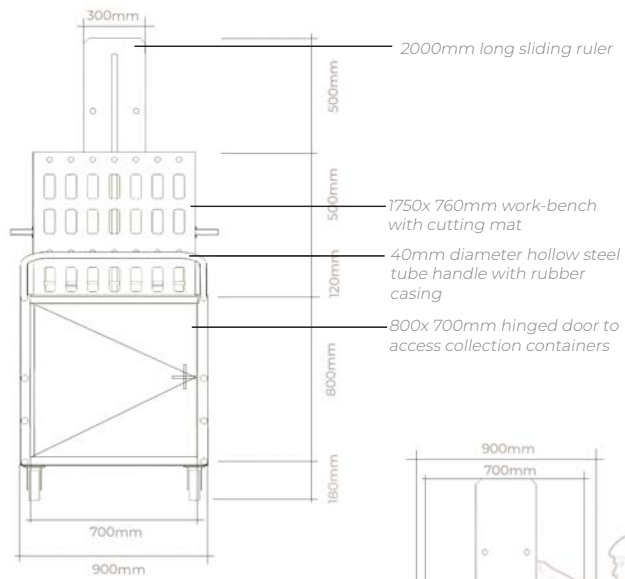


Figure 7.4.3.1 Front elevation

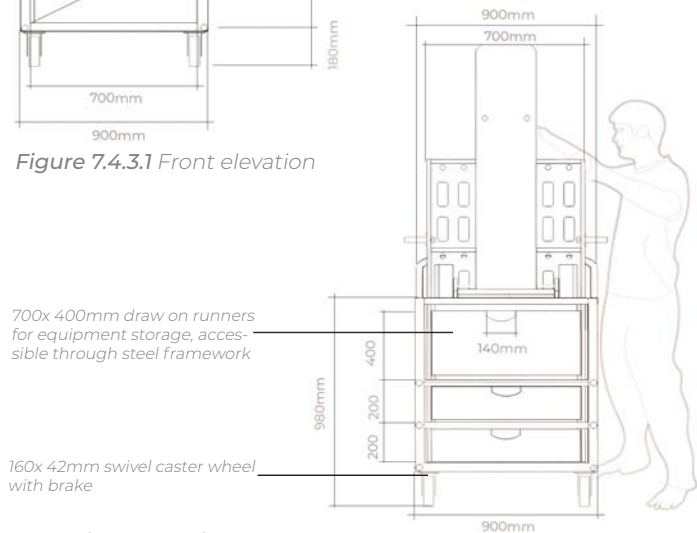


Figure 7.4.3.2 Back elevation

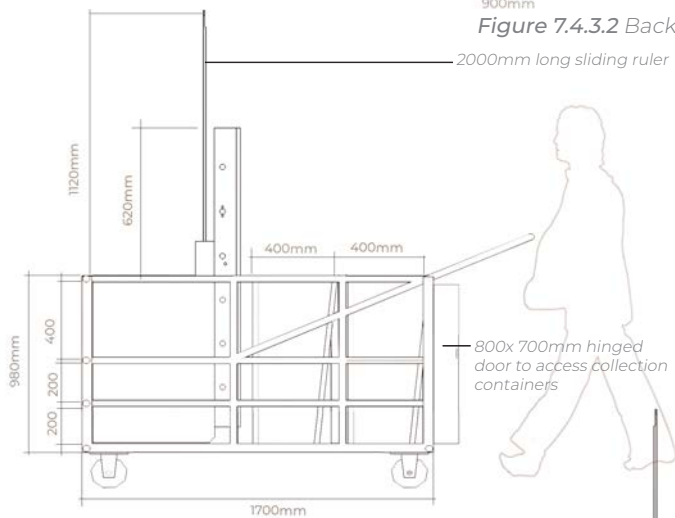


Figure 7.4.3.3 Left side elevation

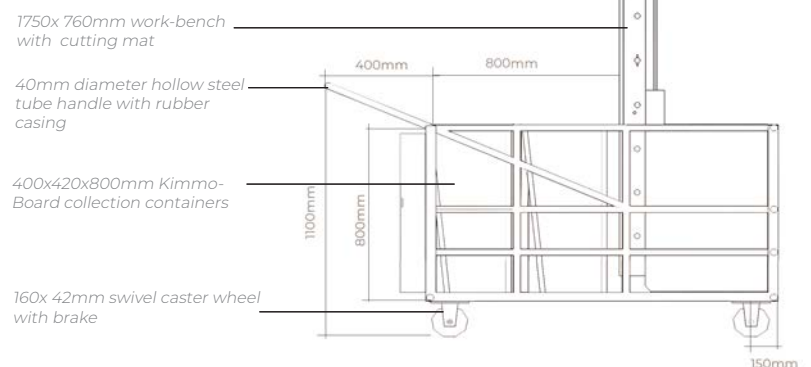


Figure 7.4.3.4 Right side elevation

### [7.4.4] SCENARIO PLANNING

The trolley's design accommodates storage and production processes and thus various utility scenarios are predicted alongside.

**Collection scenario:** The collection scenario is the only scenario when all components (containers, drawers and work-bench) are inside the trolley. Here, both drawers and containers are accessible, but work-bench is not. The collection is the most mobile configuration and that informs the compactness of its layout.



Figure 7.4.4.1  
collection scenario

**Workshop scenario:** The workshop scenario makes use of the storage drawers and work-bench. The collection containers are removed to allow for the supporting leg of the work-bench to stand. This scenario is used within the factory when panels are being cut and *sleep base* modules are being assembled. The trolley is typically stationary in this scenario.

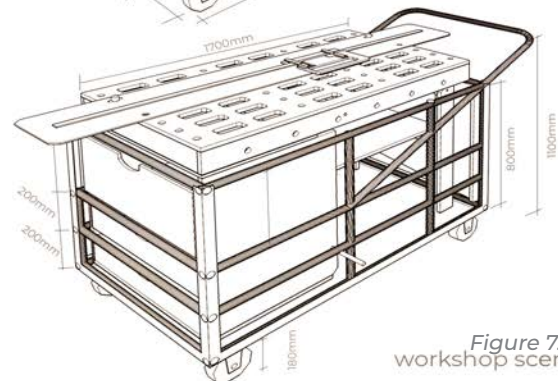


Figure 7.4.4.2  
workshop scenario

**Separate collection and workshop:** If there is a large collection taking place (e.g. the Natural History Museum has received a traveling exhibition and need to dispose of the cardboard packaging), the workshop modules is removed from the trolley and left in the factory. This allows for double the amount of collection space.

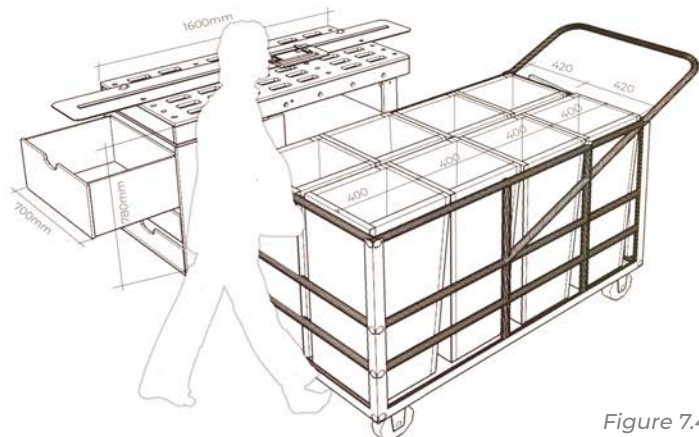


Figure 7.4.4.3  
separate collection and workshop

**Delivery of sleep base scenario:** After six *sleep bases* (18 modules) have been produced and assembled, the drawers, work-bench and collection containers are removed from the trolley. The *sleep bases* are stacked in the trolley as depicted and delivered to the *Halfway+* storage units. The trolley is then filled with damaged bases that need restoration, panel replacement or total recycling, and brought back to Junkyard Dogs Recycling Factory.

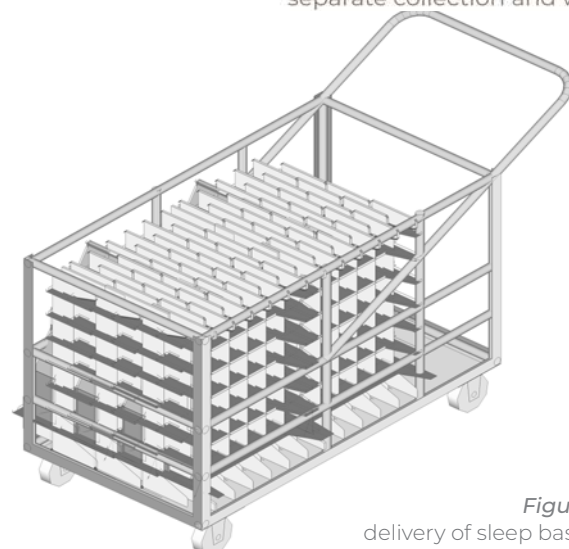


Figure 7.4.4.4  
delivery of sleep base modules

#### **[7.4.5] RECOMMENDATION FOR FURTHER DEVELOPMENT**

As indicated in 7.0, Clean-up+ is only developed on a conceptual and initial design level. If someone was to develop upon this (Stage 3 and/or 4), it is recommend that the following factors are explored:

1. The existing design can be iterated, improved and tested through prototypes.
2. The interior design of Junkyard Dogs Recycling Factory can be considered. This would include attributes such as space planning, furniture specification, machinery, lighting, ventilation, fixtures and finishes.
3. Materiality, structure, joinery and a general technical strategy can be investigated.
4. The incorporation of the + branding in the design.
5. An exploration of the fabrication of the trolley, drawers, work-bench and collection containers.
6. The proportions of the *sleep base* could be used in detailing the work-bench such that a stencil for panel cut outs could be incorporated.
7. Stage 3's principles of adaptability, deployability and system can be explored as a series of design iterations for *Post-it+*.
8. Stage 4's technical strategy towards achieving deployability can be investigated through a series of technical details, prototyping and testing.

08

*express*

STAGE 3 : DESIGN DEVELOPMENT

### **[8.0] INTRODUCTION**

Stage 3 extends on the initial design put forward in Stage 2. The design development considers the last three conceptual drivers put forward in Stage 1 (Chapter 6). These drivers are: **4. Adaptability; 5. Deployability;** and **6. System.** Design informants in Stage 2 are system-centered and include: *modularity and form, configuration potential, maintenance and cleaning, structure, degrees of deployability, fabrication, and provision for services.*

In Stage 3, only *Halfway +* and *Bench-it+* are explored. Their designs are iterated until they are resolved enough to be technified. Due to the small scale of the design, Stage 3 is not a long investigation. It is simply a systems-thinking funnel through which the design is filtered before it can be tested and detailed.

8.1

halfway +

### **[8.1.1] REVISED REQUIREMENTS FOR HALFWAY+**

Over and above the requirements set out in [7.1.1], all structures within *Halfway+* are to be **deployable** and not use any permanent fixtures to the existing urban fabric. This creates a design complexity in term of structure, services, materiality and joinery. Should any permanent changes be made to the existing urban fabric (e.g. municipal water connection), it should create a long-term positive addition.

By considering each domestic activity as a stand-alone catalogue item, the notion of **adaptability** is implied. This encourages the exploration of a simplified, generic unit with the potential to accommodate many domestic activities.

**Systems** explored in *Halfway+* include, grey-water storage, composting and transferral of solar energy into light and heat. Natural ventilation, thermal insulation, acoustic comfort and daylight influx are also explored as passive attributes within the *Halfway+* system.

## STRUCTURE AND SERVICES

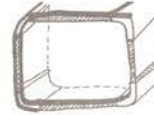
FOUNDATIONLESS

1



FRAME + INFILL

2



SERVICES TOP AND BOTTOM

3



## URBAN RESPONSE

FORM: SUBTLE AND SIMPLE

4



MATERIALITY IN RESPONSE TO CONTEXT

5



FUNCTION AS LIGHTBOX

6



## INTERIOR RESPONSE

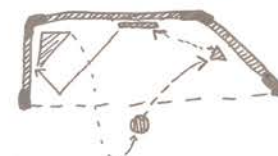
SOFT LIGHT QUALITY

7



USE + RITUAL + FAMILIARITY

8



MATERIALITY FIXED: DOMESTICITY

9

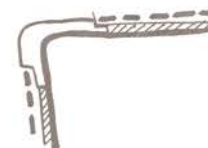


Figure 8.1.2.1 Nine considerations for the module



### [8.1.2] CONCEPTUALISING THE DOMESTIC MODULE

Based on the requirements for Halfway+ set out in 7.1.1 and 8.1.1, a module for urban domesticity is conceptualised as the following:

1. FOUNDATIONLESS: Relating back to the conceptual drivers of **deployability**, **adaptability** and **old vs new interface**, the module's structure must not require 'breaking of ground'. Therefore, the foundation is an above ground application that fastens directly to the module above it but not to the ground.
2. FRAME AND INFILL: Relating back to the conceptual drivers of **adaptability**, **deployability** and **scalability**, the module's construction must use a 'frame and infill' system. Here, all members have the potential to be flat-packable, assembled on site and change the infill material. Moreover, the frame can be connected in various configurations ensuring unlimiting spatial possibility.
3. SERVICES IN TOP AND BOTTOM: Relating back to the conceptual drivers of **adaptability**, **system** and **core+**, the module's services must only be in the horizontal planes. This will not only ensure easy access (maintenance) but allows design flexibility and configuration freedom in the vertical planes.
4. FORM SUBTLE AND SIMPLE: Relating back to the conceptual drivers of **old vs new interface**, **scalability** and **deployability**, the module's form must be simple such that many configurations are possible, it does not detract from its urban setting and it is appropriate in a variety of urban contexts.
5. EXTERNAL MATERIAL RESPONDS TO CONTEXT: Relating back to the conceptual drivers of **old vs new interface**, **system** and **adaptability**, the module's external cladding must respond to the context in which it sits. Therefore, the system for the cladding but be intuitive and accommodating of change. The external surface can also be used as a tool for way-finding.
6. FUNCTION AS LIGHT-BOX: Relating back to the conceptual drivers of **system** and **core+**, some elements of the module must be translucent/transparent to allow for an exchange of light from outside to inside, or at night from inside to outside.
7. SOFT INTERIOR LIGHT QUALITY: Relating back to the conceptual drivers of **old vs new interface** and the domestic programme, the module's interior light quality must resemble that of a domestic interior and not a harshly-lit, outdoor space.
8. USE+RITUAL+FAMILIARITY: Relating back to the conceptual drivers of **adaptability**, **deployability**, **system** and **core+**, the module's layout in terms of use, access, approach and ritual, must be consistent in all modules (despite programme changes). This ensures a sense of familiarity and belonging.
9. INTERIOR MATERIALITY RELATES TO DOMESTICITY (FIXED): Relating back to the conceptual drivers of **system** and **core+**, the module's interior finishes and associations must relate to the domestic action performed inside it. This means that all toilet modules, irrespective of urban context, with function in the same way, have the same materiality and reference the same domestic associations.

[8.1.3] WIKKELHOUSE: PRECEDENT ANALYSIS

**WHAT IS IT:** micro modular home that attempts to give new meaning to ‘living in a cardboard box’.

**DESIGNED BY:** Fiction Factory

**MATERIALITY:** 24 layers of high-strength cardboard wrapped (‘wikkel’ in Dutch) around a timber frame. The resulting structure is then topped with a waterproof coating and external timber slats (Fiction Factory, 2014).

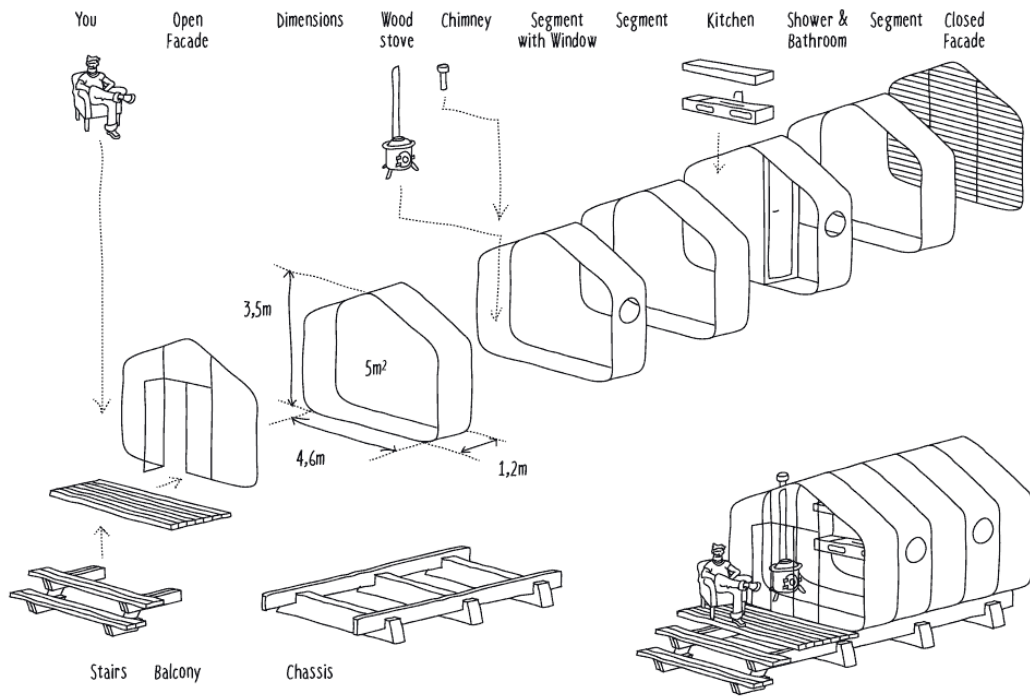


Figure 8.1.3.1 Concept diagram of Wikkelhouse (Fiction Factory, 2014)



Figure 8.1.3.2 Timber frame before wrapping (Fiction Factory, 2014)

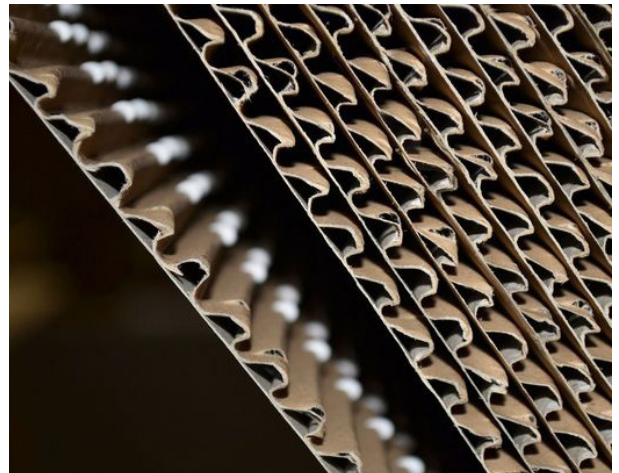


Figure 8.1.3.3 Cardboard layer glued on (Fiction Factory, 2014)

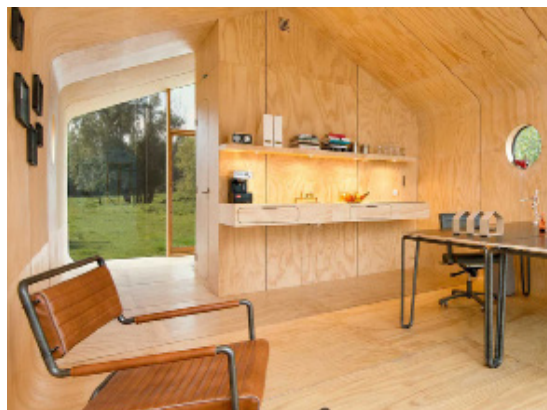


Figure 8.1.3.4 Interior view (Fiction Factory, 2014)



Figure 8.1.3.5 Exterior view (Fiction Factory, 2014)

The nine considerations in [8.1.2] are used to analyse the design of Wikkelhouse below:

1. FOUNDATIONLESS: The Wikkelhouse is foundationless and uses a series of concrete beams to create structure. The module fits into the base and relies solely on its weight to keep it in place. No external fasteners are used to connect the concrete beams to each other or to the underside of the module (Fiction Factory, 2014). The base accommodates five modules. **Therefore, modules can only be added in fives.**

2. FRAME AND INFILL: The frame of the Wikkelhouse is constructed out of 'fiber paperboard', made predominantly from Scandinavian timber. The frame then slotted around a large gable-shaped mold, and wrapped with 24 layers of cardboard (Fiction Factory, 2014). Between each layer there is environmentally friendly glue added bonding all layers together. The result is a strong and well-insulated frame and infill system. **However, the frame cannot be used independently of the infill. Moreover, the process of building both the frame and the infill is a skilled task that can only be performed off-site.**

3. SERVICES IN TOP AND BOTTOM: The Wikkelhouse's services are restricted to a particular module type. These 'special' modules include a kitchen, a bathroom and a toilet. Service cavities are built into the interior of the module and services are fitted before the wrapping process begins (Fiction Factory, 2014). **If the services were included in the roof and floor plane, more freedom with configurations would be possible.**

4. FORM SUBTLE AND SIMPLE: A simple gabled-shaped module is both a simple and intuitive form when connecting one module to the next. The form has proven complimentary in various tested conditions (both rural and urban environments). **However, the module's form can only connect to module at its front and back.** Therefore, the overall width of the Wikkelhouse is consistent in all applications, with the length accommodating a degree of change.

5. EXTERNAL MATERIAL RESPONDS TO CONTEXT: The external surface of the Wikkelhouse is finished with a protective film and a shell of wooden slats. The external materiality is consistent in all Wikkelhouse applications. The external cladding is pre-installed on each module before the unit is delivered to site. **By considering a variety of options for external cladding, Wikkelhouse could uniquely relate the context in which it lies and give the client a 'say' in the overall external appearance.**

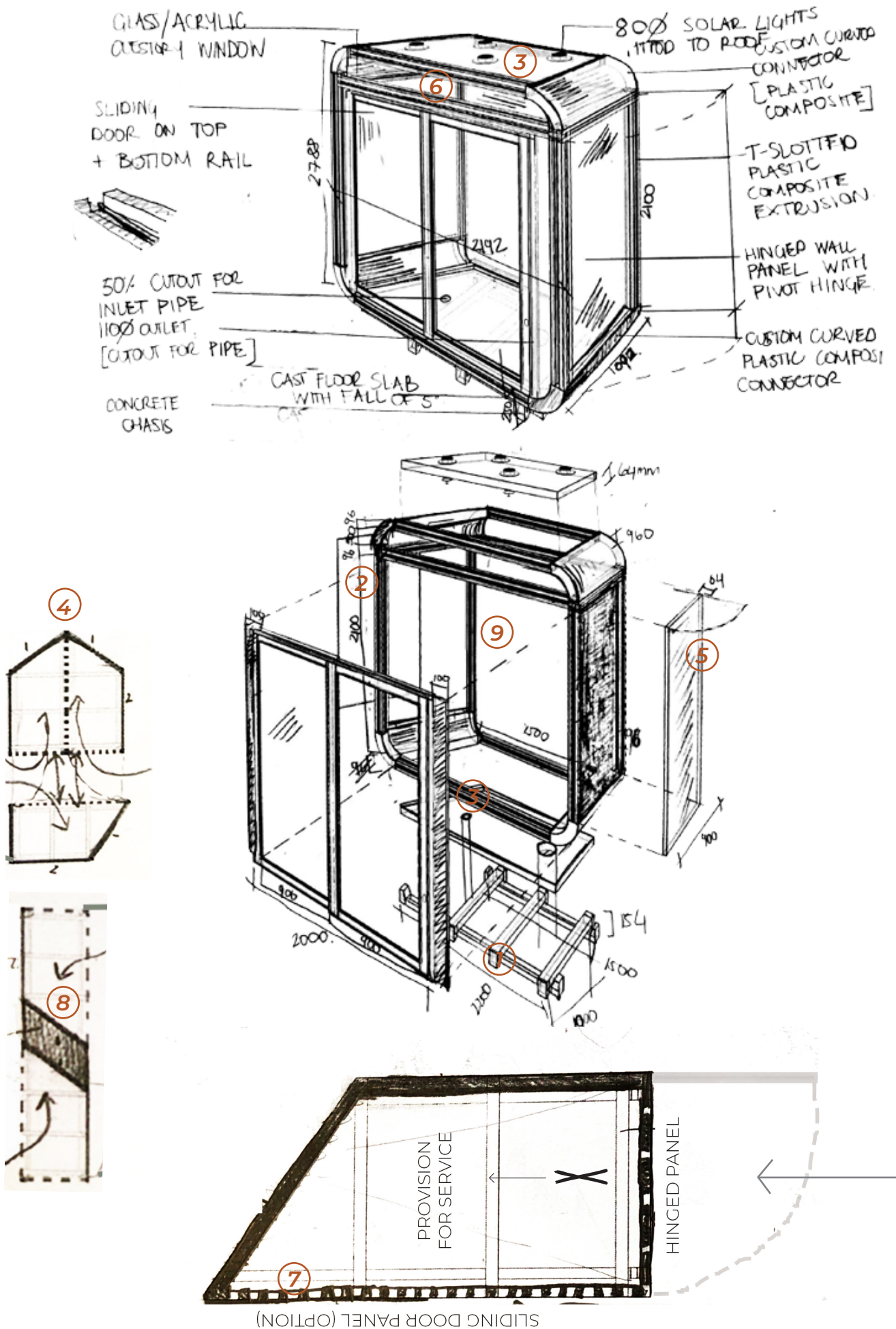
6. FUNCTION AS LIGHT-BOX: The front facade is glazed allowing for an influx of natural light. Each 'special' service modules contains a round window. The consistent use of glazing allows for the Wikkelhouse to be well-lit in the day and, for the interior light to project outside at night. **The inclusion of open-able clerestory skylights is all modules could be considered. As well as a privacy screen for the front facade of the house.**

7. SOFT INTERIOR LIGHT QUALITY: No screening devices are used to dapple light to the interior space (Fiction Factory, 2014). Therefore, the light quality can seem harsh and overpowering at certain times of day.

8. USE+RITUAL+FAMILIARITY: The repetitive form results in consistent movement through the entire house (irrespective of its length). The creates a sense of familiarity in the way each Wikkelhouse is used. The consistent layout of the 'special' service modules adds to the sense of familiarity.

9. INTERIOR MATERIALITY RELATES TO DOMESTICITY (FIXED): The interior cladding of Wikkelhouse is customizable but must be able to bend to follow the rounded edges (Fiction Factory, 2014). Despite the rounded edges' success in clearing rain water and ease of cleaning, the possibilities of interior **materiality are limited. Moreover, the interior makes use of one material throughout the entire space. The relation of the interior material to a specific domesticity activity could provide for a better distinction between serviced and unserviced areas.**

NOTE: All considerations written in bold above, are explored in the in the development of the modules in [8.1.4] that follows.



SLIDING DOOR PANEL (OPTION)

### **[8.1.4] DESIGN DEVELOPMENT OF MODULE**

The basic design of the module is depicted alongside. Below, the nine conceptual considerations are reflected upon. *It is important to note: the following design is technified in Stage 4. The sizing, systems, connections, calculations, materiality, etc. of the module are documented in [9.2].*

1. FOUNDATIONLESS: Cast concrete beams form a structural grid-like base to which the module fastens. The weight of the beams secure the base to the ground. Therefore, no fastening to the urban fabric is required. The beam heights can be adjusted to accommodate an uneven site. This is further detailed in Stage 4.

2. FRAME AND INFILL: A series of interlocking extruded channels form the module's frame. The notion of 'the continuous surface' and structural stability is created through extruded corner connectors. The connectors are designed such that the infill material is never required to bend and always meets the frame at a 90 degree angle. Therefore, standard sheet material, insulation board and cladding systems can be applied without compromising the effect of the rounded edges and the ease of cleaning associated with them.

3. SERVICES IN TOP AND BOTTOM: The floor panel is a pre-molded element with a 5 degree fall towards a 45mm hole. All wet services are accommodated in the floor plane. The 45mm hole is to house a water outlet pipe when the module is used as a shower. Two other holes are made in the floor ensuring all possible wet services can be accommodated in the floor. A 110mm hole accommodates a soil pipe for a standard composting toilet that connects it to an external tank. The smallest hole is 25mm and houses the hot and cold water inlet pipes. The roof plane has a two-directional fall for rainwater to move away from the module and flow towards the storm-water drain on the site. Note: the feasibility of rainwater harvesting is discussed in Stage 4. The roof also houses solar tube roof lights. The photo-voltaic panel is on the exterior of the roof, the tube containing a battery runs through the depth of the roof panel and the luminaire is fixed to the interior ceiling.

4. FORM SUBTLE AND SIMPLE: The form is simple such that various configurations are possible. The module footprint also accommodates the circulation and spatial sequence of the initial layout of Halfway+ in Stage 2. This relationship is depicted in [8.1.4] that follows.

5. EXTERNAL MATERIAL RESPONDS TO CONTEXT: The exterior cladding is removable and replaceable allowing for the colour and material to change to suit its context. The external cladding system is detailed in [9.2].

6. FUNCTION AS LIGHT-BOX: The module has clerestory windows on two of its sides allowing for an influx of sunlight during the day, irrespective of the modules orientation. At night, the solar lights automatically switch on. This glow is visible from outside through the clerestory windows, creating a band of light at the top of each module. This creates a sense of safety when approaching each module or when walking around areas nearby.

7. SOFT INTERIOR LIGHT QUALITY: The sliding door panel/main entrance will be explored as a perforated screen letting dappled light into the interior, without visual access. The detailing, testing and incorporation of signage on the door panel is further explored in [9.2]

→ 8. USE+RITUAL+FAMILIARITY: All modules have two entrances: one sliding door (main entrance) and one hinged single leaf door (if main entrance cannot be used). In all scenarios, the user stands where 'x' is placed and faces the direction of the arrow to perform the domestic activity. Therefore, despite the change in domestic programme within each module, the use and access ritual is consistent. This creates a sense of familiarity when entering the model. Through the familiarity, a sense of belonging is created.

9. INTERIOR MATERIALITY RELATES TO DOMESTICITY (FIXED): The interior materiality is determined by the domestic activity performed within each module. Both an urban and interior material strategy is unpacked in [9.2]. Due to the fixed nature of the interior material, the infill panels containing insulation and water proofing are pre-fixed to the interior finish layer.

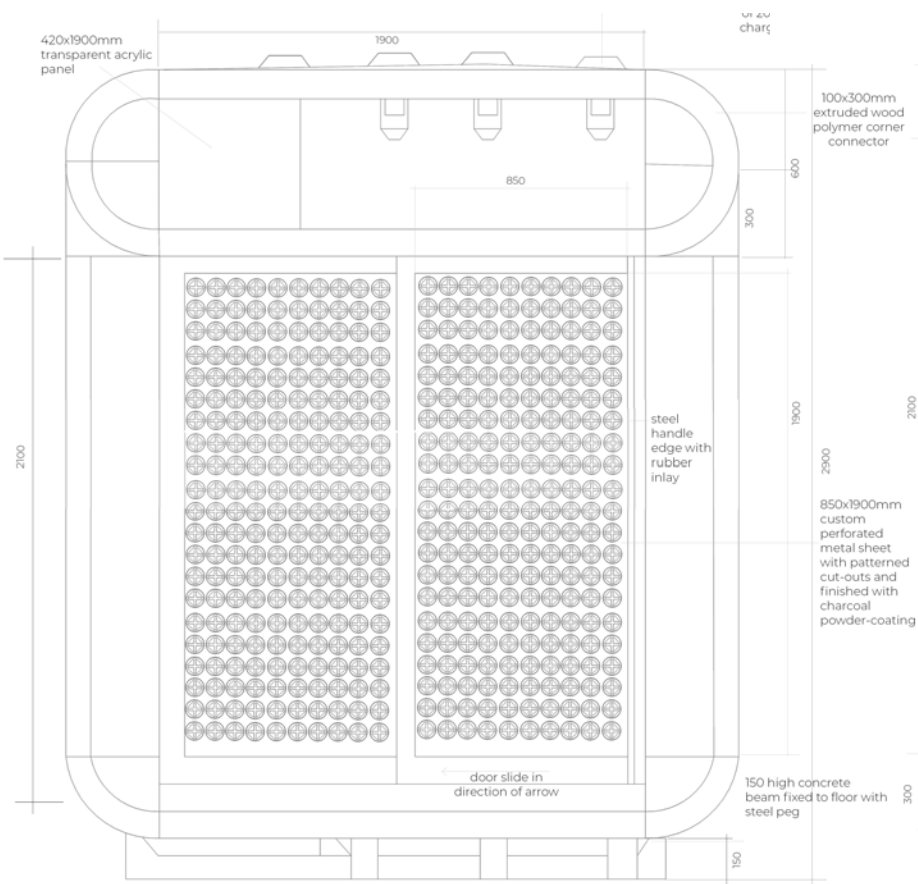


Figure 8.1.4.2 Front elevation of module

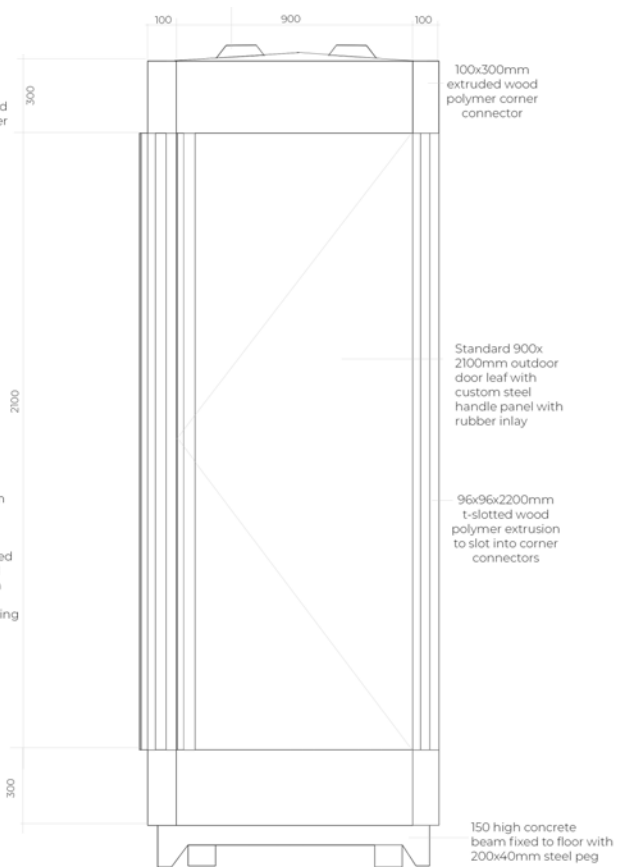


Figure 8.1.4.3 Side elevation of module

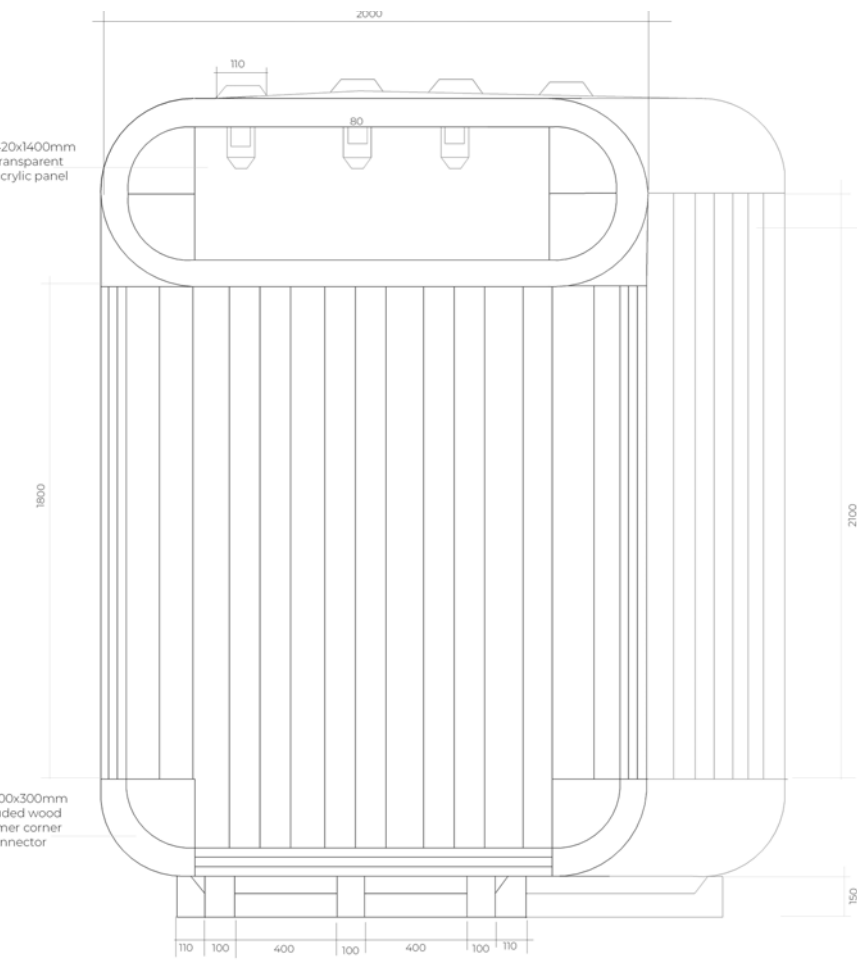


Figure 8.1.4.4 Back elevation of module

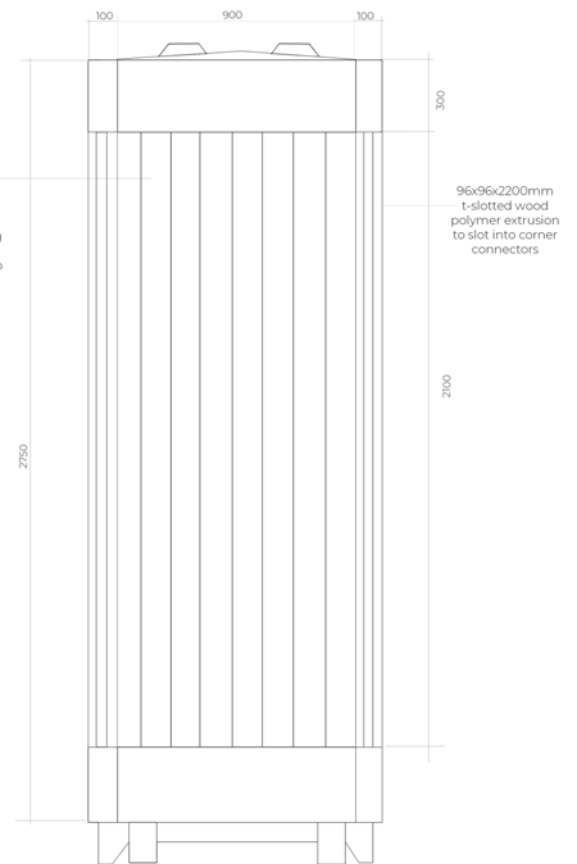


Figure 8.1.4.5 Side elevation of module

**[8.1.5] RELATION OF MODULE TO STAGE 2 LAYOUT**

The initial design layout of Halfway+ from Stage 2 is depicted below. Alongside is the iterated layout using the application of the module's (frame) footprint. It is evident that all conceptual drivers and design informants from Stage 2 have been kept intact in the iterated layout. The iteration includes a combination of module as a cellular unit (as seen in [8.1.3]), and the components of the module's frame and structural base reconfigured to create larger, public areas.





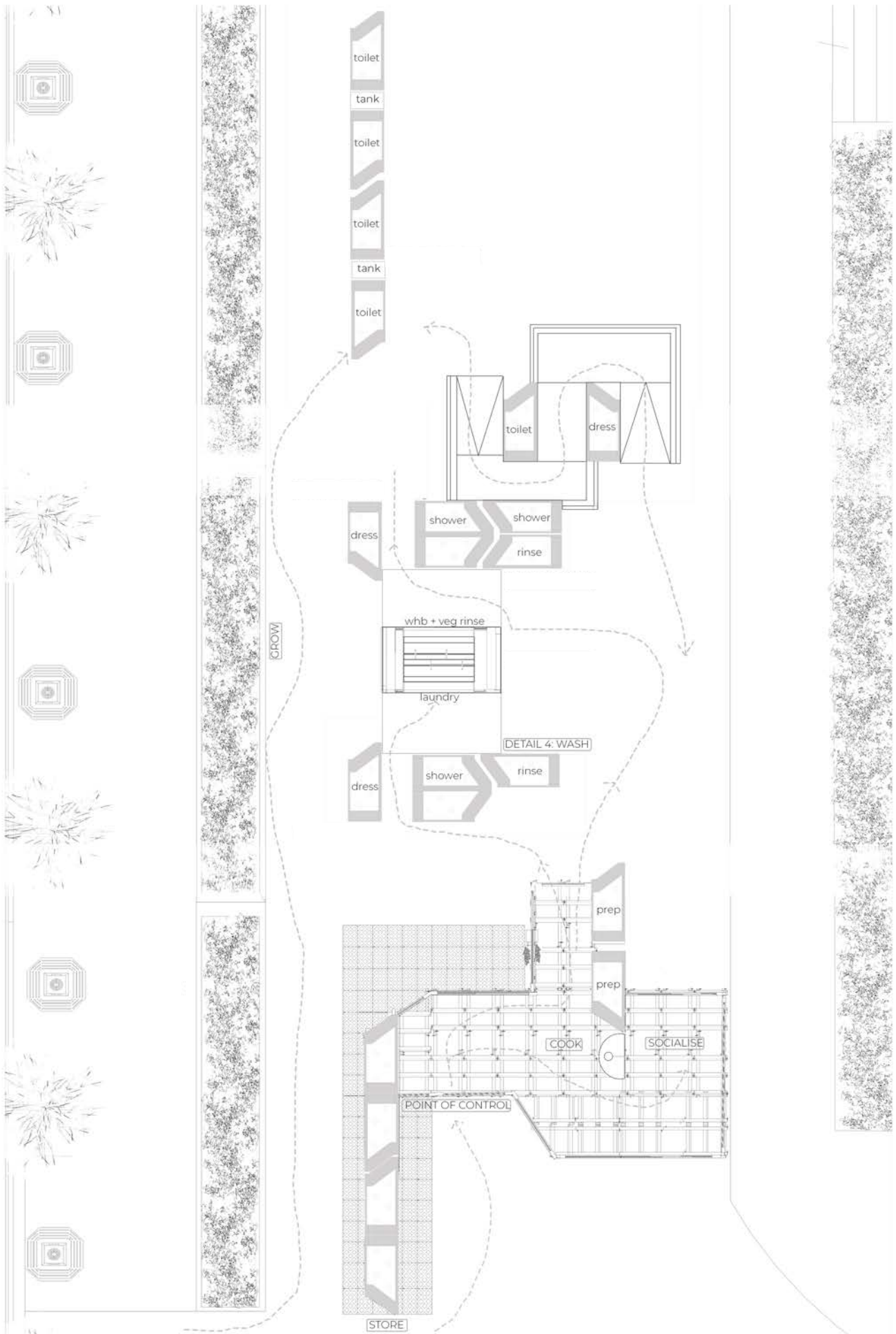


Figure 8.1.5.2 Iterated layout of Halfway+

### [8.1.6] DOMESTIC ACTIVITIES ACCOMMODATED IN STANDARD MODULE

The basic module's structure and exterior is kept intact, and the interior can be changed to accommodate the following three domestic activities: wash (self), dress and toilet. The figures below depict diagrams of how the floor service of the basic module can be manipulated to accommodate programme-specific wet services.

**WASH (SELF):** In a shower scenario, the 22mm and 45mm holes are active while the 110mm hole is plugged and clad over. Hot and cold water inlet pipes are fed through the 22mm hole, while a waste water pipe is connected to the 45mm hole to allow for grey-water to be captured and stored below the module.

**DRESS:** No wet services are required for the activity of dressing and therefore all pre-molded holes in the floor are plugged and clad over.

**TOILET:** Only the 110mm hole in the floor is used in the toilet scenario to accommodate a waste pipe that connects the toilet to the composting tank. The smaller two holes are plugged and clad over in a toilet scenario.

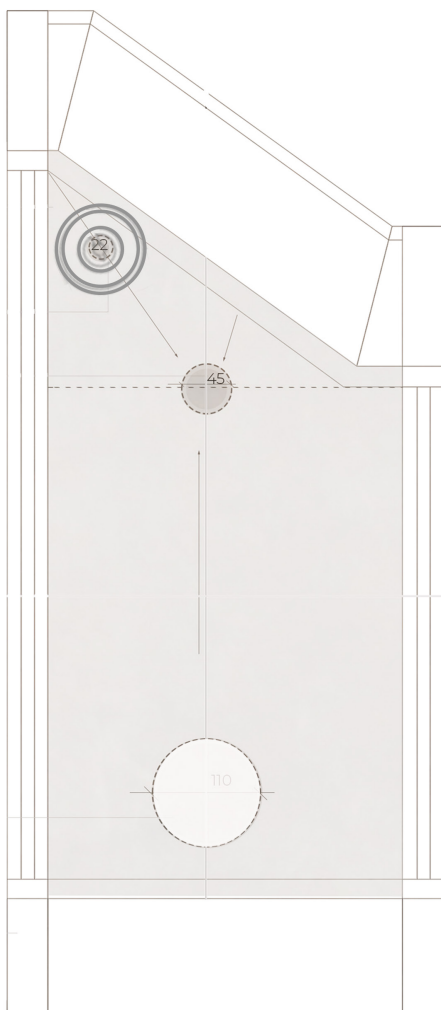


Figure 8.1.6.1 Diagram of floor in shower

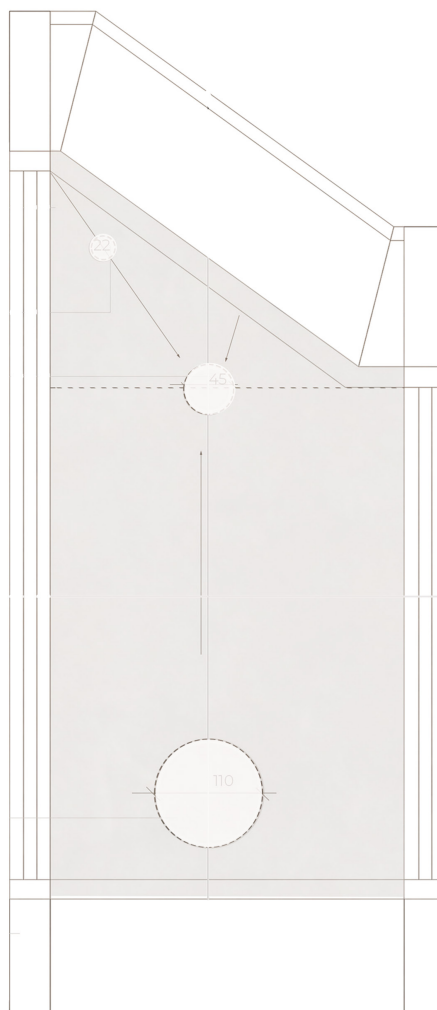


Figure 8.1.6.2 Diagram of floor in dress

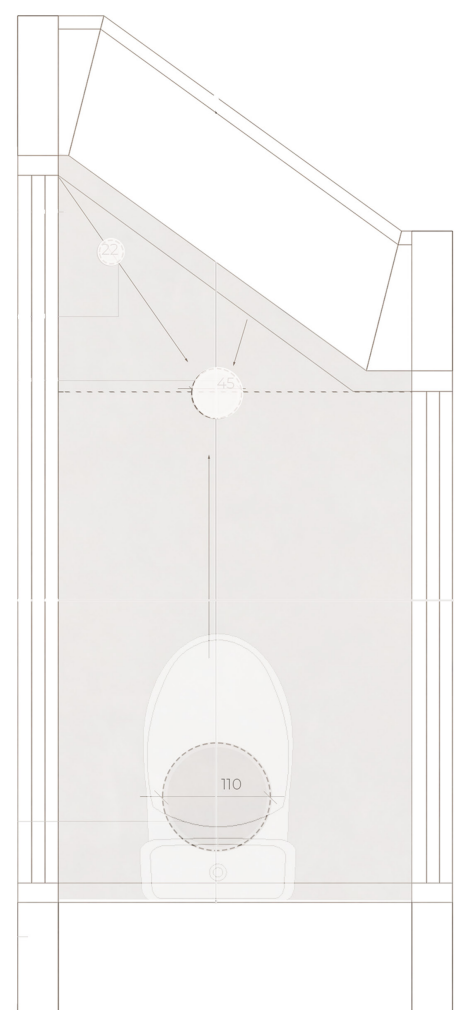


Figure 8.1.6.3 Diagram of floor in toilet

**[8.1.7] DOMESTIC FUNCTIONS ACCOMMODATED BY RECONFIGURED MODULE COMPONENTS**

The structural elements that make up the module (concrete beams and frame) can be used as individual elements to create unique configurations. The dimensions and form of each configuration responds directly to the domestic activity. **Point of control** references an entrance hall, lobby or reception area. **Store** directly relates to point of control and therefore the two configurations should always be considered as a pair. **Cook** references a domestic kitchen with cook and preparation space. **Socialise** references a front porch and patio typology.

