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MINDFUL METROPOLIS

Transforming lost space to promote the well-being of transient urban users in Hatfield

Christi de Jongh | u04520085

PREFACE

Plagiarism Declaration

In accordance with Regulation 4(c) of the General Regulations (G.57) for dissertations and theses, I declare that this dissertation, which I hereby submit for the degree Master of 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 dissertation 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.

Christi de Jongh (u04520085)

2022-08-26

PROJECT SUMMARY

MINDFUL METROPOLIS
Transforming lost space to promote the well-being of transient urban users

RESEARCH FIELD |
Inhabitation of Space / Regenerative and Resilient Cities

STUDY LEADERS |
Dr Jan Hugo
Abrie Vermeulen

SITE LOCATION |
25°44'47.02" S, 28°14'27.70" E
Duncan street, Hatfield, Pretoria

SITE PROGRAMME |
Transit Oriented Public Park

CLIENT |
Passenger Rail Agency of South Africa

KEYWORDS |
Lost Space, Loose Space, Public Space, Well-being, Integration

RESEARCH QUESTION |
How can architecture consolidate lost space with loose space to generate a public space that will serve the transient urban user and stimulate well-being?

ABSTRACT

Transforming lost space to promote the well-being of transient urban users

With the rise in urbanisation and the consequent creation of lost space, urban users have experienced a detachment from their urban fabric. This detachment has caused the user to suffer from a diminishing well-being due to a lack of public space and therefore a lack in sense of place and belonging. It is important to consider the urban user's well-being as it constitutes the happiness, health and wellness of the individual and larger community. On the positive side, there is the existence and opportunity of loose space which is a fluid realm that is activated by human input, and hosts interaction and a sense of place. The architectural opportunity is to foster the relationship between loose and lost space by allowing loose space to infiltrate and consequently activate lost space. This may be done within a space that serves the transient urban user such as a transit oriented public space. The research intention is thus to investigate lost space as well as the loose space accommodating them. The methodology is based in Roger Trancik's Figure Ground, Linkage and Place Theories. First, lost spaces were identified through desktop mapping of the existing. Then, commonalities were found by data layering. And lastly, site narrative, conditions and user needs were observed through on-site quantitative and qualitative documentation. The intervention aims to address the disparity that exists in the perception of lost spaces; there is the functionalist view that deems these spaces inefficient and undesirable. Then, there is the perspective that these spaces are activated by human input to create transient yet lively loose space. The intention is therefore to create a public space that is articulated by loose space to ultimately instil well-being.

ACKNOWLEDGEMENTS

A great thank you to everyone that has played a part in my journey

Firstly, I would like to praise and thank God, without which none of this would have been possible.

To my parents, Mam and Pappa, thank you for your endless support and advice. Your love and care absolutely carried me through the year.

To Evert, thank you for your never-ending support and comfort, I could not have asked for a better cheerleader. Your love and motivation made all the difference.

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CHAPTER ONE

Position & Situation

Introduction

Public Space is essential as it represents the valuable urban areas that host a sense of community and interaction while promoting identity and well-being (United Nations 2016). With the constant and careless growth of Hatfield and the consequent emergence of lost space, public space as medium to enable a sense of place and belonging has been suppressed. Resultantly, urban users have become detached from their environment and suffer from a diminished well-being (Case 2019; Kataria 2021; Trancik 1986). This dissertation seeks to investigate the nature of lost space and the subtle existence of loose space and how the relationship between the two may create a public space that holistically serves the transient urban user.

General Issue | **Rapid Urbanisation**

South African cities are currently characterised by rapid urbanisation and an increased demand for infrastructure (Landman 2019). With approximately 63% of South Africans already living in urban areas and a predicted 8% increase in the next ten years, eight in ten South Africans will be living in cities by 2050 (Parliamentary Monitoring Group 2019). Urbanisation is necessary as it has the potential to improve socio-economic conditions, yet it is currently being examined for its social, economic and environmental repercussions such as the rise in homelessness and informality due to insufficient provision of affordable housing, added social strain due to intense competition for work, and further demand on natural resources (Turok and Borel-Saladin, 2014). Hatfield, an older neighbourhood in the City of Tshwane, aptly represents this notion of rapid urbanisation within the country. It developed as a modest neighbourhood alongside the University of Pretoria campus (Hugo and du Plessis 2020). However, with the introduction of the Gautrain and an influx of student numbers over the years, Hatfield has experienced significant economic growth and has therefore changed rapidly to accommodate its ever-growing population (Hatfield Metropolitan Node Precinct Plan 2021; Hugo and du Plessis 2020).

Urban Issue | **The Emergence of Lost Space**

The rapid urbanisation of cities leads to uncontrolled urban expansion, which results in the creation of lost space within the urban fabric (Kataria 2021). In his seminal work, *Finding Lost Space: Theories of Urban Design*, urbanist Roger Trancik (1986) defines lost spaces as "the undesirable urban areas that are in need of redesign – antispaces, making no positive contribution to the surroundings or users." (Trancik 1986:3). They may be seen as the spaces that are inefficient and cut off from pedestrian movement; they are deserted in nature and have lost all of their functions (Kataria 2021). Leftover unstructured landscapes between buildings, surface parking lots, deteriorated parks and abandoned plots are all examples of urban lost space (Trancik 1986).

Trancik (1986) notably stated that development decisions are made on a two-dimensional level and disregards the three-dimensional relationships between buildings and spaces. This causes a negligent attitude towards truly understanding and designing for human behaviour (Trancik 1986:1). Together with this notion of dismissive development, he identified five major factors that contribute to lost space in cities. Firstly, and most prominently, is the increased dependence on the automobile, which has resulted in the dominance of highways, thoroughfares and parking lots over open space. Secondly, the Modern Movement and the modernist indifference towards public open spaces. Thirdly, zoning and urban renewal that has led to the fragmentation of the city. Fourthly, the privatisation of public spaces and the unwillingness of contemporary institutions to assume responsibility for the public urban environment. And, lastly, the change in land use that has led to the abandonment of industrial, military or transportation sites in the city (Trancik 1986:4). Trancik (1986) decisively argued that this tangential organisation of settlements and the consequent emergence of lost space has ultimately led to a loss in sense of place (Trancik 1986:22). Sense of place refers to the distinctive character of a specific locality; it relates to the emotive bonds people develop through a subjective environmental experience (Azaryahu 2009). A lack of sense of place may provoke a space to appear placeless or inauthentic.