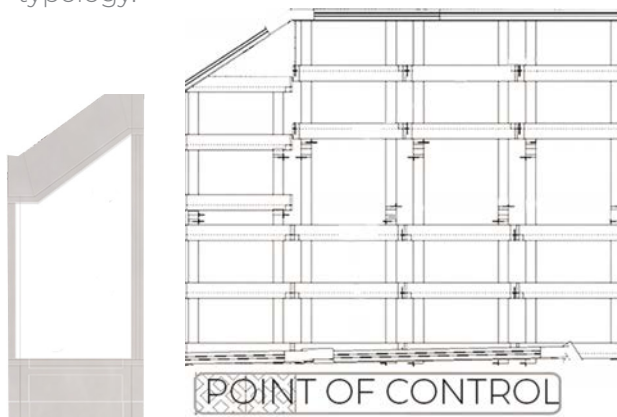


Figure 8.1.7.2 Concrete beams and frame form point of control



Figure 8.1.7.3 Concrete beams + frame form cook and prep area

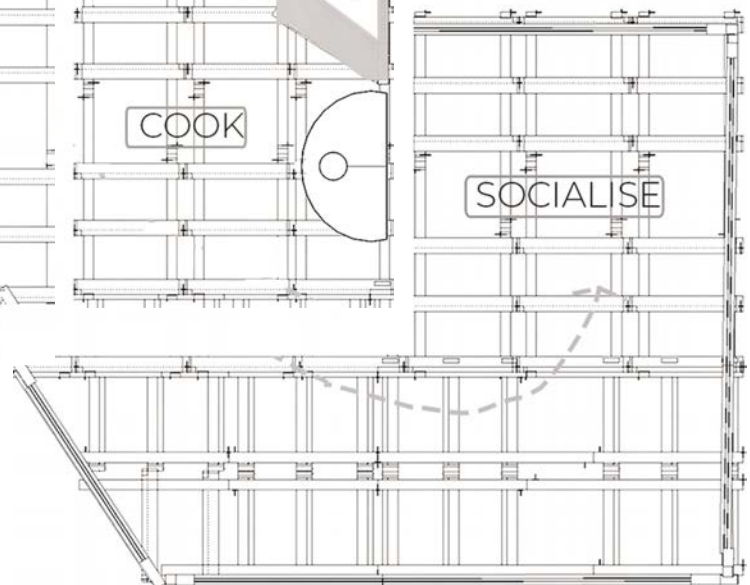


Figure 8.1.7.4 Concrete beams and frame form passage and socialise area



Figure 8.1.7.1 Module's frame used to accommodate storage boxes

**POTENTIAL TO CHANGE**

Each of the four areas above can be reconfigured to accommodate a change in context. Figure 8.1.3.15 communicates a series of possible configurations

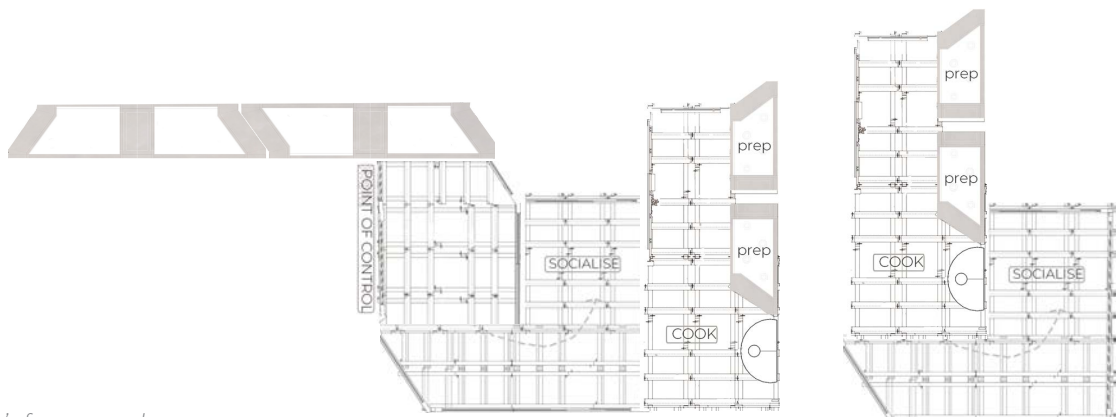


Figure 8.1.7.5 Potential configuration options

**[8.1.8] INITIAL CONSIDERATION OF 'SYSTEM'**

Below, three systems are depicted as simple flow diagrams. On the page alongside, there is a diagram highlighting an initial consideration for how the three systems can be accommodated in *Halfway+*.

**MUNICIPAL WATER SYSTEM:** The municipal inlet connection is split into two branches: one that runs through an instant water heater and through a dual-loop pump, and the other that go straight towards a dual-loop pump. Both hot and cold branch pipes are pumped through a low-speed shower head.

**GREY WATER SYSTEM** Grey water from the shower is pumped to a grey-water storage tank. Grey water from the basin falls directly into grey-water storage tank. A watering can is filled from the outlet tap of the storage tank. Irrigation tanks are filled up manually and the passive drip irrigation begins.

**COMPOSTING SYSTEM:** Waste matter from the composting toilet is pushed through a pipe and into a composting tank. Dry matter is removed from the tank and additional usable food waste is added before mixed with the soil in planter boxes.

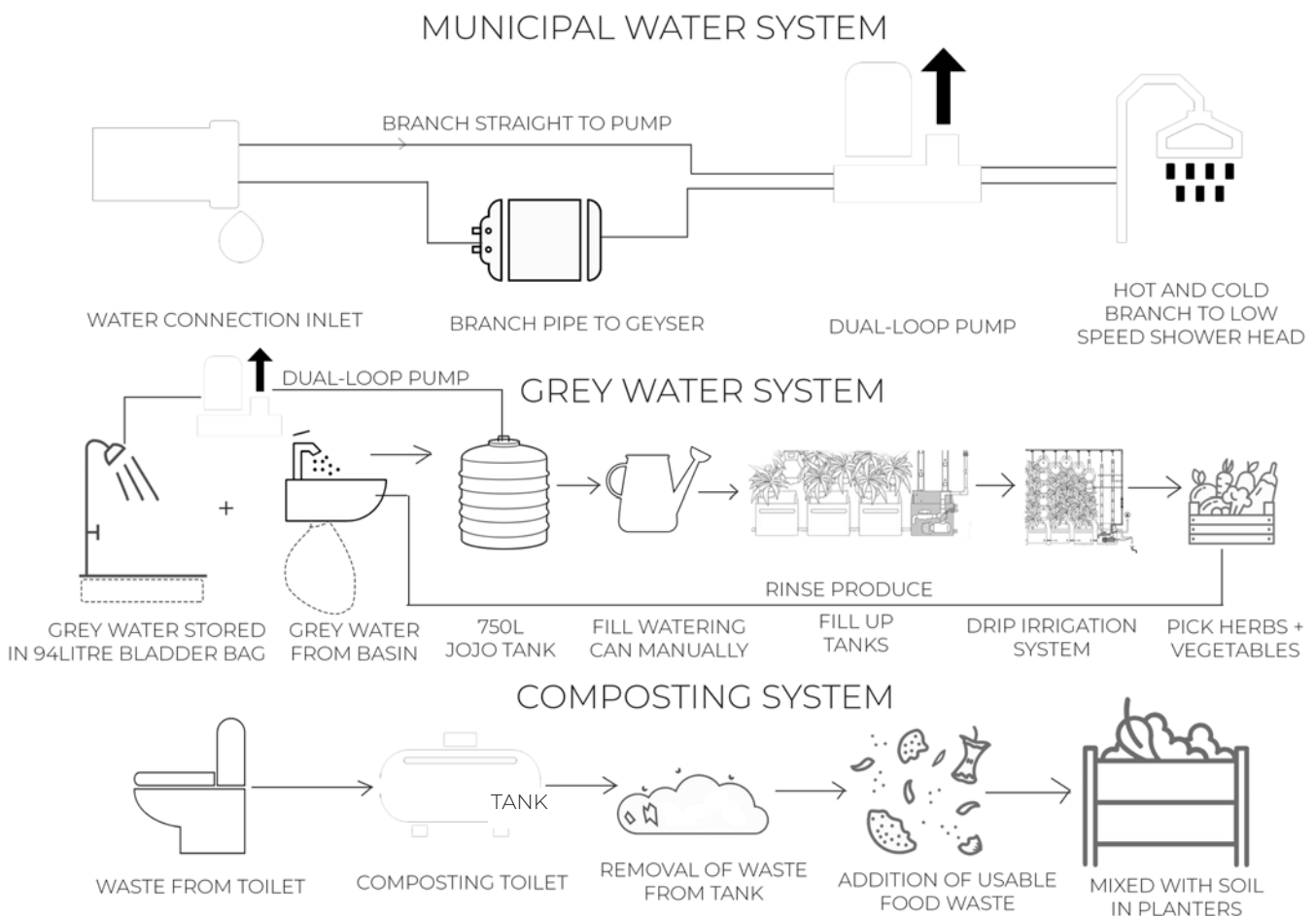
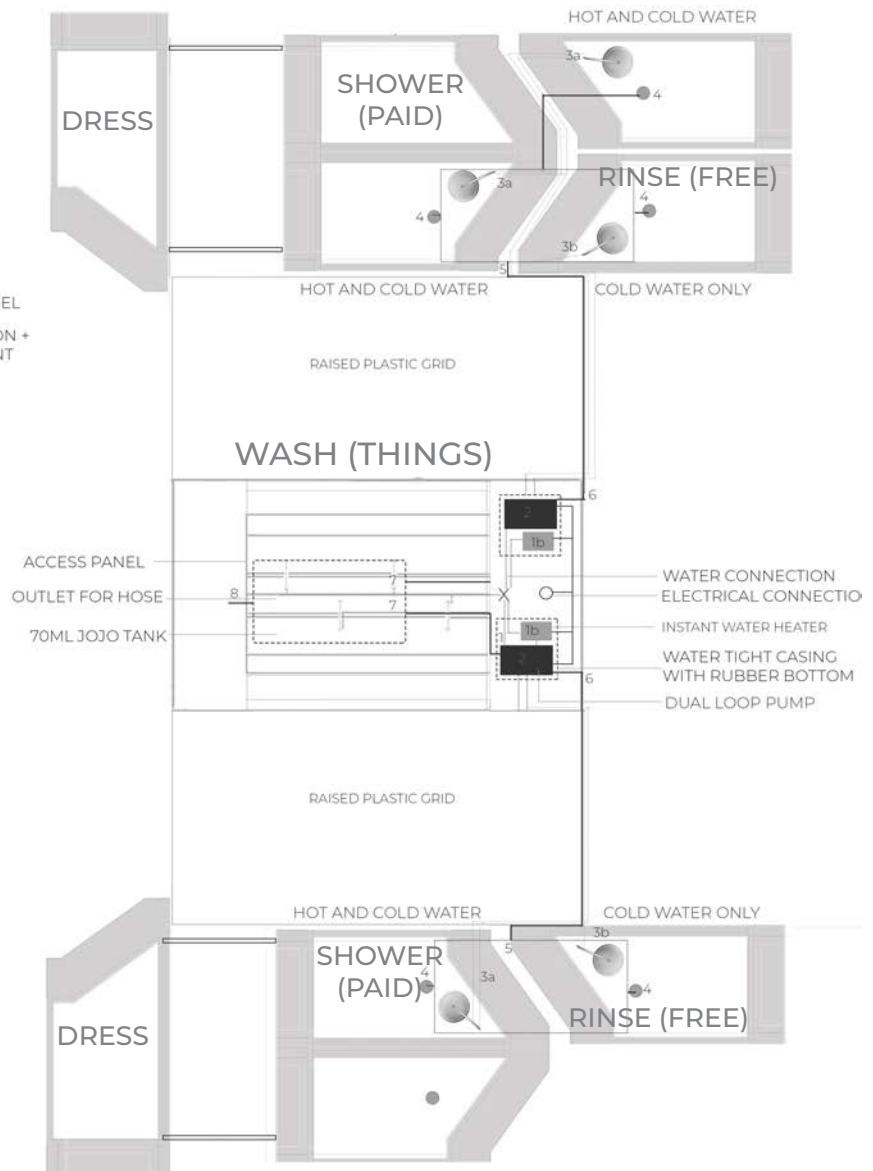


Figure 8.1.8.1 Diagram of water and composting cycles

## COMPOSTING SYSTEM IN SITU



## WATER SYSTEMS IN SITU



- X- MUNICIPAL WATER CONNECTION TO TAPS AND PUMP CASING
- O- ELECTRICAL CONNECTION TO WATER-TIGHT CASING
- 1A- COLD WATER BRANCH IS FED STRAIGHT TO PUMP
- 1B - WARM WATER BRANCH PASSES THROUGH INSTANT WATER HEATER
- 2. WARM BRANCH NOW PASSED THROUGH DUAL LOOP PUMP
- 3. BOTH BRANCHES RUN ALONG RAISED FLOOR EDGE TOWARDS SHOWER INLET
- 4. GREY WATER FALLS THROUGH OUTLET DRAIN IN EACH SHOWER
- 5. ALL GREY WATER IS COLLECTED IN A BLADDER BAG HOUSED UNDER MODULES
- 6. GREY WATER ENTERS SECOND LOOP OF PUMP
- 7. GREY WATER IS STORED IN A 750L HORIZONTAL JOJO TANK
- 8. OUTLET TAP IS CONNECTED TO SHORT HOSE AND USED TO FILL WATERING CAN

Figure 8.1.8.2 Relationship between water and compost cycles with module layout

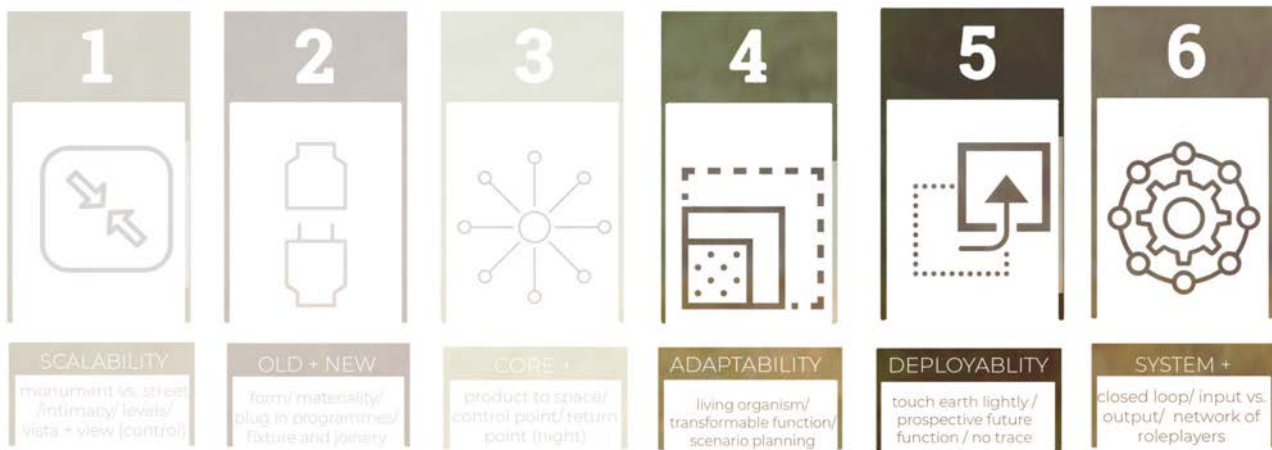


Figure 8.1.9.1 Conceptual drivers for reflection

### **[8.1.9] REFLECTION ON ITERATED DESIGN**

The iterated design of *Halfway+* successfully considers the additional three conceptual drivers in the following way:

#### **4. Adaptability:**

- \_Various domestic programmes can be accommodated in the module.
- \_Various spatial configurations of the module are possible.
- \_All external cladding adapts to respond to the urban context in which it sits.
- \_A ramped walkway can be added to the exterior of the module to create wheelchair and pram accessibility.

#### **5. Deployability:**

- \_There is no substructure and therefore the entire module can be removed from a site without leaving a trace.
- \_All framing and infill components can be flat packed to allow for simple and efficient transportation.
- \_The strength to weight ratio of each module is considered to allow for easy of assembly+ disassembly.
- \_The concrete beams that form the base have the lowest degree of deployability (because of their weight) but if left behind can become the structure for urban furniture, planter boxes, and children's play area. This is considered in [11.3]

#### **6. System:**

- \_Provision for wet services are accommodated for in the floor panel.
- \_The wash (things) station serves as the point of control for all water-related services.
- \_The service cavity between toilet modules accommodates the composting tank and waste removal drawer thus separating the composting system from the toilet module itself.
- \_The outlet from both the water and composting system is in close proximity to the 'grow' area where it is used.

It can, therefore, be concluded that the iterated design for *Halfway+* will serve as the design which is technically resolved in Stage 4.

8.2

bench-it +



### **[8.2.1] REVISED REQUIREMENTS FOR BENCH-IT+**

Over and above the requirements set out in [7.2.1], both the bed base and bag need to achieve **deployability** through ergonomics, materiality, weight and joinery.

By considering the complex model inhabitant group, the structure of bed base should be **adaptable** to accommodate for various configurations, weather conditions and users. The longevity of the bed base and bags is also an important consideration. Therefore, the loose members and flimsy joinery is to be avoided. Should a part of the bed get damaged, just the affected area should be replaced and not the entire unit.

The **system** of making the bed, how long it takes, what raw materials it requires, its delivery, weight, storage and access, are all important considerations for the reviewed design of *Bench-it+*.

### [8.2.2] PRODUCT DEVELOPMENT OF SLEEP BASE

The sleep base is narrowed and now comprises of three 760x600x200mm modules that form the sleep surface area. The overall form of the base is still derived from the form of the bench and the proportion of the human body as it was in Stage 2. Two modules are identical and the third varies to accommodate the form of the bench. The base is constructed from 15mm thick KimmoBoard (a South African paper composite) and makes use of three kinds of joinery techniques. Joint A is a 90 degree slot joint creating strength and rigidity. Joint B is a material extension joint where one module meets another. This joint is more aesthetic than structural, and thus subtly reflects the '+' brand. The same principles are applied with Joint C, except the connection is duplicated to create a stronger fixing. Joint D is not a joint because it does not include a connection between two members. However, it highlights a panel variation, where a 45 degree angle is cut into the board to allow an angle in the panel for form. In all instances, no external fasteners are used and joinery is kept as simple, intuitive and repetitive as possible.

In terms of assembly/disassembly, two processes are highlighted below: the daily, fast, modular assembly; and the assembly from flat-packed panels to completion. The latter, will only be performed by the manufacturers and delivered to the Halfway+ storage area already stacked in three modules. The stacked modules weigh 5,7kgs and are equipped with straps and handles for ease of transference from storage to bench.

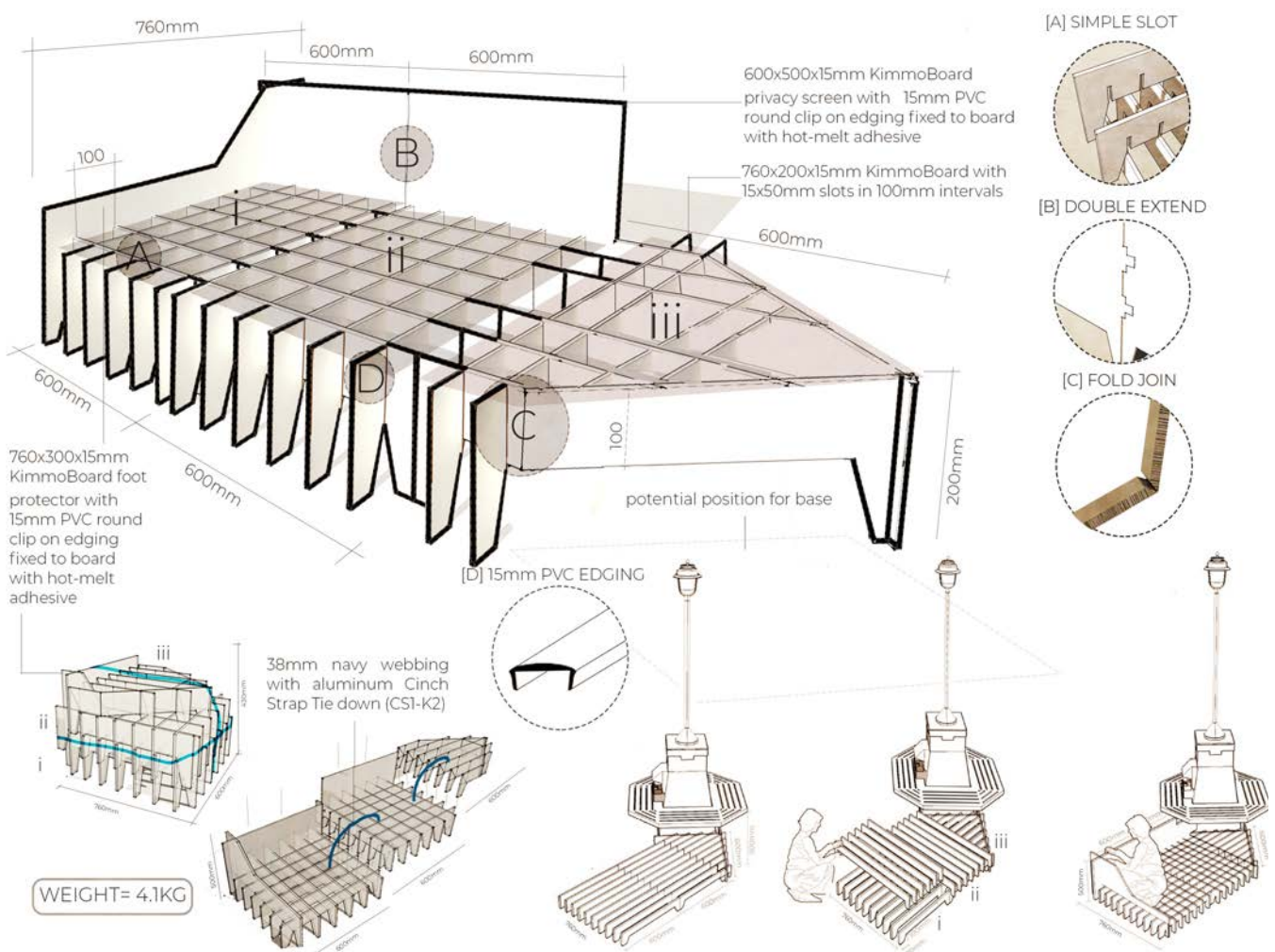


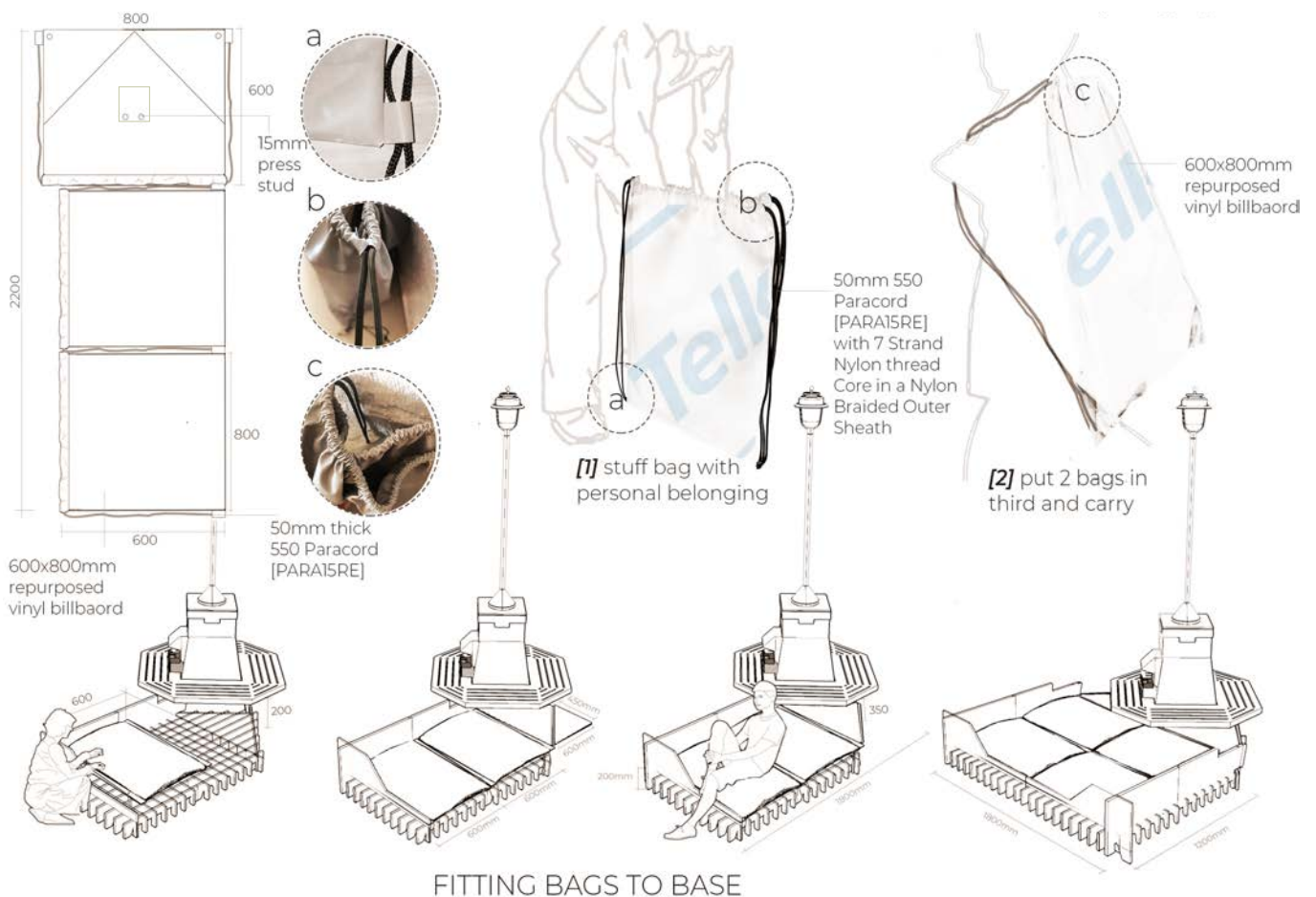
Figure 8.2.2.1 Sleep base product development

### [8.2.3] PRODUCT DEVELOPMENT OF SLEEP BAG

The sleep bag comprises of three 760x600mm modules that cover the sleep surface area of the base. Each module serves as both a mattress and a draw-string bag. Two modules are identical and the third varies to accommodate the angled form of the base. The bag is constructed from highly engineered vinyl billboards which are outdated and no longer in use. The materiality withstands harsh outdoor environmental conditions. Despite the positive attributes of this material choice, vinyl lacks flex and elasticity which is an important consideration when stuffing the bag with personal belongings. A French seam is used to add a degree of flex to the bag as indicated in the diagram below. This ensures that the bag can be both completely flat, or extend to 45mm when stuffed.

In terms of use, two processes are highlighted below: the sleep bag as a bag (day time); and the sleep bag as a mattress (night time). The night time scenario highlights the use of the draw-strings to fasten the bag to the base legs with its opening towards the 'raised' back protection such that personal items cannot be stolen with user is asleep. The top bag (angled) has a smaller pocket for safekeeping of cell-phones, passports, keys, money, etc. This pocket is covered when the corner flaps are fastened down with press studs as indicated below. The corner flap fastening creates a double layered cushioning so that the user's head is slightly elevated.

During the day, the two bottom bags are stuffed into the top one, and the draw-string is used to seal the bag. The small pocket faces the user's back to ensure safety of belongings.



FITTING BAGS TO BASE

Figure 8.2.3.1 Sleep bag product development

### [8.2.4] STORING THE SLEEP BASE

The sleep base is stored within the Halfway+ space. The storage area uses the framework of the module and three additional long, rectangular, translucent boxes that slot in the frame. The boxes are fully closed in all areas besides two: the portion marked 'exit' and the portion marked 'handle access'. The sleep base can only be removed or returned at the exit point (by point of control). The opening by the handle is used to slide the base in the either towards '1' or 'Exit'. The bottom two boxes are used to store currently usable sleep bases. While the top box stores broken or damaged bed bases that require work and additional bases should replacements be needed. The availability of sleep bases can be seen from Minnaar Street. This is because the blue strap is visible through the translucent box. The visibility of available bases can assist worker in the point of control by alleviating tensions and managing expectations.

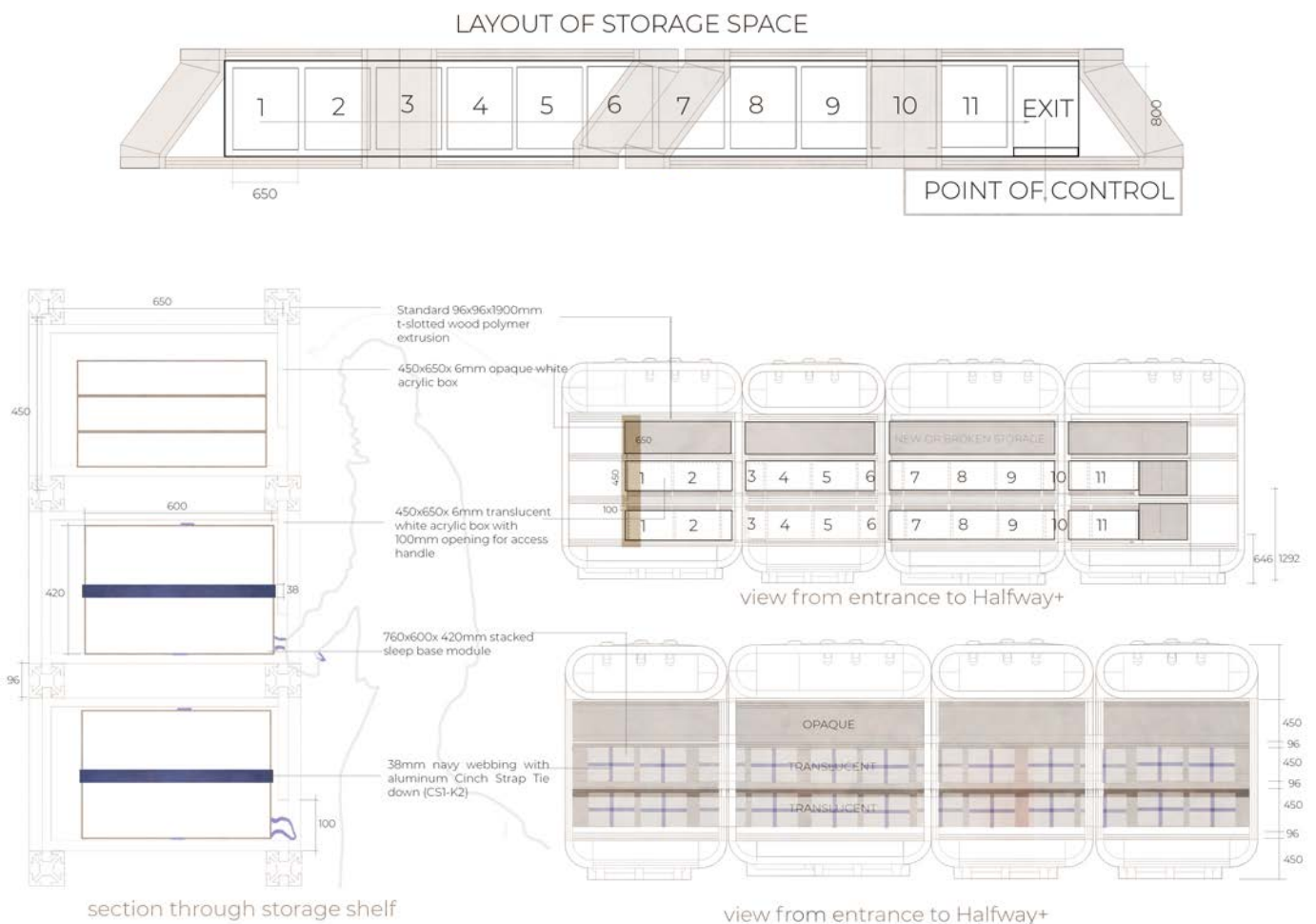


Figure 8.2.4.1 Storage of sleep base

### **[8.2.5] REFLECTION ON ITERATED DESIGN**

The iterated design of *Bench-it+* successfully considers the additional three conceptual drivers in the following way:

#### **1. Adaptability:**

- \_The form of the base can accommodate sleeping alone or in pairs.
- \_The base and bags can be used as separate design solutions or together (best option).
- \_Components within the base can be replaced individually in the event of damage.
- \_The KimmoBoard base material can be printed on in the event of a corporate campaign (branding).

#### **2. Deployability:**

- \_The base and bag do not fasten to the bench or ground plane. Therefore, their design can be applied to other urban locations.
- \_The weight of the base is light enough to move to and from the storage unit. The base is also equipped with straps and a handle aiding the moving process.
- \_The bag is light and weather-proof and can therefore travel with its owner daily.
- \_No external fasteners are in the base and therefore flat-packing is possible.

#### **3. System:**

- \_The production process, nesting, waste, transportation and maintenance of both the base and bags are considered as part of the technical investigation in [9.7]
- \_The edges of the base are protected to improve the base's durability.
- \_The token system to acquire a base ensures that an element of control and responsibility (payment) is adopted.

It can, therefore, be concluded that the iterated design for *Bench-it+* will serve as the design which is technically resolved in Stage 4.

09

*express*

STAGE 4 : TECHNICAL RESOLUTION

### **[9.1] INTRODUCTION**

Stage 4 endeavours to technically resolve five areas within Halfway+ and Bench-it+. The technical resolution focuses on the notion of **deployability** discussed in [9.2].

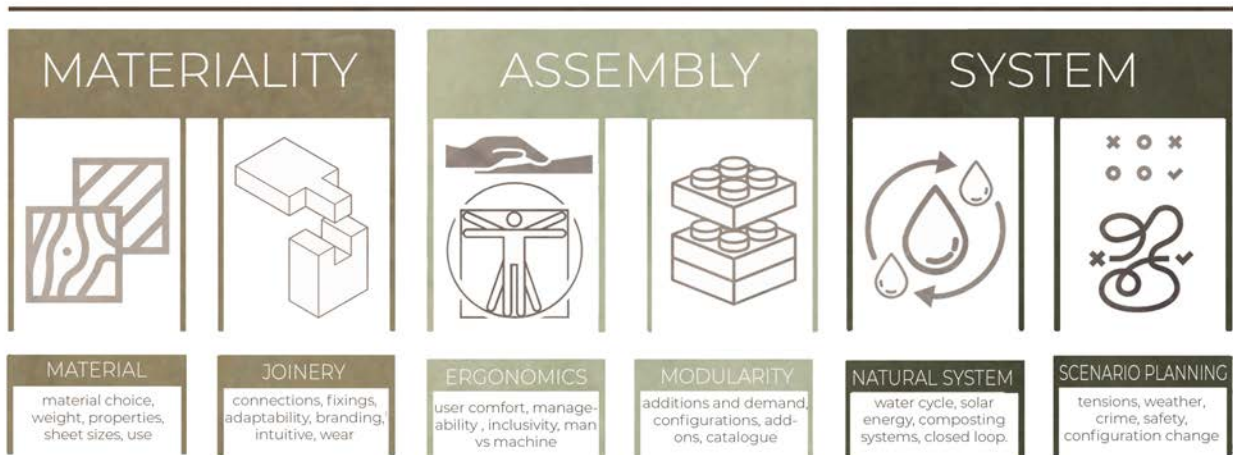
In Halfway+, the basic module is resolved to achieve deployability. Thereafter, how the module accommodates the domestic functions of 1. **Toilet**; 2. **Wash (self)**; and 3. **Dress**, is explored as three details.

The forth detail focuses on the **Wash (things)** station and its relation to the Grow area.

Lastly, the **Sleep** (bed) area is investigated as the fifth detail. Technification for this detail includes a full scale set of joinery prototypes and a 1:5 scaled model of both bed and base.

# TECHNICAL QUESTION

How can deployability be achieved in the design of Halfway+ and Bench-it+ through materiality, assembly and system?



# FORMAL AND PSYCHOLOGICAL IMPLICATION



Figure 9.2.1 Technical strategy



## [9.2] TECHNICAL QUESTION AND STRATEGY

The design technification investigates how deployability can be achieved. Deployability is considered as a three-tier investigation considering:

1. **Materiality:** material combination and joinery techniques.
2. **Assembly:** ergonomics, modularity, fabrication methods, sequence of assembly, and assembly both off and on site.
3. **System:** fitting of sanitation services, use of standard components, furniture systems, and relation of one module to the whole spatial scenario.

The three areas of investigation ensure that deployability is not only perceived as portability but also transformability, flexible accommodation of services, adaptability to context and potential for disassembly.

The three tiers of deployability above are considered as they relate to first order meaning (formal and functional) as well as the second order meaning (psychological and atmospheric).

The first order serves as the 'bones' of the design, rendering it feasible. While the second is the humane 'skin' driving a sense of interiority and domesticity. This is best communicated in Chapter 10: Story of Place.

Moreover, deployability can be considered as a tool for resilience and sustainability promoting both responsive and responsible design.

The technical investigation is positioned within the Three Pillar model of sustainability that considers social, economic and environmental factors (Grober, 2012; iv). Therefore, design and detailing decisions are not only made based the three-tiers of deployability mentioned previously, but also on their impact on people, profit and planet. This is further discussed in [9.3] which follows.

This overall strategy for deployability will be investigated as five technical details identified in [9.4]: three focusing intensely on the system and assembly layers (environmentally swayed); and two focusing on the materiality and assembly layers (people swayed).

## RELATIONSHIP WITH 3 PILLARS OF SUSTAINABLE DESIGN

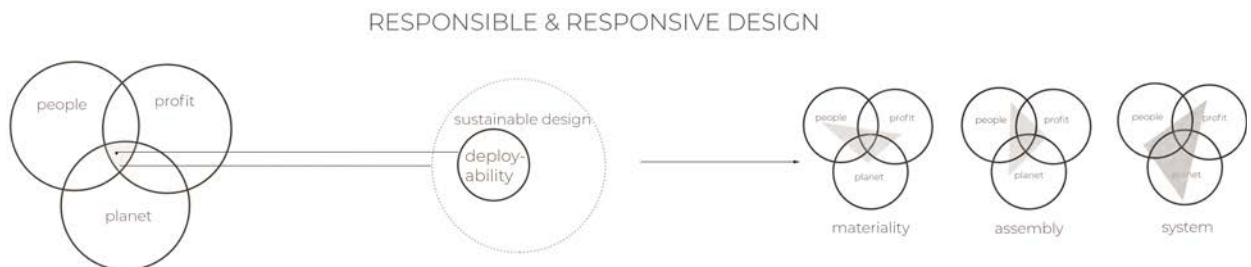


Figure 9.2.2 Relationship to 3 Pillar's sustainability model (Grober, 2012, iv)

**[9.3] HOLISTIC APPROACH TO SUSTAINABILITY.**

In his book 'Urban Sustainability in Theory and Practice', Paul James rethinks urban sustainability across all the domains of social life by considering: ecology; economy and society (political and cultural) (2015;37). Figure 9.3.1 below depicts an example of a sustainability audit model assessing the principles mentioned above. Here, a graded scale is adopted to measure the degree to which each factor performs. This holistic approach is adopted in SBAT analysis where the overall performance of the proposed design is tested (Figure 9.3.2).

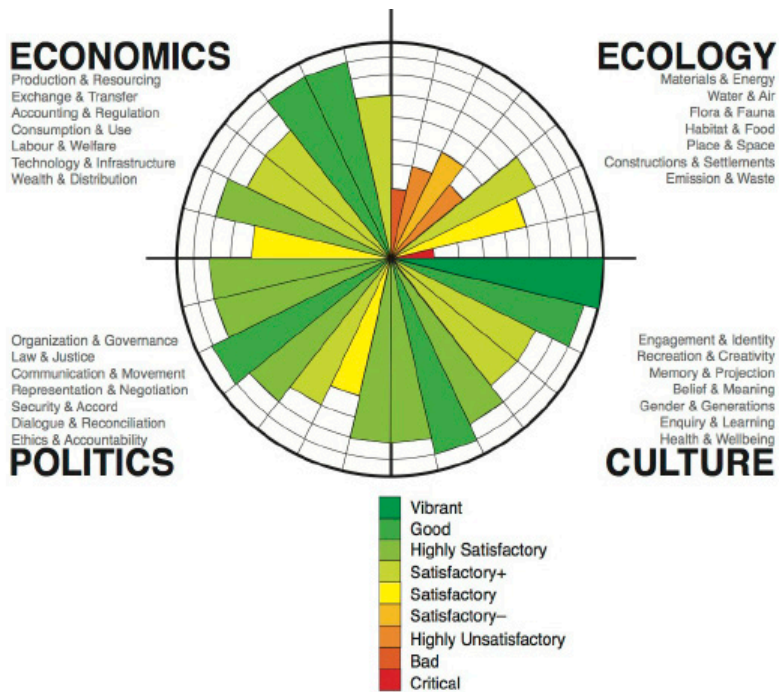


Figure 9.3.1 Circles of sustainability: sustainability audit (James, 2015; iii)

### [9.3.1] SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT)

The SBAT tool aligns with the principles set out by Paul James by re-enforcing sustainability as an equilibrium between environmental, social and economic resilience. Figure 9.3.2 below shows the analysis results of the proposed design measured against the factors seen in Appendix 1. From the results it is evident that Environmental performance is the poorest due to the lack of rainwater harvesting (see Appendix 2 calculations to render it unfeasible); and the fact that site is not 'permanent' due to the deployable nature of the design. Points lost for economic performance are the result of all ceiling heights not being above 3000mm. Lastly, points lost for Social performance are due to the potential for crime in the surrounding context. All of the low-scoring factors either conflict with the notion of deployability or are out of the designer's control.

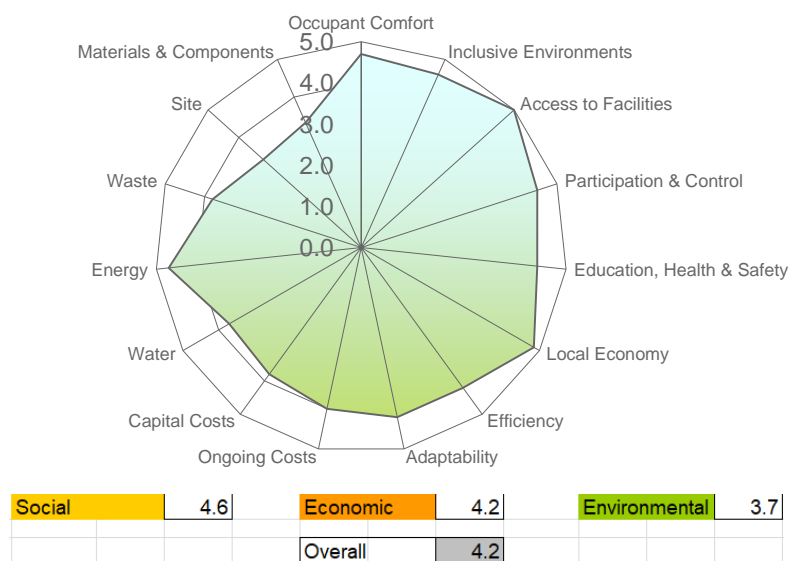
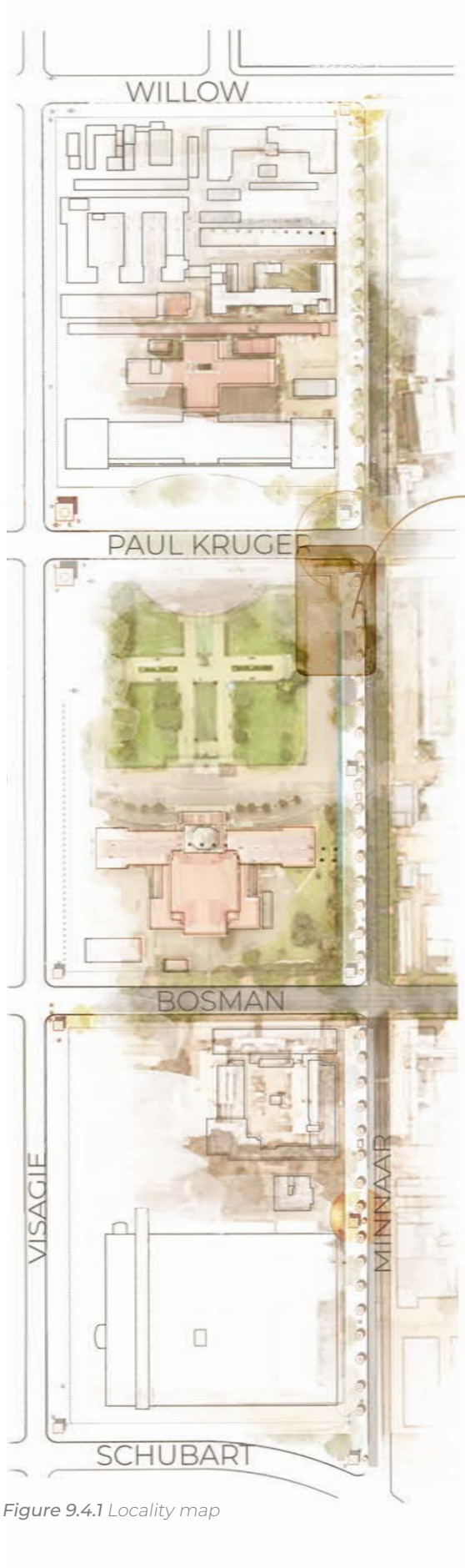


Figure 9.3.2 SBAT analysis results

[9.4] HALFWAY+ LAYOUT



SITE

As illustrated in the figure alongside, the site is on the corner of Paul Kruger and Minnaar Street in the paved area alongside Pretorius Square. This area is enlarged in [9.4.1] that follows. As a result of observation-based patterns identified in Chapter 3 and the theoretical informants of familiar and intimacy identified in Chapter 4, approach to the site is carefully curated such that physical access is only possible from Paul Kruger Street. As Figure 7.1.1.1 (page 122) suggests, all public domestic activities (cook, socialise, enter, point of control and store) are positioned along the Paul Kruger entrance to Halfway+. This creates a buffered transition between collective and private space. Despite being directly inaccessible, the private domestic activities are visually accessible from Minnaar Street to promote a sense of safety and 'eyes on the street'.

During the conceptualising phase of Halfway+, it was established that the design intervention should not only be deployable but also a sensitive insertion into the existing built fabric. Therefore, all modules are entered above the existing floor finish level and there are no fixtures between any existing fabric and the new insertion. This is true of the proposed design when inserted to any site.

Figure 9.4.1 Locality map

## HALFWAY+ SCENARIO PLAN

\*The following refers to the plan of Halfway+ on page 187 and 188 and the sections on page 189 and 190\*

### GENERAL CIRCULATION

Upon entering Halfway+, one is confronted with the point of control where directions, general information, purchasing of tokens, and storage are handled. A new-comer might engage with the staff member at the point of control while regular users will move in the direction of the amenity they seek. If one wishes to cook, purchase cooked goods, socialise, or store personal belongings, they will turn right after entering Halfway+. However, if one wishes to return a bed base, or consult with the member of staff at the point of control, they will turn left after entering Halfway+. In any of these scenarios' the public interface is the first point of contact from which the more private amenities are accessed.

In the public area, the module is used in its most adaptable configuration where the appropriate infill panels are removed such that an open-floor plan is achieved accommodating an array of activities. In the private areas, however, the module is used in its most 'complete' form creating cellular areas that accommodate a specific activity (wash, dress, toilet).

Halfway+ can also be physically accessed from Pretorius Square. Visual access from this point is specifically focused on the toilet modules encouraging passersby to engage with the most basic of the public amenities.

Users who are wheelchair-bound, push trolley's or prams, can access a ramped toilet and shower module that makes use of a closed off passageway to create wheel-chair transfer space, baby changing facilities and a safe space to leave a trolley, wheelchair or pram while using the desired facilities. Inclusive design is further unpacked on page 224.

### A SENSE OF SAFETY

A sense of safety was identified as an important factor when theoretically unpacking 'the notion of home'. In Halfway+, four design techniques are employed with the aim of achieving a sense of safety. These include: solar lighting with darkness detection; creation of a courtyard in between the wash (self) and dress areas;

visual access from Minnaar Street, Pretorius square and Paul Kruger Street; and lastly, locking the point of control, storage for cook and service cavity access panels at night.

### GROUPED SERVICES

Aiding the deployability of the proposed design, wet services are grouped to create a single service core housing both the municipal water input and the gray-water output. This ensures that access can be easily controlled and no pipes are chased into the existing urban fabric. The service core is further discussed in [9.10] #4 Central Wash Area.

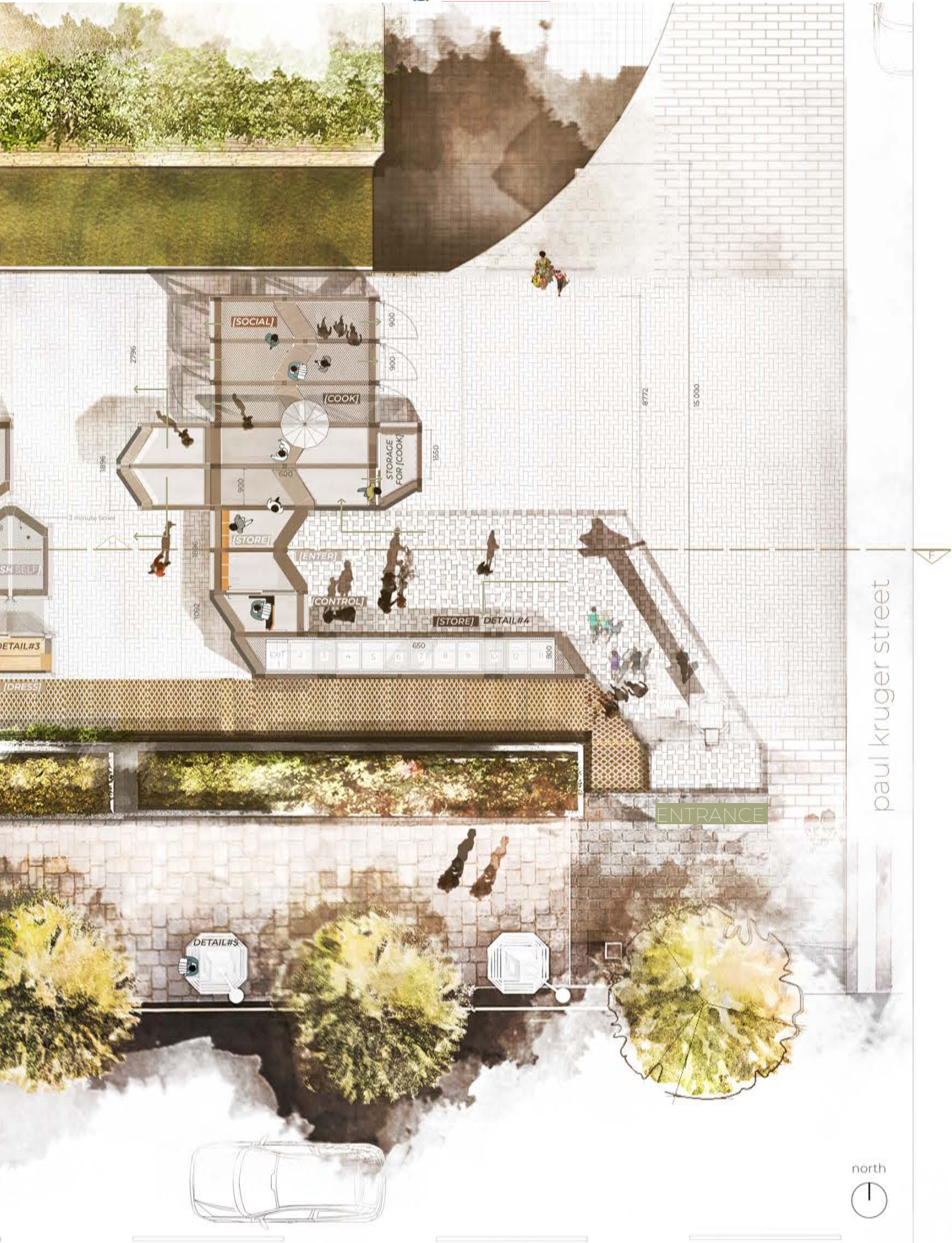
The overarching approach regarding technification is based on deployability and thus permanent fixtures are avoided as far as possible. However, municipal services such as water and electricity are required and thus permanent 'holes' in the site have to be made. The permanency of this decision is justified when considering the long-term positive addition a water and electricity point will make to its urban fabric when the modules are deployed elsewhere. Therefore, services such as sewage and gas are excluded as they will not make the same long-lasting positive addition when the modules are removed.

### IDENTIFICATION OF DETAILS

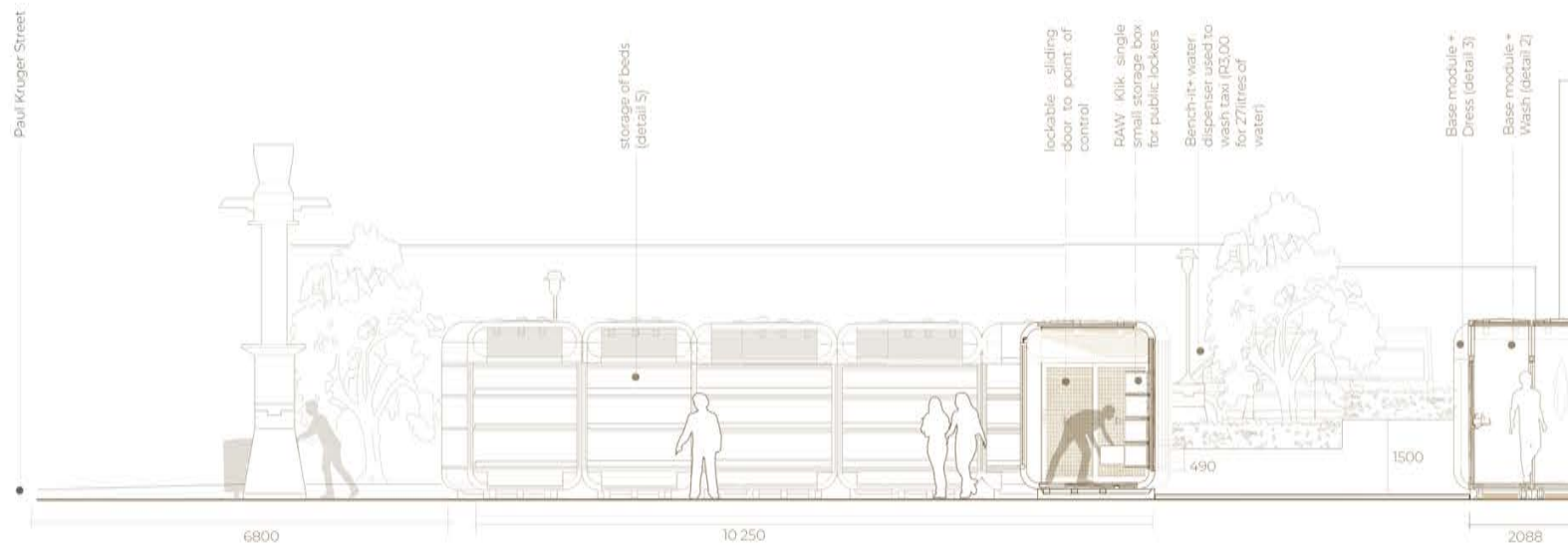
The plan of Halfway+ highlights five details which are unpacked as part of the technical argument. **Detail 1** is the **toilet** module which deals predominantly with systematic and structural complexities (see [9.7]). **Detail 2** is the **shower** module which deals predominantly with service-based, hygiene and maintenance complexities (see [9.8]). **Detail 3** is the **dress** module which deals with atmospheric and use complexities (see [9.9]). **Detail 4** is the **central wash area** which deals predominantly with service-based and access complexities (see [9.10]). Lastly, **Detail 5** is the **sleep base and bag** which deals predominantly with use, assembly, and ergonomic complexities (see [9.11]). The details were selected based on the scale variety they cover, and their relation to the technification question set out in [9.2] regarding deployability through materiality, assembly and system.



187 Figure 9.4.2 Plan of Halfway+



paul kruger street



section G-G

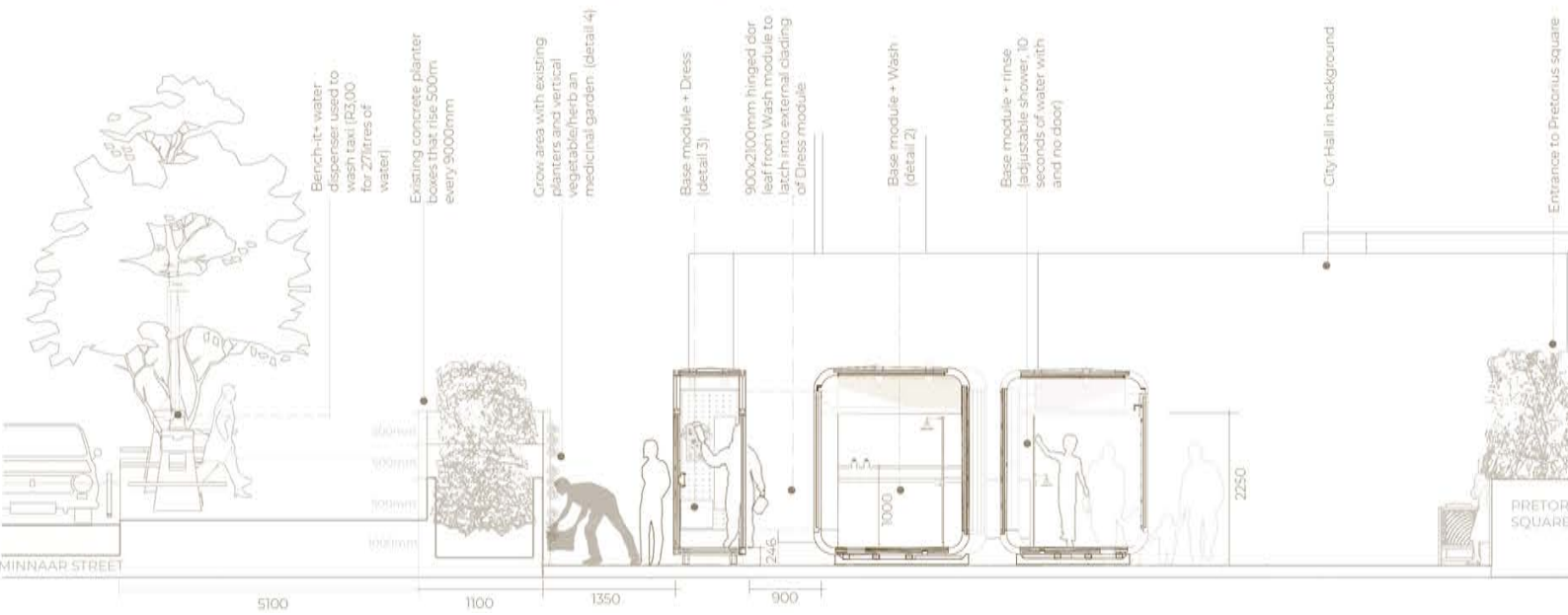
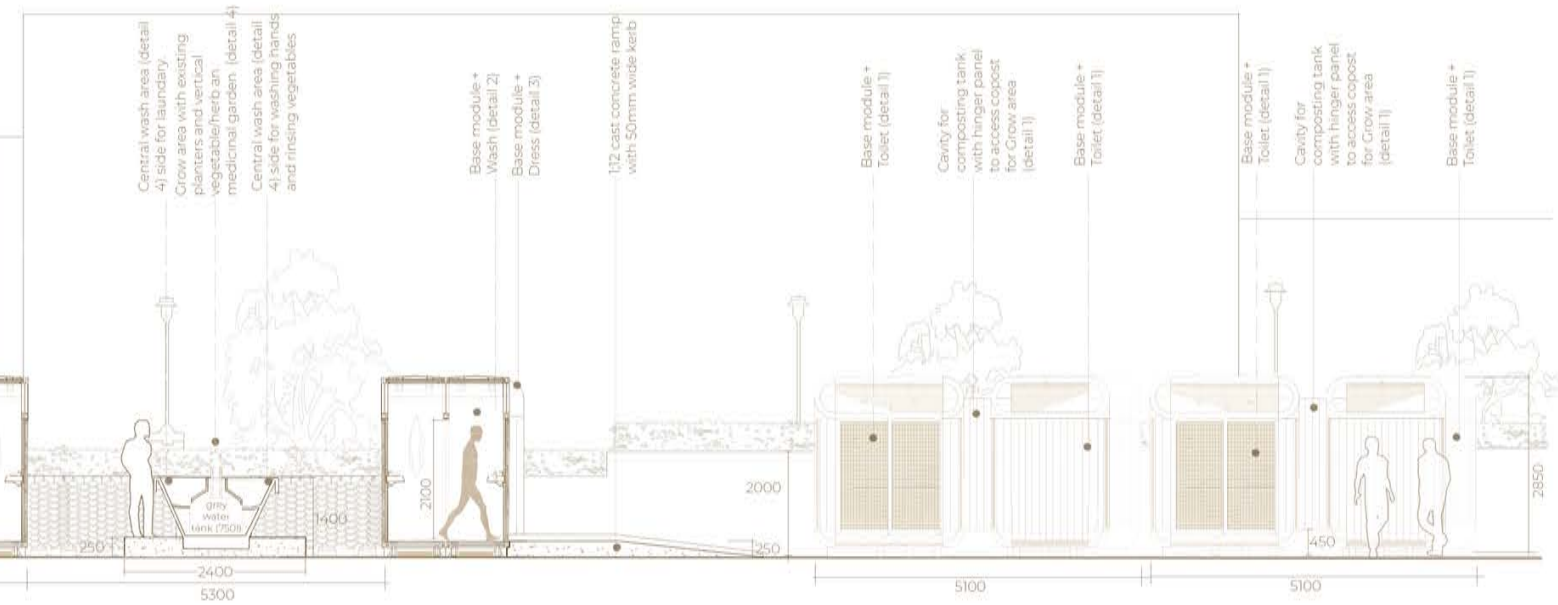


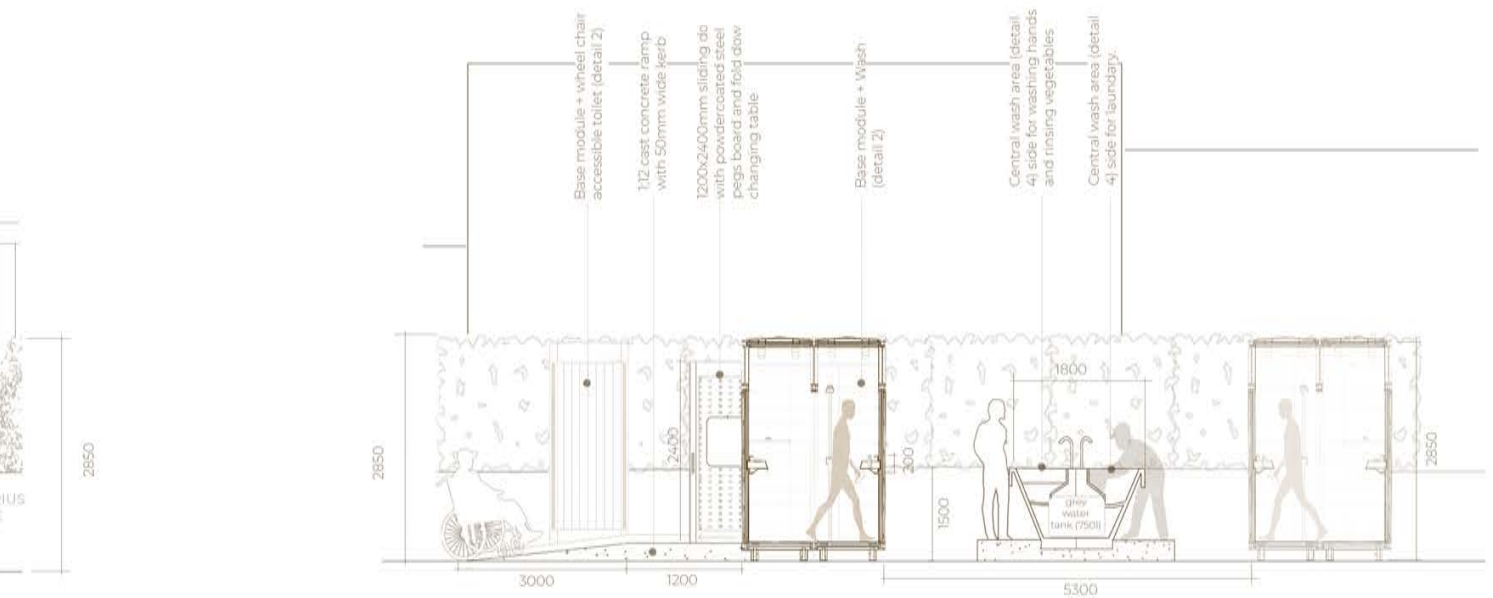
Figure 9.4.3 Section of Halfway+



## section F-F



## section H-H



80mm Powertrek Solar tube LED Downlight with darkness detector. Output of 200lumen (5hr charge and 8hour run)

1940x1000x64mm structural foam molded roof core with four 800x64mm holes to hold 800mm solar tube lights; and one 455x455x64mm hole to hold Acol 200 Ezlite solar roof ventilating fan (EZV200). All cavities are sealed with neoprene gasket on exterior and interior of roof core. Roof falls at 5 degrees. Roof core is cast in two 32mm deep half molds and is secured to module frame with neoprene gaskets. 32mm fiber cement board ceiling is fixed to flat side of roof core with eight spring loaded clips.

COMPONENT

420x1400x30mm transparent acrylic panel slotted into 32x50x1900mm recess in T-slotted extrusion above and below acrylic panel. Features are sealed with neoprene gasket strips.

96x300x300mm custom extruded wood polymer corner connector with 50x50mm recess for 48x48mm extension from 96x96x200mm t-slotted extrusions to clip in to.

420x1900x30mm transparent acrylic panel slotted into 32x50x1900mm recess in T-slotted extrusion above and below acrylic panel. Features are sealed with neoprene gasket strips.

Standard 96x96x1900mm t-slotted wood polymer extrusion with 48x48x50mm extension to connect to 50x50mm recess in corner connector.

2090x1800x48mm standard double aluminum KSW sliding door frame and rail (without glazing) with custom aluminum privacy screen welded to inside of frame.

1900x486mm powder-coated aluminum vertical elements slotted at a 45degree angle into 900x706mm horizontal elements at 50mm intervals.

COMPONENT 1: SLIDING SCREEN

270x80x9mm bent steel door edge protector with cut-out for latch and handle. Handle's rubber inlay is textured and coloured to denote module's function (toilet, shower, etc.)

150 x150mm concrete beams (various lengths) precast with 75mm holes at 800mm center to center. Precast members fasten to each other and to module floor with 720mm steel pegs.

### [9.5] TECHNIFICATION OF BASE MODULE

The base module consists of a concrete base which serves as the module's foundation. As per the calculations in Appendix 3, the foundation's weight not only supports the modules load, but also resists sliding and overturn forces caused by wind. The module itself comprises of a frame and infill structure as conceptualised in Stage 3. Figure 9.5.1 below highlights the basic assembly of the frame, which is expanded upon in [9.6]. The construction of the base module is communicated in the plans and sections that follow. Moreover, the exploded axonometric alongside identifies 5 components which are detailed on pages 199 and 200. No interior finishes are indicated here due to the programme-specific nature of the interior materiality. The interior quality is briefly illustrated in detail #1,#2 and #3 and further explored in the Chapter 10's storyboards.

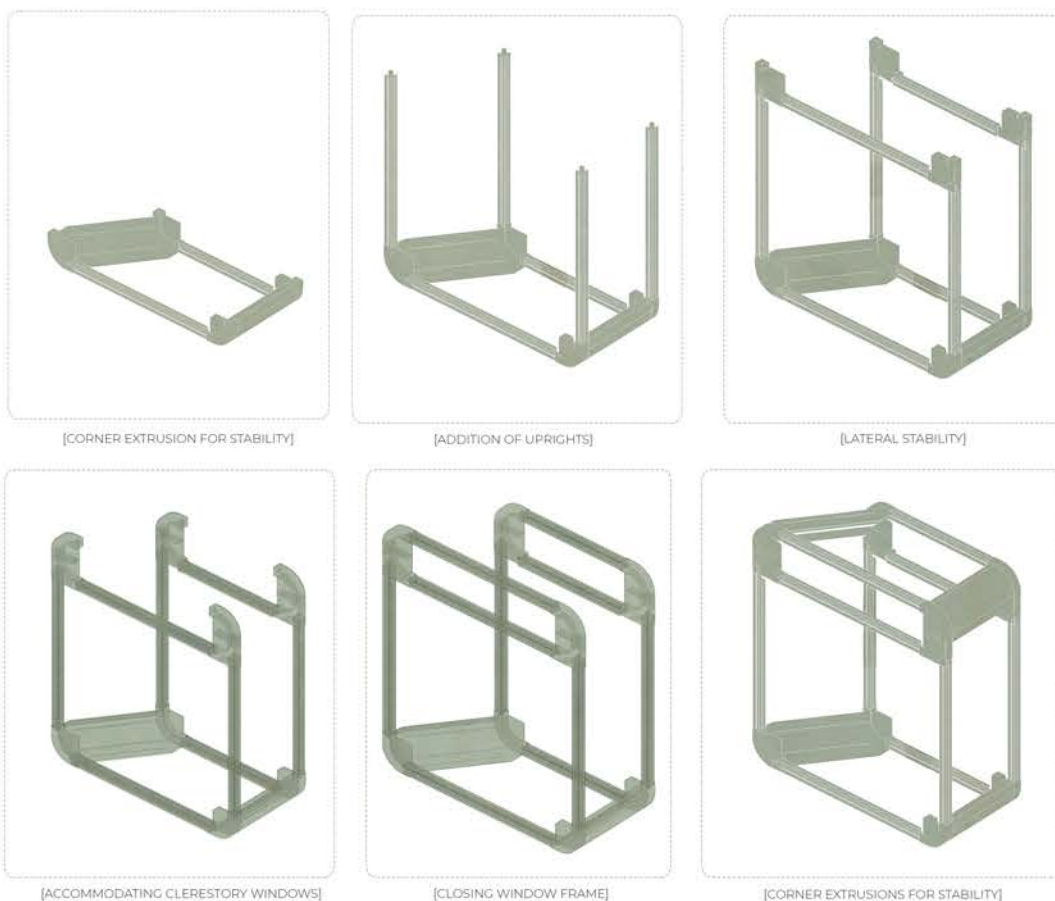


Figure 9.5.1 Module frame assembly

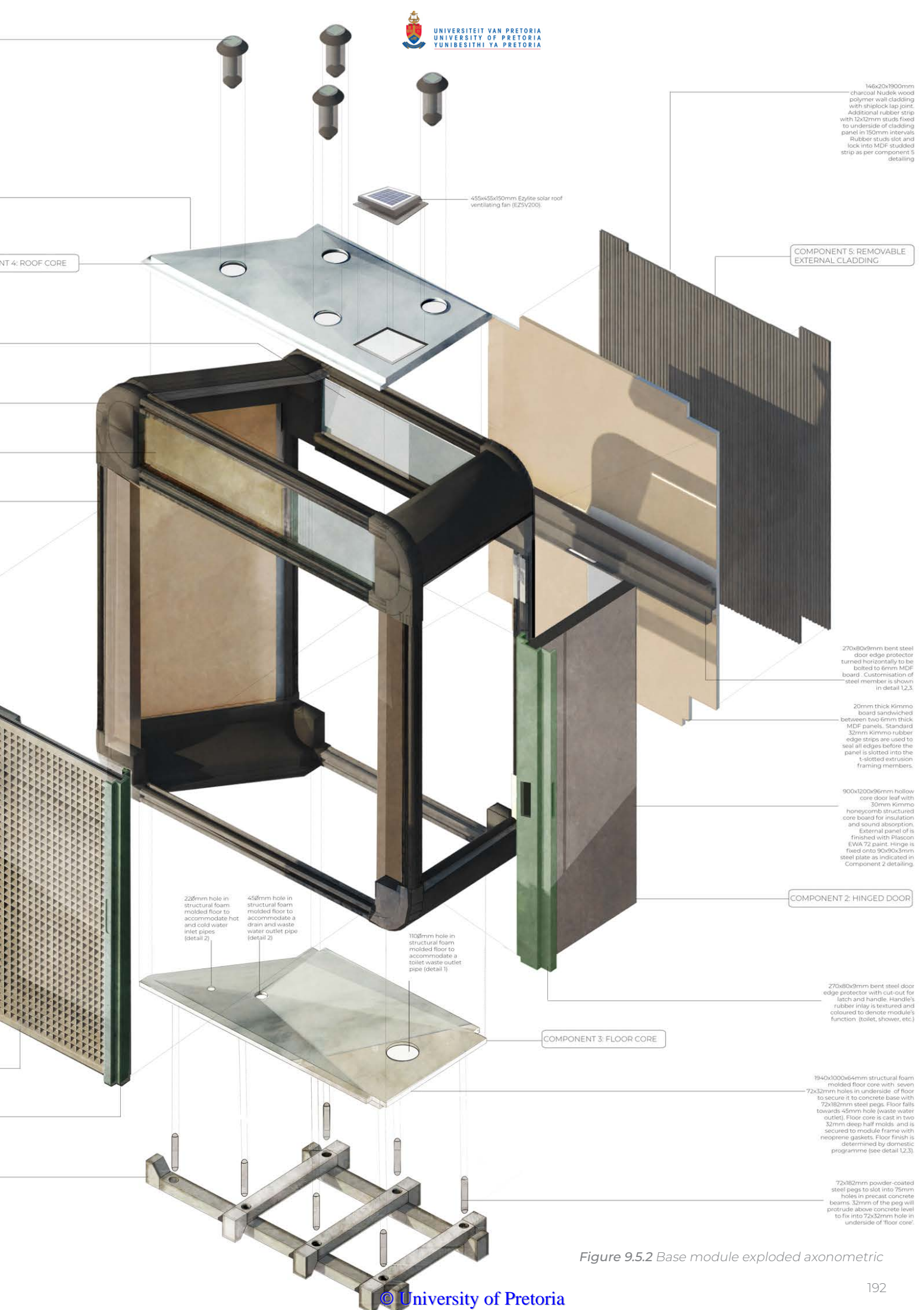


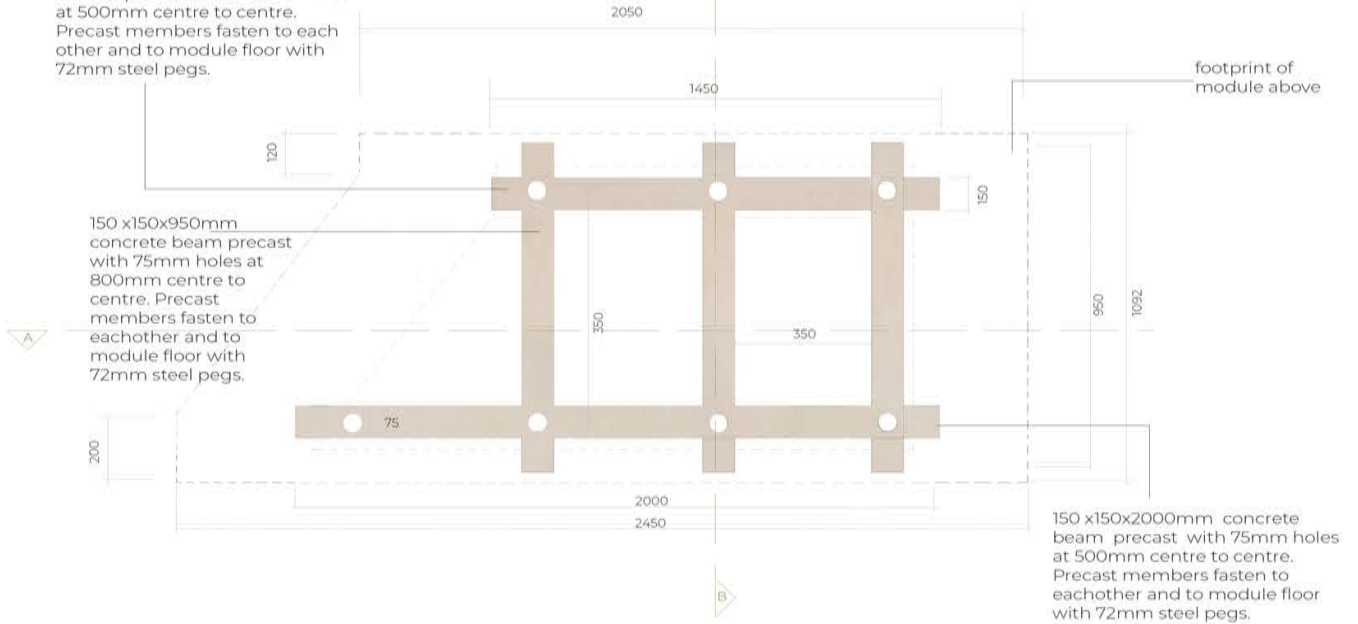
Figure 9.5.2 Base module exploded axonometric

plan at 150mm above ground level

150 x150x1450mm concrete beams precast with 75mm holes at 500mm centre to centre. Precast members fasten to each other and to module floor with 72mm steel pegs.

150 x150x950mm concrete beam precast with 75mm holes at 800mm centre to centre. Precast members fasten to each other and to module floor with 72mm steel pegs.

footprint of module above



150 x150x2000mm concrete beam precast with 75mm holes at 500mm centre to centre. Precast members fasten to each other and to module floor with 72mm steel pegs.

146x20x1900mm charcoal Nudek wood polymer wall cladding with shiplock lap joint. Additional rubber strip with 12x12mm studs fixed to underside of cladding panel in 150mm intervals. Rubber studs slot and lock into MDF studded strip as per component 5 detailing

1940x1000x64mm structural foam molded floor core. Floor falls towards 45mm hole (waste water outlet). Floor core is cast in two 32mm deep half molds and is secured to module frame with neoprene gaskets. Floor finish is determined by domestic programme (see detail 1,2,3).

plan at 1000mm above ground level

Standard 96x96x1900mm t-slotted wood polymer extrusion with 48x48x50mm extension to connect to 50x50mm recess in corner connector.

20mm thick Kimmo board sandwiched between two 6mm thick MDF panels

32mm provision for interior finish material (see detail 1,2,3)

hinge (see component 2)

900x1200x96mm hollow core door leaf with Kimmo honeycomb structured board core for insulation and sound absorption. External panel is finished with Plascon EWA 72 paint.

150 x150x2000mm concrete beam precast with 75mm holes at 500mm centre to centre. Precast members fasten to each other and to module floor with 72mm steel pegs.

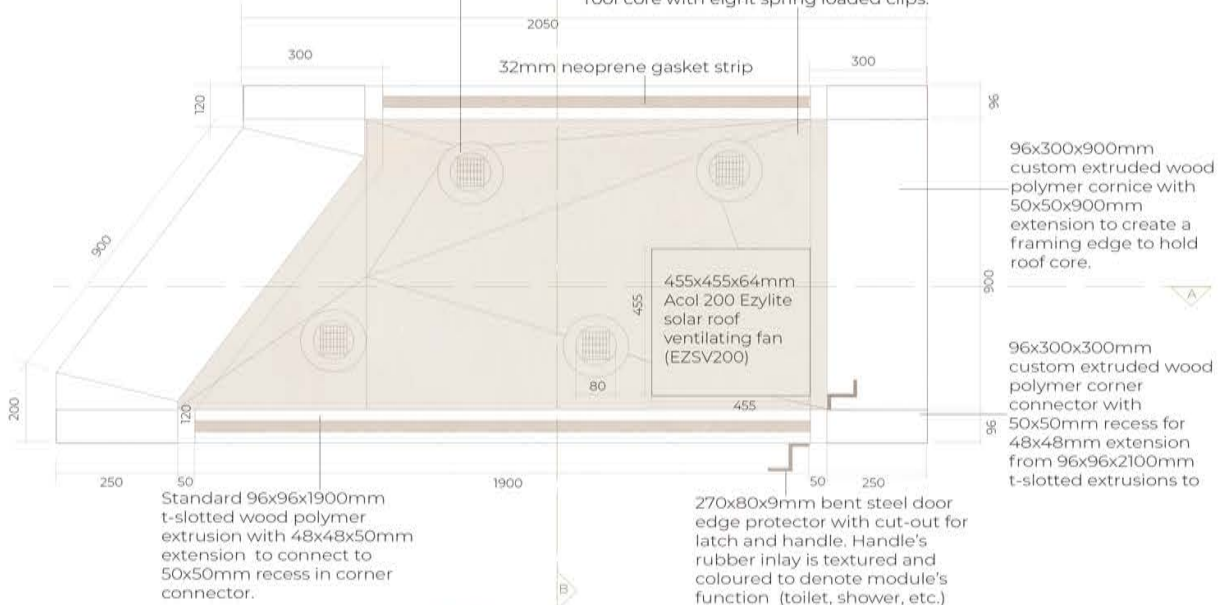
2090x1900x96mm standard double aluminum KSW sliding door frame and rail (without glazing) with custom aluminum privacy screen welded to inside of frame.

270x80x9mm bent steel door edge protector with cut-out for latch and handle. Handle's rubber inlay is textured and coloured to denote module's function (toilet, shower, etc.)

plan at 2700mm above ground level

80mm Powertrek Solar tube LED Downlight with darkness detector. Output of 200lumen (5hr charge and 8hour run)

1940x1000x64mm structural foam molded roof core. Roof falls at 5 degrees. Roof core is cast in two 32mm deep half molds and is secured to module frame with neoprene gaskets. 32mm fiber cement board ceiling is fixed to flat side of roof core with eight spring loaded clips.

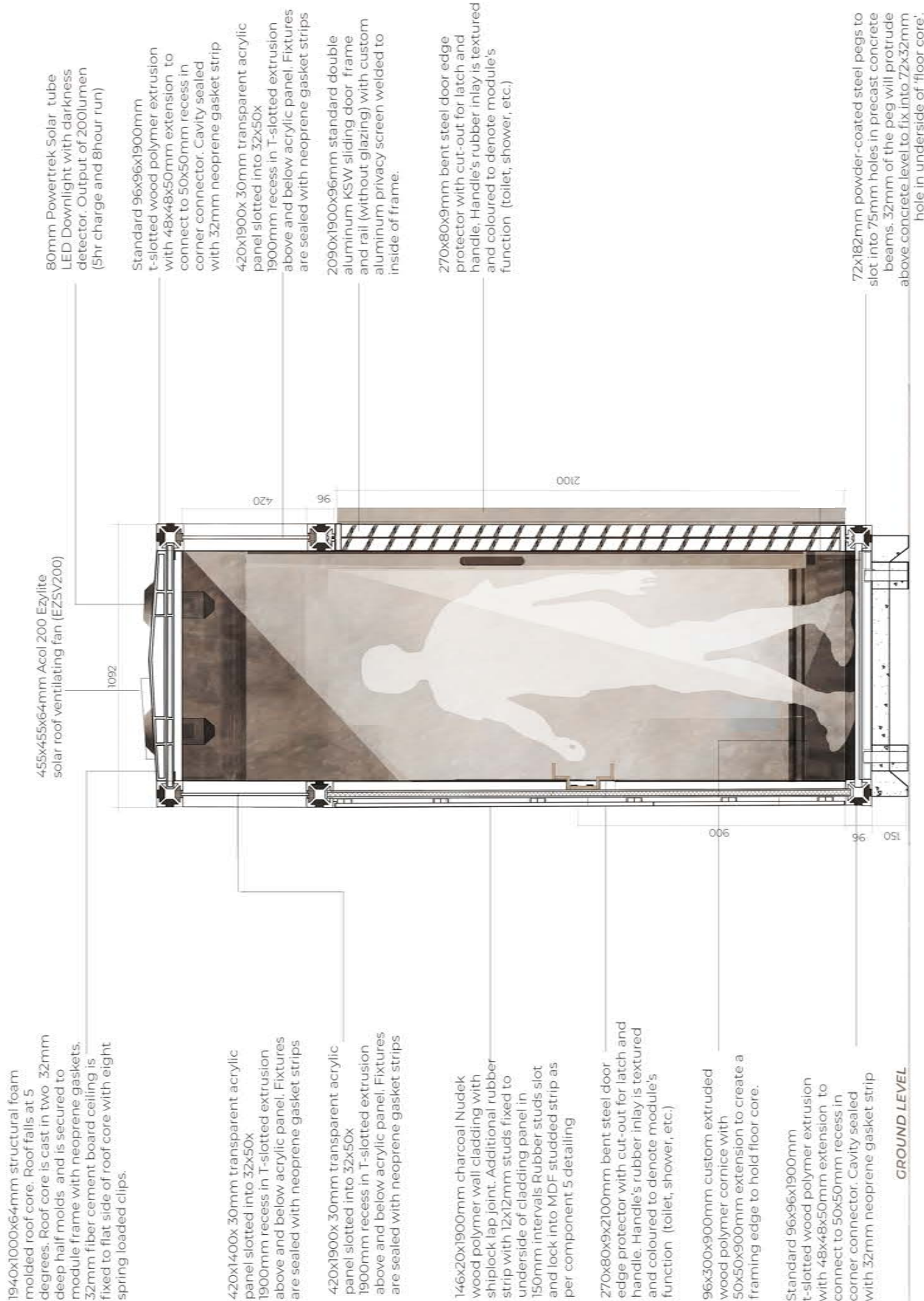


96x300x900mm custom extruded wood polymer cornice with 50x50x900mm extension to create a framing edge to hold roof core.

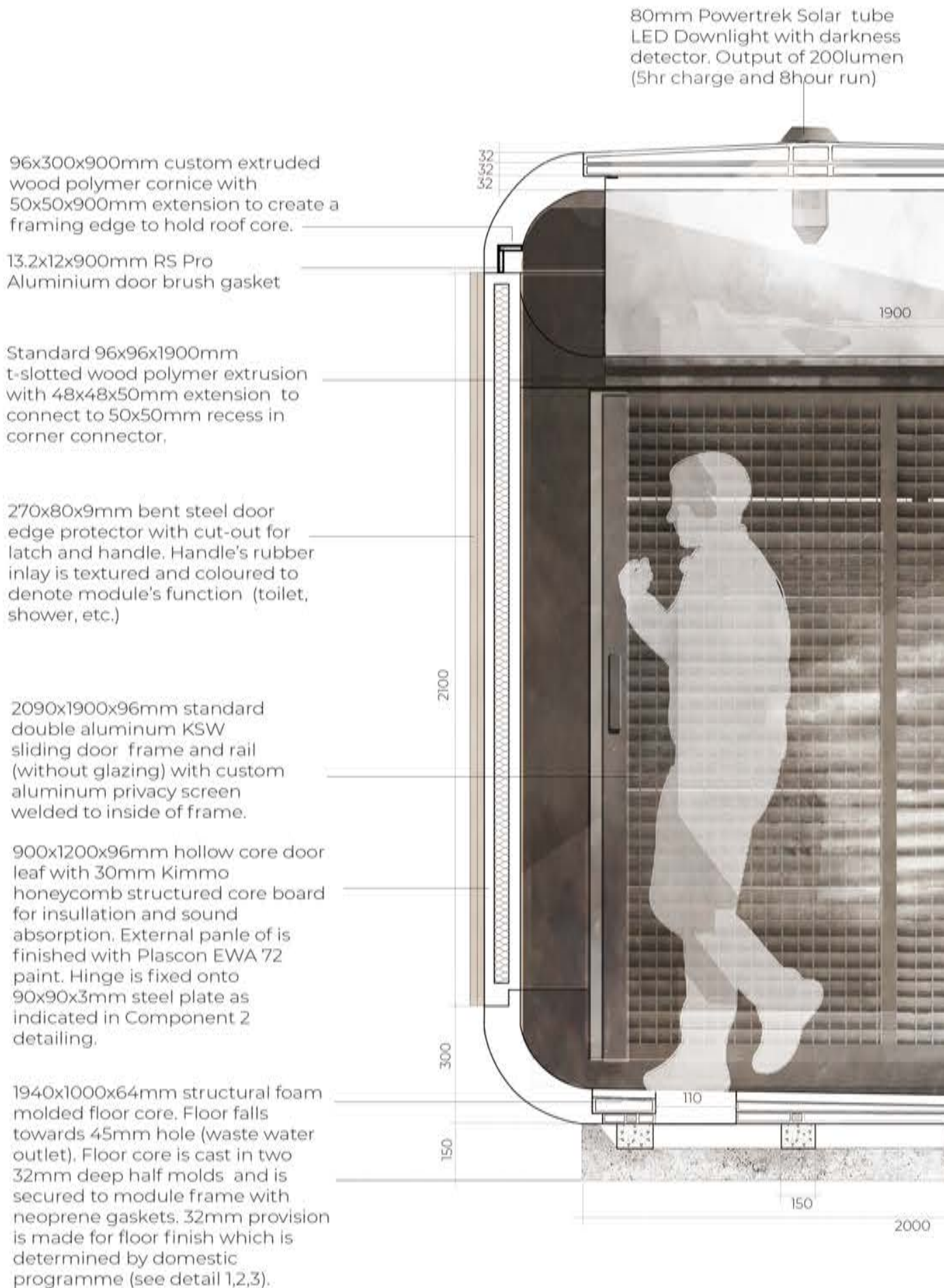
96x300x300mm custom extruded wood polymer corner connector with 50x50mm recess for 48x48mm extension from 96x96x2100mm t-slotted extrusions to

Standard 96x96x1900mm t-slotted wood polymer extrusion with 48x48x50mm extension to connect to 50x50mm recess in corner connector.

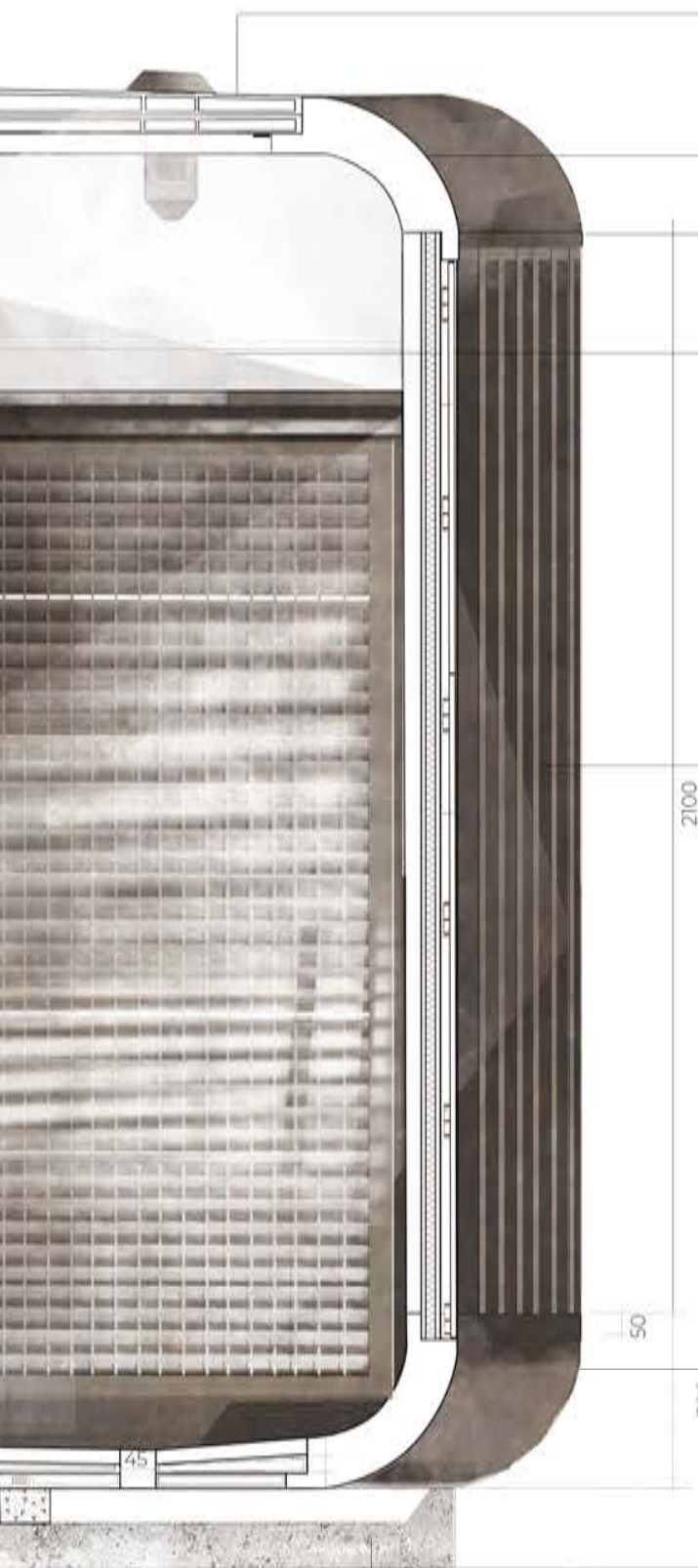
270x80x9mm bent steel door edge protector with cut-out for latch and handle. Handle's rubber inlay is textured and coloured to denote module's function (toilet, shower, etc.)



section B-B (no internal finishes)



section A-A (



1940x1000x64mm structural foam molded roof core. Roof falls at 5 degrees. Roof core is cast in two 32mm deep half molds and is secured to module frame with neoprene gaskets. 32mm fiber cement board ceiling is fixed to flat side of roof core with eight spring loaded clips.

96x300x900mm custom extruded wood polymer cornice with 50x50x900mm extension to create a framing edge to hold roof core.

420x1400x 30mm transparent acrylic panel slotted into 32x50x 1900mm recess in T-slotted extrusion above and below acrylic panel. Fixtures are sealed with neoprene gasket strips

146x20x1900mm charcoal Nudek wood polymer wall cladding with shiplock lap joint. Additional rubber strip with 12x12mm studs fixed to underside of cladding panel in 150mm intervals Rubber studs slot and lock into MDF studded strip as per component 5 detailing

96x300x900mm custom extruded wood polymer cornice with 50x50x900mm extension to create a framing edge to hold floor core.

150 x150x2000mm concrete beams precast with 75mm holes at 500mm centre to centre. Precast members fasten to each other and to module floor with 72mm steel pegs.

(no internal finishes)

1940x1000x64mm structural foam molded roof core. Roof falls at 5 degrees. Roof core is cast in two 32mm deep half molds and is secured to module frame with neoprene gaskets. 32mm fiber cement board ceiling is fixed to flat side of roof core with eight spring loaded clips.

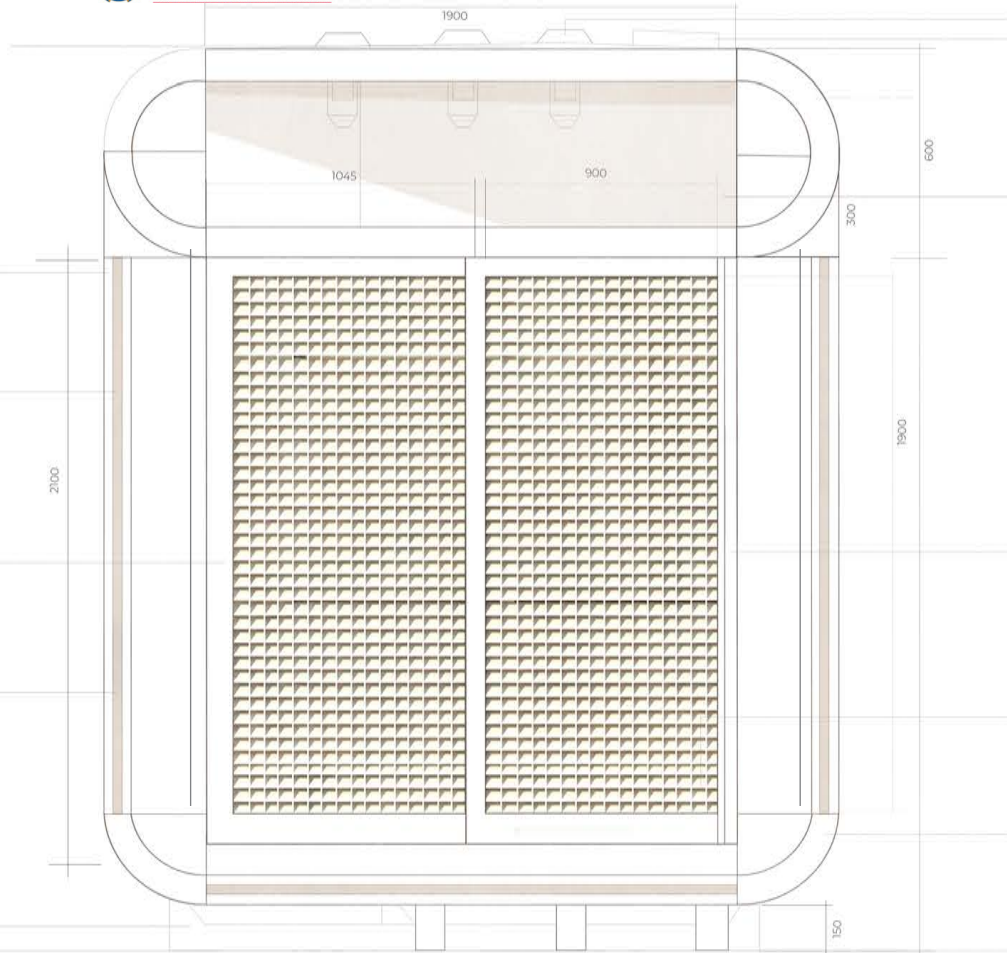
Standard 96x96x1900mm t-slotted wood polymer extrusion with 48x48x50mm extension to connect to 50x50mm recess in corner connector.

32x32x1900mm neoprene gasket strip to seal opening in t-slotted profile

2090x1900x96mm standard double aluminum KSW sliding door frame and rail (without glazing) with custom aluminum privacy screen welded to inside of frame.

Standard 96x96x1900mm t-slotted wood polymer extrusion with 48x48x50mm extension to connect to 50x50mm recess in corner connector.

150 x150x2000mm concrete beams precast with 75mm holes at 500mm centre to centre. Precast members fasten to each other and to module floor with 72mm steel pegs.



front elevation

455x455x64mm Acol 200 EzyLite solar roof ventilating fan (EZSV200)

1940x1000x64mm structural foam molded roof core. Roof falls at 5 degrees. Roof core is cast in two 32mm deep half molds and is secured to module frame with neoprene gaskets. 32mm fiber cement board ceiling is fixed to flat side of roof core with eight spring loaded clips.

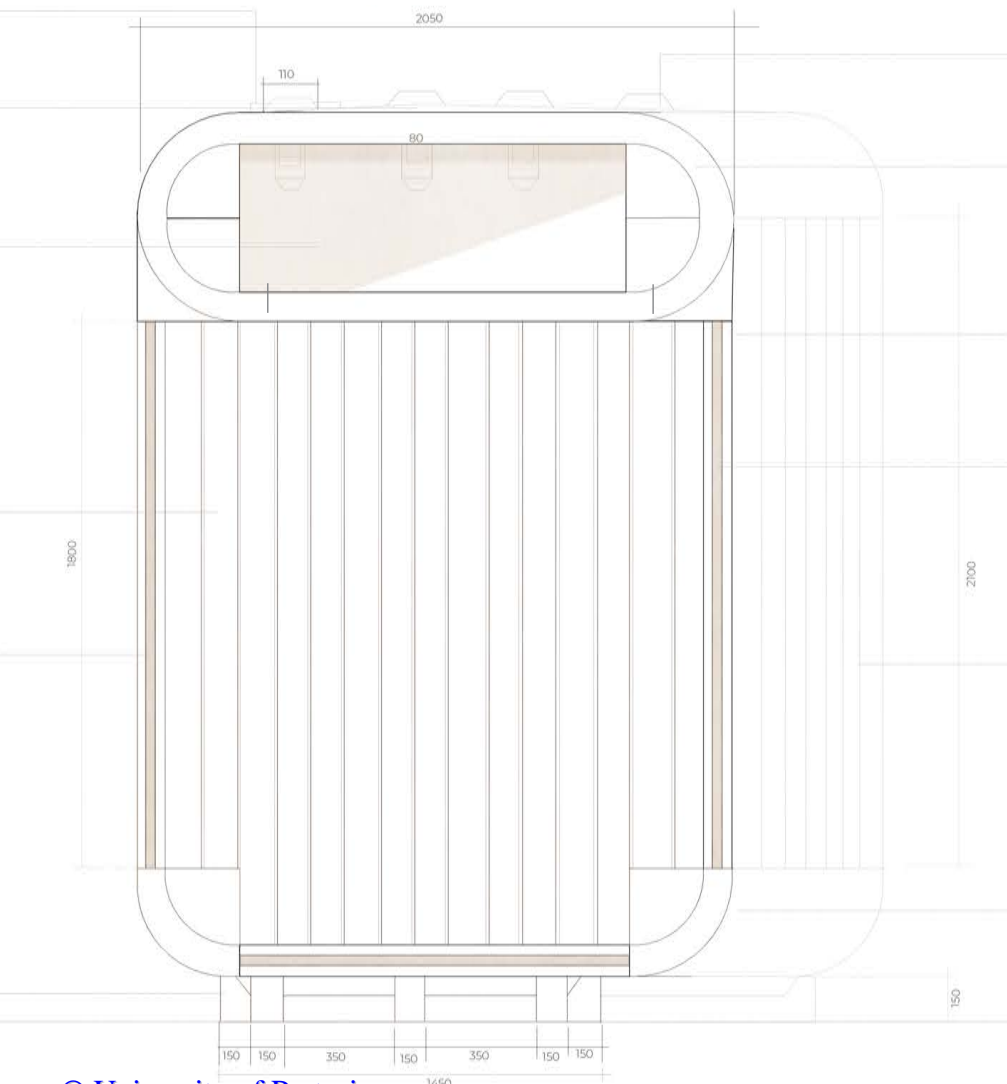
420x1400x 30mm transparent acrylic panel slotted into 32x50x1900mm recess in T-slotted extrusion above and below acrylic panel. Fixtures are sealed with neoprene gasket strips

146x20x1900mm charcoal Nudek wood polymer wall cladding with shiplock lap joint. Additional rubber strip with 12x12mm studs fixed to underside of cladding panel in 150mm intervals Rubber studs slot and lock into MDF studded strip as per component 5 detailing

32x32x1900mm neoprene gasket strip to seal opening in t-slotted profile

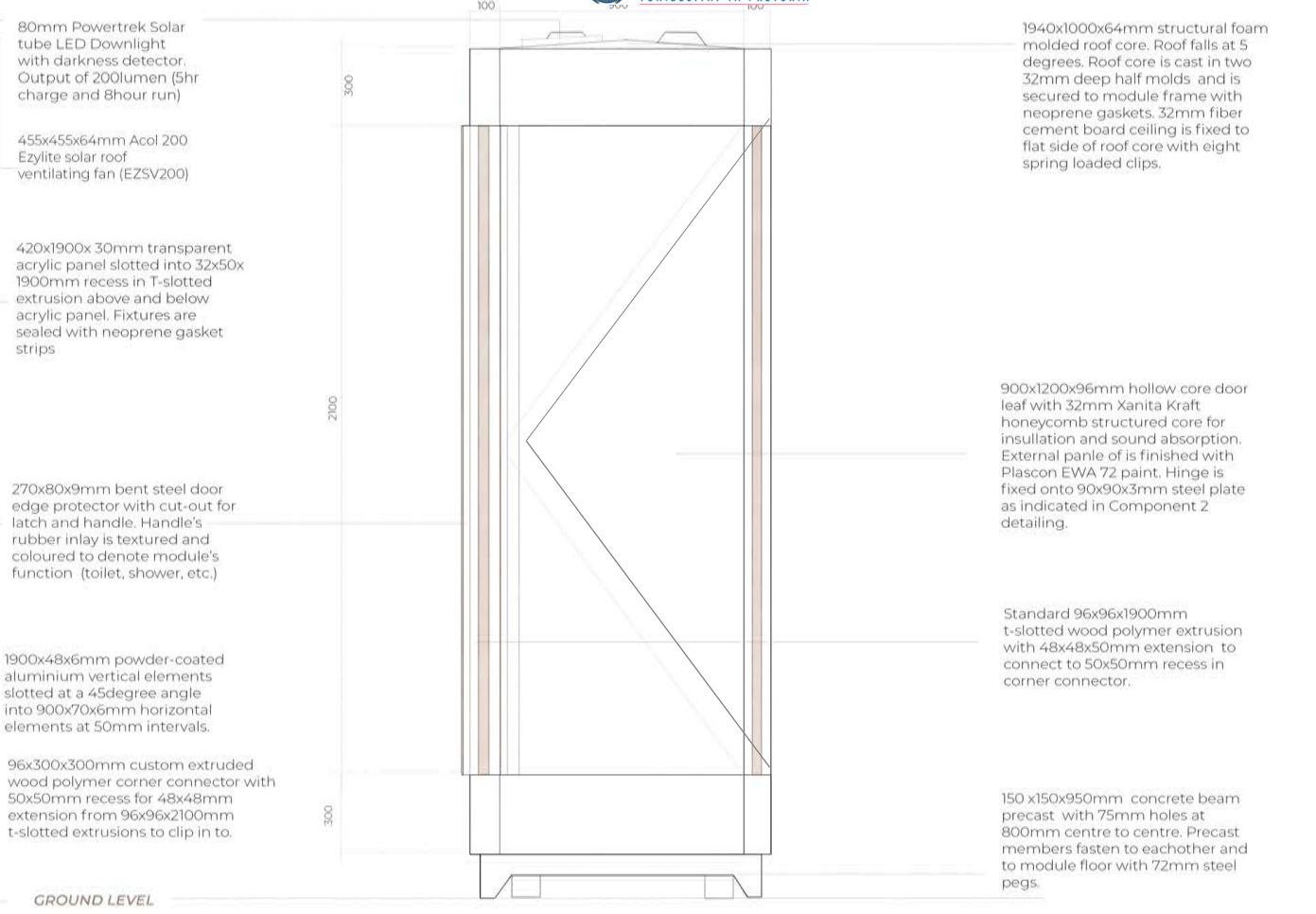
Standard 96x96x1900mm t-slotted wood polymer extrusion with 48x48x50mm extension to connect to 50x50mm recess in corner connector.