Lost space is prevalent in South African cities, largely as a result of Apartheid and Post-Apartheid city planning. Both of which has led to neighbourhoods, such as Hatfield, riddled with unkempt, inaccessible and vacant spaces (Hugo and du Plessis 2019) and therefore rendered without a strong sense of place (Trancik 1986:22).

Architectural Issue | **The Detachment of the Urban User**

Lost space, as a result of rapid urbanisation, negatively affects its surrounding environment and urban users in a multitude of ways. It leaves users without relation or identity, while it disconnects from the urban fabric and severs the individual from a sense of belonging and connotative meaning (Case 2019; Kataria 2021; Trancik 1986). The most crucial way in which lost space disturbs its environment, is by it depriving the urban context of potential public space (Jayasimhan 2021). In a paradigm of acute spatial crisis, lost space constitutes the voids that are a senseless waste of usable open space (Jayasimhan 2021).

In the *Charter for Public Space*, the United Nations (2016) defines public space as a place for public use, it is accessible and enjoyable by all for free. It consists of both open environments (e.g. streets, squares, parks) and sheltered spaces (e.g. public libraries, museums, information centres). Public space positively affects its context by promoting well-being and expression of diversity, as well as it hosting community identity and therefore a collective community life (United Nations 2016).

An urban fabric without successful public space thus represents a lack in sense of place, sense of belonging and, ultimately, a diminishing well-being (United Nations 2016). A discernible tension consequently exists between lost space and public space as the former represents the contemporary negative while the latter stands for the prospective positive. It is therefore pertinent to consider the transformation of lost space into public space as a means to remedy the detachment of urban users from their context and consequently instil well-being.

The Lack of Public Space in Hatfield

In her article, *The transformation of public space in South Africa and the role of urban design*, Professor Karina Landman (2016) introduces three trends towards the transformation of public space in South Africa, namely deterioration, privatisation and celebration. *Deterioration* refers to the lack of management and the need for survival, *privatisation* relates to a growing need for control, and *celebration* concerns symbolic representation and a need for the physical expression of meaning (Landman 2016). The first two are clearly present in the fabric of Hatfield, while the latter seems to be lacking.

In Hatfield, *deterioration* is apparent in spaces such as Springbok Park which is a national monument that contains a large variety of indigenous plants. The park used to accommodate leisurely outdoor activities, but has since fallen into disrepair and deteriorated into an unsafe space harbouring unsavoury activity (figure 1) (City of Tshwane 2015; Hatfield City Improvement District 2021).

Privatisation, in Hatfield, is perceptible in two ways; either in terms of accessibility or through sanitisation - whereby a private entity attempts to change the nature of a space to gain control and promote safety (Landman 2016). Privatisation through inaccessibility is present in spaces such as the Respublica Square; the space was previously known as the Hatfield Square and hosted a variety of pubs and clubs for the local student community. During the late 2010's, the square represented the pre-eminent space for student culture, however, the residential redevelopment of the space has closed down many of its regular anchors as well as introduce physical barriers, deeming the space inaccessible and dull to majority of the public (figure 2) (Smeets 2014; Respublica 2016; Hatfield City Improvement District 2021).

Privatisation through sanitisation is clear in the case of the Hatfield Plaza Flea Market which successfully occupied the parking lot of the Hatfield Plaza Shopping Centre for many years (Egas 2012). While the market used to be a bustling bazaar, it has since been removed from the plaza, leaving the space vacant, without a sense of place and purpose other than it being a parking lot (figure 3) (South Africa Explorer 2015).

Public spaces mirror the complexities of societies, therefore, as these spaces change and become less connected, so do the urban users (Madanipour 2010). The disintegration of public space and its introduction to the realm of lost space, leaves neighbourhoods like Hatfield with the discouraged ineptitude for human interaction and well-being (Landman 2019). This ultimately inhibits the area from reaching its full potential vibrancy and liveability; rendering it without a sense of place (Hatfield City Improvement District 2021).

It is for this reason that the third trend, *Celebration*, be the aspiration of such a neighbourhood. If public spaces are celebrated, their positive attributes (such as promoting a sense of community, identity and well-being) and placemaking qualities (such as sentimental connection to a place and human flourishing) will be instilled in the urban context (United Nations 2016; Cutieru 2021). This will consequently result in a strong sense of place and the perseverance of public space over lost space.

Past

Present

Past

Present

Figure 1 | Photos of Springbok Park – Past (Inspirock 2014) and Present (Ueckerman 2021)

Past

Present

Figure 2 | Photos of Hatfield Square – Past (GPSmyCity 2011) and Present (Creamer Media Reporter 2018)

Past

Present

Figure 3 | Photos of Hatfield Plaza Flea Market - Past (Facebook 2012) and Present (Google Earth 2022)

The Opportunity of Loose Space

Hajer and Reijndorp (in Kataria 2021) define lost space as in-between spaces which are ephemeral and represent both space and a prospective future – a collection of disparate activities, while architect Raoul Bunschoten (2003) refers to the metaspace; a new public space for interaction and intertwining of urban actors and their desires and interests. A great disparity therefore exists in the perception of lost spaces; on the one hand, there is the functionalist view that deems the space inefficient and undesirable, and on the other, is the perspective that these spaces are activated by human input to create transient yet lively loose space. In their influential work *Loose Space: Possibility and Diversity in Urban Life*, authors Franck and Stevens (2006) express that having an instrumental and functionalist view of underutilized spaces (also known as lost spaces) ignores the potential of them being a source of sociability, inclusivity, diversification and growth. They introduce the concept of loose space which is a fluid realm whereby the human input activates a space through recognition of potential and consequent modification for their needs and desires (Franck and Stevens 2006).

Loose space hosts a variety of temporal activities which in turn supports a local and place-specific culture (Franck and Stevens 2006). Franck and Stevens (2006) describe the relation between acts of looseness and their social context in four themes, namely appropriation, tension, resistance and discovery.