150 x150x1450mm concrete beams precast with 75mm holes at 500mm centre to centre. Precast members fasten to each other and to module floor with 72mm steel pegs.

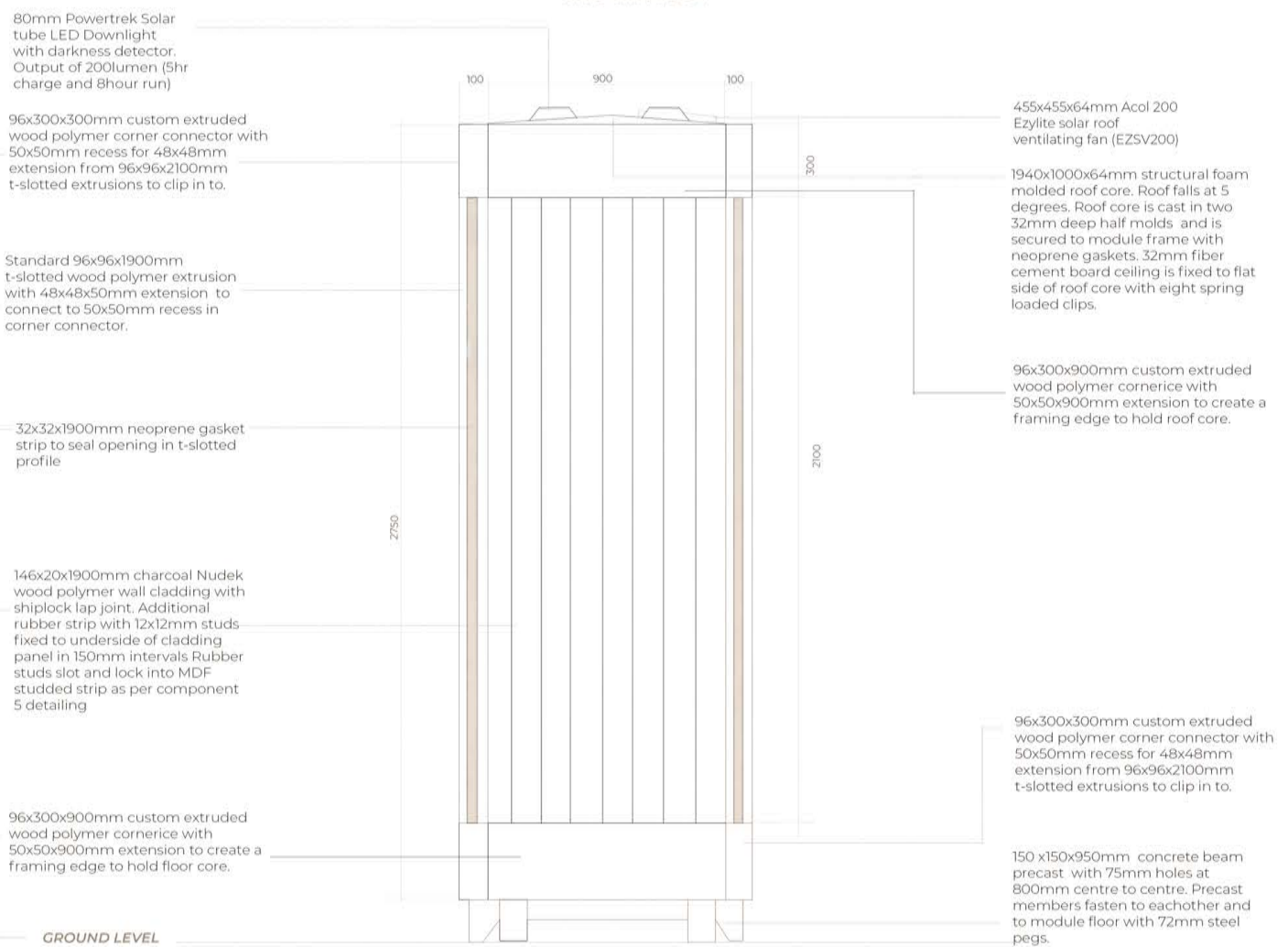


back elevation





side elevation



side elevation

services

- ✓ PASS
- ✓ DAY
- ✓ SOLA
- ✓ ACOU

80mm Powertrek Solar tube LED Downlight with darkness detector. Output of 200lumen (5hr charge and 8hour run)

420x1900x 30mm transparent acrylic clerestory window

900x1200x96mm hollow core door leaf with 30mm Kimmo honeycomb structured core board for insulation and sound

2090x1900x96mm standard double aluminum KSW sliding door frame and rail (without glazing) with custom aluminum privacy screen welded to inside of frame.



## within *module*

POSITIVE VENTILATION  
NATURAL LIGHTING  
SOLAR LIGHTING  
ACOUSTICS

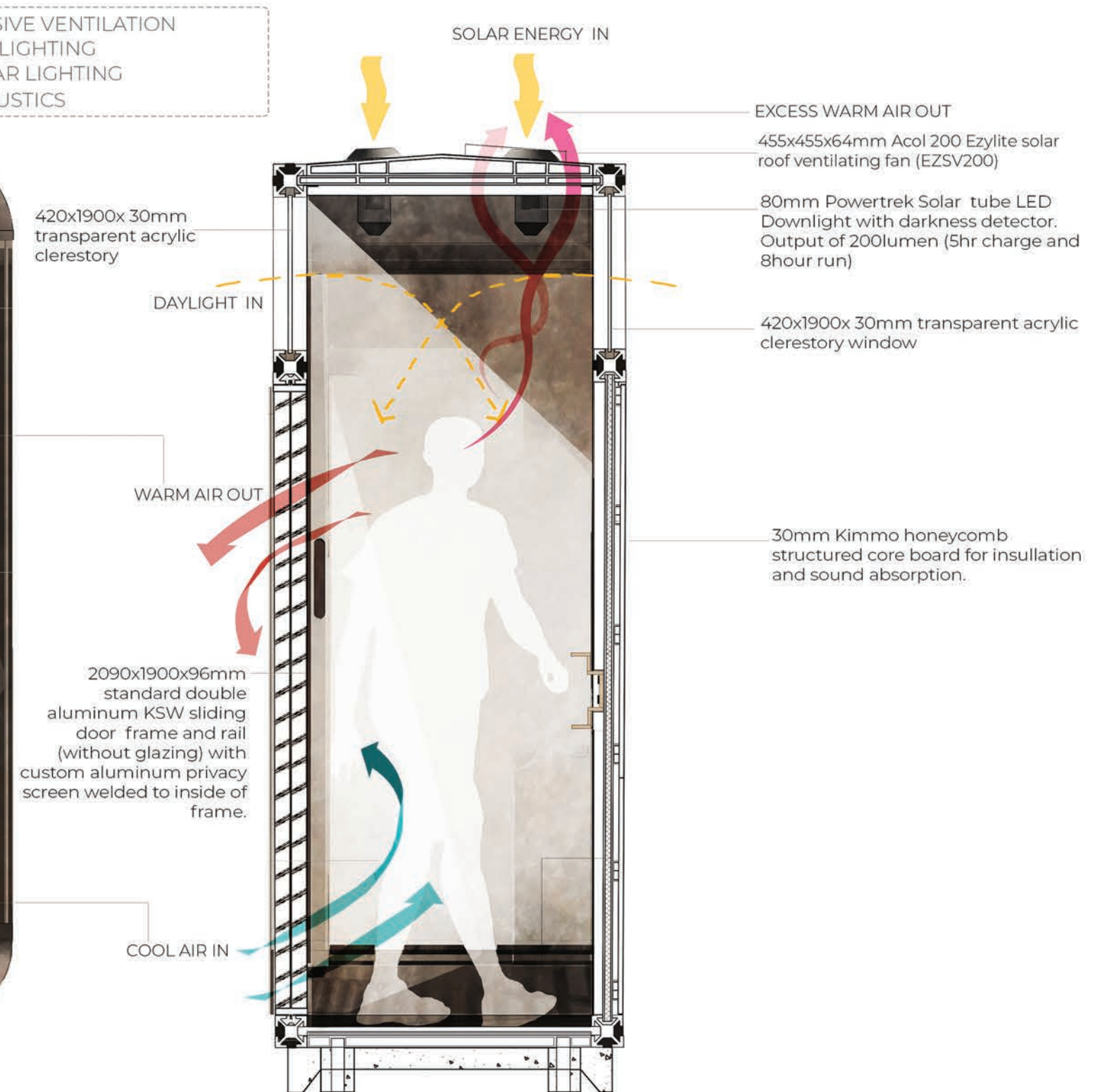


Figure 9.5.8 Accommodating services in base module

## COMPONENTS OF MODULE

**Component 1** unpacks the sliding screen by showing how a standard aluminium sliding door frame and rail relates to the t-slotted extrusion. Thereafter the aluminium slotted privacy screen is fitted to the frame and strips of woven polyethylene are woven into slots in the screen. This creates privacy bands and dapples light, referencing the light through a curtain or blinds. A 1:1 prototype of the screen was built and the resultant light quality is depicted in Figure 9.5.8 alongside.

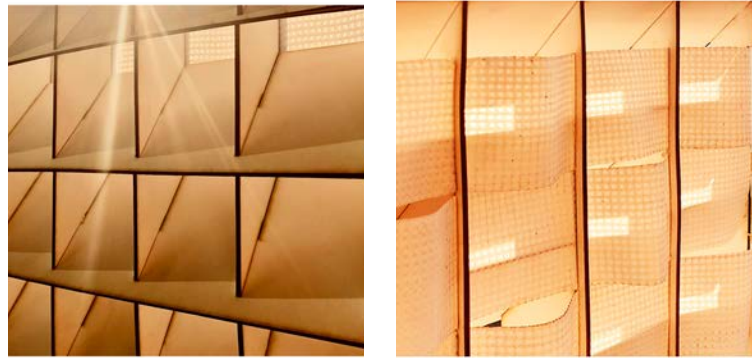
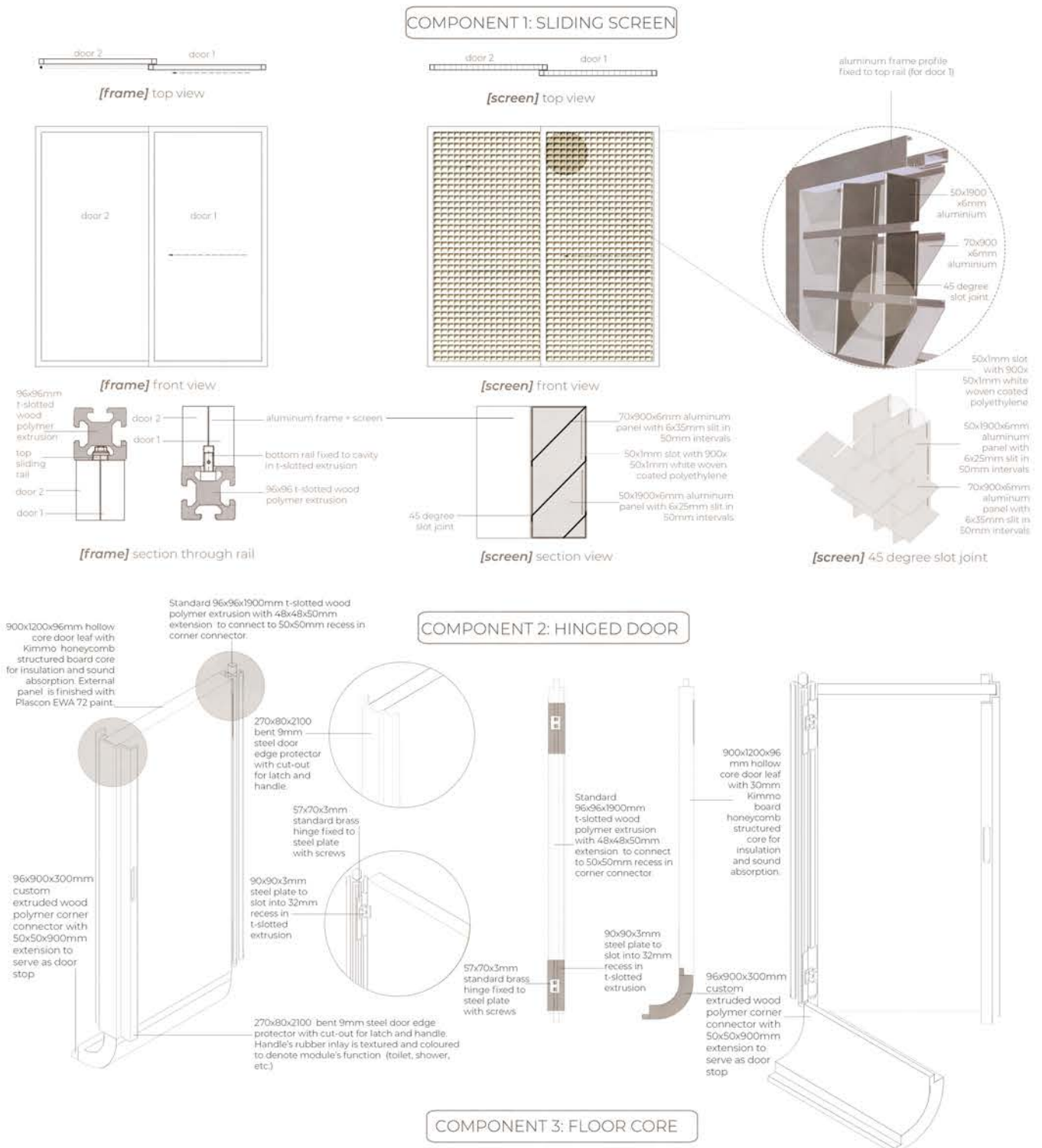
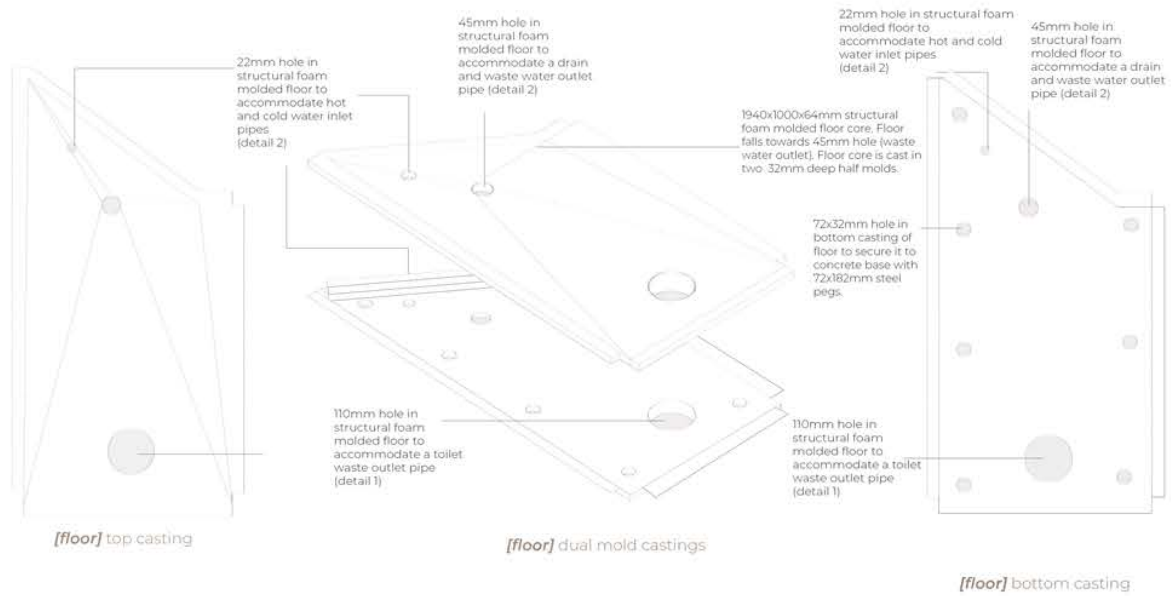
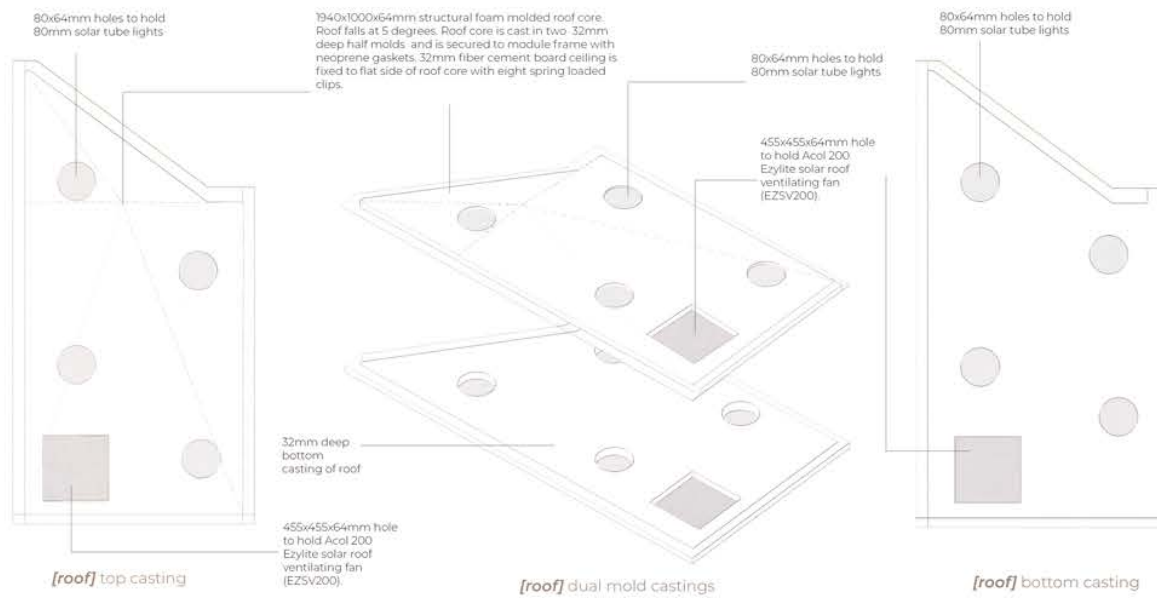


Figure 9.5.9 Testing light quality through screen





**COMPONENT 4: ROOF CORE**



**COMPONENT 5: REMOVABLE EXTERNAL CLADDING**

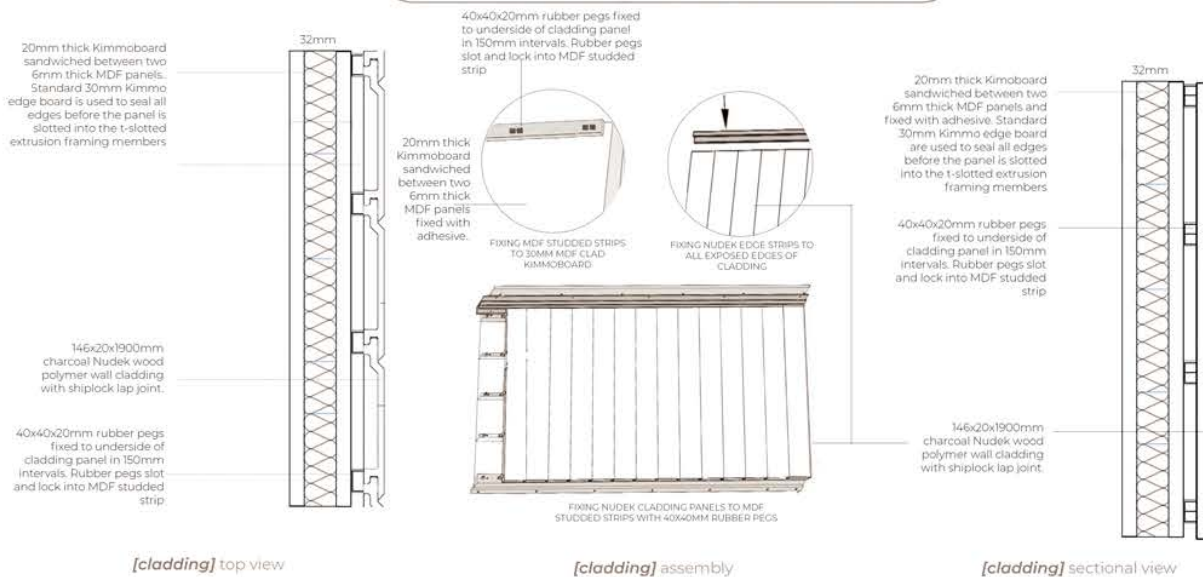


Figure 9.5.11 Component 3, 4 and 5 detail

[9.6] BASE MODULE ASSEMBLY  
FOUNDATION KIT

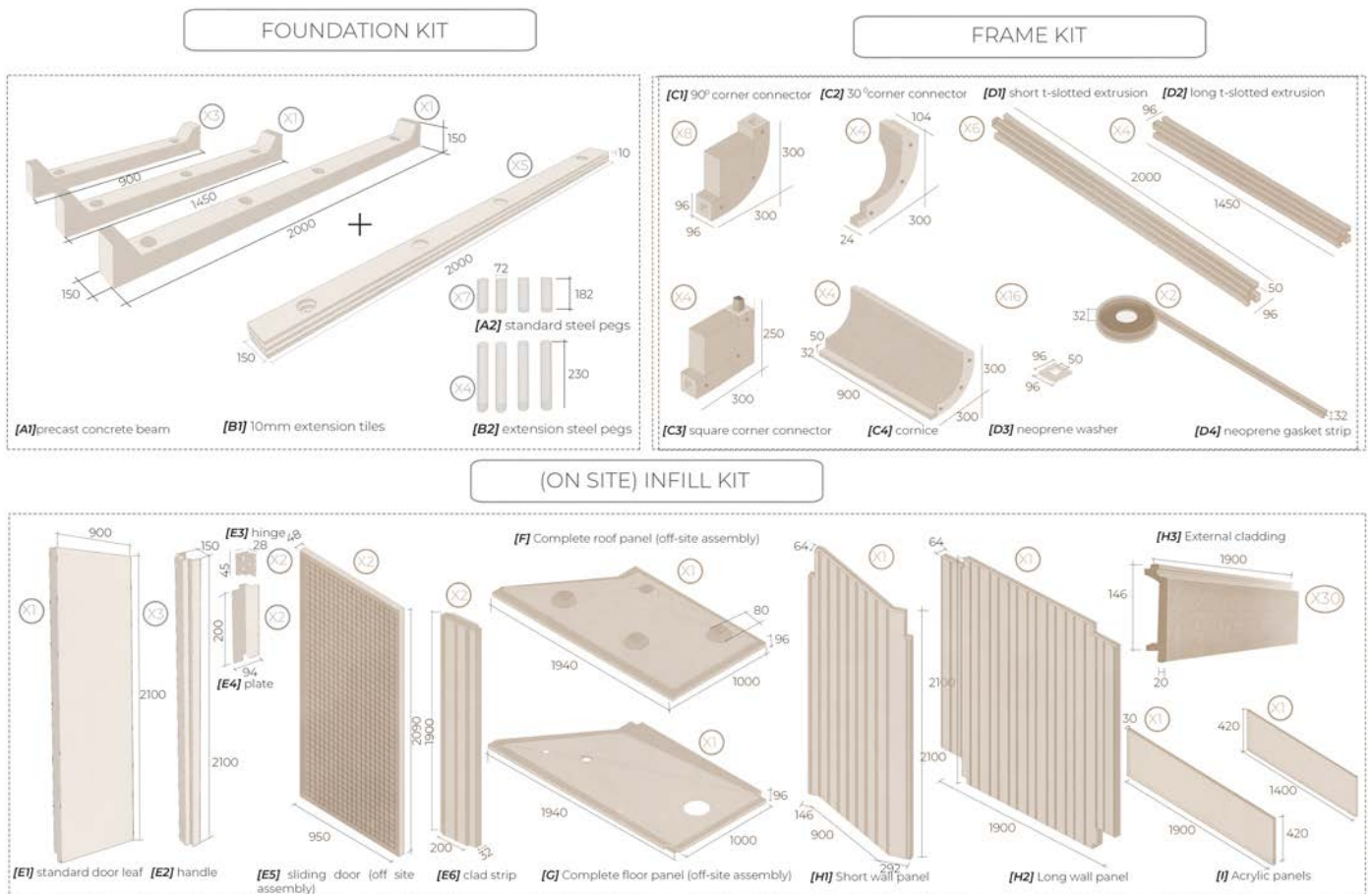


Figure 9.6.1 Base module kit of parts

## [9.6.1] ON-SITE ASSEMBLY

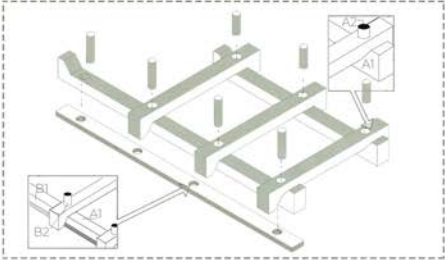
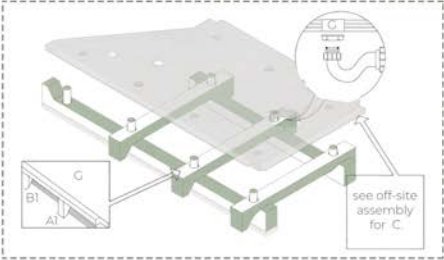
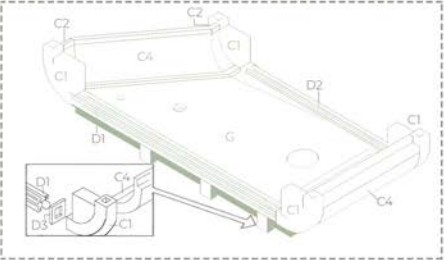
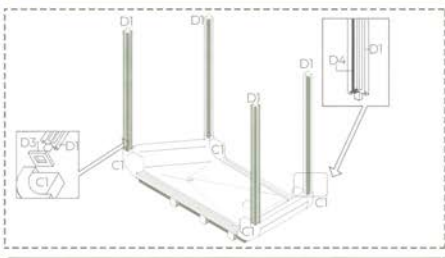
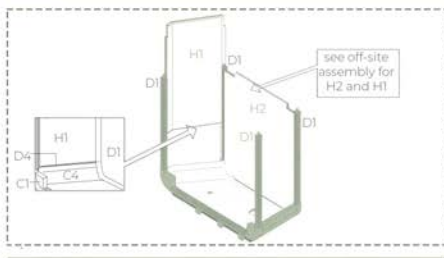
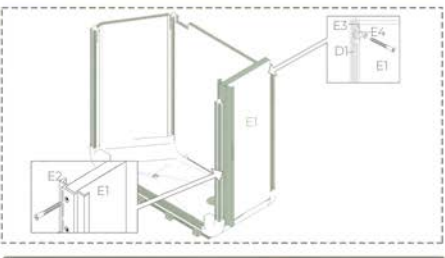
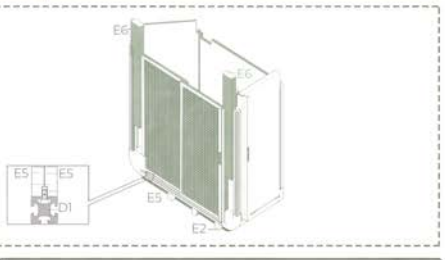
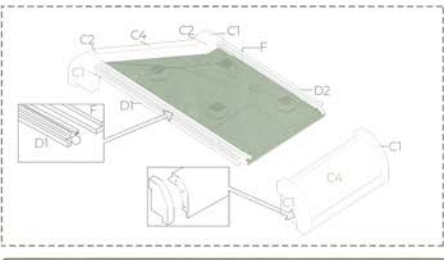
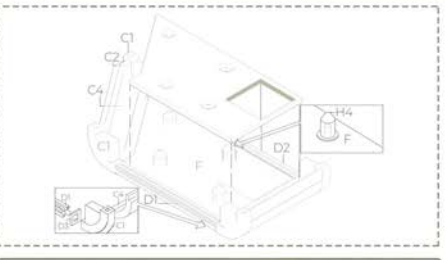
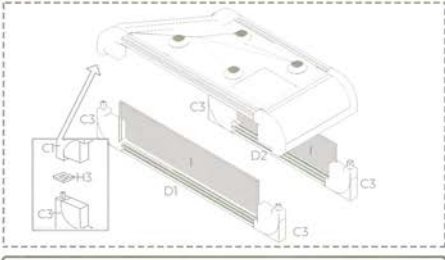
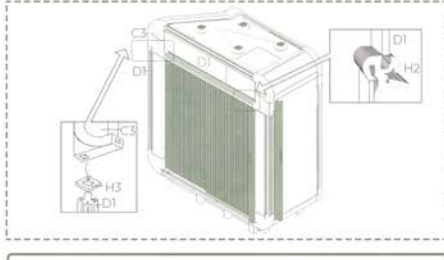
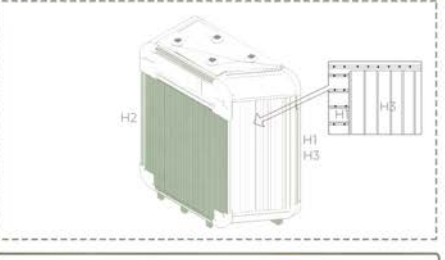
<p><b>01 constructing the base</b></p>  <p><b>Step 1:</b> Determine the slope of the site (max. 1:8 one-directional fall). <b>Step 2 [optional]:</b> Fix up to 5 extender tiles (B1) to bottom of long precast concrete beam (A1) using extender steel pegs (B2). <b>Step 3:</b> Fix remaining 4 precast concrete beams (A1) to each other with standard steel pegs (A2).</p>	<p><b>02 fitting the floor panel</b></p>  <p><b>Step 4:</b> Connect the underside of the floor panel (G) to steel pegs (A2+B2). <b>Step 5:</b> Install programme-specific service pipes to appropriate cavity in floor and seal with neoprene gasket. <b>Step 6:</b> Plug other cavities with PVC plug and seal.</p>	<p><b>03 building the bottom of the frame</b></p>  <p><b>Step 7:</b> Connect T-slotted extrusions (D1+D2) to floor (G) and seal with neoprene gasket strip. <b>Step 8:</b> Slot C4 cornice to floor cavity. Connect C2 to diagonal edge. <b>Step 9:</b> Click C1 into C4 and C2 and place neoprene washer (D3) before connecting to D1 and D2.</p>
<p><b>04 slot in uprights</b></p>  <p><b>Step 10:</b> Add neoprene washer (D3) to top of C1 corner connectors. <b>Step 11:</b> Slot T-slotted extrusions (D1) to all four corners (C1). <b>Step 12:</b> Seal all outside-facing slots in T-slotted extrusion (D1) with neoprene gasket strips (D4).</p>	<p><b>05 add wall panels</b></p>  <p><b>Step 13:</b> Slide short wall panel (H1) into 32mm cavity in T-slotted extrusion (D1). <b>Step 14:</b> Slide short wall panel (H2) into 32mm cavity in T-slotted extrusion (D1). <b>Step 15:</b> Seal the bottom of wall panels to frame with neoprene gasket.</p>	<p><b>06 add hinged door</b></p>  <p><b>Step 16:</b> Connect hinge (E4) to plate (E3) and fix to D1. <b>Step 17:</b> Fasten door leaf (E1) to hinge with screws. <b>Step 18:</b> Screw handle (E2) to side of door leaf (E1). <b>** Door brush is only added in 08: Roof and Frame**</b></p>
<p><b>07 adding sliding doors</b></p>  <p><b>Step 19:</b> Install bottom rail to T-slotted extrusion. <b>Step 20:</b> Slide both E5 doors onto bottom rail and secure handle (E2) to one edge with screws. <b>Step 21:</b> Slide in E6 clad strips between upright T-slotted extrusion and E5 door frame. Seal with neoprene gasket.</p>	<p><b>08 roof and frame</b></p>  <p><b>Step 22:</b> As a separate assembly, build a frame around the roof panel (F) using corner connectors C1, C2 and C4. <b>Step 23:</b> Next, slot in T-slotted extrusions (D1 and D2) to C1 cavity. <b>Step 24:</b> Ensure all outward facing cavities of T-slotted extrusions are sealed with neoprene gasket (D4).</p>	<p><b>09 add the ceiling</b></p>  <p><b>Step 25:</b> Turn assembly from 08 upside-down. <b>Step 26:</b> Use B spring loaded clips fitted to underside of roof panel to fix fiber cement ceiling board to roof panel. <b>Step 27:</b> Use neoprene gasket strips (D4) to seal and secure light and ventilator fan to ceiling.</p>
<p><b>10 adding windows</b></p>  <p><b>Step 28:</b> Use C3 and D1 members to build frame 1 and C3 and D2 members to build frame 2. <b>Step 29:</b> Slot in acrylic panels (I) to Frame 1 and 2. Secure with H4 strip. <b>Step 30:</b> Turn the construction from 09 back around and connect C1 corner pieces to C3 corner pieces using a H3 neoprene washer.</p>	<p><b>11 putting it all together</b></p>  <p><b>Step 31:</b> Add top sliding door rail to underside of D1 T-slotted extrusion. <b>Step 32:</b> Connect construction from 10 to construction from 07 using a neoprene washer (H3) at each corner. <b>Step 33:</b> Check all exposed cavities in T-slotted extrusions (D1 and D2) and sealed with H4 neoprene gasket strip.</p>	<p><b>12 external cladding</b></p>  <p><b>Step 34:</b> Using the MDF studded strips added to H1 and H2 (see off-site assembly), start at one end and push rubber pegs fixed to bottom of cladding into holes along wall panel until secure. <b>Step 35:</b> Repeat Step 34, making sure ship-lap joinery is correct and secure. Ensure all junctions with the frame are sealed with H4 gasket.</p>

Figure 9.6.2 On-site assembly of base module

## [9.6.2] OFF-SITE ASSEMBLY

### ASSEMBLY OF C: FLOOR

The floor core, as detailed on page 194, has three holes to accommodate the appropriate service (programme determined). The holes that are not in use, are plugged with a neoprene gasket plug. Thereafter, four 20x40mm anodized aluminium hollow floor joists are fixed to floor core with screws in 300mm intervals. These serve to level the floor plane. Next, the programme specific floor finish is laid. In all modules, except the shower, a Medium Density Fiber board is fitted as a ground sheet before the interior cladding is laid. All junctions with the floor panel and the module's frame, are sealed with a neoprene gasket strip.

### ASSEMBLY OF H1+H2: WALL

The wall core is a 20mm thick Kimmoboard panel (insulation) with standard 20mm Kimmo Edge-board sandwiched between two 6mm thick Medium Density Fiberboards. Anodized aluminium hollow horizontal wall studs are screwed into one side 6mm fiberboard in 600mm intervals. Anodized aluminium hollow Vertical wall studs are screwed into other side 6mm fiberboard in 300mm intervals. External cladding is fastened to wall studs as per Component 5 on page 194. The internal cladding is programme specific but in all instances cladding is directly fastened to the vertical wall studs.

## ASSEMBLY OF C

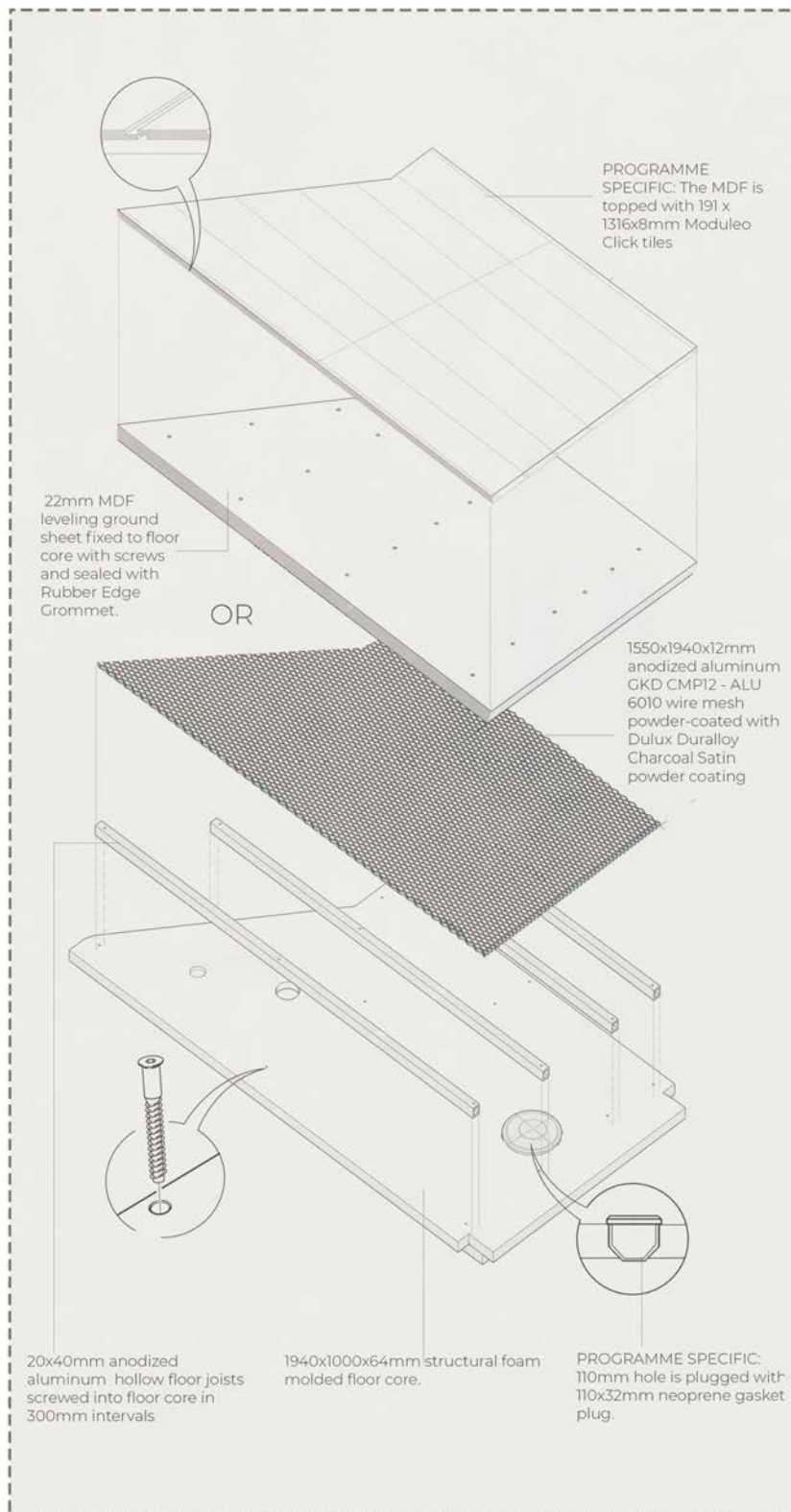
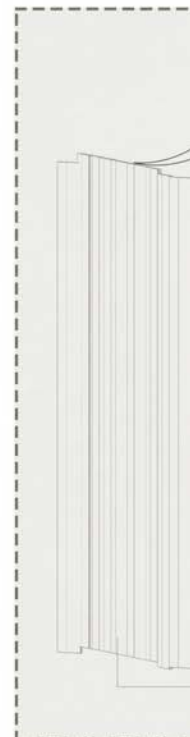


Figure 9.6.3 Off-site assembly of base module

## ASSEMBLY

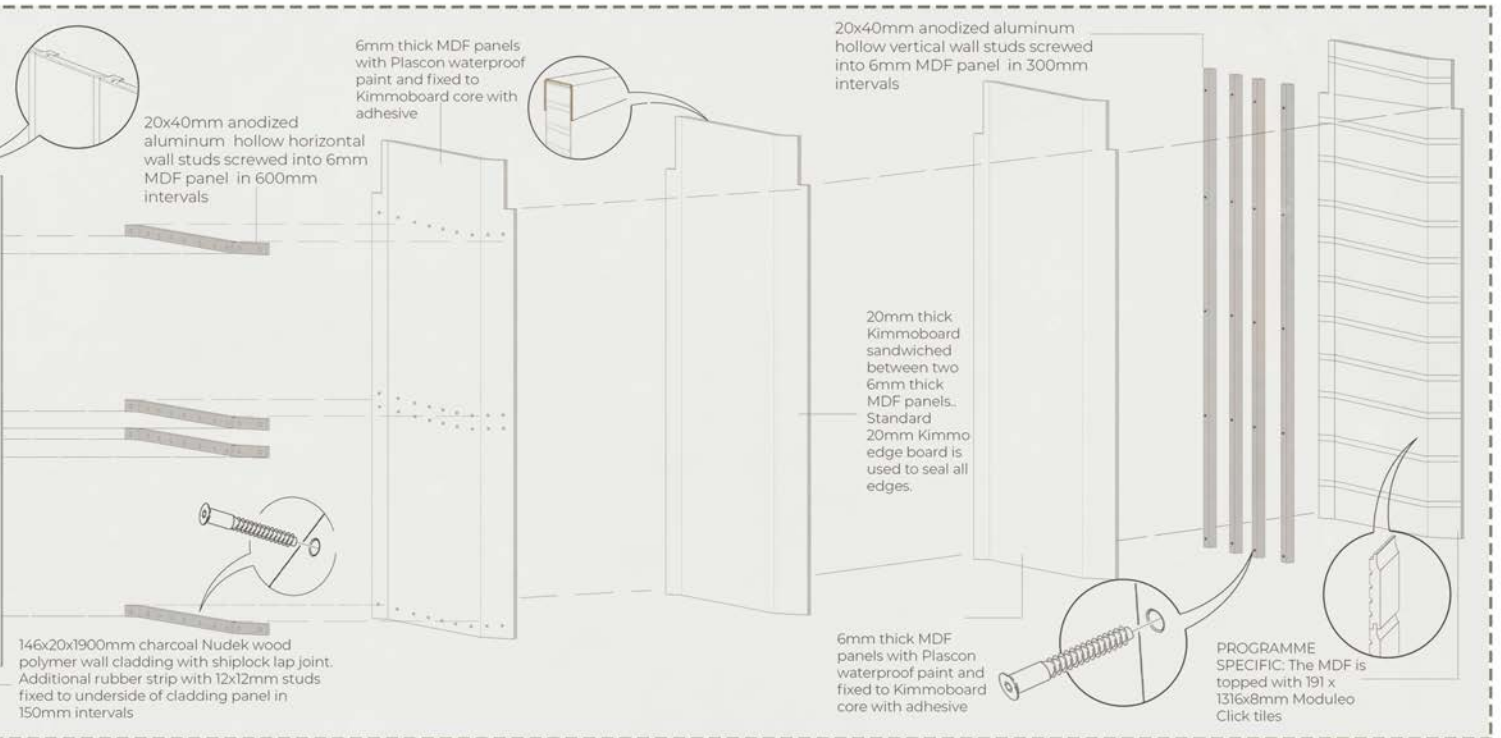


## ASSEMBLY

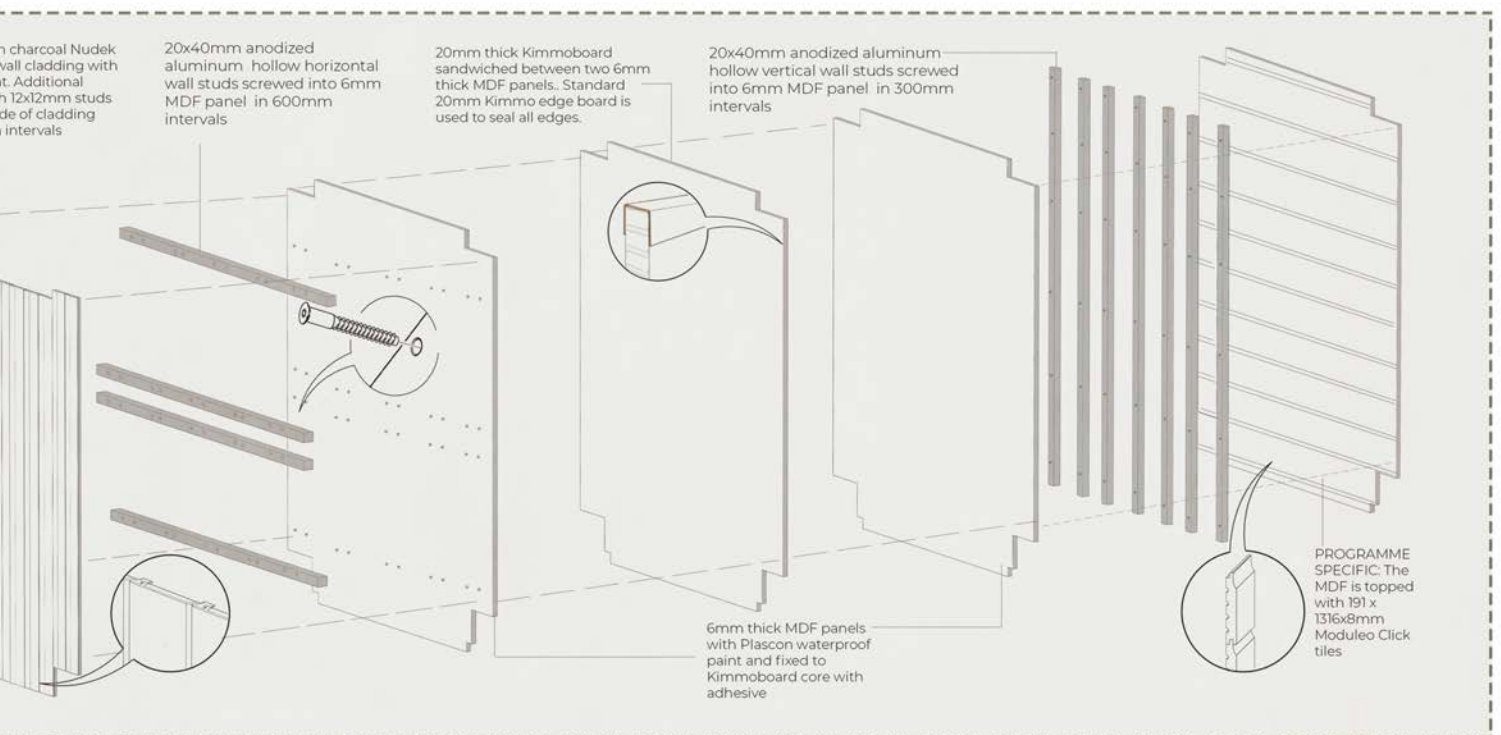




## Y OF H1



## Y OF H2



[9.7] #1 BASE MODULE + TOILET



Figure 9.7.1 Locality within Halfway+

The location of the toilet modules are opposite the staircase to Pretorius Square allowing for visual access from the square inviting passersby to make use of the public amenity. The composting cavity has a hinged access door and when open the dry compost storage drawer can be slid open and compost can be directly moved to the nearby Grow area.

The relationship between the technical question and Detail 1 is unpacked in Figure 9.7.2 below.

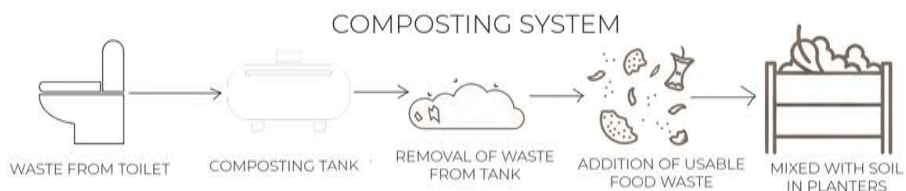
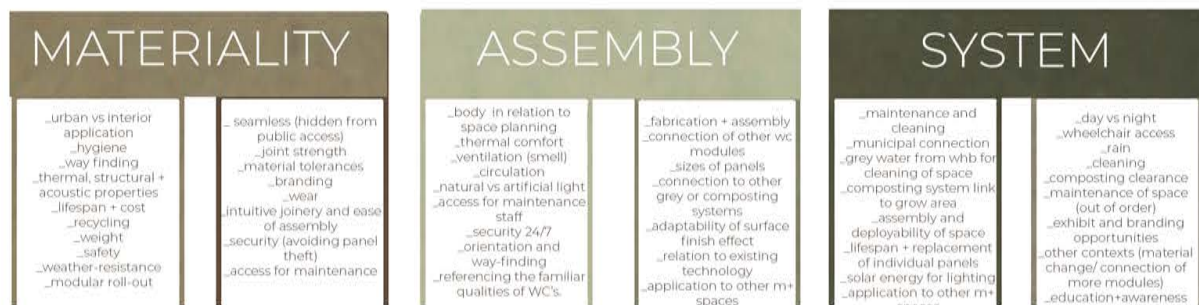


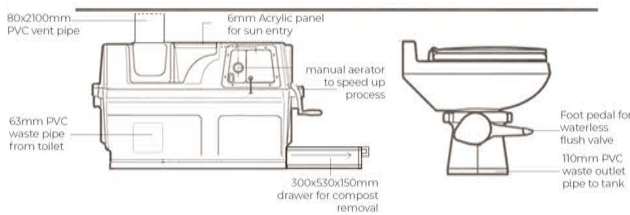
Figure 9.7.2 Toilet strategy and system

## THE TOILET MODULE

Two modules are joined together with a central service cavity where waste from two separate Sealand low flush toilets flow into a single Centrex 2000 composting tank. The tank is painted matt black with a glazed top to absorb as much heat as possible to speed up the composting process. When compost is dry enough it enters a drawer to be removed and used in the gardens. The cavity is accessed through a 550mm wide hinged panel that slots into the outside face of the t-slotted extrusion. The hinge, handle and lock for the cavity use the same detailing as Component 2 on page 173.

Interior materiality is specified in the plan alongside and the section on pages 207 and 208. A mood-board highlighting the interior quality is included on pages 209 and 210.

- Composting Tank:** Matt Black CENTREX 2000 NE non-electric, high capacity central composting tank with fitted vent stack.
- Toilet:** The Centrex 2000 NE may be used with one or more Sealand low flush toilets, purchased separately.
- Capacity:** 3-5 Residential/Continuous Use  
6-8 Weekend and Vacation Use
- Production:** 80grams of compost per person each week. 40kgs per person each year.
- How it works:** Separate toilet and tank (cavity) where all dry matter can be removed from drawer in tank.
- Dimensions:** Tank: 900x530x 850mm  
Dimensions: Toilet: 476x521x387mm



[specification] sanitary fixtures

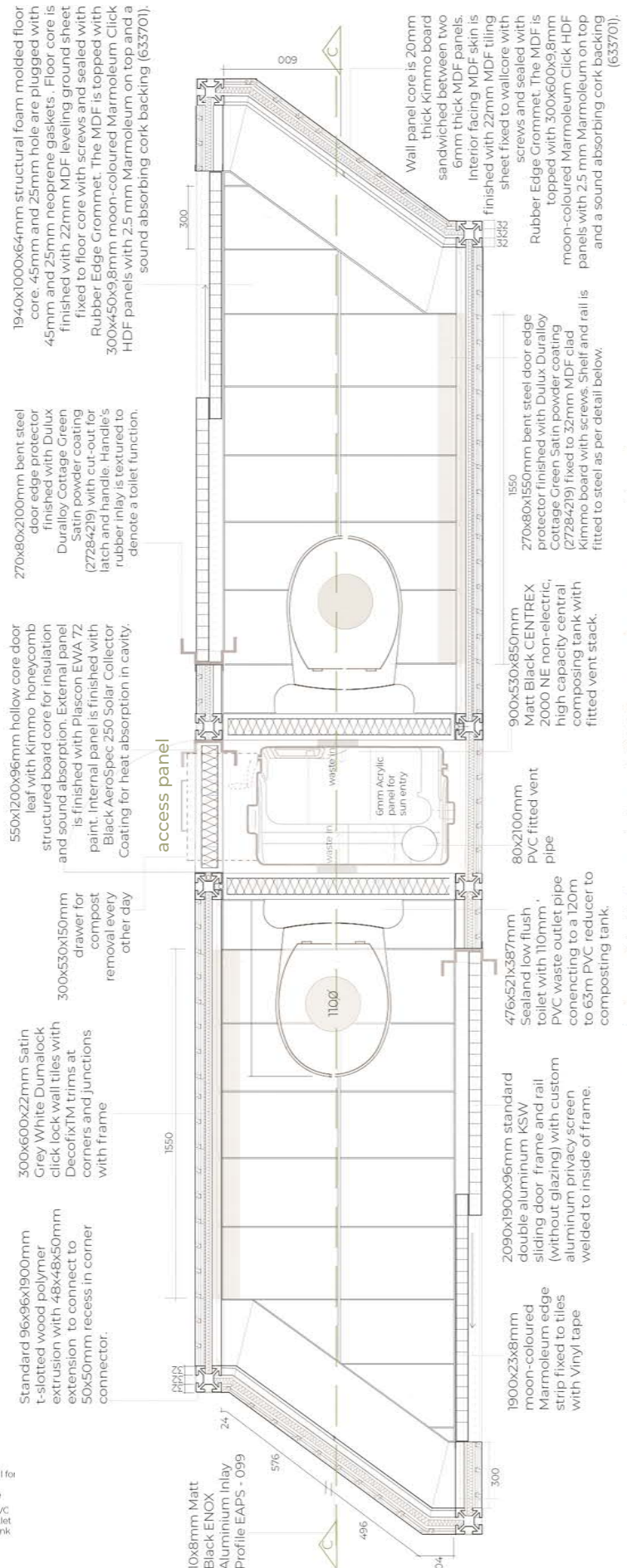


Figure 9.7.3 Plan of toilet modules

plan of toilet modules at 1000mm above ground level

80mm Powertrek Solar tube  
LED Downlight with darkness  
detector. Output of 200lumen  
(5hr charge and 8hour run)

550x1200x96mm hollow  
leaf. External panel is  
Plascon EWA 72 paint  
is finished with Black  
Solar Collector Coat  
absorption in

300x600x9,8mm  
moon-coloured  
Marmoleum  
Click HDF panels  
with 2.5 mm  
Marmoleum on  
top and a sound  
absorbing cork  
backing (633701).

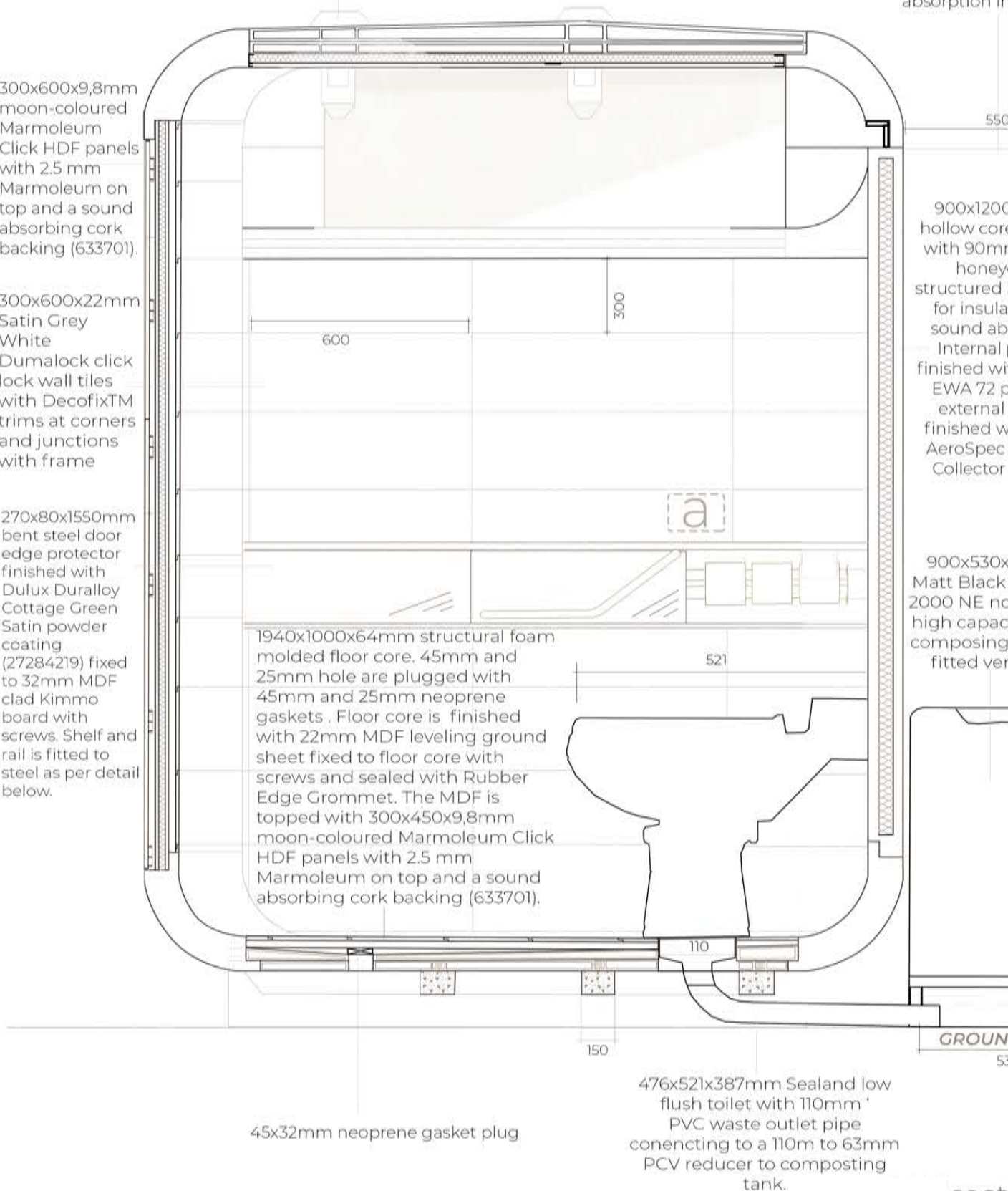
300x600x22mm  
Satin Grey  
White  
Dumalock click  
lock wall tiles  
with Decofix™  
trims at corners  
and junctions  
with frame

270x80x1550mm  
bent steel door  
edge protector  
finished with  
Dulux Duralloy  
Cottage Green  
Satin powder  
coating  
(27284219) fixed  
to 32mm MDF  
clad Kimmo  
board with  
screws. Shelf and  
rail is fitted to  
steel as per detail  
below.

1940x1000x64mm structural foam  
molded floor core. 45mm and  
25mm hole are plugged with  
45mm and 25mm neoprene  
gaskets. Floor core is finished  
with 22mm MDF leveling ground  
sheet fixed to floor core with  
screws and sealed with Rubber  
Edge Grommet. The MDF is  
topped with 300x450x9,8mm  
moon-coloured Marmoleum Click  
HDF panels with 2.5 mm  
Marmoleum on top and a sound  
absorbing cork backing (633701).

900x1200  
hollow core  
with 90mm  
honey  
structured  
for insula  
sound ab  
Internal p  
finished wi  
EWA 72 p  
external  
finished w  
AeroSpec  
Collector

900x530x  
Matt Black  
2000 NE no  
high capac  
composing  
fitted ver



45x32mm neoprene gasket plug

476x521x387mm Sealand low  
flush toilet with 110mm  
PVC waste outlet pipe  
conencting to a 110mm to 63mm  
PCV reducer to composting  
tank.

low core door  
 s finished with  
 t. Internal panel  
 x AeroSpec 250  
 ating for heat  
 n cavity.

1940x1000x64mm structural foam molded roof  
 core. Roof core is clad with 4mm Everite Nutec  
 fiber cement board finished with Dulux  
 evening Haze (2723055S). The fiber cement  
 board to fixed to 20mm Kimmo honeycomb  
 structured board with eight spring loaded clips

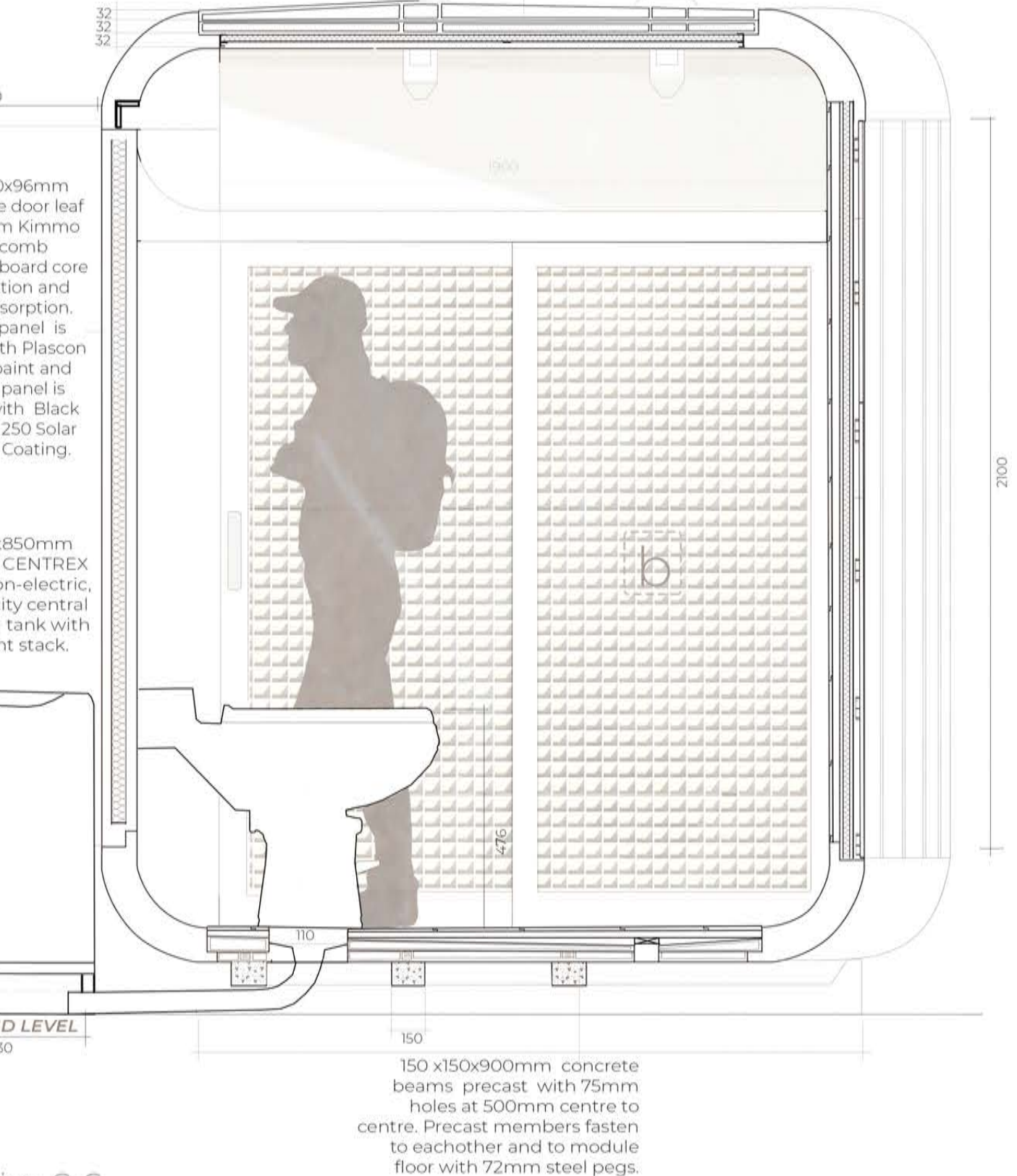


Figure 9.7.4 Section through toilet modules

270x35x6mm  
Lounge Cubis  
Mosaic Polished Tile  
strips fit to  
3x100mmMDF panel  
that slides along top  
and bottom rail

270x80x1550mm bent steel door edge  
protector finished with Dulux Duralloy  
Cottage Green Satin powder coating  
(27284219) fixed to 32mm MDF clad Kimmo  
board with screws.

tank.

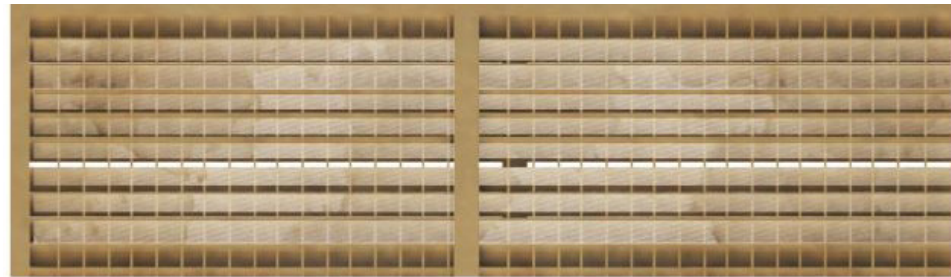
[1:10] sec

136x80m Eneo S6 matt black  
with metal flap (41529) fixed  
to 270x80x1550mm bent steel door  
with bolts



90x900m hollow brushed aluminium rail  
fastened to 270x80x1550mm bent steel door  
edge protector with screws at 910mm above  
finishe floor level

[a] detail of wall rail



136x80m Eneo S6 matt black  
toilet roll holder



600x125x420mm Bidvest Steiner  
slimline dustbin



270x35x6mm Lounge Cubis Mosaic Polished Tile strip

tion C-C

toilet roll holder  
to underside of  
edge protector



70x900x6mm aluminum  
panel with 6x35mm slit in 50mm  
intervals



50x1900x6mm aluminum  
panel with 6x25mm slit in 50mm  
intervals



50x1mm slot with 900x  
50x1mm white woven  
coated polyethylene

[b] detail of privacy screen



white woven coated polyethylene



300x600x22mm Satin Grey White Dumalock  
click lock wall tiles



300x450x9,8mm moon-coloured Marmoleum  
Click HDF panels with 2.5 mm Marmoleum on  
top and a sound absorbing cork backing  
(633701).

Figure 9.7.5 Interior quality and details

[9.8] #2 BASE MODULE + WASH (SELF)



Figure 9.8.1 Locality within Halfway+

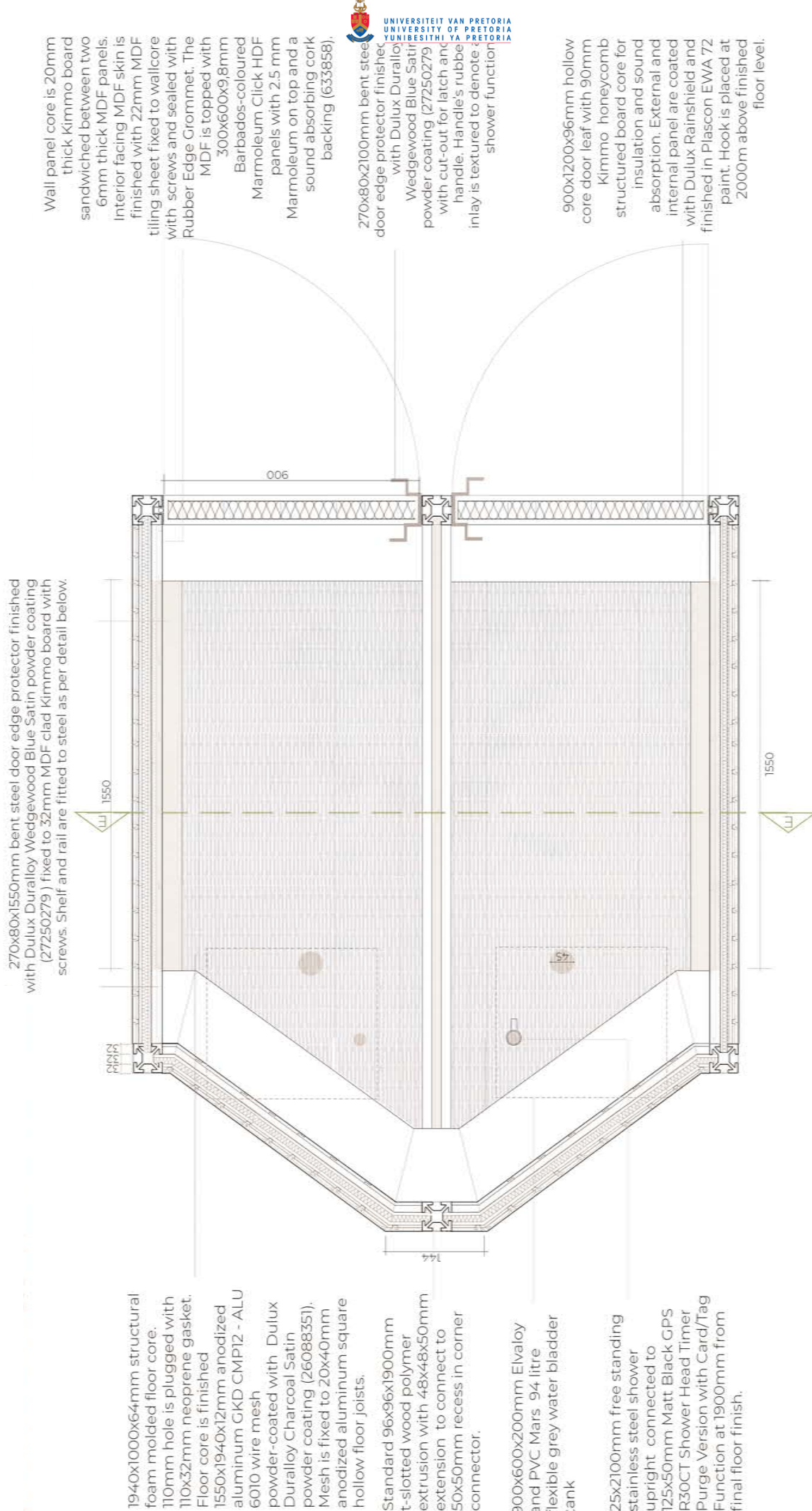
The wash (self) modules are positioned opposite the dress module. The double hinged doors swing open as indicated above and the latch from each door locks into the external cladding of the dress module. This ensures that a larger space is created linking the shower area to the dressing room. By linking the wash and dress area, the passage between them is shut off from public circulation allowing users to know the space is occupied from a long distance away.

The relationship between the technical question and Detail 2 is unpacked in Figure 9.8.2 below.



Figure 9.8.2 Shower strategy and system





270x80x1550mm bent steel door edge protector finished with Dulux Duralloy Wedgewood Blue Satin powder coating (27250279) fixed to 32mm MDF clad Kimmo board with screws. Shelf and rail are fitted to steel as per detail below.

Wall panel core is 20mm thick Kimmo board sandwiched between two 6mm thick MDF panels. Interior facing MDF skin is finished with 22mm MDF tiling sheet fixed to wallcore with screws and sealed with Rubber Edge Grommet. The MDF is topped with 300x600x9.8mm Barbados-coloured Marmoleum Click HDF panels with 2.5 mm Marmoleum on top and a sound absorbing cork backing (633858).

270x80x2100mm bent steel door edge protector finished with Dulux Duralloy Wedgewood Blue Satin powder coating (27250279) with cut-out for latch and handle. Handle's rubber inlay is textured to denote shower function

900x1200x96mm hollow core door leaf with 90mm Kimmo honeycomb structured board core for insulation and sound absorption. External and internal panel are coated with Dulux Rainshield and finished in Plascon EWA 72 paint. Hook is placed at 2000mm above finished floor level.

1940x1000x64mm structural foam molded floor core. 110mm hole is plugged with 110x32mm neoprene gasket. Floor core is finished 1550x1940x12mm anodized aluminum GKD CMP12 - ALU 6010 wire mesh powder-coated with Dulux Duralloy Charcoal Satin powder coating (26088351). Mesh is fixed to 20x40mm anodized aluminum square hollow floor joists.

Standard 96x96x1900mm t-slotted wood polymer extrusion with 48x48x50mm extension to connect to 50x50mm recess in corner connector.

900x600x200mm Elvaloy and PVC Mars 94 litre flexible grey water bladder tank

25x2100mm free standing stainless steel shower upright connected to 125x50mm Matt Black GPS R30CT Shower Head Timer Purge Version with Card/Tag Function at 1900mm from final floor finish.

Figure 9.8.3 Plan of wash modules at 1000mm above ground level

Figure 9.8.3 Plan of shower module

## WASH (SELF) MODULE

Two modules are joined together to create a wide interior space allowing for mothers/fathers to shower with their children. There is provision made for each module to function as an independent shower if the context and demand is appropriate. The water system is illustrated on page 220 explaining how municipal water reaches the shower head through a 3 minute timer and then is shut off. Thereafter, grey-water is drained into a 94 liter holding bladder tank before being pumped through a grease inceptor and into a 750litre horizontal Jojo tank.

Hygiene and maintenance is crucial informant for the floor materiality choice in the shower. A powder-coated expanded aluminium mesh is used as the floor finish such that one's feet are removed from the slippery floor core whilst allowing for water to fall through the mesh on to the sloped floor core towards the 45mm outlet pipe. The mesh can be removed such that cleaning of the floor core is accessible. The colour variation between the mesh and the floor core creates the illusion of a mosaic surface referencing traditional bathroom interiors.

**Shower system:** GPS R30CT Shower Timer Purge Version with Card/Tag Function (Matt black)

**How it works:** 1 token amounts to 3 min of water flow. Reset time 2min.

**Dimensions:** Control: 125x50mm Head: 125x70mm

**Dimensions:** Activation and display: 125x570mm

**+Timer is battery powered+**

**Bladder Tank:** Elvaloy and PVC Mars 94 litre flexible grey water bladder tank (0.9m x 0.6m x 0.2m).

3 MIN SHOWER WITH LOW-FLOW SHOWER HEAD USES 23,7 LITRES OF WATER AND COSTS R2,07	R3.00 FOR 3MIN  (EXTRA 93C ALLOWS THE FOOT SHOWER TO BE FREE)
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**[specification]** sanitary fixtures

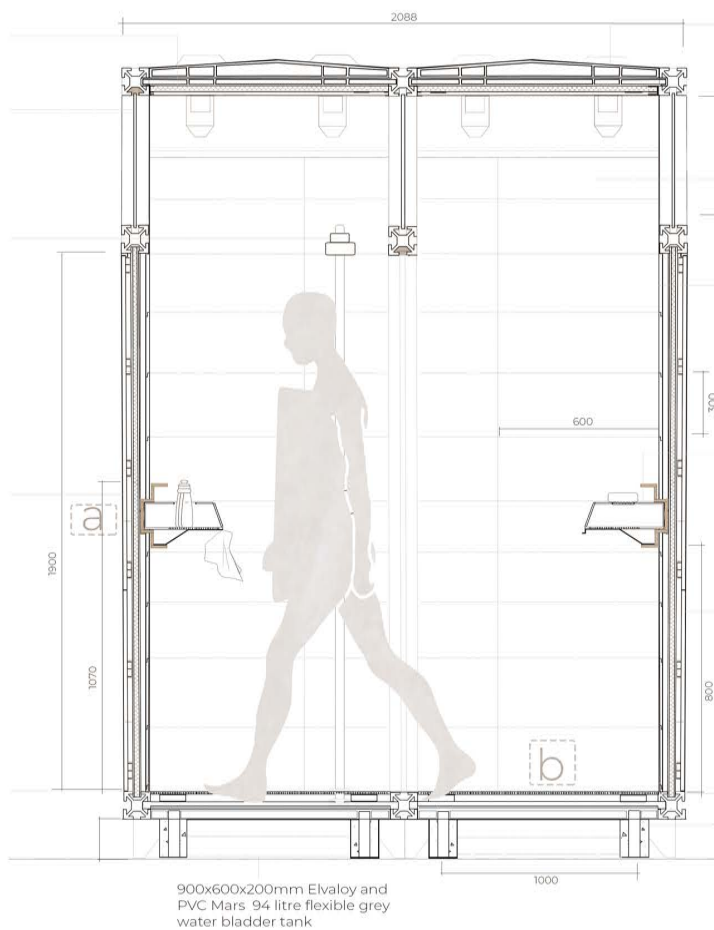
80mm Powertrek Solar tube LED Downlight with darkness detector. Output of 200lumen (5hr charge and 8hour run)

420x1400x 30mm transparent acrylic panel slotted into 32x50x 1900mm recess in T-slotted extrusion above and below acrylic panel. Fixtures are sealed with neoprene gasket strips

25x2100mm free standing Chacoal powdercoated steel shower upright connected to 125x50mm Matt Black GPS R30CT Shower Head Timer Purge Version with Card/Tag Function at 1900mm from final floor finish.

270x80x1550mm bent steel door edge protector finished with Dulux Duralloy Wedgewood Blue Satin powder coating (27250279 ) fixed to 32mm MDF clad Kimmo board with screws. Shelf and hook are fitted to steel as per detail below.

1940x1000x64mm structural foam molded floor core. 110mm hole is plugged with 110x32mm neoprene gasket. Floor core is finished 1550x1940x12mm anodized aluminum GKD CMP12 - ALU 6010 wire mesh powder-coated with Dulux Duralloy Charcoal Satin powder coating (26088351). Mesh is fixed to 20x40mm anodized aluminum hollow floor joists.



1940x1000x64mm structural foam molded roof core. Roof core is clad with 4mm Everite Nutec fiber cement board finished with Dulux evening Haze (27230555). The fiber cement board to fixed to 20mm Kimmo honeycomb structured board with eight spring loaded clips

Wall panel core is 20mm thick Kimmo board sandwiched between two 6mm thick MDF panels. Interior facing MDF skin is finished with 22mm MDF tiling sheet fixed to wallcore with screws and sealed with Rubber Edge Grommet. The MDF is topped with 300x600x9,8mm Barbados-coloured Marmoleum Click HDF panels with 2.5 mm Marmoleum on top and a sound absorbing cork backing (633858).

146x20x1900mm charcoal Nudek wood polymer wall cladding with shiplock lap joint. Additional rubber strip with 12x12mm studs fixed to underside of cladding panel in 150mm intervals Rubber studs slot and lock into MDF studded strip as per component 5 detailing

Standard 96x96x1900mm t-slotted wood polymer extrusion with 48x48x50mm extension to connect to 50x50mm recess in corner connector.

150 x150x900mm concrete beams precast with 75mm holes at 500mm centre to centre. Precast members fasten to eachother and to module floor with 72mm steel pegs.

section E-E of wash module

Figure 9.8.4 Section through shower module

270x80x1550mm bent steel door edge protector finished with Dulux Duralloy Wedgewood Blue Satin powder coating (27250279)



220x80x40mm bent 3mm aluminium bracket bolted to 270x80x1550mm bent steel door edge protector and underside of steel shelf.

90x220x1550mm hollow 3mm steel shelf with 70mm cutouts at 150mm centre to centre to hold cosmetic bottles. Shelf is finished with Dulux Duralloy Charcoal Satin powder coating (26088351)



1550x1940x12mm anodized aluminum GKD CMI12 - ALU 6010 wire mesh powder-coated with Dulux Duralloy Charcoal Satin powder coating (26088351).

25x2100mm free standing Chacoal powdercoated steel shower upright.

32x1550x3mm Wayflor Woven Flooring (Indent) strips to fill 32mx1550mm cavity in 96x96x1550 t-slotted extrusion 940x1000x64mm structural foam molded floor core with 5 degree fall towards 45mm outlet pipe to 94 litre bladder bag



Steel mesh is fixed to 20x40x1550mm anodized aluminum hollow floor joists.

[a] detail of wall rail

[b] detail of mesh floor system

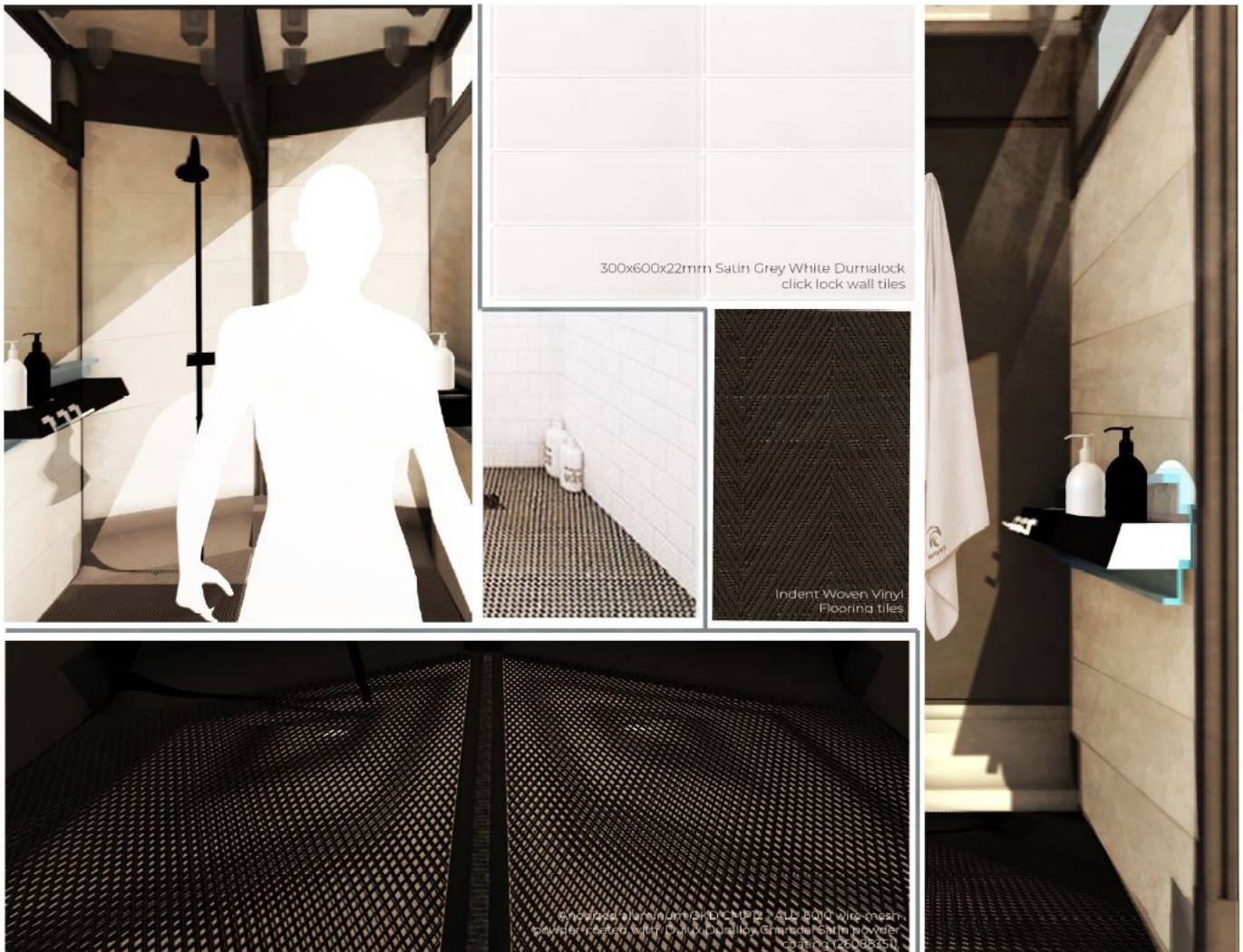


Figure 9.8.5 Interior quality and details of shower

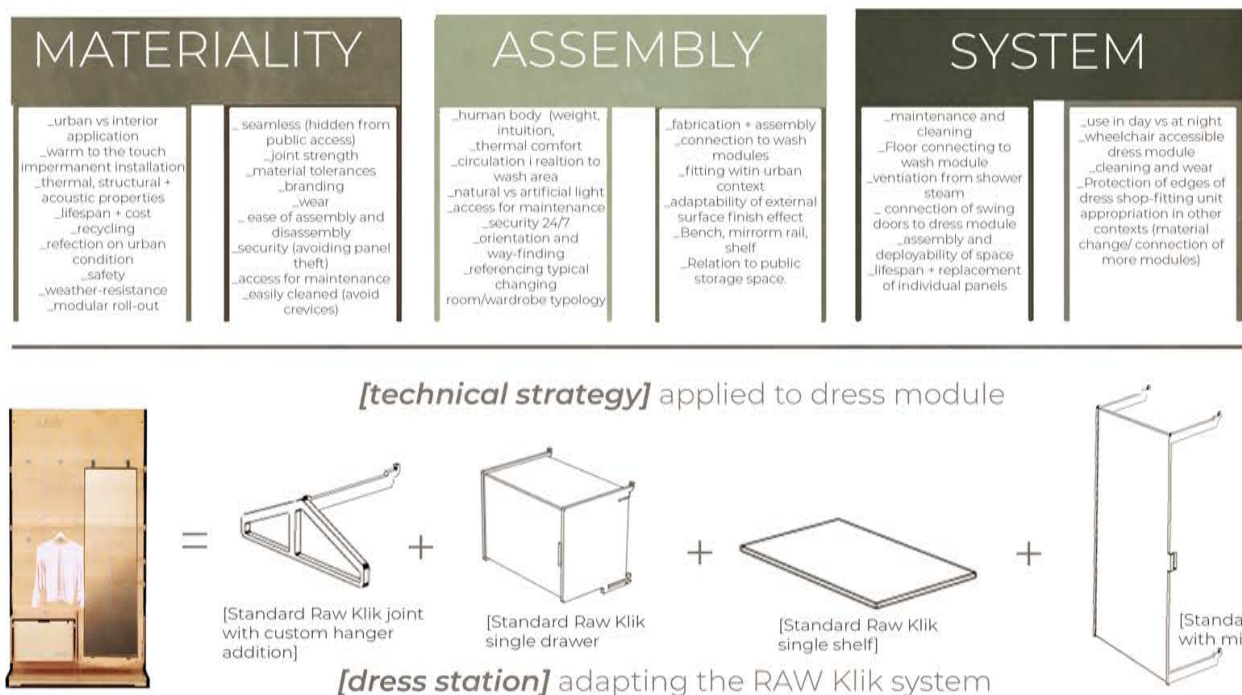
[9.9] #3 BASE MODULE + DRESS

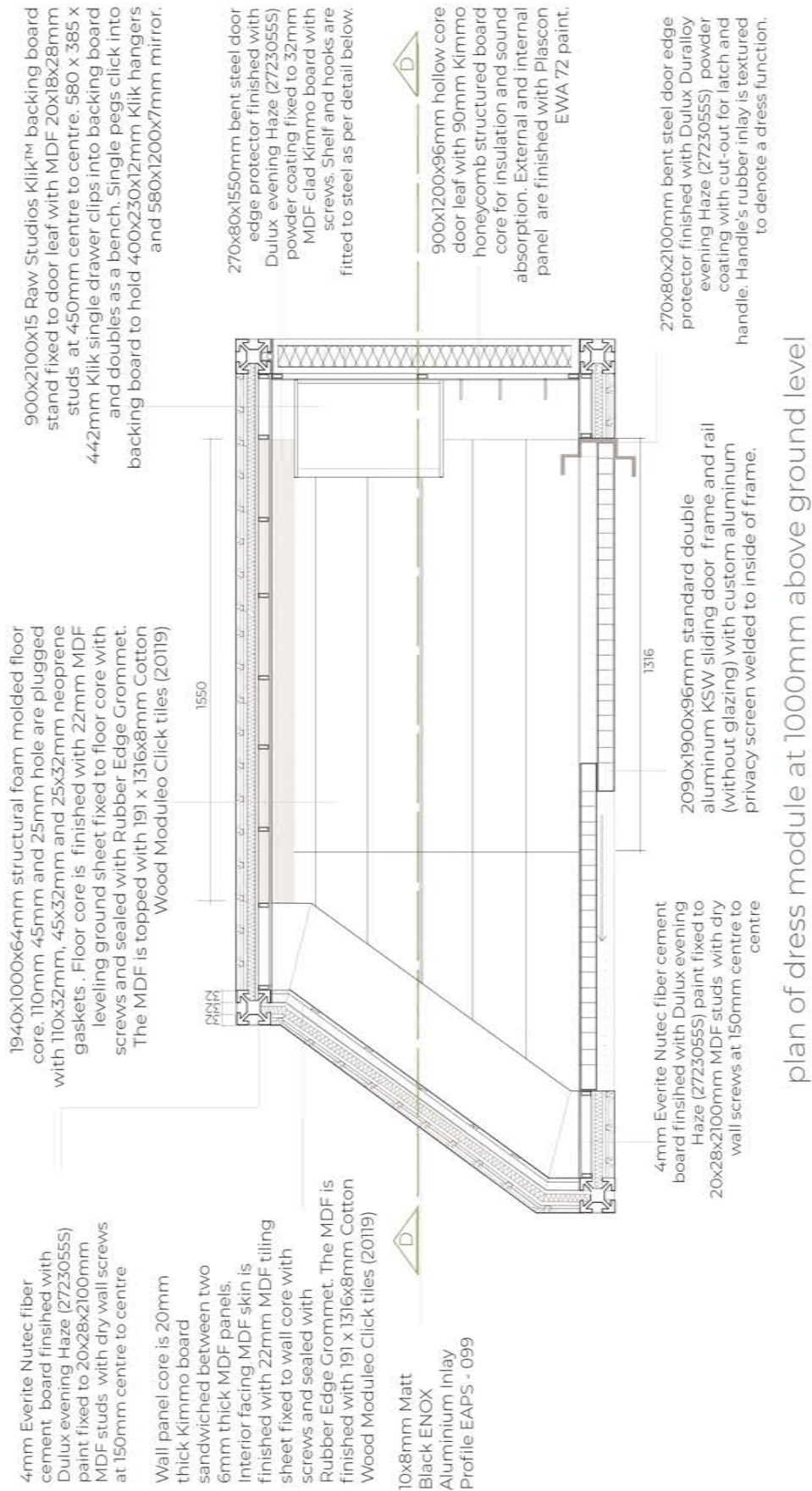


Figure 9.9.1 Locality within Halfway+

The dress module is positioned opposite the wash (self) modules. The double hinged doors swing from the wash (self) modules and latch into the external cladding of the dress module. This does hinder the use of the sliding door for the dress module. Thus, the dress and wash (self) modules can be used as separate cellular spaces, or as one larger space.

The relationship between the technical question and Detail 3 is unpacked in Figure 9.9.2 below.





In the dress module, the Raw Studios Klik joinery system has been adapted such that the activity of dressing is better accommodated. Here, a custom hanger and mirror have been designed to work with Raw's Klik joint. Raw's single drawer design has been reinforced with a steel bracket to serve as a seating element too.

80mm Powertrek Solar tube LED Downlight with darkness detector. Output of 200lumen (5hr charge and 8hour run)

Wall panel core is 20mm thick Kimmo board sandwiched between two 6mm thick MDF panels. Interior facing MDF skin is finished with 22mm MDF tiling sheet fixed to wall core with screws and sealed with Rubber Edge Grommet. The MDF is finished with 191 x 1316x8mm Cotton Wood Moduleo Click tiles (20119)

4mm Everite Nutec fiber cement board finished with Dulux evening Haze (2723055S) paint fixed to 20x28x2100mm MDF studs with dry wall screws at 150mm centre to centre

270x80x1550mm bent steel door edge protector finished with Dulux evening Haze (2723055S) powder coating fixed to 32mm MDF clad Kimmo board with screws. Shelf and hooks are fitted to steel as per detail below.

1940x1000x64mm structural foam molded floor core. 110mm 45mm and 25mm hole are plugged with 110x32mm, 45x32mm and 25x32mm neoprene gaskets. Floor core is finished with 22mm MDF leveling ground sheet fixed to floor core with screws and sealed with Rubber Edge Grommet. The MDF is topped with 191 x 1316x8mm Cotton Wood Moduleo Click tiles (20119)

1940x1000x64mm structural foam molded roof core. Roof core is clad with 4mm Everite Nutec fiber cement board finished with Dulux evening Haze (2723055S). The fiber cement board is fixed to 20mm Kimmo honeycomb structured board with eight spring loaded clips

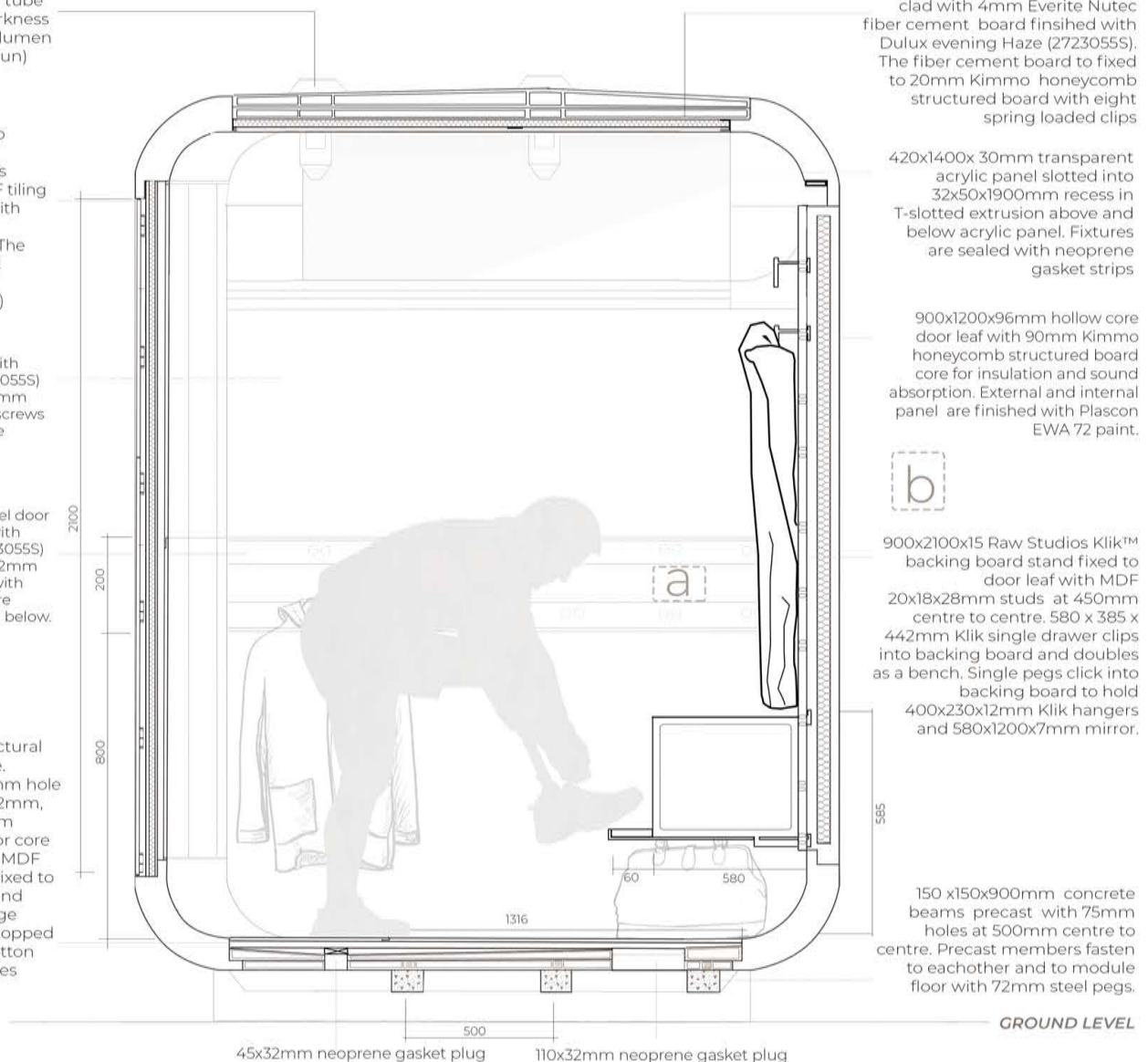
420x1400x 30mm transparent acrylic panel slotted into 32x50x1900mm recess in T-slotted extrusion above and below acrylic panel. Fixtures are sealed with neoprene gasket strips

900x1200x96mm hollow core door leaf with 90mm Kimmo honeycomb structured board core for insulation and sound absorption. External and internal panel are finished with Plascon EWA 72 paint.

b

900x2100x15 Raw Studios Klik™ backing board stand fixed to door leaf with MDF 20x18x28mm studs at 450mm centre to centre. 580 x 385 x 442mm Klik single drawer clips into backing board and doubles as a bench. Single pegs click into backing board to hold 400x230x12mm Klik hangers and 580x1200x7mm mirror.

150 x150x900mm concrete beams precast with 75mm holes at 500mm centre to centre. Precast members fasten to each other and to module floor with 72mm steel pegs.



section D-D

Figure 9.9.4 Section of dress module

270x80x1550mm bent steel door edge protector finished with Dulux evening Haze (2723055S) powder coating fixed to 32mm MDF clad Kimmo board with screws. Shelf and hooks are fitted to steel as per detail below.



2719x1550x15 Raw Studios Klik™ backing Birch plywood pegboard with standard single pegs bolted to 270x80x1550mm bent steel door edge protector.

900x2100x15 Raw Studios Klik™ backing Birch plywood pegboard stand fixed to door leaf with MDF 20x18x28mm studs at 450mm centre to centre.



580x1200x7mm mirror with Single Klik pegs attached to each corner.

580 x 385 x 442mm Klik single drawer clips into backing board and doubles as a bench. Front panel is clad with a 380x440 Wayflor Woven Vinyl Floor tile (Dusk) to avoid damage



[a] detail of wall rail

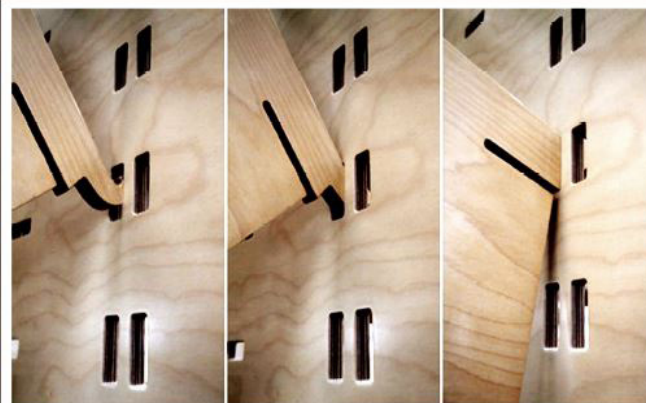
620x 385 x 442mm steel plate finished with Dulux evening Haze (2723055S) powder coating and a 60x442mm anodized aluminum GKD CMI12 - ALU 6010 wire mesh footing .

[b] detail of changing station

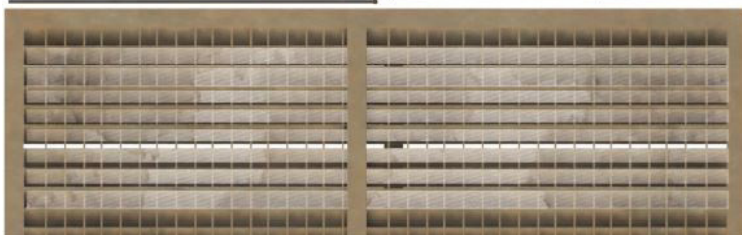


580 x 385 x 442mm Klik™ single drawer clips into backing board and doubles as a bench. Front panel is clad with a 380x440 Wayflor Woven Vinyl Floor tile (Dusk).

Cotton Wood Moduleo Click tiles (20119).