Figure 4.1 | User appropriation of existing structure for individual needs (Author 2022)

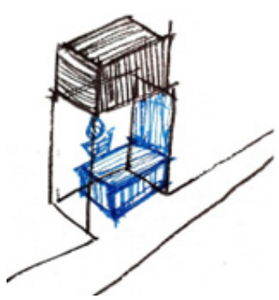


Figure 4.2 | Informal Trader appropriating space under an advertisement board and along a balustrade (Author 2022)

Figure 5.1 | Tension between informal traders, and formality and informality (Author 2022)

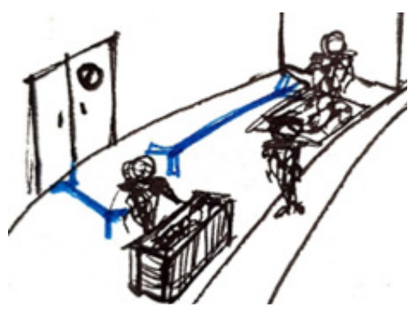


Figure 5.2 | Opposing informal traders along pedestrian route (Author 2022)

Figure 6.1 |Individual resisting authoritative implementations (Author 2022)

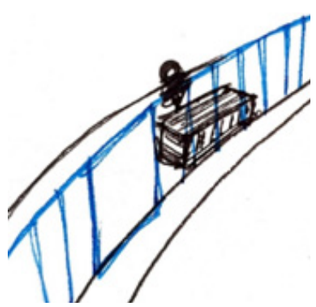


Figure 6.2 | Informal Trader resisting implemented control by remaining in optimal selling spot (Author 2022)

Figure 7.1 | Individual discovering additional uses for an infrastructural element (Author 2022)

Figure 7.2 | Individual discovering additional uses for an infrastructural element (Author 2022)

Appropriation, relates to the actions that make a space loose and enables it to become an expected part of urban life (even though the space may have never been intended for that use). It contributes to the identity of a neighbourhood as the synergistic mixing of uses creates opportunities for contact and maintains cultural identity and community ties (figure 4) (Franck and Stevens 2006).

Tension relates to a sense of negotiation, either between the various individuals appropriating spaces, or private entities and these individuals, or between the loosening (informalizing) and tightening (formalising) of a space (figure 5) (Franck and Stevens 2006).

Resistance, in terms of loose space, describes the inhabitation of urban pockets by people. The sense of resilience manifests in the confrontation posed towards urban re-development and adjustment to a mainstream lifestyle. This observed resistance allows for the preservation of a sense of place, practices and identity (figure 6) (Franck and Stevens 2006).

Discovery concerns the locating of a space and the uncovering the opportunities it may offer. This type of habitation is gentle; it appreciates the current features of the space and regards them as assets by incorporating them into an alternative means of occupation (figure 7) (Franck and Stevens 2006).

Activated Edges
Edge of Unprogrammed Space (Lost Space) activated by Informal Traders and Social Activity of Pedestrians (Author 2022)

Expression of Needs/Desires
Walkway and Retaining Wall being used by Pedestrian as Lunchtime Seating. Ashy remnants of Informal Traders cooking food is also visible in this space (Author 2022).

Expression of Identity
Walls of Pedestrian Bridge riddled with posters and graffiti/markings (Author 2022)

Figure 8 | Activated Edges, Expression of Needs/Desires; Expression of Identity (Author 2022)

Loose space inherently emerges in a variety of types within the urban fabric; some locations are planned for specific uses (such as designed public open spaces) while others are without an assigned function (such as leftover or abandoned spaces) (Franck and Stevens 2006). Within these spaces informal trade is prevalent and shaped by the particularities of culture and place to provide scope for socialization and expression of identity (Franck and Stevens 2006). Loose spaces exhibit the essence of urbanity as it embodies accessibility, freedom of choice, density and coalescence of diverse people and activities (Franck and Stevens 2006). Loose spaces accordingly impart a vibrant sense of place as they allow for sensually rich experiences (Franck and Stevens 2006).

Leftover spaces tend to be situated alongside a space with fixed functions; this relation potentially allows the ‘lost space’ to become loose (Franck and Stevens 2006). The tightness (formalisation) of the contained space may begin to unravel, increasing its tension with the adjacent loose space which will allow for the housing of displaced activities (Franck and Stevens 2006).

Loose space may be recognised in the context of Hatfield in the appropriation of space. This either takes the shape of activated edges (user activity around lost space), expression of needs/desires (using a fixed element for a function other than its intended purpose) and expression of identity (altering existing fabric to share an opinion or show ownership).

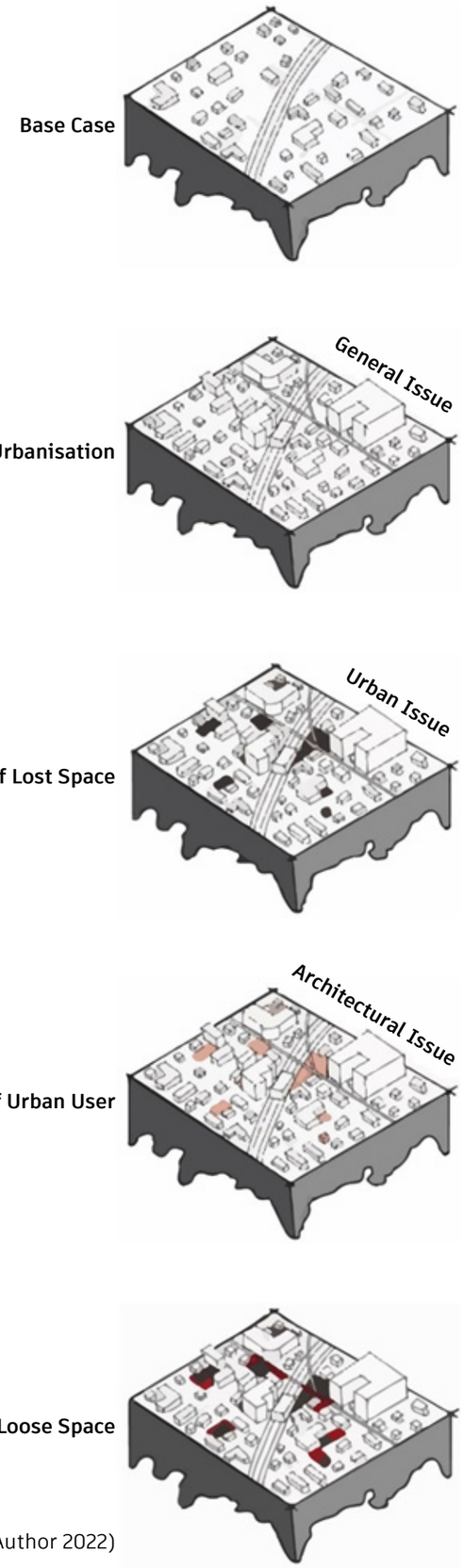


Figure 9 | Current Condition of Hatfield's Urban Fabric (Author 2022)