Wayflor Woven Vinyl Floor tile (Dusk).



white woven coated polyethylene

Figure 9.9.5 Interior quality and details of dress module



Figure 9.9.6 Interior view of toilet module

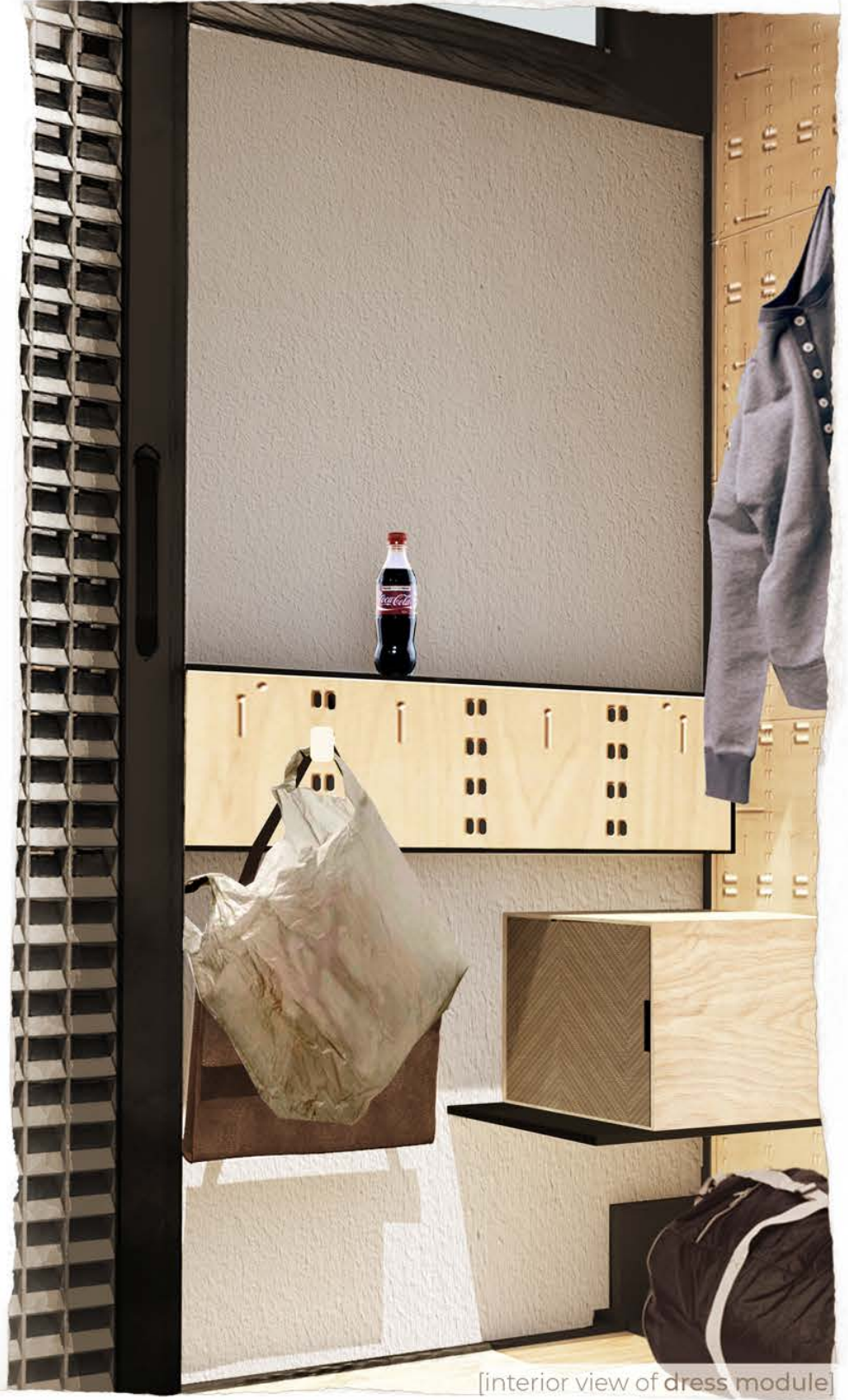


Figure 9.9.7 Interior view of wash module





[interior view of wash module]



[interior view of dress module]

Figure 9.9.8 Interior view of dress module

[9.10] #4 CENTRAL WASH AREA



Figure 9.10.1 Locality within Halfway+

The central module is positioned at the center of the courtyard between the wash (self) modules. It serves as the service core for the entire Halfway+ space. The central wash area includes the municipal water and electricity inlets as well as two instant water heaters, two dual-loop pumps, one grease inceptor and a grey water storage tank. There is an access panel allowing the gardener to fill a watering can and fill the drip irrigation tanks as highlighted in Figure 9.10.5.

The relationship between the technical question and Detail 4 is unpacked in Figure 9.10.2 below.

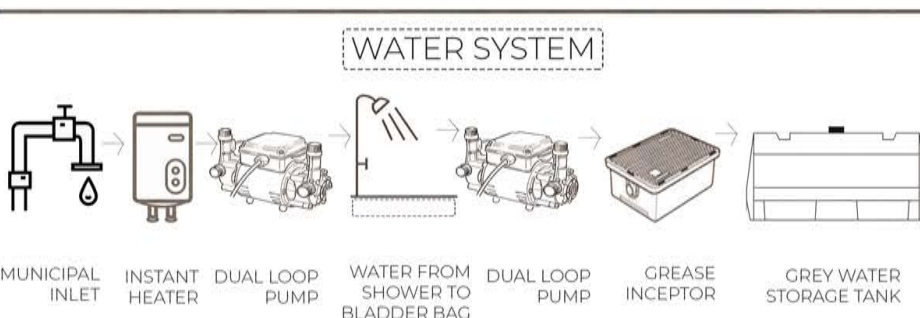
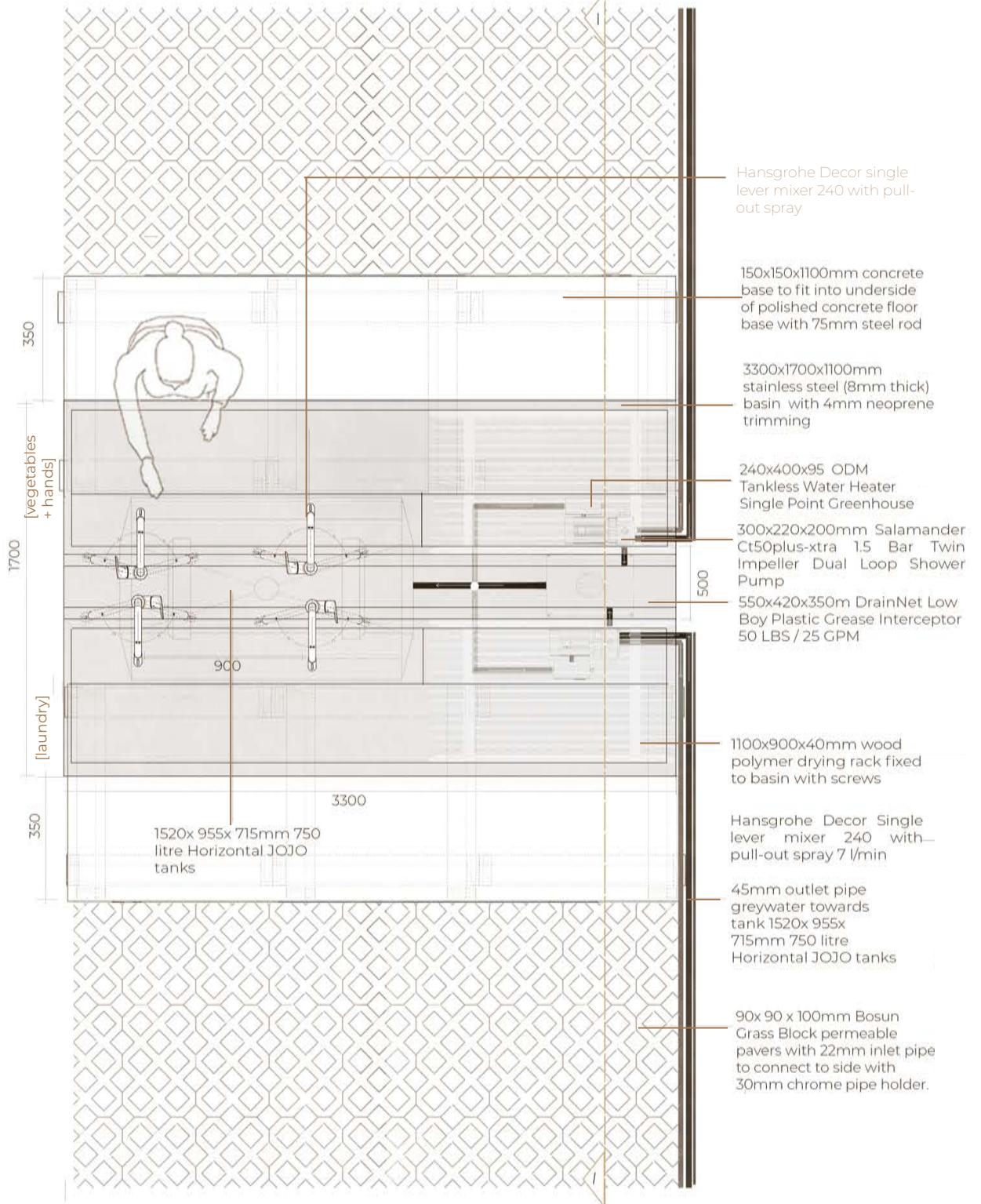


Figure 9.10.2 Central wash area strategy and system

### THE CENTRAL WASH AREA

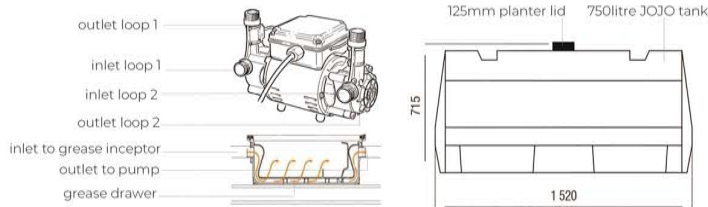
The wash area is divided into two sides: one dedicated to the washing of clothes and the other for the washing of hands and rinsing of vegetables. The differentiating design factor is the depth of the basin. The laundry station has a deeper basin with an uneven surface for scrubbing clothes. The hand washing and vegetable rinse station has a powder-coated aluminium mesh creating a shallower trough whilst catching any loose leaves before entering and clogging the in-line filtration system. A wood polymer drying rack for clothes and dishes slides along the top of the basin to assist the domestic action of washing.



plan of wash basin

Figure 9.10.3 Plan of central wash area

**Greywater Storage Tank:** 1520x 955x 715mm  
750 litre Horizontal JOJO tanks  
**Pump:** Salamander Ct50plus-xtra 1.5 Bar Twin  
Impeller Dual Loop Shower Pump  
**Water Heater:** 240x400x95 ODM Tankless  
Water Heater I Single Point Greenhouse  
**Taps:** Hansgrohe Decor Single lever mixer 240  
with pull-out spray 7 l/min  
**Bladder Tank:** Elvaloy and PVC Mars 94 litre  
flexible grey water bladder tank (0.9m x 0.6m x  
0.2m).  
**Grease Interceptor:** DrainNet Low Boy Plastic  
Grease Interceptor 50 LBS / 25 GPM



The floor area around the central wash area is raised to accommodate the height of the grey-water tank without making the basin inaccessibly high. The raised floor surface is polished concrete but is surrounded by Bosun grass permeable pavers ensuring that any excess water that drips on to the floor after washing, does not create puddles on the ground and become a slip hazard. The permeable pavers are raised above the paving level in Halfway+ allowing for water inlet and outlet pipes to run along the side of the pavers such that no chasing into the floor is needed. This allows for easy accessibility for maintenance without becoming a trip hazard.

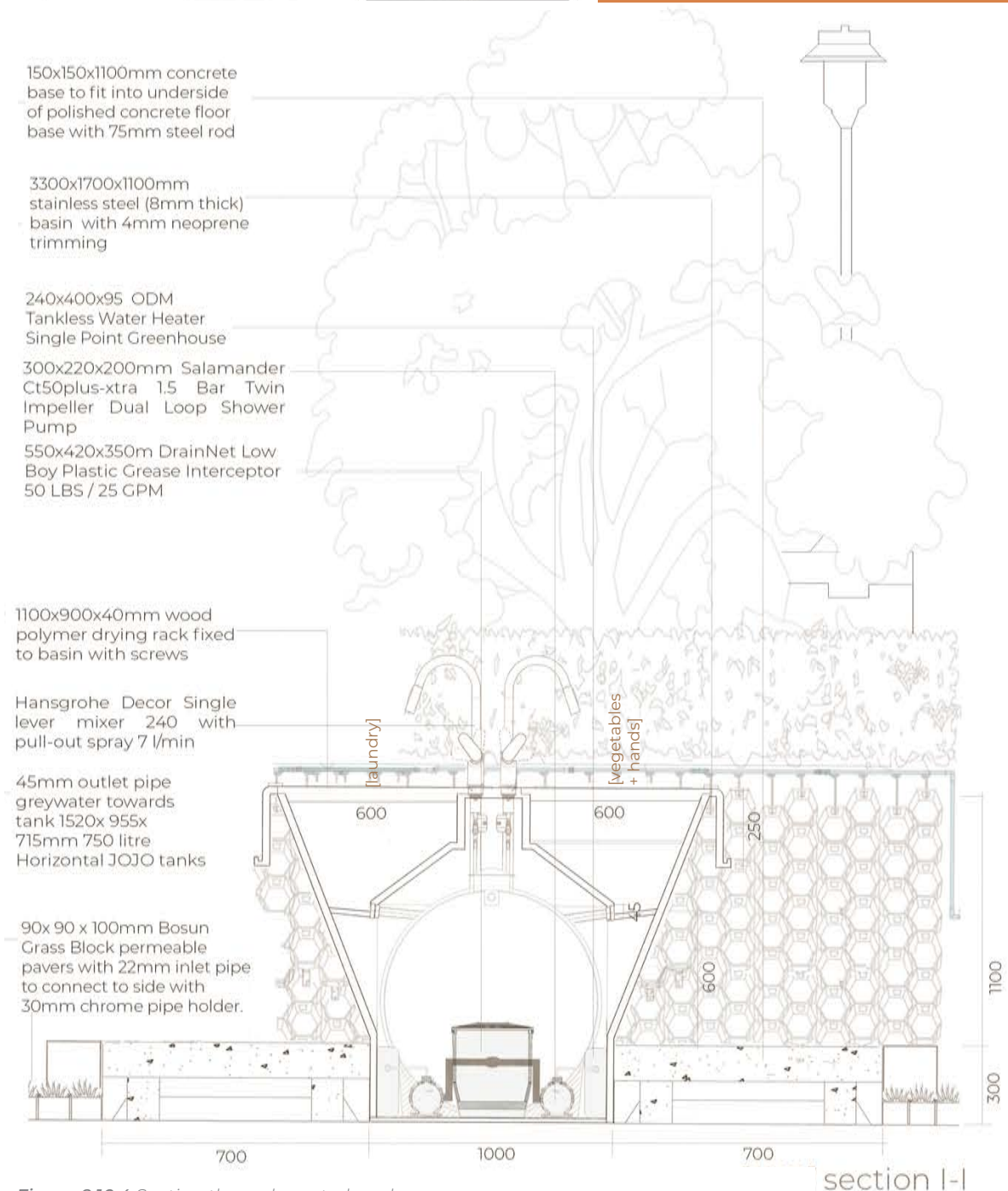
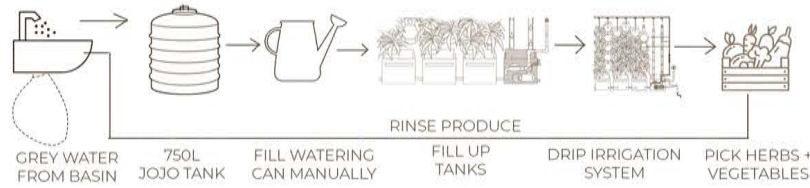


Figure 9.10.4 Section through central wash area

### CENTRAL WASH AREA LINK TO GROW AREA

As depicted below, the grey-water from the basin and the showers is stored in a 750litre Jojo tank which is then dispensed into a watering can by the gardener. The water is then poured into the tanks of the irrigation system and the drip irrigation system begins. The Vicinity Modular Vertical Garden System is adapted to suit an outdoor condition. The diagrams below highlight the workings of the system.



### [GROW] adapting Vicinity Modular Vertical Gardens Drip Irrigation system

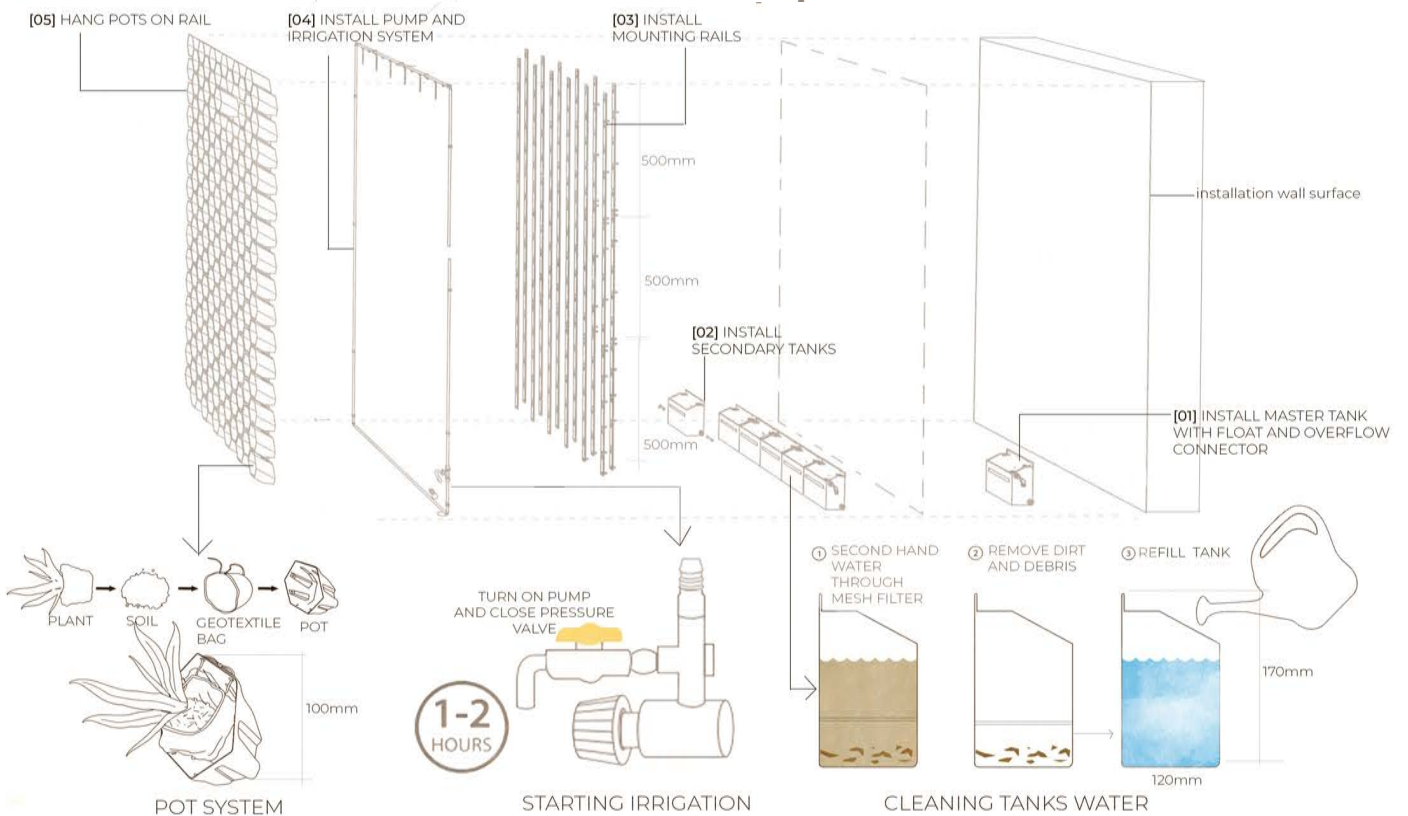
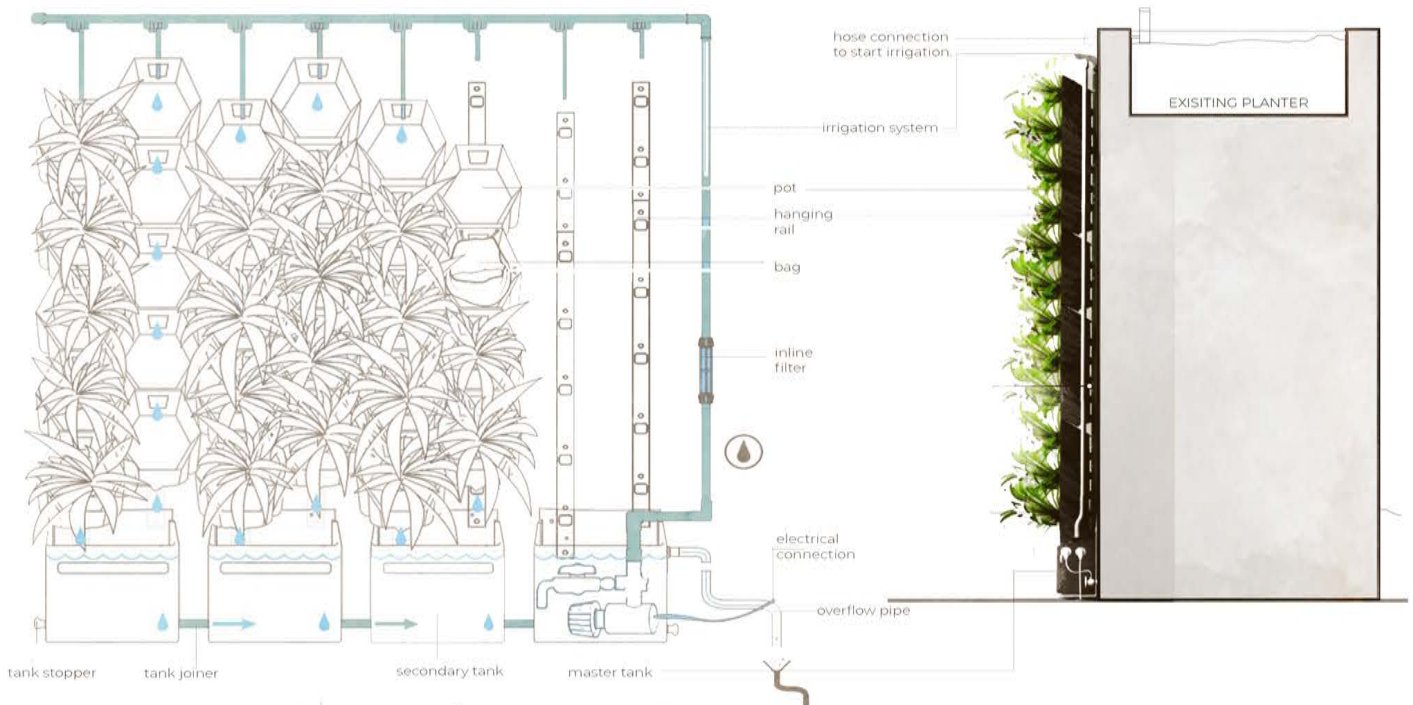


Figure 9.10.5 Unpacking the irrigation system

**LINK TO NATURAL HISTORY MUSEUM**

The proposed plant palette includes both medicinal plants and edible plants. This supports the Natural History Museum's medicinal plant agenda and the cook area in Halfway+. There is an inherent health education component linked to the medicinal plants. This reinforces the notion of empowerment through awareness-raising.

Visitors from the museum are encouraged to visit Halfway+ and learn about the grey-water system and its relation to the medicinal plants. Visitors can then also be encouraged to store bags, lunch-boxes, etc. in the Halfway+ storage space. This ensures both corporate and community buy-in to the m+ system as a whole.

01 | CHILLI 02 | PINEAPPLE FLOWER 03 | KOOIGOED 04 | DEVIL'S FINGER 05 | ALOE FEROX 06 | CANCER BUSH 07 | WILD GARLIC 08 | WILD ROSEMARY

09 | AFRICAN GINGER 10 | AFRICAN POTATO 11 | SPINACH 12 | TOMATO BUSH 13 | KALE 14 | ONION 15 | CARROT 16 | CABBAGE



NOURISHMENT PLANTS

PURELY MEDICINAL

Figure 9.10.6 Grow area plants and irrigation system

ADAPTATION FOR INCLUSIVITY



Figure 9.10.7 Inclusive adaptation of modules

A ramped walkway is incorporated between a toilet and wash [self] module to allow access to people with prams, trolleys and wheelchairs. Here, the walkway not only accommodates the 250mm floor level difference, but also can be screened off to create a private wheelchair transfer space, baby change station and dressing area. The standard toilet module is fitted with two grab rails as per SANS 10400 Part S. The shower module is fitted with a shower seat and appropriate grab rails. The sliding doors used in the standard base modules are removed to allow for easier access to the toilet and shower. Instead two sliding doors are added to the walkway and latch into the upright t-slotted extrusion as depicted above.

As per SANS 10400 Part S, the 1200mm walkway inclines at 1:12 and has a 1200mm landing before the start of the sliding door accommodating a wheel-chair turning circle. The change in floor level is only 250mm and therefore no handrail is needed along the walkway. Instead, a 70mm wide curb is used. Lastly, the finished floor level of the walkway is flush with the interior floor level. Thus, trip hazards are avoided.

[9.11] #5 SLEEP

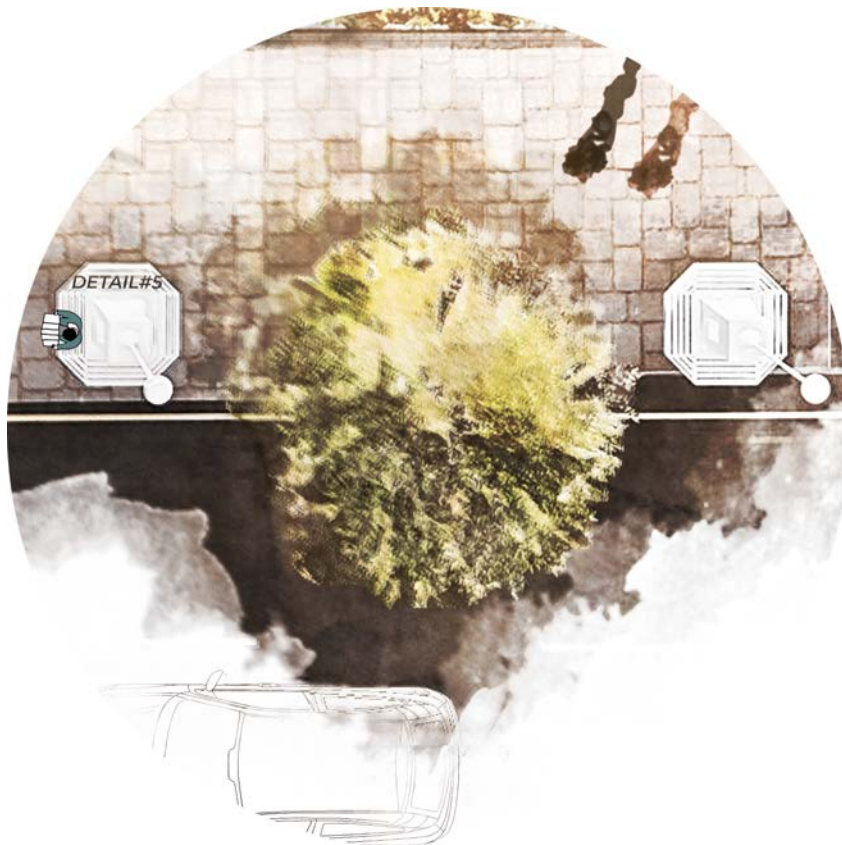


Figure 9.11.1 Locality within Halfway+

The location of the sleep base and bag at night is around the benches (typically two beds per bench). During the day the bed bases are stored in Halfway+ as illustrated on page 177 while the bags are either carried or stored privately in Halfway+. The relationship between the technical question and Detail 5 is unpacked in Figure 9.11.2 below.

MATERIALITY		ASSEMBLY		SYSTEM	
<ul style="list-style-type: none"> <li>_sheet sizes +thickness</li> <li>_compressive strength</li> <li>_material flex</li> <li>_thermal + acoustic properties</li> <li>_lifespan</li> <li>_cost</li> <li>_recycling</li> <li>_weight</li> <li>_manufacturing processing</li> <li>_economic nesting</li> <li>_weather-resistance</li> </ul>	<ul style="list-style-type: none"> <li>_dry joinery application</li> <li>_joint strength</li> <li>_material tolerances</li> <li>_branding</li> <li>_lifespan</li> <li>_wear</li> <li>_intuitive joint</li> <li>_weight</li> <li>_manufacturing error tolerances</li> <li>_scalability for other design components</li> </ul>	<ul style="list-style-type: none"> <li>_body proportions in relation to base design</li> <li>_thermal comfort</li> <li>_weight</li> <li>_usability of base and bag</li> <li>_inclusive design</li> <li>_structural comfort (spacing of struts)</li> <li>_assembly + disassembly of bed (effort needed)</li> <li>_transfer comfort</li> </ul>	<ul style="list-style-type: none"> <li>_fabrication</li> <li>_assembly (daily)</li> <li>_roll-out to other areas</li> <li>_sizes/manageable proportions</li> <li>_manufacturing sheet sizes that correlate to bed design</li> <li>_use of cut-offs</li> <li>_repetition of member sizes and details</li> <li>_application to other m+ spaces</li> </ul>	<ul style="list-style-type: none"> <li>_raw material collection</li> <li>_input vs output</li> <li>_cost</li> <li>_capacity</li> <li>_manufacturing sheet material method</li> <li>_% of waste</li> <li>_lifespan + replacement of individual panels</li> <li>_recycling of old beds</li> <li>_base vs cushions</li> <li>_application to other m+ spaces</li> </ul>	<ul style="list-style-type: none"> <li>_day vs night</li> <li>_solo vs group</li> <li>_rain</li> <li>_booking bed</li> <li>_broken bed and replacement</li> <li>_customization and identity</li> <li>_wearable bag vs cushion</li> <li>_branding opportunities</li> <li>_other contexts (base only/ bag only/ both)</li> </ul>

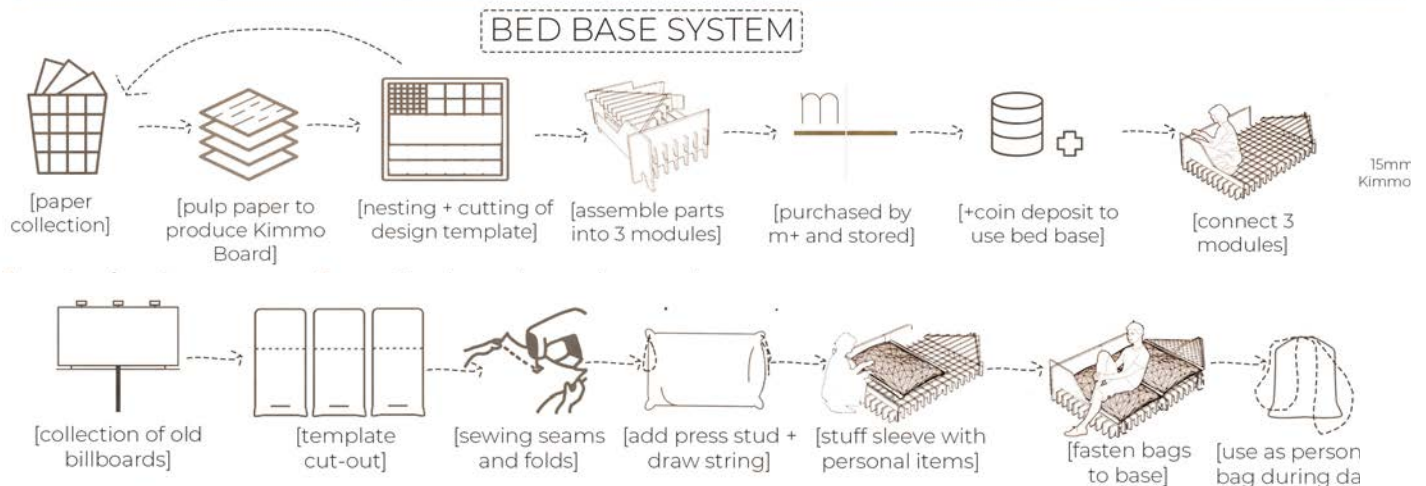


Figure 9.11.2 Central wash area strategy and system  
229

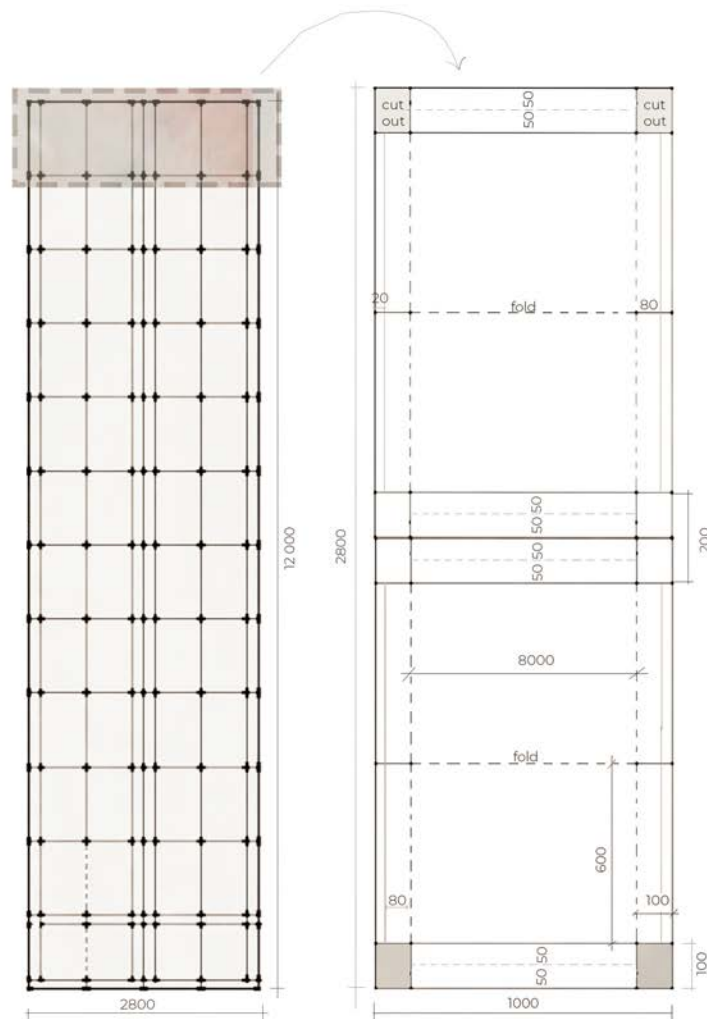
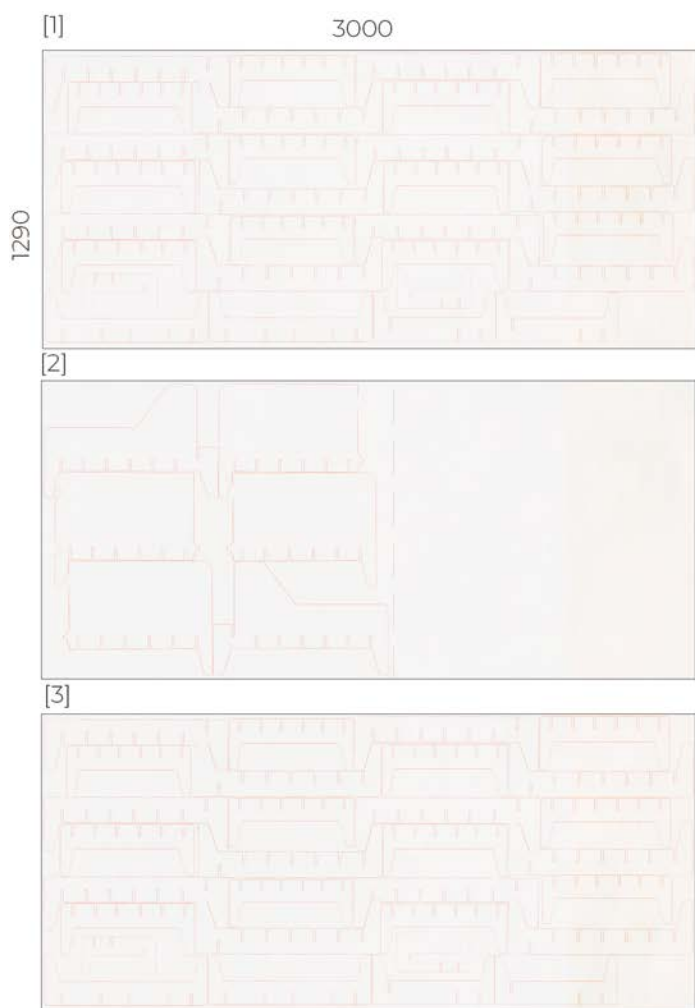


### SLEEP BASE AND BAG NESTING

The Sleep base and bag design in stage 3 is technified through a materiality investigation considering waste, recyclability and economical production. Two bed bases can be nested on to 2,5 sheets of 15mm KimmoBoard and despite the their being 15% of material waste from the cut-out sheet, the waste 100% repulpable.

When nested on the a standard billboard size piece of vinyl, 24 sleep bags can be produced with 0% waste as the cut-outs depicted below are stitched on to become the Paracord draw-string loops in each bag. Three bags are used for each base. Resultantly, one recycled billboard can fully furnish 8 bases.

- Base material:** 15mm KimmoBoard (sheet size 1290x3000mm )
- Base edges:** 15000mm roll of Tubeway 15mm PVC round clip on edging (ER111)
- Bag Sleeve:** Re-purposed billboards (highly engineered vinyl)
- Draw-string:** 550 Paracord [PARA15RE] with 7 Strand Nylon thread Core in a Nylon Braided Outer Sheath
- Base straps:** 38mm navy webbing with aluminum Cinch Strap Tie down (CSI-K2)



BAG NESTING

1 BILLBOARD = 24 BAGS

BASE NESTING

2.5 SHEETS = 2 BEDS

**SHEET 1:** 13.1% WASTE  
**SHEET 2:** 17.2% WASTE  
**SHEET 3:** 13.1% WASTE

85% OF SHEET = BASE  
15% OF SHEET = REPULPING

95% OF SHEET = BAG ENVELOPE  
5% OF SHEET = DRAW-STRING LOOP

0% OF WASTED MATERIAL

Figure 9.11.3 Sleep base nesting

Figure 9.11.4 Sleep bag nesting

DESIGN TESTING

The Sleep base is tested at 1:5 scaled modules that communicate the relationship between the 3 modules, their relation to the bench, bags and their compact stacking for transfers to the Halfway+ Store area. One module of the base is tested at 1:1 using 15mm KimmoBoard such that strength, material tolerances, edge protection and comfort can be tested. An accompanying 1:1 bag prototype is used to test ergonomics, use, wear, strength, capacity and its relation with the base.



231 Figure 9.11.5 Photographs of prototypes

## [9.12] CONCLUSION

The design technification (Stage 4) set out to achieve deployability through materiality, assembly and system. **Details 1,2 and 3; TOILET, DRESS AND WASH** are programmatic adaptations of the base module and in all instance deployability is achieved through:

### 1. **Materiality:**

- The heavy concrete base ensures structural stability without being permanently fixed to the existing paving.
- The base's weight causes it to be less portable; however it is still possible to move. This is justifiable due to the positive contribution that the bases can make to a site if left behind in the deployment process. This is depicted in the scenario on page 259.
- The module's frame materiality is light-weight, strong, durable and uses dry joinery (no external fastener).
- The infill panels' external cladding system is designed such that cladding is changeable to adapt to the urban context in which it sits
- The interior material relates strongly to the domestic action contained in the module itself. Here, maintenance, hygiene, safety, and the feelings of intimacy and familiarity were all important considerations.

### 2. **Assembly:**

- The components that make up the module's assembly kit are a combination of standard 'off-the-shelf' elements (door leaf, t-slotted extrusions, hinge, etc); while others are specifically engineered for the module (floor core, corner connectors, roof panel, etc). Deployability is considered for both types of components: those that are off the shelf can be purchased anywhere and the specifically engineered components use a series of standard molds allowing for the entire construction to roll-out where needed.
- The on-site assembly process itself uses minimal external fastening, is simple to follow, does not require machinery or tools (other than scissors and a screw driver) and allows for complete disassembly when deployed elsewhere.

### 3. **System:**

- Standard sanitation fixtures are used to make installation, maintenance and replacement as simple as possible.
- All wet services occur on the ground plane allowing for easy access.
- The lighting and ventilation services are out of the user's reach but can be accessed for maintenance.
- The module's frame itself serves as an adaptable cog in the overall system allowing for various spatial configurations (toilet vs. shower vs. dress).
- Lastly, there are no open cavities, recesses or overhangs in the module's design, thus controlling dust and water collection.

**Detail 4** is the least deployable space within Halfway+ due to the service-focused nature of the **CENTRAL WASH STATION**. However, deployability is still achieved through:

### 1. **Materiality:**

- The material choice is long-lasting, easy to clean, durable and does not corrode when wet or in the sun. The choice of material contrasts the modules' palette to connote an urban response to the notion of washing and growing.
- The material choice therefore responds to the existing context because despite the module's being deployed elsewhere, the 'grow' area and water point could remain because they relate to the agenda of the Natural History Museum.

### 2. **Assembly:**

- The assembly of the grow area extends the modularity of the other spaces. Therefore, individual parts can be replaced in the event of damage.

### 3. **System:**

- Standard water and electrical equipment is used to allow for potential roll-out to other sites and ease of maintenance.
- All services are grouped and accessible through a lockable panel. The gardener opens the panel daily to water the garden and therefore can keep an eye on the performance of the equipment.

**Detail 5** deployability is achieved in **SLEEP** through:

### 1. **Materiality:**

- The weight of the base is light enough (just above 4kg) to move to and from the storage unit. The base is also equipped with straps and a handle aiding the moving process.
- No external fasteners are in the base and therefore flat-packing is possible. This also means that components within the base can be replaced individually in the event of damage. Moreover, the edges of the base are protected to improve the base's durability.
- The bag is light and weather-proof and can therefore travel with its owner daily.
- The use of old billboards can also contribute to corporate buy-in. In addition, the KimmoBoard base material can be printed on in the event of a corporate campaign (branding).

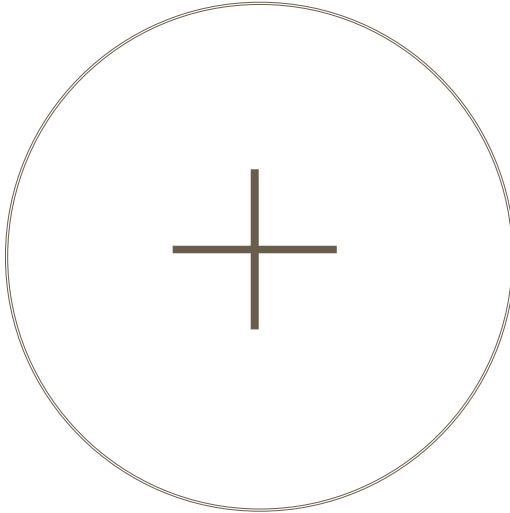
### 2. **Assembly:**

- The base and bag do not fasten to the bench or ground plane. Therefore, their design can be applied to other urban locations.
- The assembly is a simple process whereby the three base modules are fastened together with the two carry straps and fitted with three bags for softening.
- This ritual references the notion of 'making one's bed' as well as creates a sense of ownership and empowerment.

### 3. **System:**

- The bed base is stored in Halfway+ near the point of control.
- The token system to acquire a base ensures that an element of control and responsibility (payment) is adopted.
- The bed bag belongs to the individual and therefore, they are responsible for it
- The bases are produced a Junkyard Dogs Recycling Factory and the bags at the Cultural History Museum. Therefore no vehicular delivery is required.





*reflect* considers three factors as a way to evaluate the design process.

1. Stories of use (People)
2. Scenario planning (Place)
3. Contributions and Recommendations (What has been done and what could be done in future).

part



*reflect*

CHAPTERS 10;11;12

[STORY BOARDS, SCENARIO  
TESTING, CONTRIBUTION AND  
CONCLUSION]

TO  
*reflect*  
STORY OF PLACE



**[10.1] INTRODUCING THE CHARACTERS**

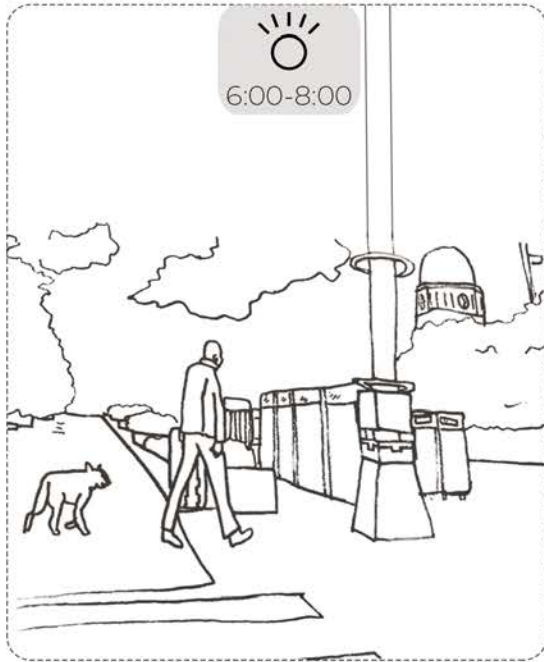
The storyboards focus on the human-centered actions of domesticity and as well as the qualities of interiority experienced by the eight typical personas below. These actions and feelings are tracked over the 24 hour day. The stories are illustrated such that a specific action, interaction, or moment eliciting a distinct domestic response is highlighted. Eight key personas are identified from the list of role-players on page 133. These personas are representative of the key model inhabitants frequenting the m+ system.



Figure 10.1 Character profiles

[10.2] STORYBOARDS

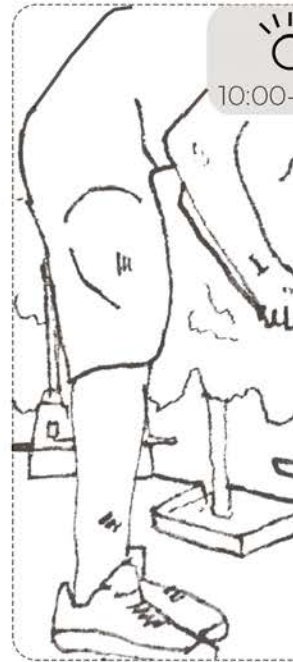
JOE AND PATCHY



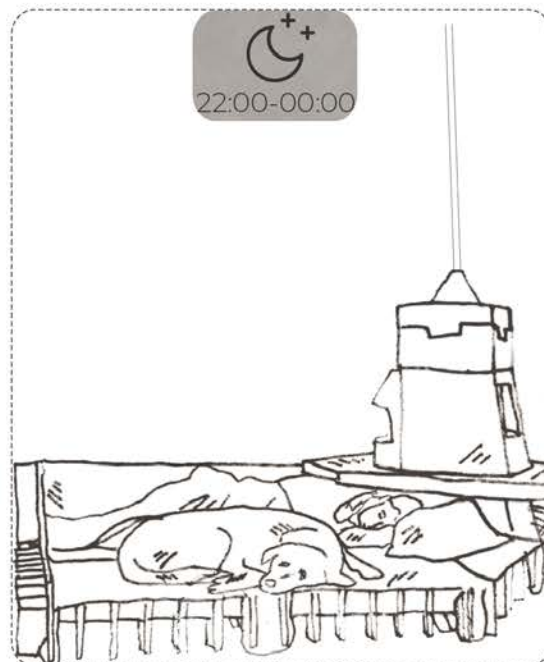
Joe wakes up, packs up the sleep base and returns it to Half-way+. Here, he receives his R40 +token deposit back. Him and Patchy make their way to work.



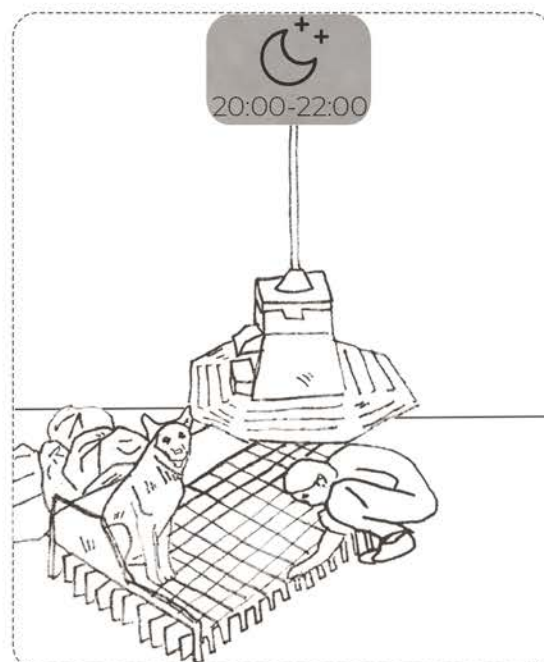
Joe purchases some food from a nearby vendor for him and Patchy. He soon returns to watching over the parked cars.



Joe takes short break to Minnaar Street, f and give Patchy so When open, Joe vis money to his fan



Joe uses the water dispenser to wash his hands and feet before falling asleep next to Joe .

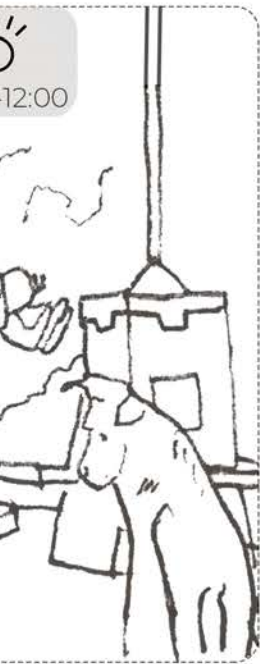


Joe and Patchy walk back to the wash area to clean the plate and cup. Thereafter, they walk to Minnaar Street and assemble their bed.

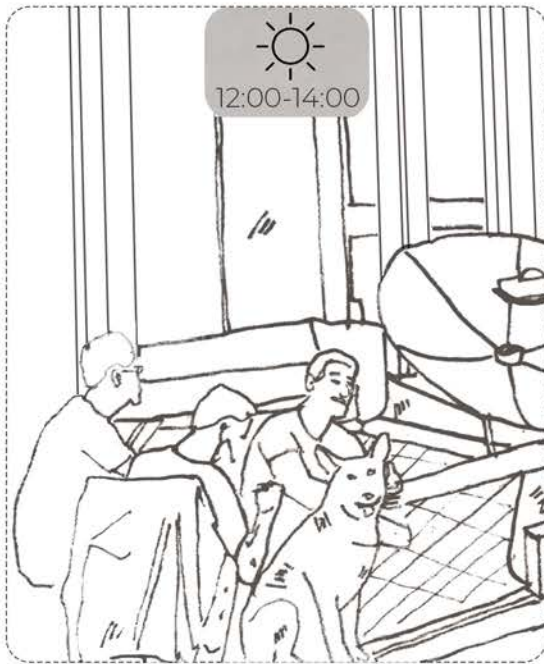


Joe uses the R40. received back ear redeems another 19:00. He goes to enjoys dinner v

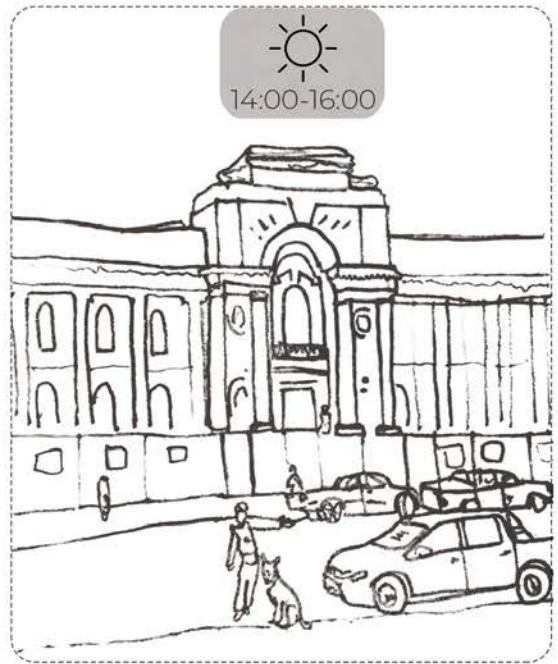
Figure 10.2 Story of Joe and Patchy



Joe drinks where he walks and fills his water bottle with some water to drink. He uses a Post-it+ to send a message to his family in Limpopo.