In *Porosity at the edge: Working through Walter Benjamin's "Naples"*, Andrew Benjamin (2005) notes philosopher Walter Benjamin's emphasis of the potential of a diversified use of edges. This allows the cultivation of loose spaces in a scenario like Hatfield to be an appropriate means of supporting and engaging the transient urban user. The appropriation of lost spaces allows them to become loose (Franck and Stevens 2006), and consequently provide users with an opportunity for a sense of place and belonging through an encouraged sense of ownership and identity (Schneider and Till 2007).

The Participant | The Transient Urban User

The transient urban user is predominantly an individual that either lives on the periphery of the city or in the city and needs to travel via public transit to work, education and amenities (Simpson, McKay, Patel, Sithole, van den Berg, and Chipp 2012). Unfortunately, the public transportation system in South Africa is not fully integrated, which leaves the commuter tethered to a specific mode of transport for a portion of their journey and then on foot for the remainder (Simpson *et al.* 2012). This transient lifestyle causes the user to experience a multitude of spaces and thresholds, especially those that share an interface with the street as it is where the pedestrian resides (Bremner 2010).

As many spaces within the city fall subject to privatisation, sanitisation and commodification, urban activities and identities become prescribed and homogenised; this renders users as passive consumers rather than active participants (Franck and Stevens 2006). Trancik (1986) mentions that 'the modern city dweller is forced to create a social life on personal, controllable territory instead of engaging in a communal existence centred around the street'. This notion of Trancik (1986) is visible as pedestrians hasten down the sidewalk, with the majority being destination-focused and spending only a fleeting moment in a single space, while a meagre few make the decision to linger for social interaction with a familiar informal trader.

As the individuals make their trip, they are met with various lost spaces which may evoke a sense of loss in values, meaning and belonging (Kataria 2021). At the same time, the urban users experience the lack of successful public space (Jayasimhan 2021). These abject public spaces detach them from the urban environment and consequently deprives them of a collective community life and personal well-being (United Nations 2016). These deficiencies may be viewed as objective and subjective well-being (Petermans and Pohlmeyer 2014).

Petermans and Pohlmeyer (2014) state that objective well-being is necessary for collective upliftment and may be attained by addressing basic needs of the passive inhabitant, such as ensuring user comfort in terms of universal accessibility, acoustics and isolation. While subjective well-being is necessary for individual quality of life and may be attained by addressing the higher-order needs of the interactive inhabitant, such as ensuring human flourishing with engaging activities, positive relationships and meaning (Petermans and Pohlmeyer 2014).

It is pertinent to engage with the urban user's well-being as an encouraged well-being will improve the urban user's sense of place and, ultimately, promote a more liveable Hatfield (Petermans and Pohlmeyer 2014; United Nations 2016; Cutieru 2021).

As rapid urbanisation has led to the emergence of lost space in Hatfield, it has also caused the urban fabric to lack successful public space (Hatfield City Improvement District 2021). This lack of public space results in an ineptitude to promote a sense of place, sense of belonging, and ultimately, improved well-being, leaving the urban user detached from their environment (United Nations 2016). Alongside the lost space there is, however, the propitious loose space (Franck and Stevens 2006). Loose space may remedy this detachment and diminishing well-being as it encourages sense of place, sense of community and belonging, and identity within urban users (Franck and Stevens 2006). All of which may benefit the transient urban users and allow them to serve their society for larger community upliftment.