Joe and Patchy walk across the road to Halfway+ where they purchase food that is being cooked there. They spend some time in the shade, eating and socialising before heading back to work.



Joe continues watching over people's vehicles, and guiding them in to and out of parking lots until the Natural History Museum closes at 16:00.

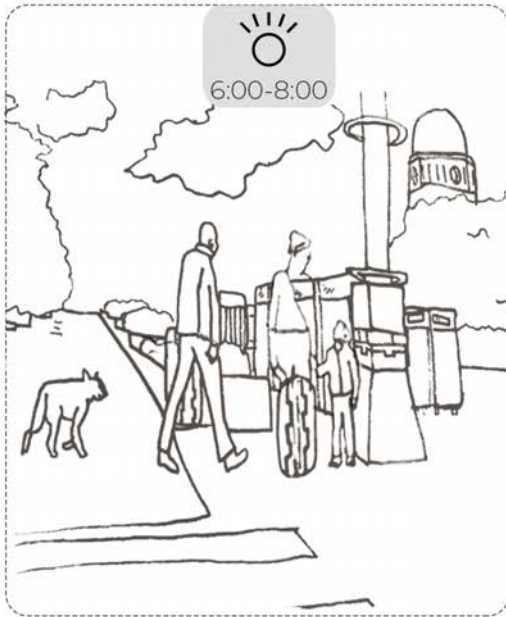


Joe uses a R3.00 +token that he purchased earlier that day, and goes to the shower base before heading to the cook area and sitting with his friends.



Joe and Patchy head back to Halfway+ after a long day in the hot sun. They purchase a R3.00 shower token and head to washing courtyard. Patchy waits outside while Joe showers and dresses. Soon after, Joe washes his clothes from the day. Joe then uses another R3.00 coin to hose Patchy down. Afterwards, the pair sit in the courtyard while the clothes and Patchy dry.

SARAH AND BEN



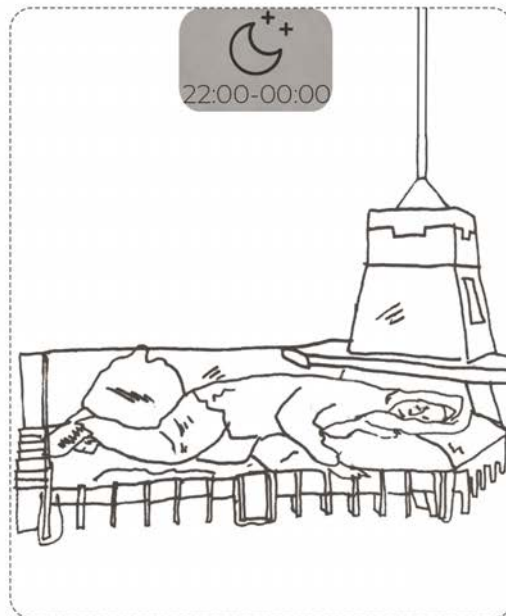
Sarah and Ben wake up, remove bags from the sleep base, and return it to Halfway+. Here, Sarah receives her R40+token deposit back.



Sarah collects some vegetables from the garden, rinses them and prepares food for her and her son. After they are fed and dressed, Sarah and Ben walk to Ditsong Cultural History Museum.



Sarah joins other community members in a museum-funded skills upgrade programme where they learn to produce sleep bags from old bedding material.



Sarah chats to her friend who sleeps beside her most nights until they fall asleep.



Sarah and Ben walk to Minnaar Street where she cleans Ben's teeth, unpacks the sleep base, ties the bags to the bag and climbs into bed with Ben.



Sarah uses her R40.00 token to buy a sleep base for the evening. Sarah and Ben, then make use of the vegetables from the garden as well as supplies from the nearby Supermarket to cook dinner.

Figure 10.3 Story of Sarah and Ben



Members  
giftment  
rn to  
billboard



Sarah's day-to-day tasks include the washing of old billboards, drawing the pattern (stencil) onto the material, cutting them to size, sewing the bag together and feeding in the draw string.



redeem  
he and  
getable  
om a  
dinner.



At 16:00, Sarah and Ben leave the Cultural History Museum and head towards Halfway+ where they shower, wash their clothes from the day and wait for them to dry.

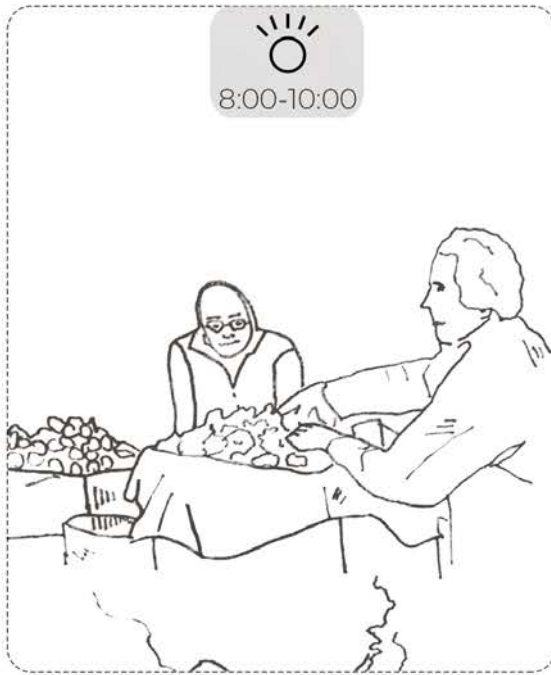


When several bags have been produced, Sarah, Ben and other community members move them to the entrance of the Cultural History Museum where they are given to the homeless who wish to store their belongings and furnish the bed bases.

WILLIAM



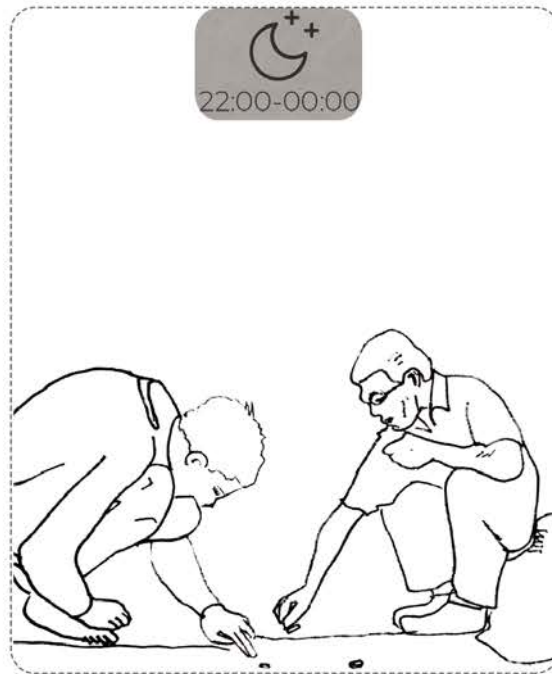
William wakes up, packs up the sleep base and returns it to Half-way+. Here, he receives his R40 +token deposit back and stores it around his neck.



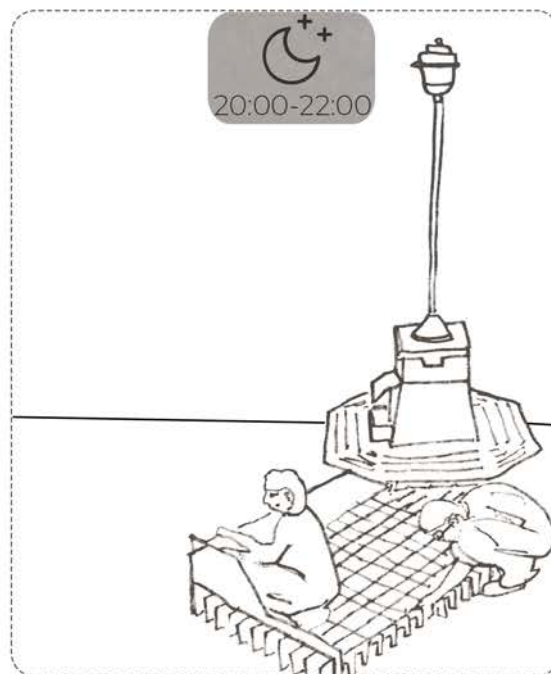
William purchases some food from a nearby vendor before moving towards the corner of Paul Kruger and Visagie Street



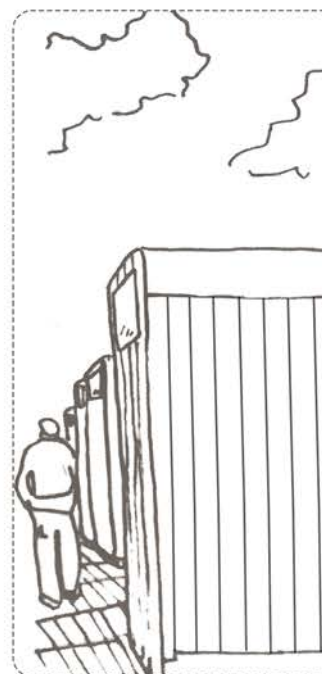
William and his friend walk towards the street corner and Paul Kruger Street to get some shade. They soon return



The two have a few drinks and gamble until they are tired enough to go to sleep.



Joseph assists William in assembling the sleep base modules. William then uses his bag as a pillow. Joseph did not have enough money to redeem a base and therefore uses 2 bags for softening.



William purchases a base in the dre... the base in the dre... socks and keeps the... to Minnaar Street wh...

Figure 10.4 Story of William



William and Joseph occupy their corner and move to Minnaar Street later and sit in the corner to 'their' corner.



With the money he collects, William purchases food from Halfway+ and spends part of the afternoon eating and drinking in Pretorius square while keeping an eye on 'his' corner.



William returns to the corner and Joseph. When it is opened, both William and Joseph go to Post-It+ to receive any mail they might have and receive their pension money.

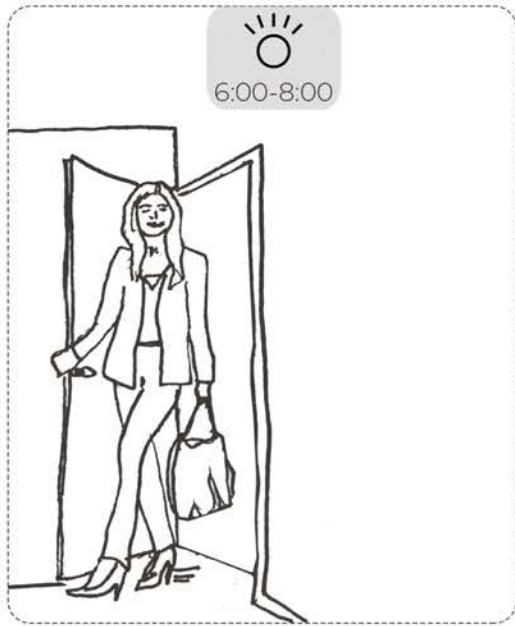


William purchases a R3.00 shower token and redeems the sleep base. He stores his sleeping bag in the showering room while he showers. He then washes his shirt and other wet items in a separate bag. He then purchases food and goes to Pretorius square where he eats, drinks, talks to Joseph and drapes his wet clothes over the bench.



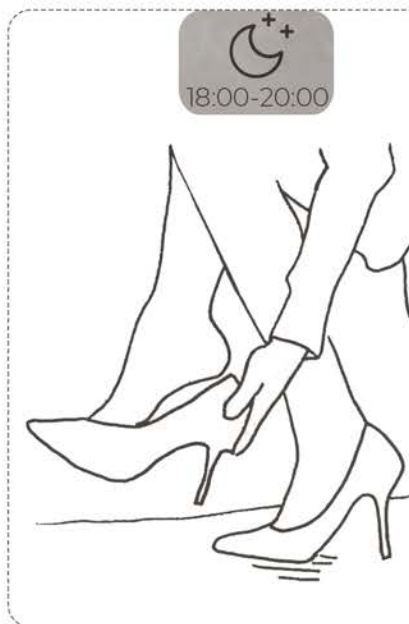
William and Joseph return to 'their' corner for peak-hour traffic. Here, they hope to collect enough money to purchase food and shower tokens.

SASHA



Sasha has just come home from work. Before climbing into bed, she showers and has something to eat.

.....ZZZZZZZZZZ.....



When Sasha no longer has customers and the streets are empty, she decides to go back home for her own safety.

Because Sasha gets paid in cash only, she worries about keeping it in her bag. She stores it at home and reminds herself that she must head to Post-it+ in the morning to send some of it to her ill mother in Eldorado Park.

Sasha has something to eat and heads out to the streets near Eldorado Park. Sasha's job does not provide her with a steady income and at any moment she could lose her apartment. She hopes tonight isn't the

Figure 10.5 Story of Sasha

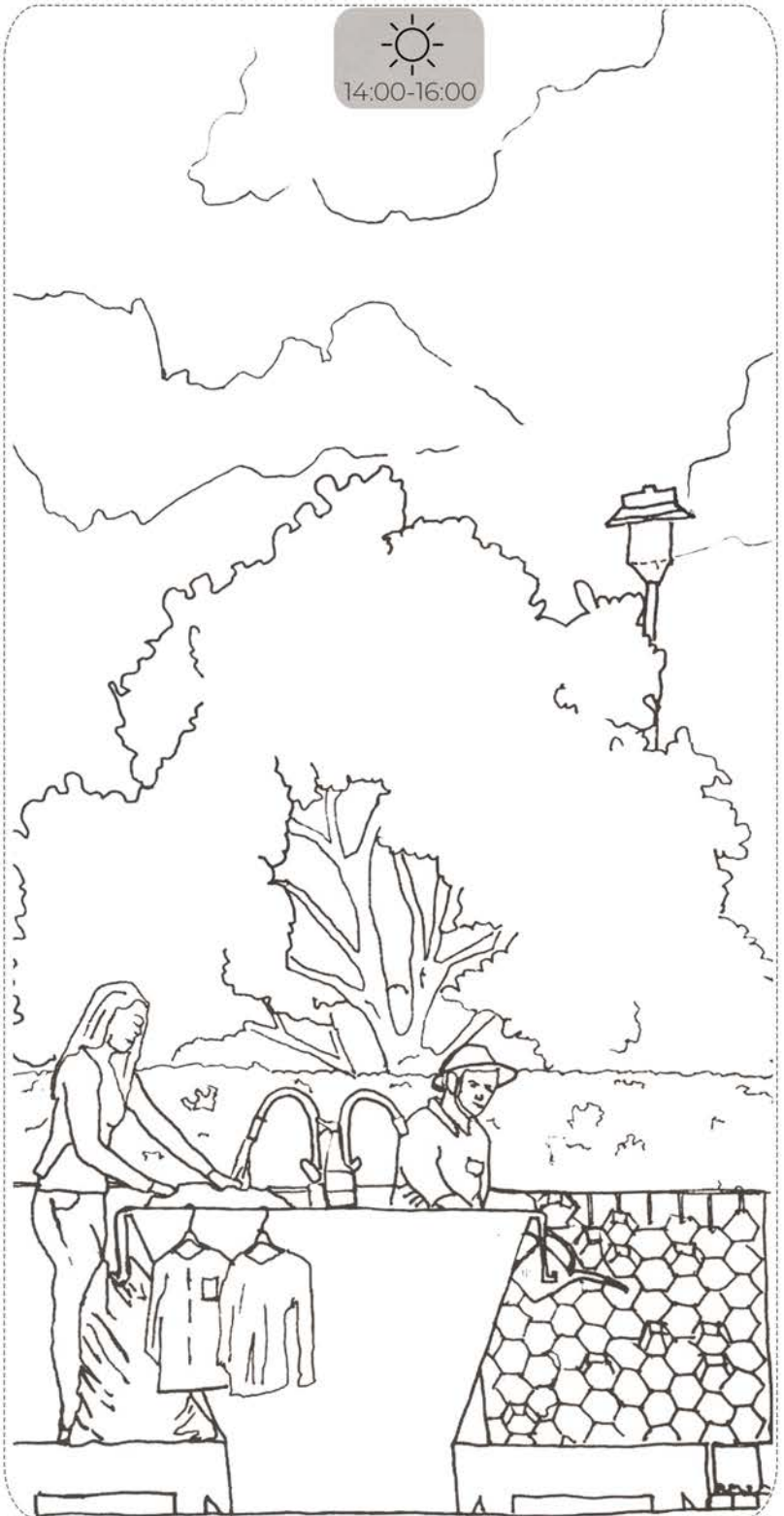


12:00-14:00



Sasha wakes up and realises that she no clean laundry. Her apartment is too small to do laundry and she cannot afford the laundry services down the road. She decides to go to Halfway+ after she has her lunch.

14:00-16:00



16:00-18:00



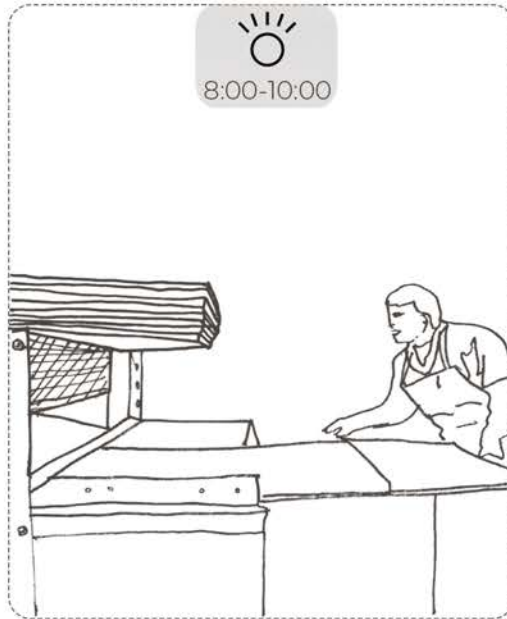
With a bag full of clean, dry laundry, Sasha waves goodbye to Thabo and walks back home to get showered and ready for work.

With her bag of laundry and detergent, Sasha walks up the road to Halfway+. She starts the process while the basin is unoccupied and makes use of the nearby drying rack to hang her clothes. She sits alongside her washing and chats to Thabo who is tending to the garden.

MATTHEW



Matthew wakes up in his apartment near Burgers park, puts on his uniform and heads to work at Junkyard Dogs Recycling Factory. On his way he fills up his water bottle with cold water from the Minnaar Street dispensers.



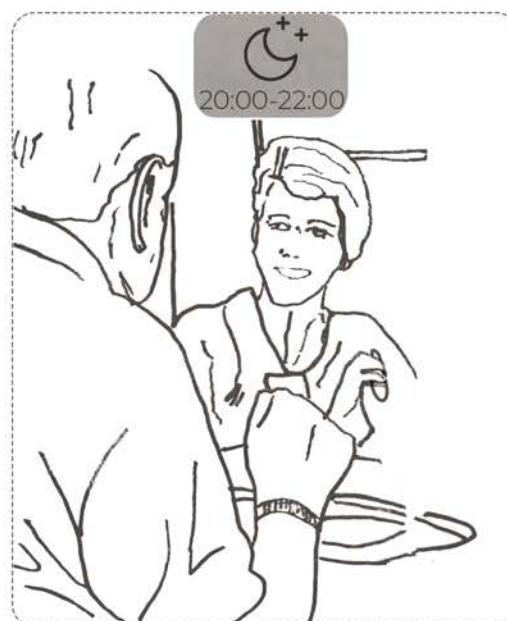
Work begins and Matthew is tasked with re-pulping paper waste for the production of KimmoBoard for a few hours.



Once a few 15mm thick Kimmo sheets have been manufactured, Matthew can begin cutting the sleep base's components and grouping them into groups to speed up the assembly process.



Matthew goes to sleep.



Here, he enjoys dinner and a drink with his girlfriend.



Matthew passes the Halfway Point, quickly wash his face, hands and the toilet after a long day at work, then proceeds to his apartment.

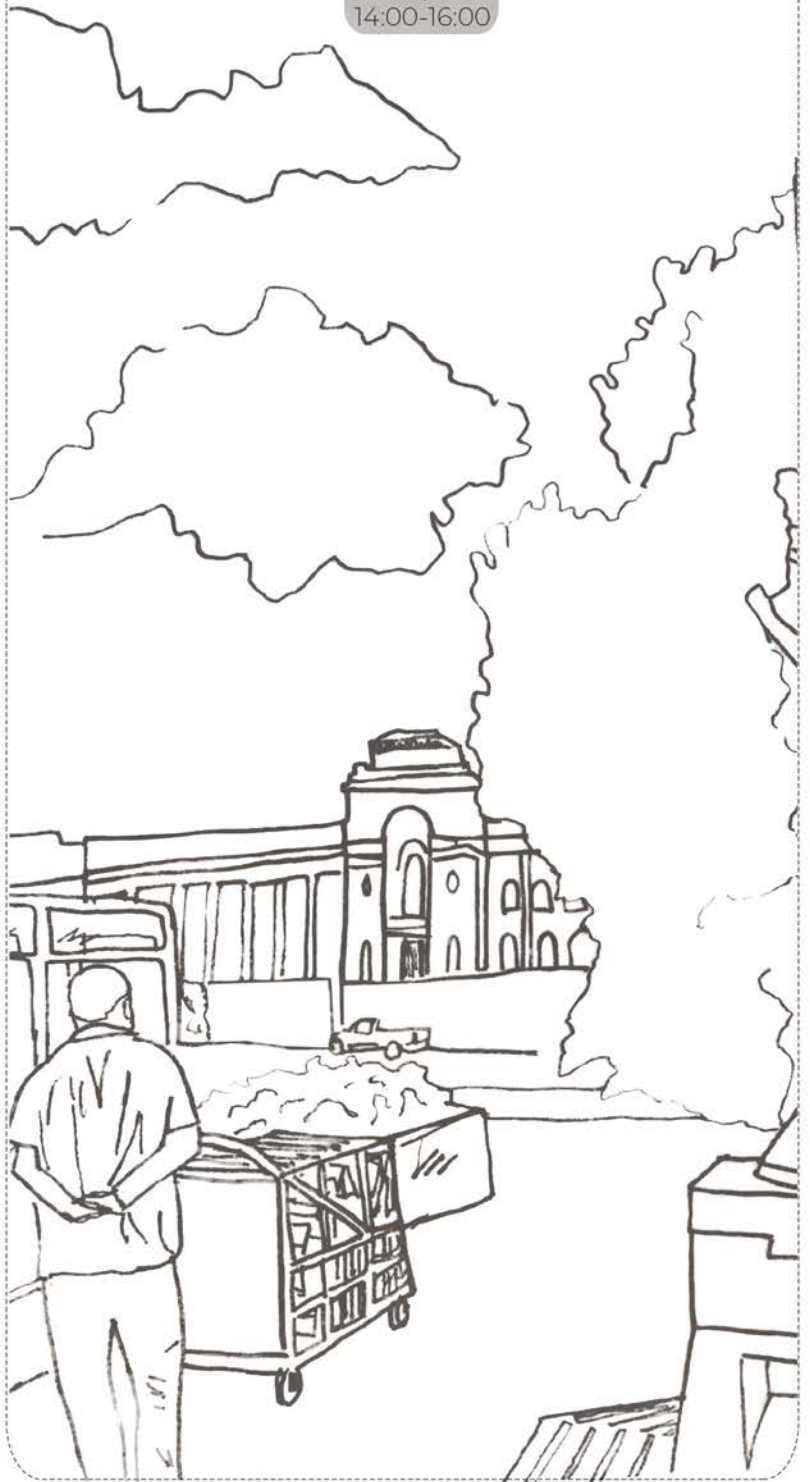
Figure 10.6 Story of Matthew

  
 12:00-14:00



Matthew now begins to assemble the sleep base modules on his work bench and store them in his trolley. From the 15 sheets of KimmoBoard he produced earlier, he can assemble a total of 12 sleep bases (36 modules).

  
 14:00-16:00



Matthew now fills trolley with a total of 6 beds (18 modules) and walks towards Halfway+ to deliver the bases to the storage area. All damages or destroyed bases are then loaded into his trolley and wheeled back to the factory to be restored or re-pulped. Matthew then brings the remaining 6 sleep bases to Halfway+.

  
 16:00-18:00

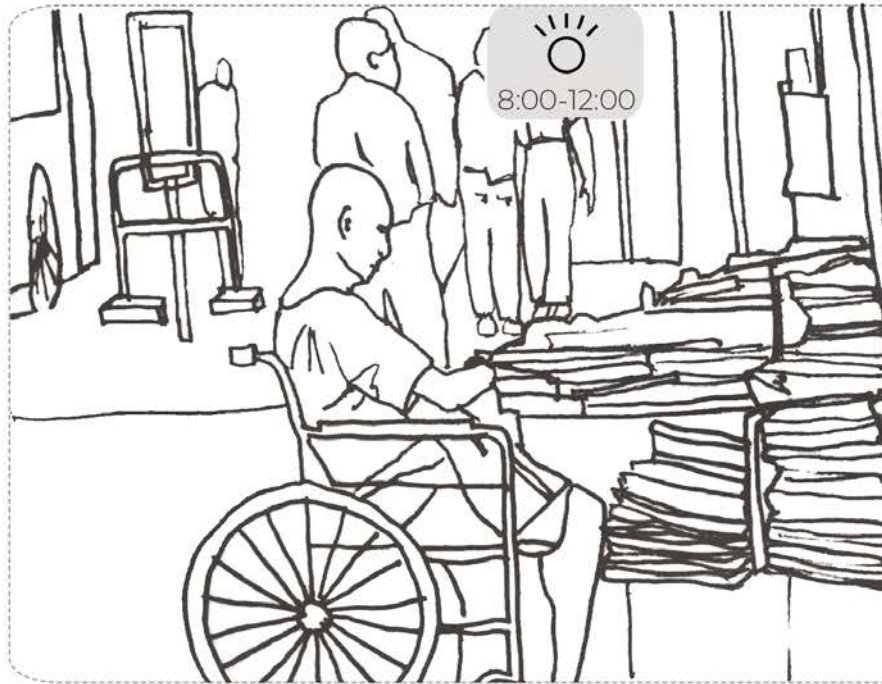


On his way back to the factory, Matthew does a paper collection from the Natural History museum, City Hall, Department of Water and Sanitation, Home Affairs, and Cultural History Museum.

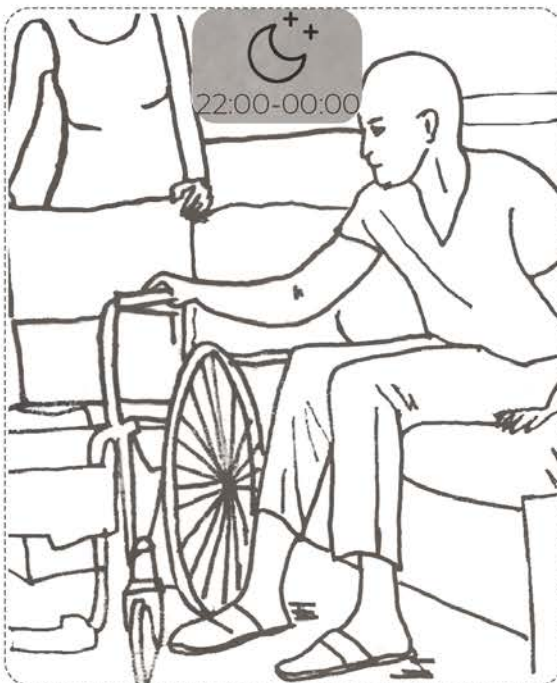
JACOB



Jacob wakes up at 6:00 and begins his long journey to Pretoria station where he is employed to sell newspapers.



Jacob begins the work day by sorting out the newspapers. Thereafter, he sells newspapers near the entrance to the platform.



Jacob arrives home and his wife helps him wash up and climb into bed.



Jacob purchases some food on his way home. Sometimes he is able to catch a bus, and other days he wheels himself there. By the time he gets home, he is exhausted.

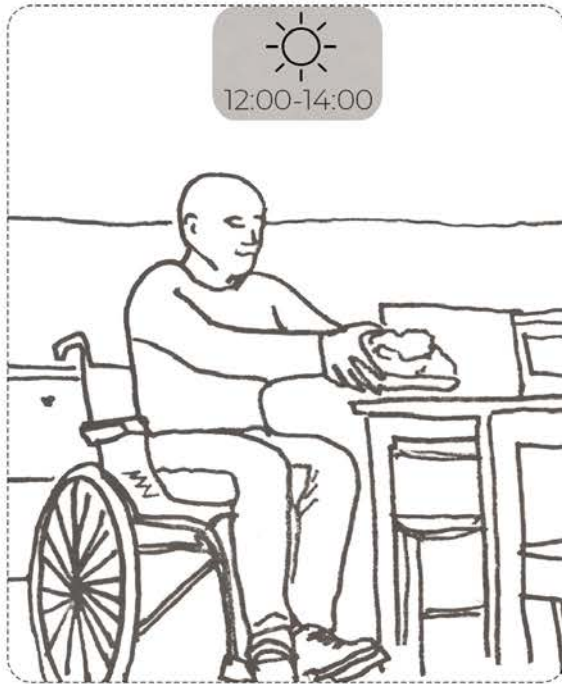


Jacob makes use of the bus before making his way home. Near Halfway+, he finds it easier than traveling on foot after he shows up.

Figure 10.7 Story of Jacob



into stacks.  
platforms.



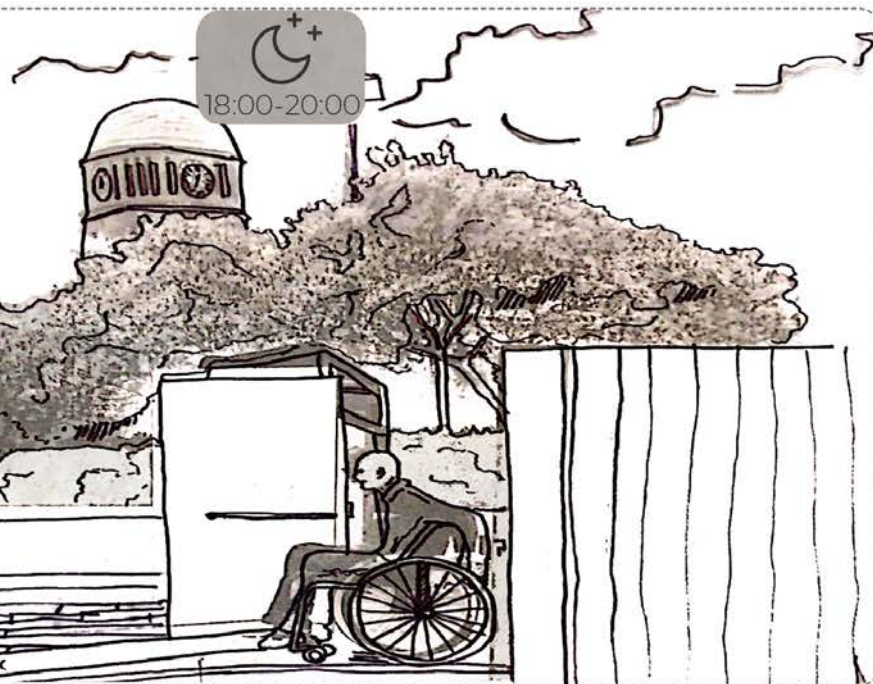
☀️  
12:00-14:00

Jacob leaves the lunchtime chaos of Pretoria station and purchases food from a nearby, wheelchair-friendly shabean. After his lunch break, he returns to the station to resume work.



☀️  
14:00-16:00

Jacob finishes work at 15:00 and makes his way back towards Church Street where he lives. Everyday on his way he stops on Minnaar Street to drink some water and rest. He sometimes buys a snack for a vendor nearby.



☾+  
18:00-20:00

the wheelchair-accessible section of Halfway+ to go to the toilet way home again. Some nights, if he is meeting friends for dinner e showers and puts on clean clothes here. He finds this much g all the way home (towards Church Square), only to head back ers. On these days, he puts his bag into storage for the day.



☀️  
16:00-18:00

When Post-it+ is open, Jacob receives his weekly wages here. He then chooses if he would like to take the cash for himself, or transfer it to loved ones elsewhere.

KATE + DAVID



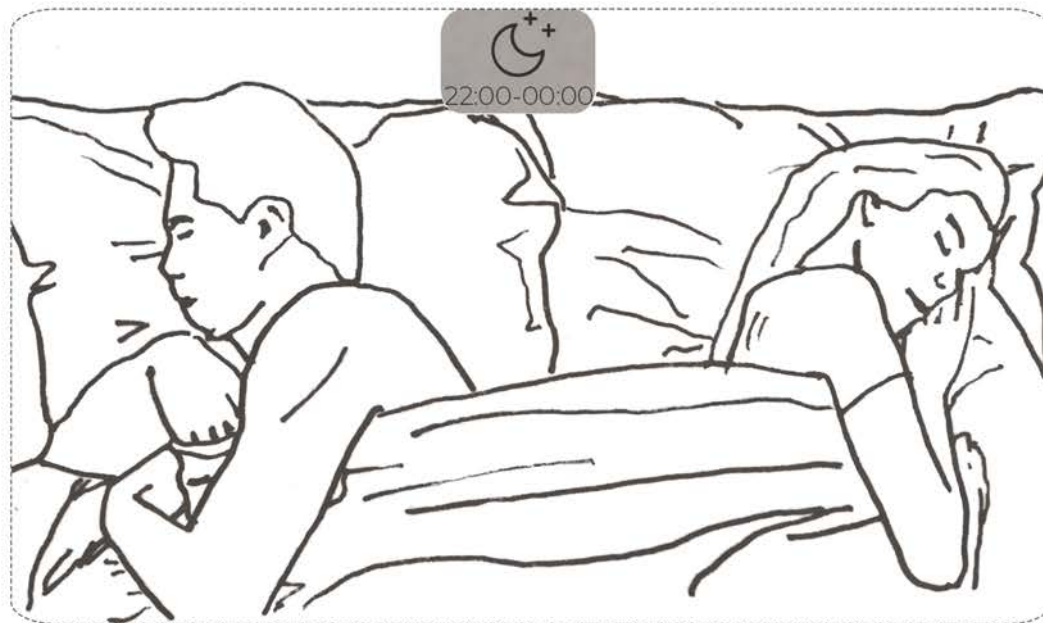
Kate and David wake up, take a shower and eat some breakfast at home. Thereafter, they make their way to the Ditsong Natural History Museum to begin work promptly at 8:00.



After opening all the exhibition venues, Kate and David ensure all the office admin is taken care of before the first group of researchers arrive for a guided tour of the Ornithology collection.



Kate and David show a group of Ornithology researchers around the Austin Roberts collection as well as the museum's archive.



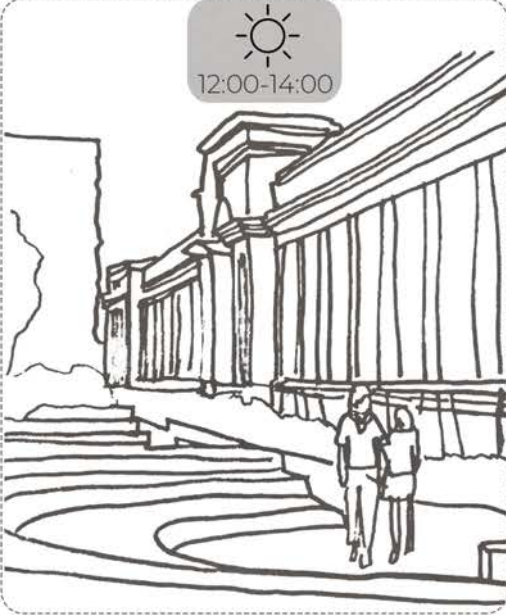
Kate and David watch television in bed before falling asleep.



They enjoy dinner at their home. After they discuss their day, plan tomorrow, take a shower and get ready for bed.

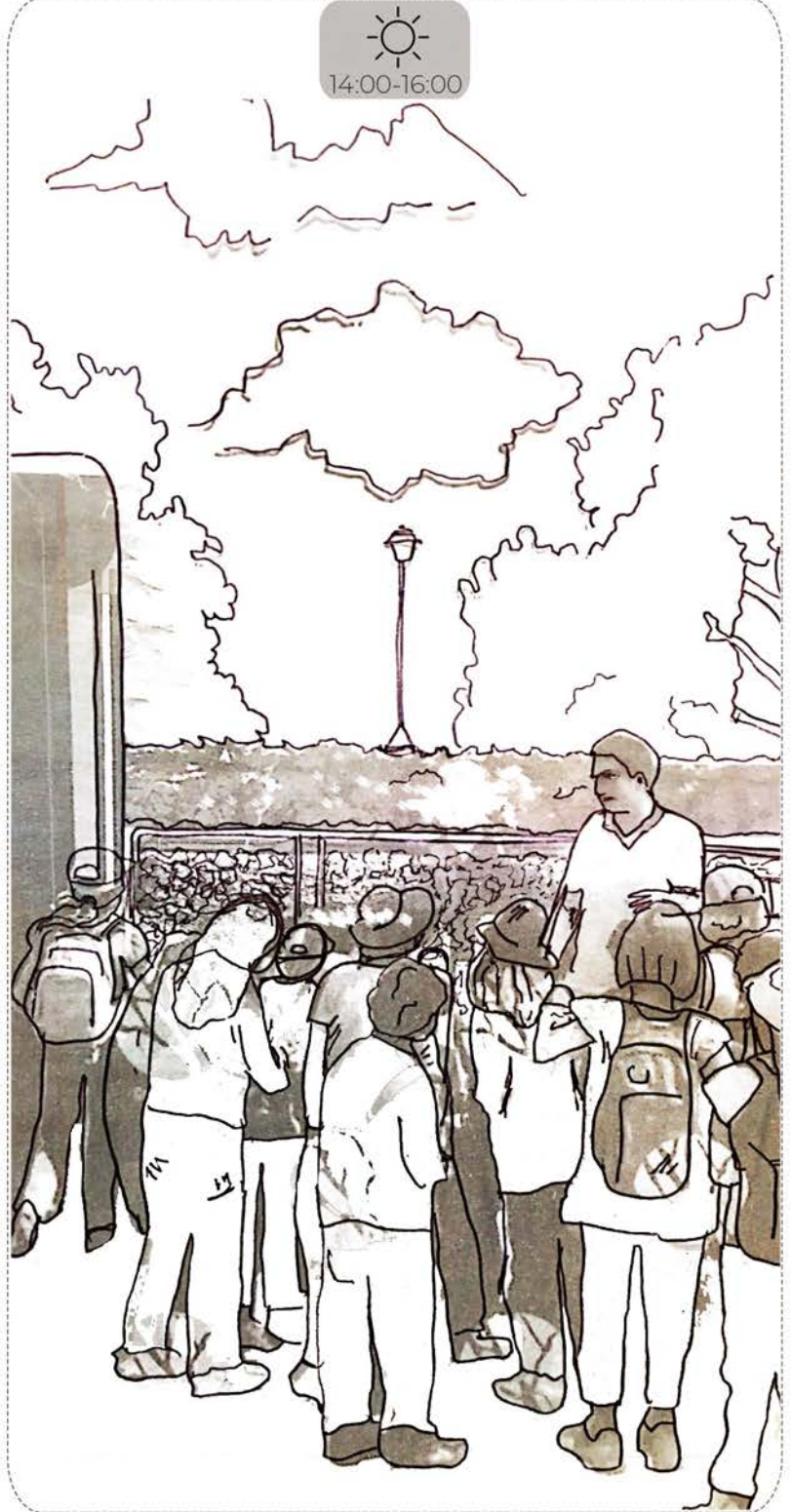
Figure 10.8 Story of Kate and David

☀️  
12:00-14:00



Kate and David take their packed lunch outside and find a comfortable spot in the shade to enjoy it. They move back inside and prepare for the large group of school children arriving at 14:00.

☀️  
14:00-16:00



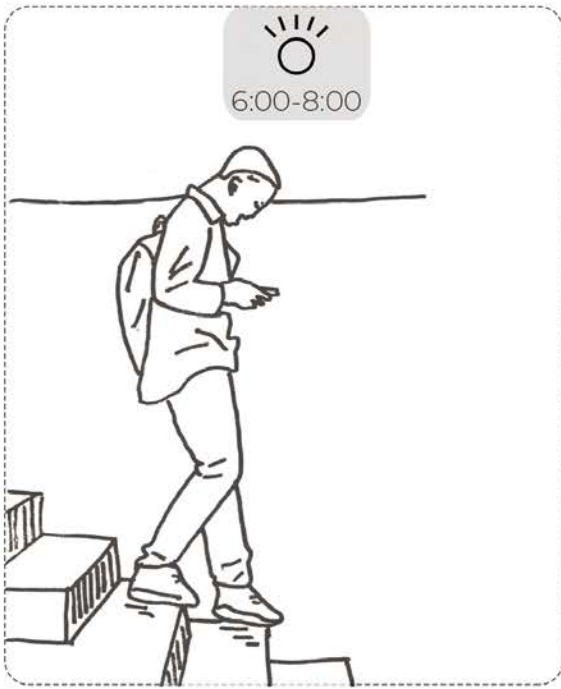
Kate and David start their tour outside the museum where they walk the children to the Halfway+ to store their belongings, and show them the medicinal plants. They then proceed to the Museum's avery and continue their discussion about South African plants and bird life.

☀️  
16:00-18:00

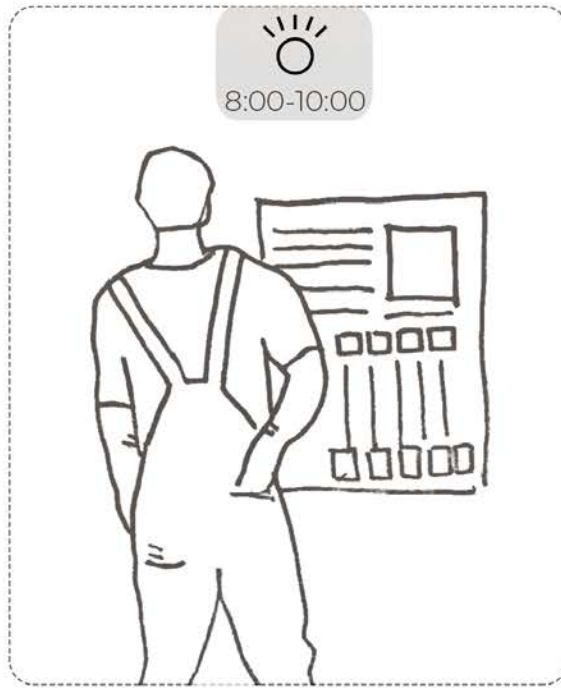


At 16:00 Kate and David walk their group back to Halfway+ to collect their stored belongings. Thereafter, the pair return to the museum to lock up and drive home.

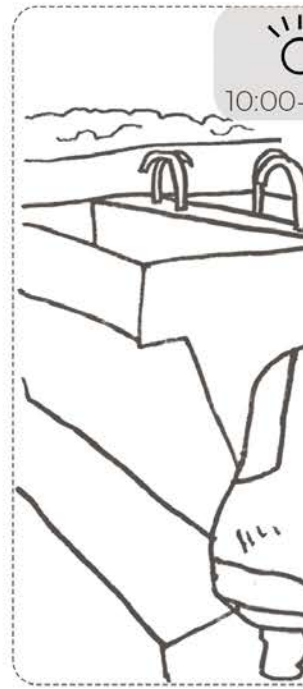
THABO



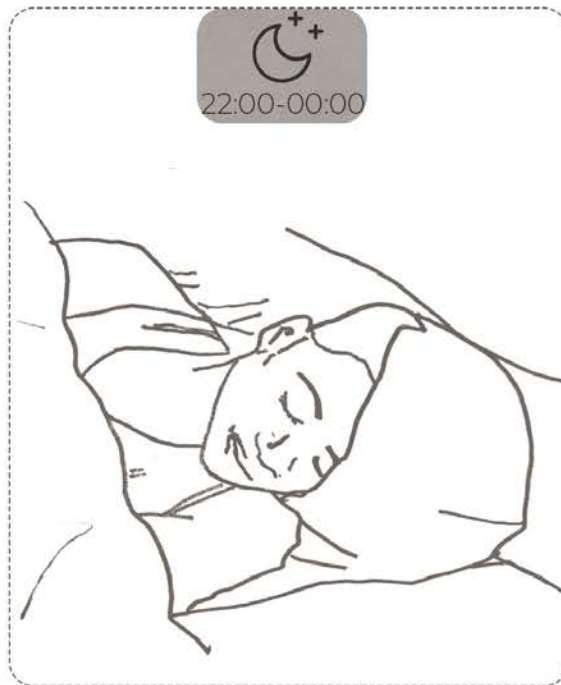
Thabo wakes up at Yeast City Housing in time for breakfast from 6:00-7:00. Thereafter, he receives his work schedule for the day. This is how residents without money earn their stay at Yeast.



Thabo is scheduled to work at Halfway+ for the month ahead based on his skill-set in maintenance and gardening. He has received adequate training on mechanical systems in Halfway+.



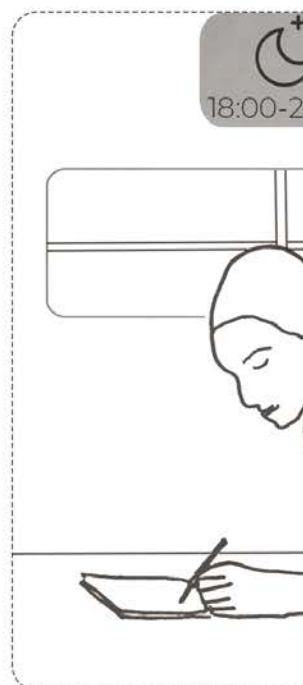
Thabo starts by opening the control panel of the central cleaning out the... Thereafter, he ensures the systems in place.



After a long day, Thabo climbs into bed and falls asleep.



Thabo helps clean up the dinner area and then goes upstairs to use the shower where he also rinses off his uniform in preparation for tomorrow.



Thabo walks back to Yeast City Housing where he... hours before sitting down to dinner.

Figure 10.9 Story of Thabo





...ning up the access  
al wash area and  
grease inceptor.  
s all the mechanical  
ce are in order.



Next, Thabo takes the clippers and basket stored under the basin and begins pruning the garden, picking what is ripe and giving it to the staff member in the point of control. He then unlocks the service cavity between the toilet modules and removes all dry compost. This, he mixes with soil and places it into the planter boxes and vertical garden's geotextile bags.



...towards Yeast City  
e logs his working  
ng down to have  
ner.



After all the plants have received adequate watering, Thabo locks the access panel, washes his hands, changes out of his uniform and hands the keys into the 'point of control.'



After locking the doors to the service cavity, Thabo re-opens the under-basin access panel and fills the watering can with greywater. He then fills the tanks for the drip irrigation system.

### [10.3] RELATION TO 24HRS PROGRAMME AND CONCLUSION

In figure 10.9 below, each persona has been analysed based on their involvement with the m+ system (Halfway+, Bench-it+, Post-it+ or Clean-up+) between 6:00 and 00:00. It is identified that there is the most community involvement within the m+ system between 14:00 and 20:00 on a daily basis. This aligns with the intended programme set out in 6.6 (page 111 and 112 ). The hours where involvement peaks are in graphically communicated in Figure 10.10 alongside.