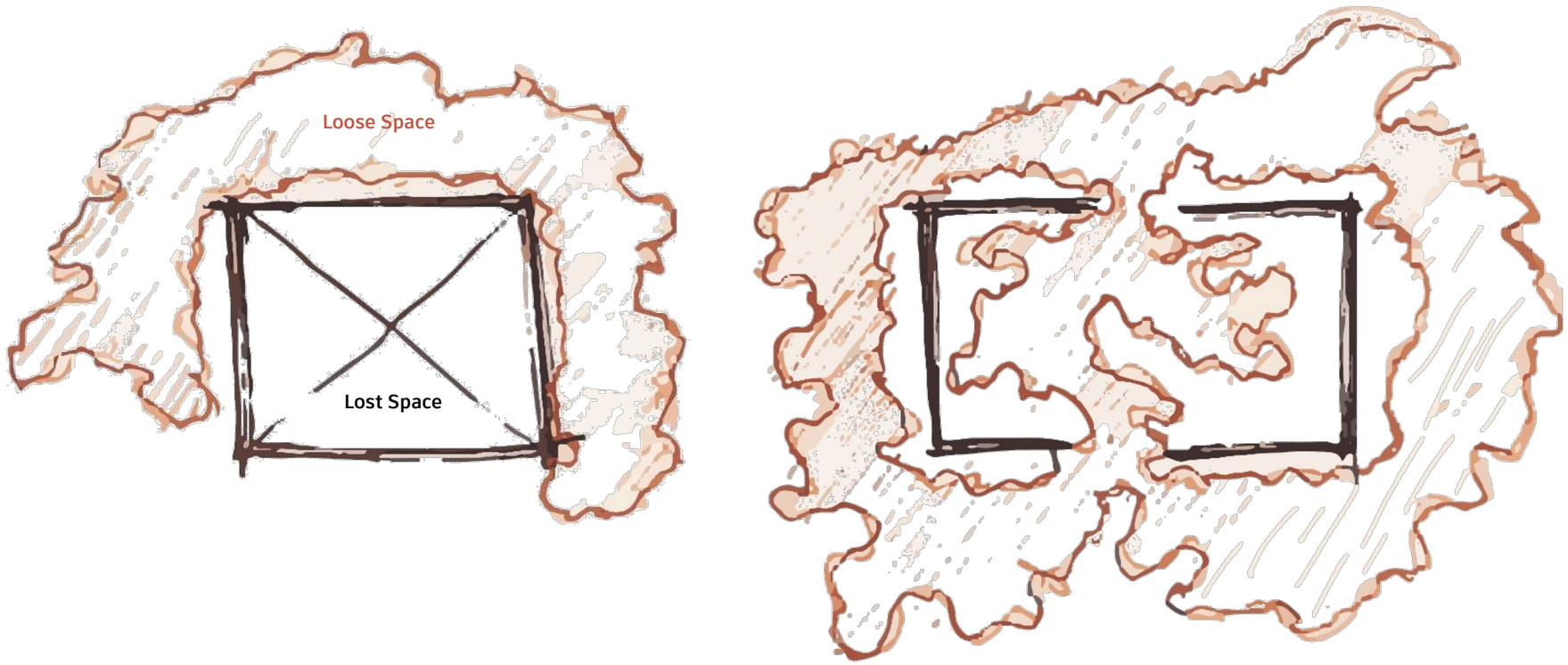


Figure 10 | Relationship between Lost Space and Loose Space (Author 2022)

Research Question | Architectural Intention

How can architecture consolidate lost space with loose space to generate a public space that will serve the transient urban user and stimulate well-being?

The architectural intention is to foster the sense of place and identity that resides in loose space as a means to rehabilitate the lost space of Hatfield. Additionally, it is to inspire both objective and subjective well-being with the purpose of establishing individual flourishing and overall community upliftment (Petermans and Pohlmeyer 2014).

The study contributes to the continuum of architecture by investigating both lost and loose space as well as the relationship between the two. Additionally, it attempts to uncover the potential of loose space while exploring a public space that focuses on well-being.

Methodology

The research will be conducted according to a mixed method approach as both quantitative and qualitative data will be collected and analysed (as per figure 11) (Shorten and Smith 2017). This explains that Hatfield will be analysed according to Trancik's (1986) urban design theories, namely the Figure-Ground, Linkage and Place theories. These theories offer an approach to understanding social-material relations as well as potential strategies for integrated urban design (Trancik 1986).

In terms of the *Figure-Ground Theory*, a desktop mapping of the existing will be carried out. This will be at hand of the *Hatfield Metropolitan Node Precinct Plan* (2021) and will act as the initial indication of lost spaces within the study area. Then, in terms of the *Linkage Theory*, a layering of data will take place. These overlays will act as a tool to finding commonalities and deriving assumptions between the data points. Lastly, in terms of the *Place Theory*, an observational mapping of three specific lost spaces will be executed. This will be done in terms of quantitative and qualitative documentation. The quantitative documentation will be led by Jan Gehl and Birgitte Svarre's *How to study public life* (2013) which is a practical method for understanding the character of a space as well as the characters within a space (Gehl and Svarre 2013). The qualitative documentation will be conducted through sets of empathy mapping (Brown 2018) as well as in-depth on-site investigation to uncover the site narrative (Kusenbach 2003). The observational mapping will allow for a deeper understanding of the rituals that occur on and around the study area (Andrews 2012).

Due to the hands-on nature of the observational mapping, unstructured interviews with pedestrians and informal traders may take place as well as a structured interview with the CEO of the Hatfield CID. Ethical clearance (reference number: EBIT/46/2022) has been obtained prior to the engagement of any participants within the study.

Additionally, literature reviews regarding placemaking, well-being, lost space, loose space, public space and the urban user, will be undertaken and applied to the study area. Then, precedent studies as well as critiques will be conducted on various relevant public spaces and modal interchanges. These informants will then formulate a set of guidelines and criteria to lead and test the design, respectively.

The design process will produce a design proposal with technical investigations. It will explore the attainment of placemaking and well-being within the intersect of lost and loose space in Hatfield, while developing a mixed-use precinct, with a focus on a transit oriented public space.

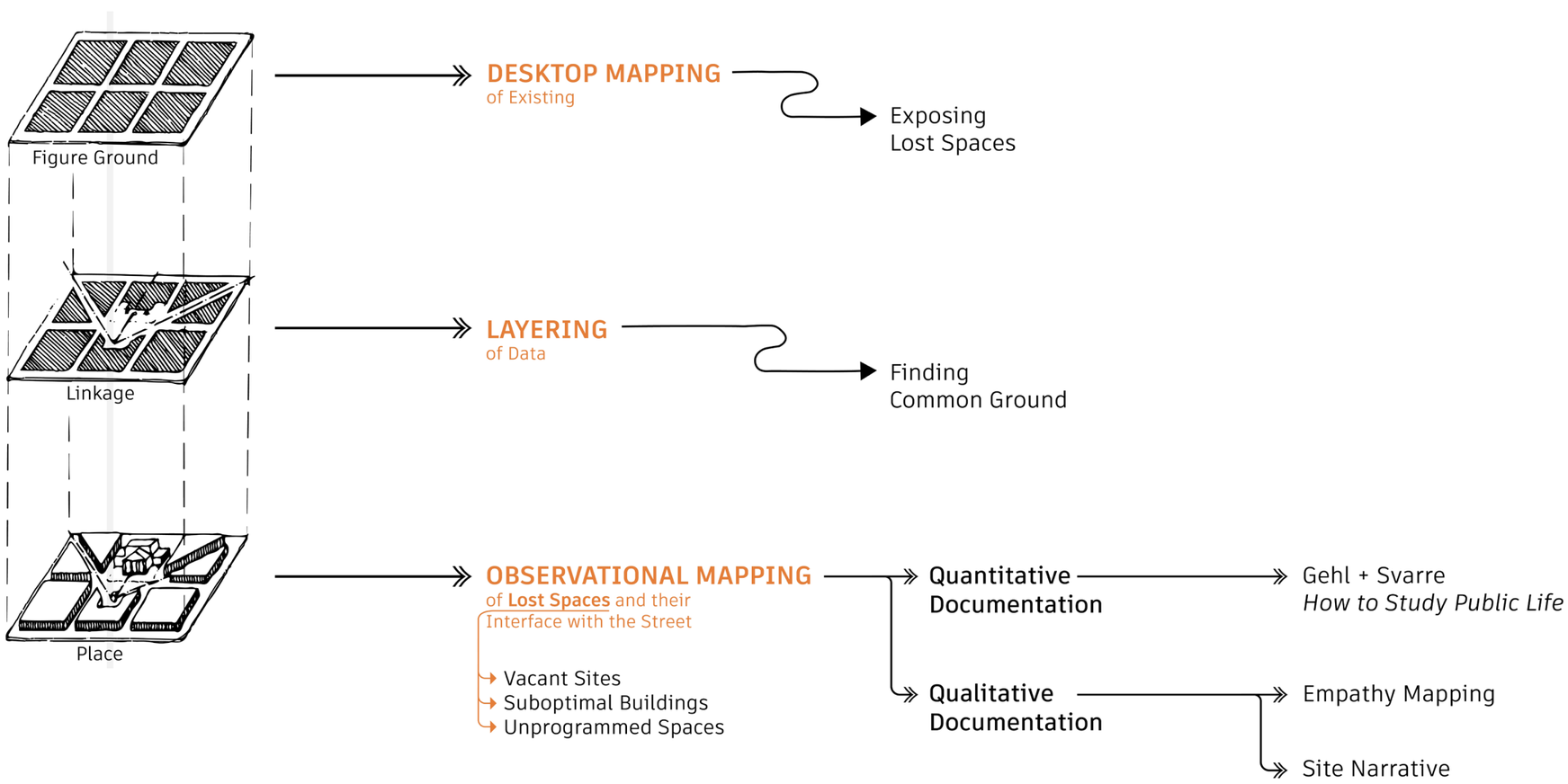


Figure 11 | Methodology (Author 2022)