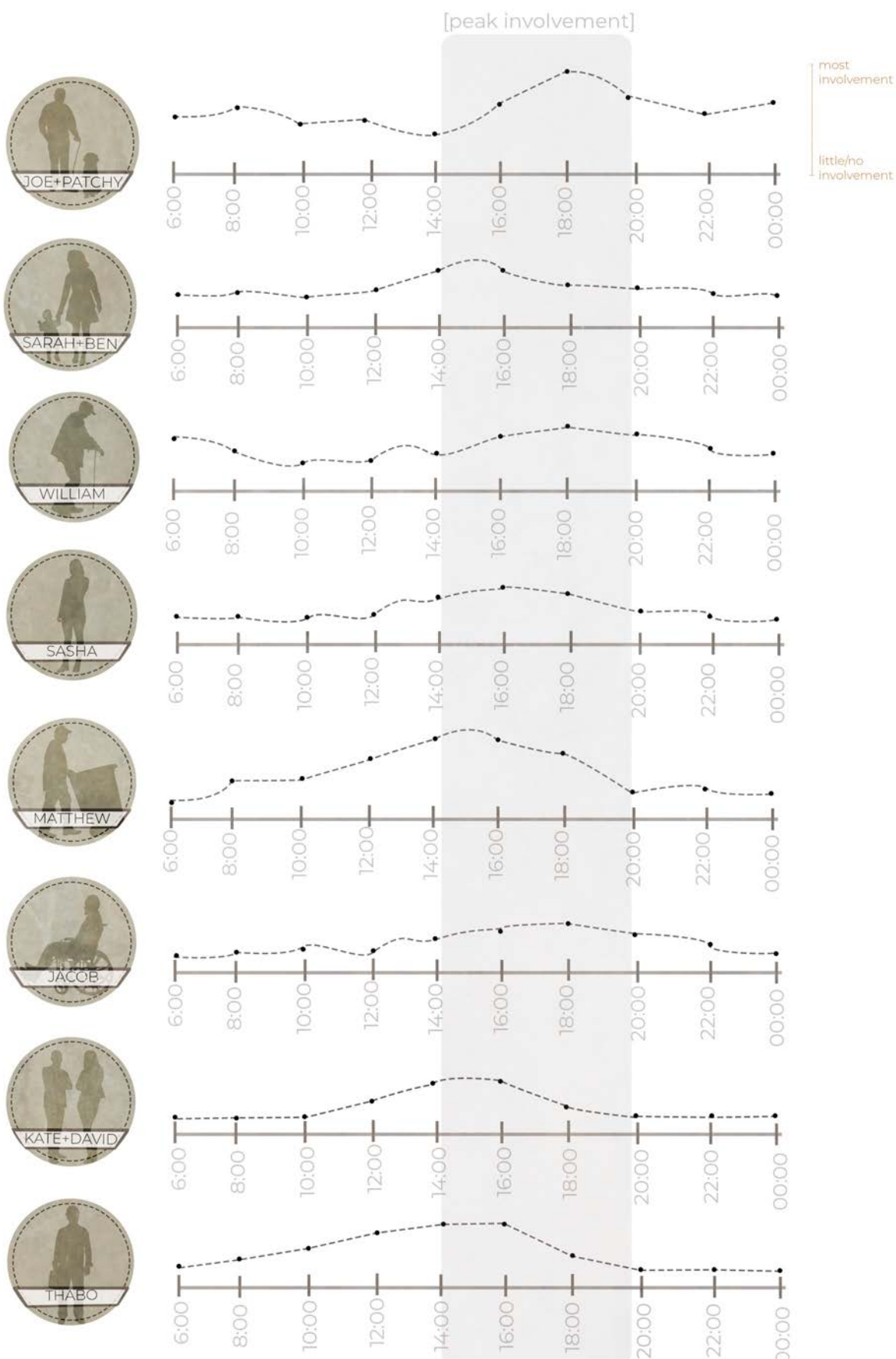


Figure 10.9 Relationship with characters and their involvement in m+ system

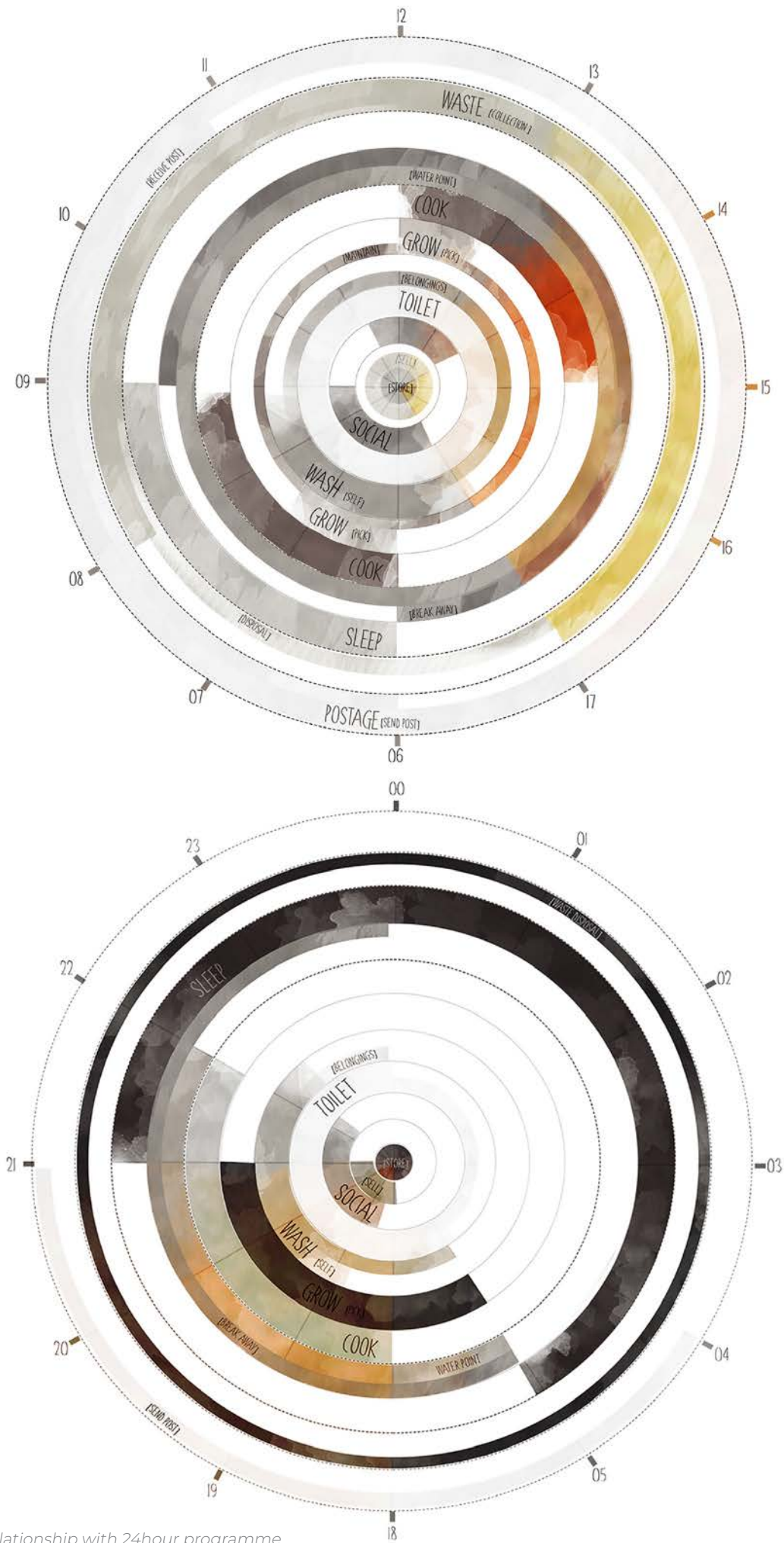


Figure 10.10 Relationship with 24hour programme



[view of central wash area at 14:00]



Figure 10.11 Scene at Halfway between 14:00 and 16:00 © University of Pretoria



[view of cook/socialise area at 17:00]



Figure 10.12 Scene at Halfway between 16:00 and 18:00 © University of Pretoria



[view of Minnaar Street at 20:00]





Figure 10.13 Scene at Halfway between 18:00 and 20:00 © University of Pretoria

**[10.4] RELATION TO CONTEXT**

As one approaches Halfway+ from Minnaar Street, no areas of Halfway+ are visible due to the level difference between the street and the square. The lamppost on the corner of Paul Kruger Street and Minnaar Street creates an entrance threshold guiding the user into the point of control. Thereafter, one is able to pass through the public cook and socialising area, and move towards the private wash area. The spatial sequences are depicted in the figure below.



Figure 10.14 Approaching Halfway+ from Minnaar Street

When approaching Halfway+ from Pretorius Square, one is first confronted with a view of the toilets. After walking down the stairs, the wheelchair accessible toilet and shower is revealed. Thereafter, one passes the central wash area and proceeds to the public cook and socialise space. Now, the lamppost on the corner of Paul Kruger Street and Minnaar Street creates an exit threshold guiding the user back onto the street. The spatial sequences are depicted in the figure below.



Figure 10.15 Approaching Halfway+ from Pretorius Square

[10.5] BUY-IN AND BRANDING

[INSTITUTIONAL BUY-IN]



[COMMERCIAL BUY-IN]



[CORPORATE BUY-IN]



ORATE BUY-IN]



[MUNICIPAL BUY-IN]



Figure 10.16 Buy-in from various role-players

11

*reflect*  
SCENARIO TESTING

### [11.1] INTRODUCTION

The scenarios that follow explore potential future use of the module; and sleep base and bag. **The intention of the scenarios is to reflect on the robustness, adaptability and deployability of the module, rather than reflect on the design itself.** Four scenarios are unpacked diagrammatically to demonstrate the deployability and feasibility of the proposed design from Part C. Figure 11.1 outlines the domestic activities accommodated in the four contextual scenarios that follow.

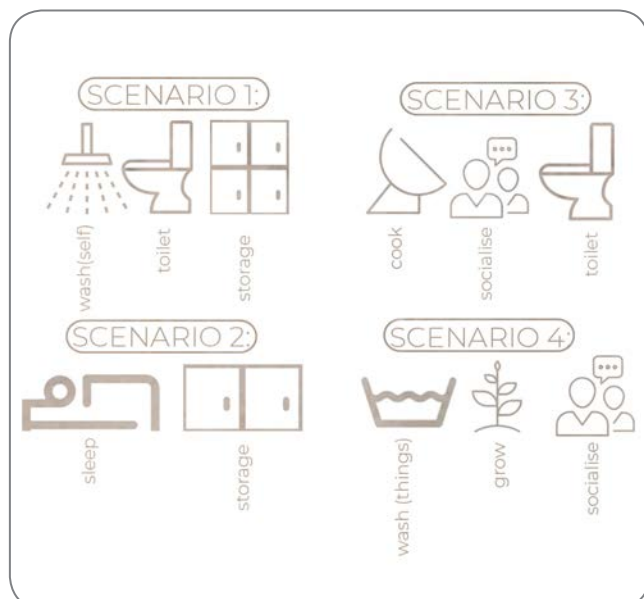


Figure 11.1 Summary of scenarios

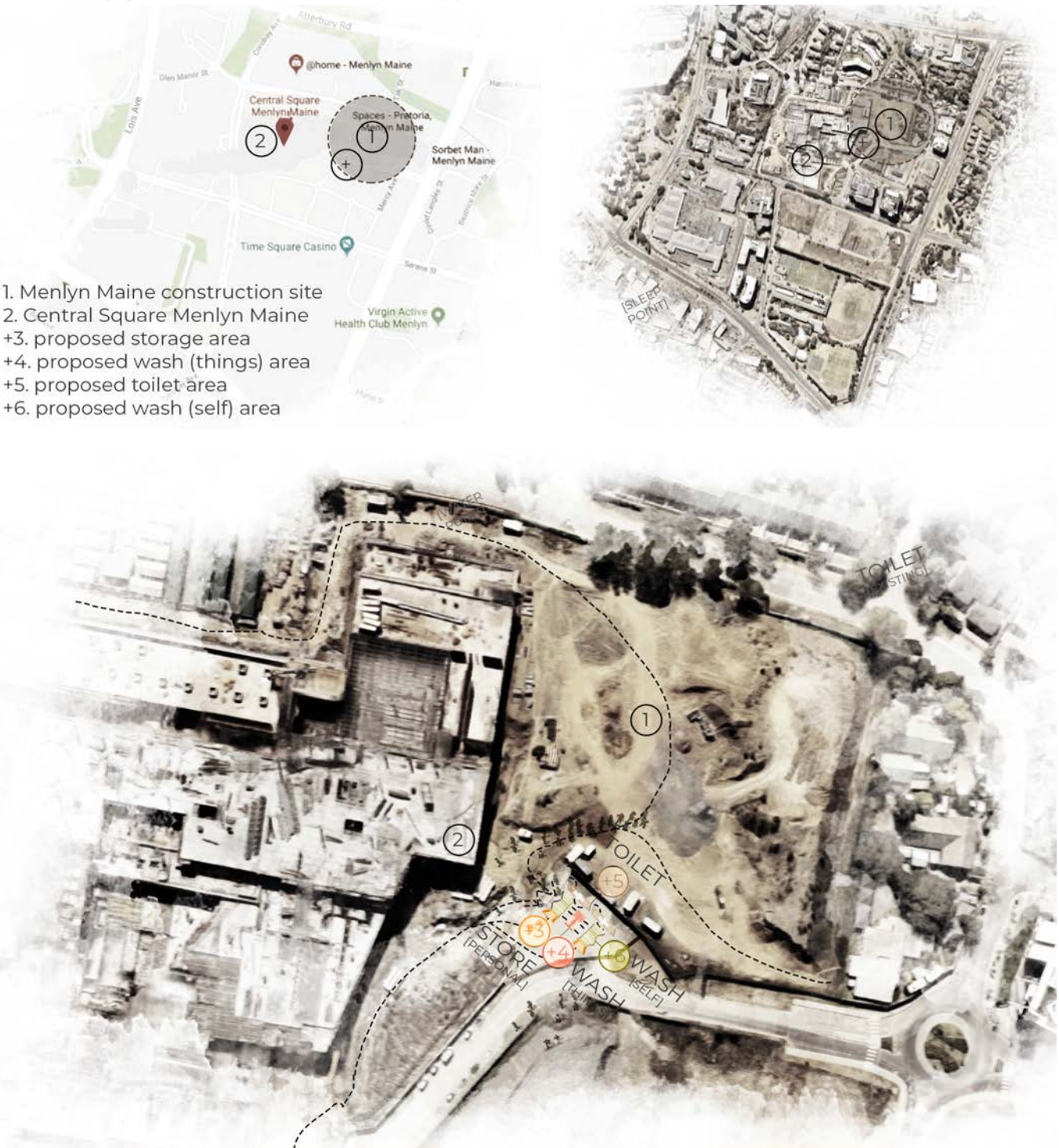
**[11.2] PUBLIC AMENITIES SCENARIO**

Site: Menlyn Maine construction site

Situation: Construction workers leave their homes at 05:00 and travel long distances to get to work. When they arrive they required a place to change into their construction gear and store their personal belongings (clothes, lunch, valuables). The nearest toilet is 2km away causing workers to either take time out of their work day, or turn to a less hygienic alternative. After a long day out in the hot sun and dust, workers now require a place to wash up, fill water bottles and change out of their working clothes, before beginning their journey home. Their working clothes can be washed and stored on site for the next morning when they return.

Duration of stay before deployed elsewhere: 8 months

Potential design positioning: Situated on the flatter, private, south western part of the site with easy access to public transport, the wash (things) (marked +4) is the core of the service space. This connects to the municipal water and electrical inlet, and services the nearby shower areas. The storage area (+3) is positioned in close proximity to the wash (self) (+6), while the toilets (+5) are situated in the most screened off position for privacy. Compost from the toilets and grey-water from the showers is used in the nearby gardens of the Central Square (2).



- 1. Menlyn Maine construction site
- 2. Central Square Menlyn Maine
- +3. proposed storage area
- +4. proposed wash (things) area
- +5. proposed toilet area
- +6. proposed wash (self) area

Figure 11.2 Public amenities scenario



[11.3] SLEEP AND STORE SCENARIO

Site: Magnolia Dell Park

Situation: When work day draws to a close, Magnolia Dell is filled with a variety of people seeking recreational leisure in the park. Some eat, drink, chat and nap. When it gets dark, many of the people leave the park and return to their nearby homes. However, some stay. Night after night, groups of the homeless find a spot on the grass, under a bench or beneath a tree, to spend the night. With no place to store their personal belongings, many important things get misplaced or stolen. All of their belongings are carried in plastic bags which often break. As a result, the park's caretakers, have their hands full trying to maintain a litter-free environment.

Duration of stay before deployed elsewhere: undetermined

Potential design positioning: As one enters the park (marked 1), one is exposed to the storage modules for sleep bases (+5). Here, a courtyard is created between the water point (3), storage of bases(+5) and storage of personal belongings space. This creates a thoroughfare for entering the park and restaurant space where users can access public amenities (2) and sleep (+6) near park benches (4).

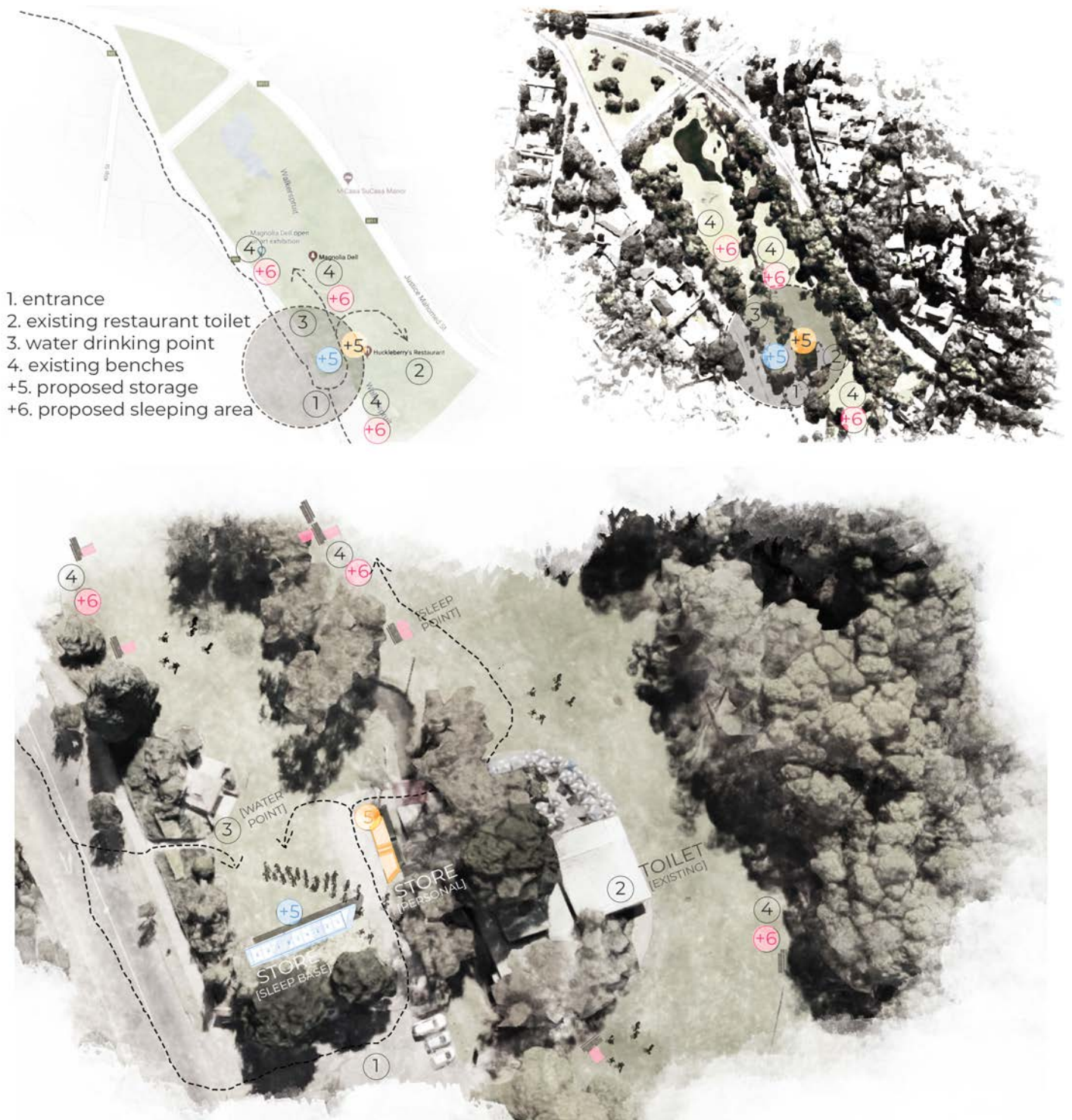


Figure 11.3 Sleep and store scenario

**[11.4] COMMUNITY COOK AND SOCIALISE SCENARIO**

Site: Marlboro Gautrain station

Situation: Every day, many people use the Gautrain as their transport for getting from *a* to *b*. Despite its convenience and connection to the Gautrain bus route, many people spend time waiting on the platforms or outside the station, for the train, bus or taxi to arrive. The waiting experience could become more pleasant if there was some shade, a place to sit, and a place to purchase something to eat and drink. This would encourage all the people waiting to come together, promoting a sense of security specifically in the early mornings and evenings.

Duration of stay before deployed elsewhere: at least 2 years

Potential design positioning: Opposite the entrance to the station (1), situated on an island across the road, the socialise (+6) and cook (+4) area create a public core where users can wait for trains and buses (3). While they wait, they can purchase cooked goods, sit in the shade, and use the toilet (+5) in a secure, boomed-off area. Compost from the toilet is used in the nearby garden. By removing these amenities from the station itself, the building's architectural integrity is kept intact while providing a safe place for user's in transit.

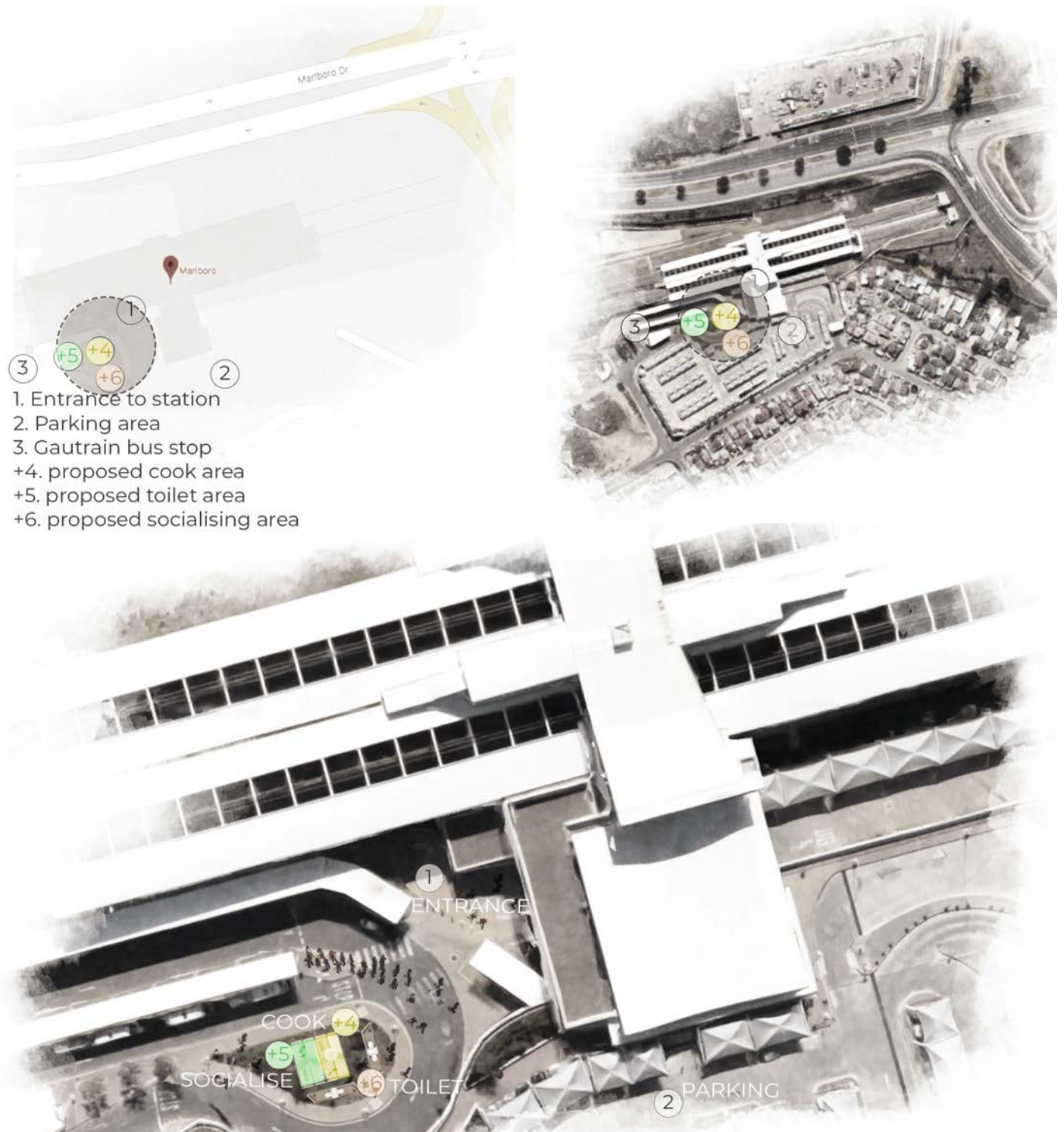


Figure 11.4 Cook and wash scenario

[11.5] CONCRETE BASE RESIDUE SCENARIO

Site: Halfway+ (Minnaar Street)

Situation: After two years of providing public amenities to the homeless, the demographic, and therefore the social needs, along Minnaar Street change. As a result, the modules from Halfway+ are disassembled and deployed to the inner city of Johannesburg. New concrete bases will be produced in Johannesburg for the modules to save transportation and labour costs (bases are heavy). All that now remains in Halfway+ is an excess of concrete bases, a water point, an electrical point and the Grow area. The residue is now required to turn away from its previous life of domesticity, and make a positive addition to the urban fabric for all that pass by.

Duration of stay before deployed elsewhere: until no longer suitable to the social context.

Potential design positioning: Concrete bases are stacked around the central wash area and grow area to provide public seating, additional planters and a play area for children. The nearby water and electrical points encourage users to spend more time in the outdoor public space. Other potential design solutions to latch on to the concrete bases include: an outdoor gym, exhibition space for the nearby museums, a parkade for bicycles and waste picking trolley's, and a platform for informal trade.

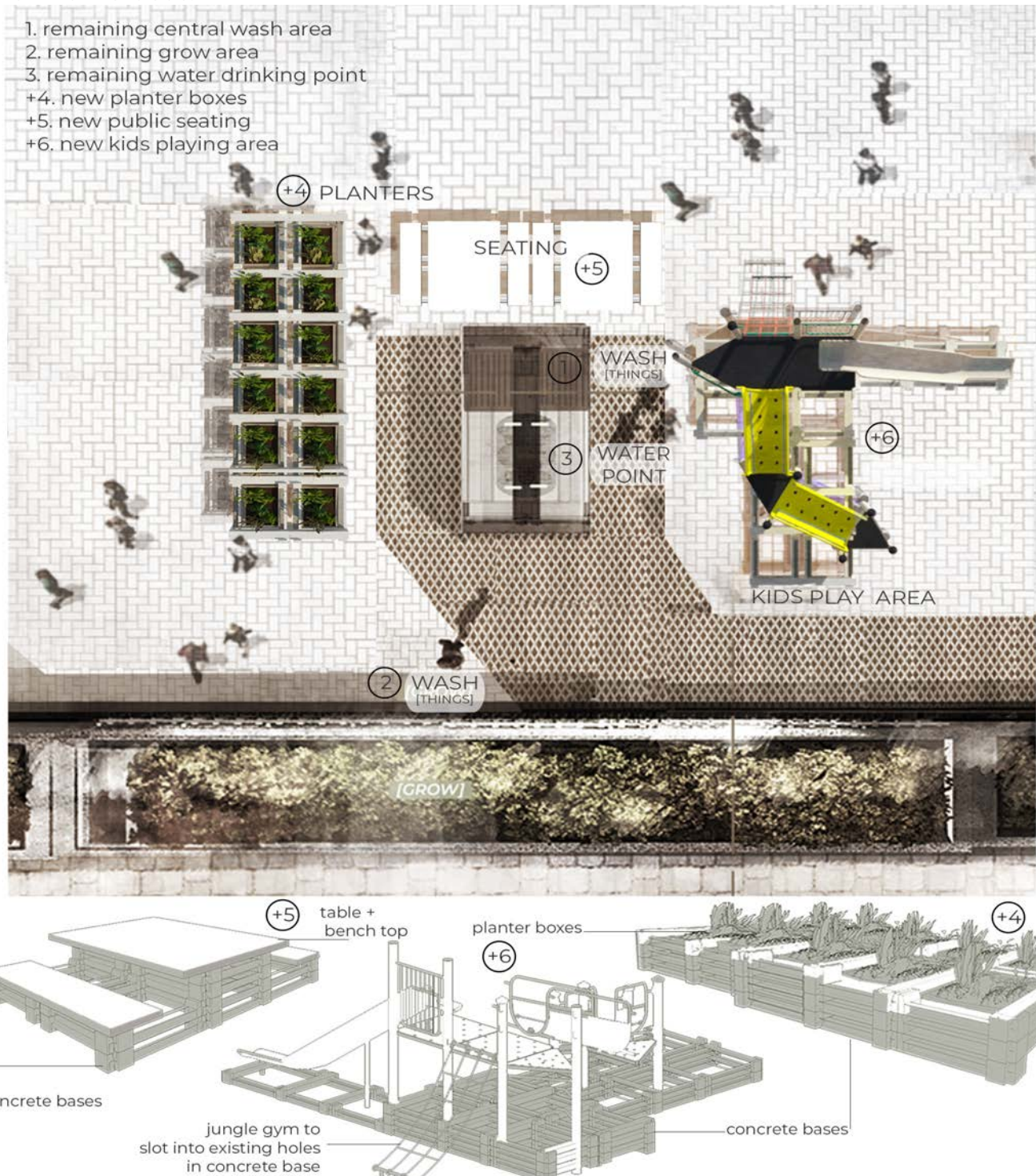


Figure 11.5 Re-use of concrete base residue scenario

12

*reflect*  
CLOSING

## [12.1] CONTRIBUTION

1. *The Secret Life of Streets* proves that the urban interior is a valuable realm for the interior architecture discipline to explore.
2. Domestic activity (beyond the traditional interior) is reclaimed as a powerful foundry programme extending the scope of interior architecture into the urban realm.
3. The notion of urban interiors have been defined, identified and typified based on their domestic natures.
4. The relationship between urban interiors and streets has been extracted based on scenarios where domestic territories exist at their intersection.
5. Instead of one traditional dissertation research field being selected at the start of a project, the design process and iteration led to a morphed consideration across all research field. This is depicted in Figure 12.1 below.

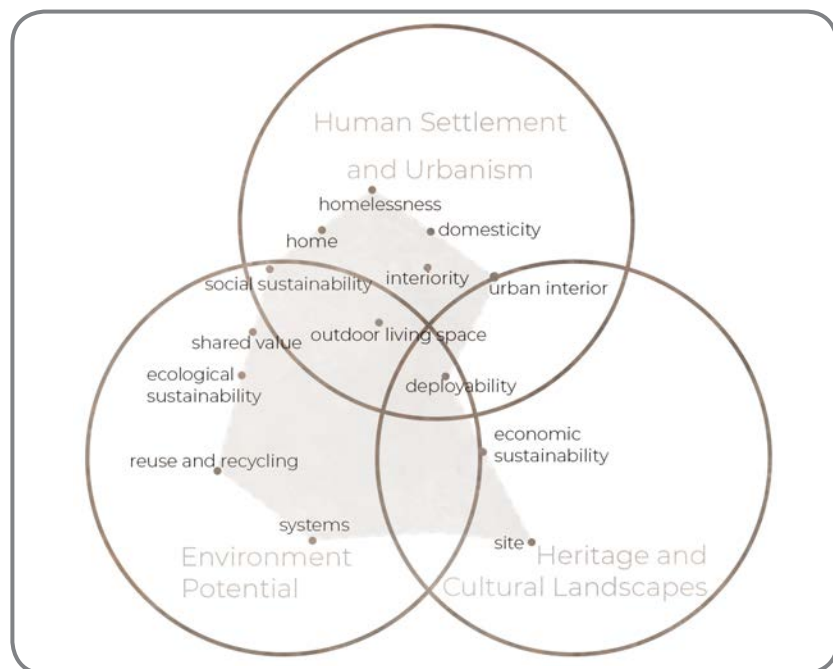


Figure 12.1 Research field plotting

6. There is potential for several contexts, both physical and social, to grow in value by deploying the modules in appropriate configuration.
7. The making of domestic interiors is investigated as a series of temporary and semi-permanent design interventions that accommodate informal, domestic functions.
8. The notion of resilience through self-reliance is unpacked by establishing a web of reciprocity between all role-players. And in so doing, ensure a production process that empowers, includes, and creates a sense of belonging and identity.
9. Conceptualisation of the m+ system occurs at various scales (product, space, system) through the interior architect's lens of manipulating the user interface. Thus, the small determines the big.
10. A thorough reflection on the design process is conducted by testing its feasibility in various contexts and with a variety of model inhabitants (storyboards).

## **[12.2] RECOMMENDATIONS**

Over and above the recommendations for further development of Post-it+ on page 146 and Clean-up+ on page 152, the following can be considered:

\_Full scale prototyping explorations to test the materiality, joinery and structural integrity of the module.

\_An in-depth investigation into the design development and technification of the cook, socialise and public storage areas of Halfway+.

\_Exploring more scenarios where the module and sleep base and bags are used in commercial applications. This could include the use of public toilets and shower at sporting events; as well as sleep areas at festivals such as Oppikoppi or Rocking the Daisies.

\_ Obtaining ethical clearance so that a complete 1:1 prototype of the sleep base module can be tested on Minnaar street to evaluate wear, ergonomics, comfort and customisation.

\_Testing the external cladding system with a variety of cladding options: ranging from metal sheeting and composite decking, to branding walls for surrounding business or a public platforms for street art.

\_Co-creating storyboards for and with all potential role-players in the m+ to further explore the personal experience.

\_Complete a costing audit for the module and the base to determine where costs can be reduced. This would increase the design's economic viability.

### [12.3] CONCLUSION

The dissertation set out to investigate ***what can be added to the existing design of Minnaar Street to better accommodate its informal, domestic function?*** And in doing so, extend the disciplinary 'skin' to include urban interiors. This question is answered through three sub-questions

#### *part a - context and place making*

From the contextual investigation, it can be concluded that interior architecture, most intensely felt at a bodily scale, can strengthen the built environment's connection to the social reality of the city by mapping urban space through the lens of urban interiors. By unpacking the interior spatial qualities within the urban interiors, types resembling rooms in a traditional house are derived. From this, domestic rituals within these rooms can be unpacked. As a result, the social reality of the city (people and their domestic actions) is contextualised its urban fabric.

#### *part b - theory based*

From the theoretical investigation, it can be concluded that the theory of urban interiors can drive interiority and urban domesticity on South African streets by creating an interface between object, user and space. By considering these three components as a network, urban interiority is achieved through the establishment of familiarity and intimacy within the domestic public realm. As a result, domesticity in a South African context can be shifted from traditional indoor space to street space. As a result, the theory of urban interiors can provide a platform for the interior architecture discipline not only investigate South African streets' domestic potential, but also add value to the discipline and context in doing so.

#### *part c - design*

The design and technification process entailed various degrees of resolution through iteration, prototyping and refinement, whilst engaging with the complexities of first and second order meaning. From the design investigation, it can be concluded that a design intervention at a product, spatial and systematic scale can accommodate urban domestic ritual, whilst emphasizing a sense of empowerment and belonging. This is possible through a design solution that is deployable, adaptable, of an intimate scale, can be used in solo or large, connected intervention, contains points of control and makes use of self-reliant systems.

In closing, Halfway+, Bench it, Post-it+ and Clean-up+ can be added to Minnaar Street, and similar sensitive sites, to better accommodate its informal, domestic function.





2017  
Pretoria

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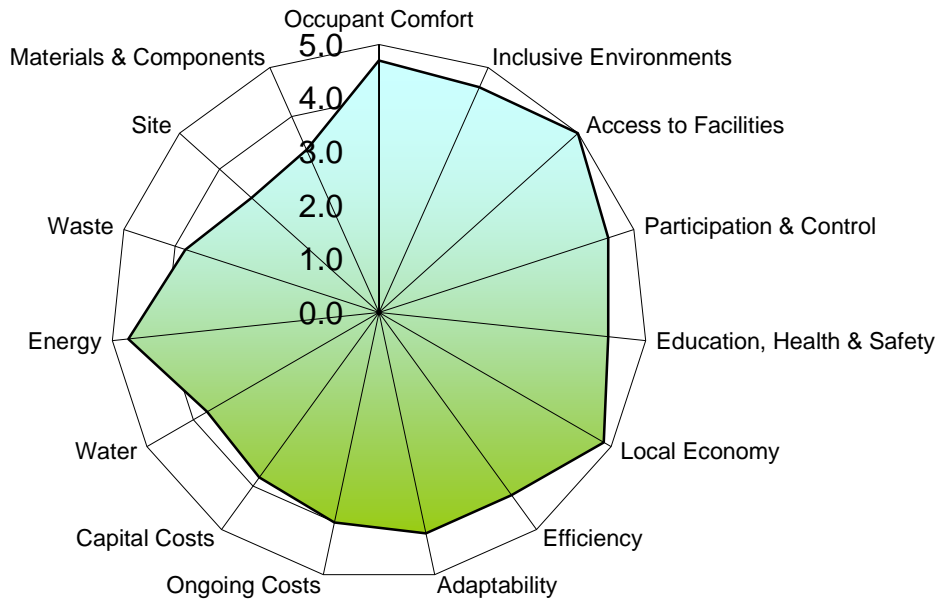
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# apprendices

## APPENDIX 1: SBAT ANALYSIS



<b>Social</b>	<b>4.6</b>	<b>Economic</b>	<b>4.2</b>	<b>Environmental</b>	<b>3.7</b>
		<b>Overall</b>	<b>4.2</b>		

### Building Performance - Social

Criteria	Indicative performance measure	Measured	Points
<b>SO 1 Occupant Comfort</b>			<b>4.7</b>
SO 1.1 Daylighting	% of occupied spaces that are within distance 2H from window, where H is the height of the window or where there is good daylight from skylights	80	0.8
SO 1.2 Ventilation	% of occupied spaces have equivalent of opening window area equivalent to 10% of floor area or adequate mechanical system, with uppolluted air source	100	1.0
SO 1.3 Noise	% of occupied spaces where external/internal/reverberation noise does not impinge on normal conversation (50dbA)	100	1.0
SO 1.5 Thermal comfort	Temperature of occupied space does not exceed 28 or go below 19°C for less than 5 days per year (100%)	90	0.9
SO 1.5 Views	% of occupied space that is 6m from an external window (not a skylight) with a view	100	1.0
<b>SO 2 Inclusive Environment</b>			<b>4.6</b>
SO 2.1 Public Transport	% of building (s) within 400m of disabled accessible (20%) and affordable (80%) public transport	100	1.0
SO 2.2 Information	Comprehensive signage provided (50%), Signage high contrast, clear print signage in appropriate locations and language(s) / use of understandable symbols / manned reception at all entrances (50%)	90	0.9
SO 2.3 Space	% of occupied spaces that are accessible to ambulant disabled / wheelchair users	80	0.8
SO 2.4 Toilets	% of occupied space with fully accessible toilets within 50m along easily accessible route	100	1.0
SO 2.5 Fittings & Furniture	% of commonly used furniture and fittings (reception desk, kitchenette, auditorium) fully accessible	90	0.9
<b>SO 3 Access to Facilities</b>			<b>5.0</b>
SO 3.1 Children	All users can walk (100%) / use public transport (50%) to get to their childrens' schools and creches	100	1.0
SO 3.2 Banking	All users can walk (100%) / use public transport (50%) to get to banking facilities	100	1.0
SO 3.3 Retail	All users can walk (100%) / use public transport (50%) to get to food retail	100	1.0
SO 3.4 Communication	All users can walk (100%) / use public transport (50%) to get to communication facilities (post/telephone/internet)	100	1.0
SO 3.5 Exercise	All users can walk (100%) / use public transport (50%) to get to recreation/exercise facilities	100	1.0
<b>SO 4 Participation &amp; Control</b>			<b>4.5</b>
SO 4.1 Environmental control	% of occupied space able to control their thermal environment (adjacent to openable windows/thermal controls)	80	0.8
SO 4.2 Lighting control	% of occupied space able to control their light (adjacent to controllable blinds etc/local lighting control)	80	0.8
SO 4.3 Social spaces	Social informal meeting spaces (parks / staff canteens / cafes) provided locally (within 400m) (100%)	100	1.0
SO 4.4 Sharing facilities	5% or more of facilities shared with other users / organisations on a weekly basis (100%)	100	1.0
SO 4.5 User group	Users actively involved in the design process (50%) / Active and representative management user group (50%)	90	0.9
<b>SO 5 Education, Health &amp; Safety</b>			<b>4.3</b>
SO 5.1 Education	Two percent or more space/facilities available for education (seminar rooms / reading / libraries) per occupied space (75%). Construction training provided on site (25%)	100	1.0
SO 5.2 Safety	All well used routes in and around building well lit (25%), all routes in and around buildings visually supervised (25%), secure perimeter and access control (50%), No crime (100%)	50	0.5
SO 5.3 Awareness	% of users who can access information on health & safety issues (ie HIV/AIDS), training and employment opportunities easily (posters/personnel/intranet site)	80	0.8
SO 5.4 Materials	All materials/components used have no negative effects on indoor air quality (100%)	100	1.0
SO 5.5 Accidents	Process in place for recording all occupational accidents and diseases and addressing these	100	1.0



### Building Performance - Environmental

Criteria	Indicative performance measure	Measured	Points
<b>EN 1 Water</b>			<b>3.7</b>
EN 1.1 Rainwater	% of water consumed sourced from rainwater harvested on site	0	0.0
EN 1.2 Water use	% of equipment (taps, washing machines, urinals showerheads) that are water efficient	100	1.0
EN 1.3 Runoff	% of carparking, paths, roads and roofs that have absorbant/semi absorbant/permeable surfaces (grassed/thatched/looselaid paving/ absorbant materials)	80	0.8
EN 1.4 Greywater	% of water from washing/relatively clean processes recycled and reused	100	1.0
EN 1.5 Planting	% of planting (other than food gardens) on site with low / appropriate water requirements	90	0.9
<b>EN 2 Energy</b>			<b>4.7</b>
EN 2.1 Location	% of users who walk / cycle / use public transport to commute to the building	90	0.9
EN 2.2 Ventilation	% of building ventilation requirements met through natural / passive ventilation	80	0.8
EN 2.3 Heating & Cooling	% of occupied space which relies solely on passive environmental control (no or minimal energy consumption)	100	1.0
EN 2.4 Appliances & fittings	% of appliances / lighting fixtures that are classed as highly energy efficient ( ie energy star rating)	100	1.0
EN 2.5 Renewable energy	% of building energy requirements met from renewable sources	100	1.0
<b>EN 3 Waste</b>			<b>3.8</b>
EN 3.1 Toxic waste	% of toxic waste (batteries, ink cartridges, flourescent lamps) recycled	0	0.0
EN 3.2 Organic waste	% of organic waste recycled	100	1.0
EN 3.3 Inorganic waste	% of inorganic waste recycled.	80	0.8
EN 3.4 Sewerage	% of sewerage recycled on site	100	1.0
EN 3.5 Construction waste	% of damaged building materials / waste developed in construction recycled on site	100	1.0
<b>EN 4 Site</b>			<b>3.2</b>
EN 4.1 Brownfield site	% of proposed site already disturbed / brownfield (previously developed)	0	0.0
EN 4.2 Neighbouring buildings	No neighbouring buildings negatively affected (access to sunlight, daylight, ventilation) (100%)	100	1.0
EN 4.3 Vegetation	% of area of area covered in vegetation (include green roofs, internal planting) relative to whole site	20	0.2
EN 4.4 Food gardens	Food gardens on site (100%)	100	1.0
EN 4.5 Landscape inputs	% of landscape that does not require mechanical equipment (ie lawn cutting) and or artificial inputs such as weed killers and pesticides	100	1.0
<b>EN 5 Materials &amp; Component</b>			<b>3.3</b>
EN 5.1 Embodied energy	Materials with high embodied energy (aluminium,plastics) make up less than 1% of weight of building (100%)	50	0.5
EN 5.2 Material sources	% of materials and components by volume from grown sources (animal/plant)	40	0.4
EN 5.3 Ozone depletion	No materials and components used requiring ozone depleting processes (100%)	100	1.0
EN 5.4 Recycled / reuse	% of materials and components (by weight) reused / from recycled sources	42	0.4
EN 5.5 Construction process	Volume / area of site disturbed during construction less than 2X volume/area of new building (100%)	100	1.0

### Building Performance - Economic

Criteria	Indicative performance measure	Measured	Points
<b>EC 1 Local economy</b>			<b>4.9</b>
EC 1.1 Local contractors	% value of the building constructed by local (within 50km) small (employees<20) contractors	100	1.0
EC 1.2 Local materials	% of materials (sand, bricks, blocks, roofing material) sourced from within 50km	85	0.9
EC 1.3 Local components	% of components (windows, doors etc) made locally (in the country)	100	1.0
EC 1.4 Local furniture/fittings	% of furniture and fittings made locally (in the country)	100	1.0
EC 1.5 Maintenance	% of maintenance and repairs by value that can, and are undertaken, by local contractors (within 50km)	100	1.0
<b>EC 2 Efficiency</b>			<b>4.2</b>
EC 2.1 Capacity	% capacity of building used on a daily basis (actual number of users / number of users at full capacity*100)	100	1.0
EC 2.2 Occupancy	% of time building is occupied and used (actual average number of hours used / all potential hours building could be used (24) *100)	71	0.7
EC 2.3 Space per occupant	Space provision per user not more than 10% above national average for building type (100%)	100	1.0
EC 2.4 Communication	Site/building has access to internet and telephone (100%), telephone only (50%)	50	0.5
EC 2.5 Material & Components	Building design coordinated with material / component sizes in order to minimise wastage. Walls (50%), Roof and floors (50%)	100	1.0
<b>EC 3 Adaptability</b>			<b>4.0</b>
EC 3.1 Vertical heights	% of spaces that have a floor to ceiling height of 3000mm or more	0	0.0
EC 3.2 External space	Design facilitates flexible external space use (100%)	100	1.0
EC 3.3 Internal partition	Non loadbearing internal partitions that can be easily adapted (loose partitioning (100%), studwall (50%), masonry (25%)	100	1.0
EC 3.4 Modular planning	Building with modular stucture, envelope (fenestration) & services allowing easily internal adaptaptation (100%)	100	1.0
EC 3.5 Furniture	Modular, limited variety furniture - can be easily configured for different uses (100%)	100	1.0
<b>EC 4 Ongoing costs</b>			<b>4.0</b>
EC 4.1 Induction	All new users receive induction training on building systems (50%), Detailed building user manual (50%)	50	0.5
EC 4.2 Consumption & waste	% of users exposed on a monthly basis to building performance figures (water (25%), electricity (25%), waste (25%), accidents (25%)	100	1.0
EC 4.2 Metering	Easily monitored localised metering system for water (50%) and energy (50%)	50	0.5
EC 4.3 Maintenance & Cleaning	% of building that can be cleaned and maintained easily and safely using simple equipment and local non-hazardous materials	100	1.0
SO 4.5 Procurement	% of value of all materials/equipment used in the building on a daily basis supplied by local (within the country) manufacturers	100	1.0
<b>EC 5 Capital Costs</b>			<b>3.8</b>
EC 5.1 Local need	Five percent capital cost allocated to address urgent local issues (employment, training etc) during construction process (100%)	100	1.0
EC 5.2 Procurement	Tender / construction packaged to ensure involvement of small local contractors/manufacturers (100%)	100	1.0
EC 5.3 Building costs	Capital cost not more than fifteen % above national average building costs for the building type (100%)	80	0.8
EC 5.4 Technology	3% or more of capital costs allocated to new sustainable/indigenous technology (100%)	100	1.0
EC 5.5 Existing Buildings	Existing buildings reused (100%)	0	0.0

### APPENDIX 2: PROOF THAT RAINWATER HARVESTING IS NOT FEASIBLE.

1. Roof area of module (catchment area): **2,475m<sup>2</sup>**
2. There are **14 181 liters** collected on each roof per year in Pretoria.  
This results in 3.88litres of water per day saving **36 cents** daily  
Annual saving: **R131 per year.**

Installation of equipment for rainwater harvesting in each unit=**R5130.00**  
Therefore: it would take **38 years** for the system to pay itself off (excluding maintenance)

[RAINWATER HARVESTING ON THE MODULE'S ROOF IS NOT ECONOMICALLY VIABLE]

APPENDIX 3: MODULE'S RESISTANCE TO SLIDING AND OVERTURNING  
 (calculation done by specialist structural engineer)

**Basic wind pressure**

Code Referenced  
 SANS 1016:10 - 3

Wind speeds

Fundamental basic wind speed	$v_{b0} := 28$ m/s	Johannesburg	Figure 1, pg 14
Probability of exceedance	$p := 0.02$		
Shape parameter	$K := 0.2$ $m := 0.5$		
Probability factor	$c_{prob} := \left( \frac{1 - K \cdot \ln(-\ln(1 - p))}{1 - K \cdot \ln(-\ln(0.98))} \right)^m$ $c_{prob} = 1$		7.2.3
Basic wind speed	$v_b := v_{b0} \cdot c_{prob}$ $v_b = 28$ m/s		7.2.2
Terrain Category B			Table 2, pg 17
Height above ground	$z := 3.05$		Table 1, pg 16
Height of reference plane	$z_g := 3$		
Gradient height	$z_g := 350$		
Height below which no further reduction required	$z_e := 5$		
Exponent	$\alpha := 0.120$		
Roughness factor	$c_r(z) := 1.36 \cdot \left( \frac{z - z_g}{z_g - z_e} \right)^\alpha$ $c_r(z) = 0.471$		7.3.2.1
Topography factor	$c_o(z) := 1$		7.3.3
Peak wind speed	$v_p(z) := c_r(z) \cdot c_o(z) \cdot v_b \cdot 1.4$ $v_p(z) = 18.457$ m/s		7.3.1.1
	$Altitude := 1400$ m		
	$Sitealt1 := 1000$ $Sitealt2 := 1500$	$\rho1 := 1.06$ $\rho2 := 1$	Table 4, pg 20
Air density	$\rho := \rho2 - (Sitealt2 - Altitude) \cdot \frac{(\rho2 - \rho1)}{Sitealt2 - Sitealt1}$ $\rho = 1.012$ kg / m <sup>3</sup>		
Peak wind pressure	$q_p(z) := \frac{1}{2} \cdot \rho \cdot \frac{v_p(z)^2}{1000}$ $q_p(z) = 0.172$ kN/m <sup>2</sup>		7.4

Table 1 — Parameters of wind profile

1	2	3	4	5
Terrain category	Height $z_1$	Height $z_2$	Height $z_3$	Exposure $\alpha$
A	150	0	1	0,870
B	300	0	2	0,885
C	450	3	3	0,126
D	600	5	10	0,150

Table 2 — Terrain categories




1	2	3
Category	Description	Illustration
A	Flat, unobstructed terrain with very light exposure and few or no obstructions (single rural area exposed to open sea or large lake)	
B	Area with low vegetation and few or no isolated obstructions (for example rural and suburban residential regions with few or no obstructions)	
C	Area with regular cover of vegetation or buildings or with isolated obstructions (for example residential areas, urban areas, towns and commercial centres)	
D	Area in which at least 10% of the surface is covered by buildings and other structures with a mean height of 15 m	

Table 2. A representative wind direction is shown. It can be assumed that the wind direction is parallel to the building and that the wind speed is constant over the height of the building.

Table 4 — Air density as a function of site altitude

1	2
Site altitude above sea level	Air density
m	$\rho$ kg/m <sup>3</sup>
0	1,20
500	1,12
1 000	1,06
1 500	1,00
2 000	0,94

NOTE 1: A temperature of 20° has been selected as appropriate for South Africa and the variation of mean atmospheric pressure with altitude is allowed for in the above table.  
NOTE 2: Intermediate values of  $\rho$  may be obtained from linear interpolation.

**Overall Forces** - Table 13, maximum blockage

Positive co-efficient = +0.8

$$q_{positive} = q_p(z) \cdot 0.8$$

$$q_{positive} = 0.138$$

$$w := 0.138 \text{ kPa}$$

$$l := 2.2 \text{ m}$$

$$h := 2.7 \text{ m}$$

$$b := 1 \text{ m}$$

$$F := 1.3 \cdot w \cdot l \cdot h$$

$$F = 1.066 \text{ kN}$$

(Force in horizontal direction)

$$M := F \cdot \frac{h}{2}$$

$$M = 1.439 \text{ kN} \cdot \text{m}$$

(Moment that will cause overturning)

Sliding resistance

$$\text{Weight} := 24 \frac{\text{kN}}{\text{m}^3} \cdot 0.15 \text{ m} \cdot 0.075 \text{ m} \cdot (2 \text{ m} + 1.5 \text{ m} + 0.9 \text{ m} \cdot 4)$$

$$\text{Weight} = 1.917 \text{ kN}$$

Therefore weight is greater than horizontal force so sliding is resisted

Overturning resistance

$$M_R := \text{Weight} \cdot \frac{b}{1.3}$$

$$M_R = 1.475 \text{ kN} \cdot \text{m}$$

(Moment that will resist overturning)

Therefore moment of resistance is greater than overturning

APPENDIX 4: FINAL PRESENTATION AND MODELS