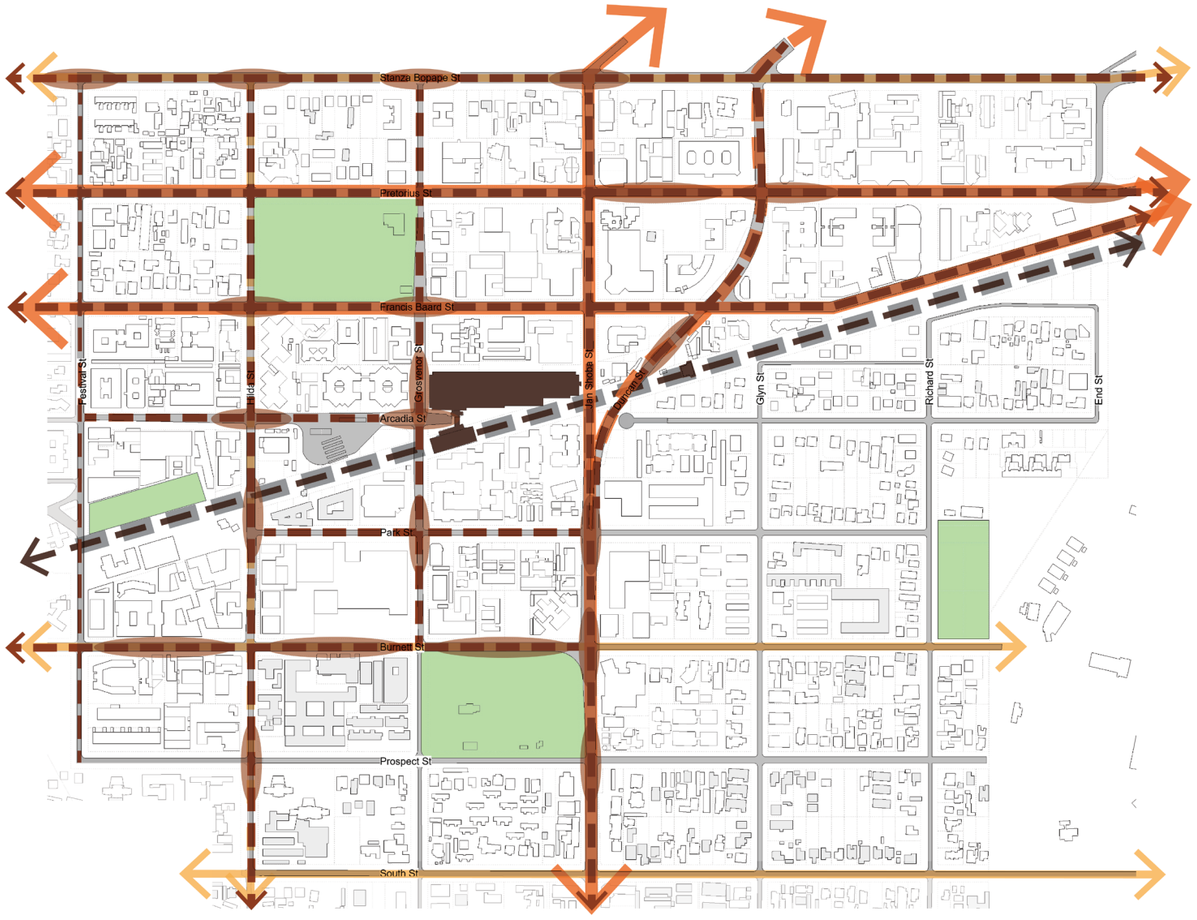


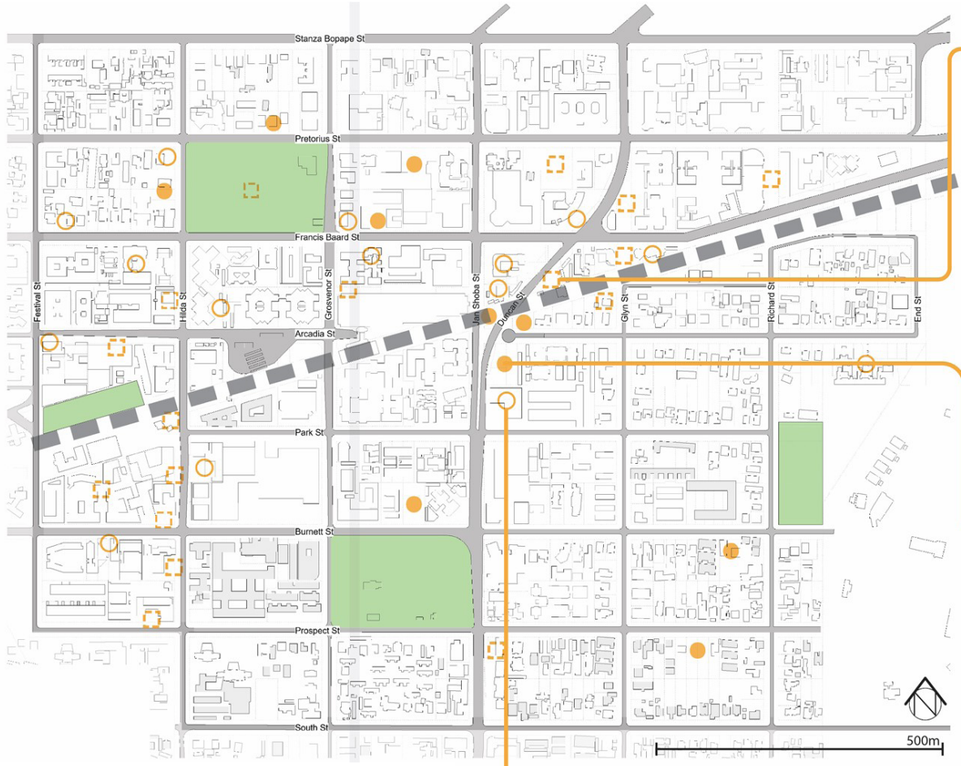
Figure 12 | Connectivity (Author 2022)

Open Space, Lost Space and Informality (Author 2022)

Site Introduction

The initial criteria for the site selection included a space that represented lost space (either in terms of abandonment or underutilisation) as well as it being in the context of a rapidly urbanising city. Furthermore, the site requirements involved a significant presence of commuters (transient urban users). As the commuters' dependence on public space and public transit became more apparent, the final criteria implied the inclusion of a multitude of public transport modes. As per this set of criteria, the chosen study area is Hatfield.

Hatfield portrays a uniquely diverse neighbourhood that is well-connected as it is at the intersection of a multitude of routes and is well serviced by multiple public transport services (railways, busses and informal taxis). Hatfield hosts a large number of pedestrians usually commuting to work and school (Hatfield City Improvement District 2021). The urban fabric also includes an abundance of lost spaces, only a few public spaces and a transient community of informal traders and commuters.



Unprogrammed Space

A space that has been overlooked and lies along the blurred line of public/private. They are not intentionally designed and have no specific purpose. They are too flexible and frequently end up as parking lots.

Vacant Site

A site that has been privatized and abandoned. Buildings on these sites frequently fall into disrepair and then get demolished, leaving the site bare and neglected.

Suboptimal Building

A building that is unfitting to the surrounding environment, either by it being vacant, insufficiently occupied or inappropriately programmed.

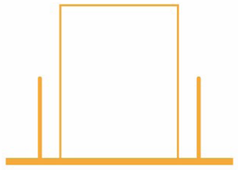


Figure 13 | Site (Author 2022)

The selected site emerged through the process of mapping lost spaces in the study area. Many lost spaces were identified and then divided into three typologies, namely vacant sites, suboptimal buildings and unprogrammed spaces. The final site selection comprised of an area that included all three types of lost spaces and the convergence with the Hartbeesspruit Metrorail and Hatfield Gautrain stations. The site is positioned along Jan Shoba Street and includes the unprogrammed space in front of the Metrorail Station, the vacant site in the residential realm and the suboptimal building, Ditsela Place.

The predominant users present on site are fast-paced pedestrians and informal traders that seem to share a strong social relationship. The site offers the opportunity for an architectural intervention that links to the existing transit systems and current loose spaces to support urban users and reactivate lost spaces currently found on site.

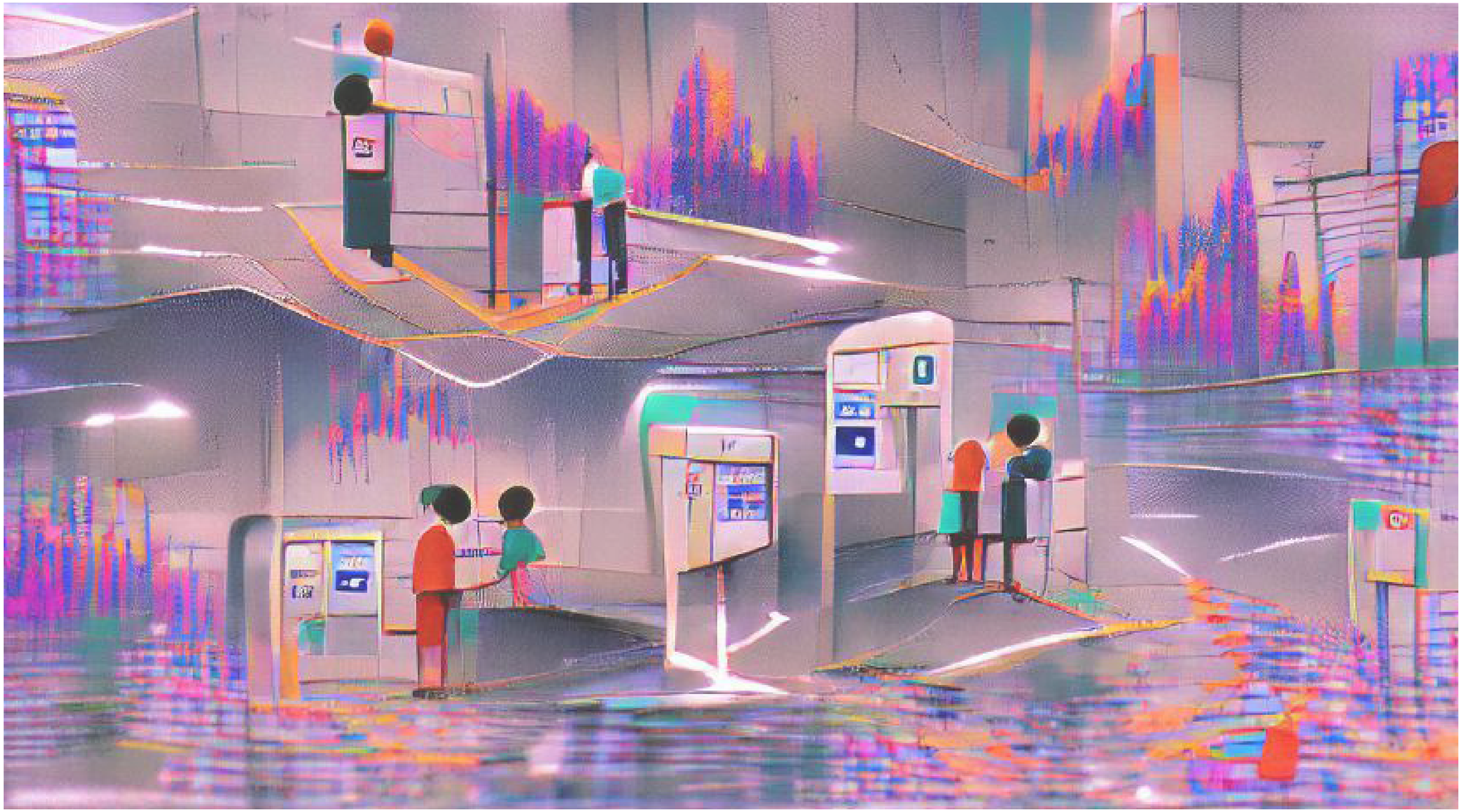


Figure 14 | Abstract Vision Image (Author via AI Artwork Generator 2022)

Approach and Programme Postulation

Concealment and indifference should not be the means of addressing lost space, instead, the potential looseness of these spaces should be recognised and encouraged as they offer opportunity for urban redevelopment, creative infill and rediscovering of hidden resources of our urban fabric (Trancik 1986; Franck and Stevens 2006).

The site offers the opportunity for a mixed-use transit interchange that encourages interaction and a sense of place. The proposal may incorporate many sub-programmes such as commerce (market space), entertainment (cultural expression), business (work spaces), education (seminar spaces), social (gathering spaces) and production (communal gardens).

The project envisions to ultimately support the transient urban users, informal traders and commuters, by providing a public space and building that promotes convenience, a sense of community and an opportunity for a brief retreat.

Conclusion

The current trend of rapid urbanisation has engendered a mass of lost space within South African cities (Kataria 2021). These lost spaces negatively influence their surroundings and especially the transient urban users of the context (Case 2019; Kataria 2021; Trancik 1986). However, the subtle existence of loose space represents a possible solution to this predicament. There is an opportunity to encourage the notion of loose space and its consequential mediation with lost space to ultimately procure vibrant public space. An investigation of lost space, loose space and public space as well as an analysis of specific sites will be conducted. This will allow an architectural exploration into public space that engages the commuter and supports the informal trader in pursuit of a sense of place and overall well-being.

CHAPTER TWO

Design Research

Introduction

With the rise in urbanisation and the consequent creation of lost space, urban users have experienced a detachment from their urban fabric (Landman 2019; Kataria 2021; Case 2019; Trancik 1986). This detachment has caused the user to suffer from a diminishing well-being due to a lack of public space and therefore a lack in sense of place and belonging (United Nations 2016). It is important to consider the urban user's well-being as it constitutes the happiness, health and wellness of the individual and larger community (Kirsten, Van der Walt and Viljoen 2009).

On the positive side, there is the existence and opportunity of loose space which is a fluid realm that is activated by human input and hosts interaction and a sense of place (Franck and Stevens 2006; Bunschoten 2003). The opportunity is to foster the relationship between loose and lost space by allowing loose space to infiltrate and consequently activate lost space. This may be done within a space that serves the transient urban user such as a transit oriented public space.

A key characteristic of loose space is that of spatial appropriation which is the ability of the user to alter space according to their needs and desires (Franck and Stevens 2006). Spatial appropriation is essential for the promotion of emotional ownership, identification and a sense of belonging, all of which contributes to a restored well-being (Schneider and Till 2007).

In this chapter, a further investigation into the theoretical position will be conducted. This will regard well-being and loose space (in terms of spatial appropriation). Subsequently, the chapter will unpack design informants to obtain principles and guidelines towards a conceptual approach. This will consider the information gathered on site through observational mapping which will reveal different users and conditions of the existing, as well as an analysis of multiple precedents. All of these will allow for the development of a conceptual approach and then a programmatic and spatial response.

Theoretical Positioning | **Well-Being**

As public space represents the richness of a society, the current disintegration of the public spaces in Hatfield portrays the resulting fragmentation of its community (Madanipour 2010). While the amount and quality of Hatfield's public space dwindles, so does the overall sense of place and well-being (United Nations 2016).

In the first chapter, the concept of objective and subjective well-being, coined by Petermans and Pohlmeyer (2014), was introduced to describe collective and individual well-being, respectively. Objective well-being relates to the degree in which external conditions affects the comfort of an individual or collective (Petermans and Pohlmeyer 2014). It entails comfort and liveability within the architectural environment (relating to elements such as acoustics, isolation, heating and universal design) (Petermans and Pohlmeyer 2014). Subjective well-being relates to the individual's self-evaluation of their lives (Petermans and Pohlmeyer 2014). It entails psychological well-being and life satisfaction (relating to elements such as positive emotions, engaging activities, positive relationships and meaning) (Petermans and Pohlmeyer 2014). As a response to addressing these types of well-being, Desmet and Pohlmeyer (2013) developed the *Positive Design Framework* which endeavours to stimulate human flourishing. This framework (figure 15) includes designing for virtue, personal significance and pleasure, along with the characteristics for positive design: possibility-driven, balance, personal fit, involvement of people and long-term impact (Desmet and Pohlmeyer 2013).

Walsh (in Kirsten *et al* 2009) described well-being as a type of flourishing that is entangled with the concept of human happiness and quality of life. Kirsten, Van der Walt and Viljoen (2009) further define well-being as related to holistic anthropology and used to convey the interconnectedness between internal and external environments of being (Kirsten *et al* 2009). They state that well-being functions in many domains of life, such as physical, social and psychological (Kirsten *et al* 2009).

Psychologist Abraham Maslow (1943) introduced the hierarchy of needs in his paper *A Theory of Human Motivation* as a reflection of the universal needs and acquired emotions of society. The system (figure 16) was split into deficiency needs and growth needs, containing physiological, safety, social, esteem, cognitive, aesthetic, self-actualisation and self-transcendence sub-needs (Maslow 1943). This tiered system indicates how architecture may provide for basic needs, assist occupants to meet their psychological needs as well as evaluate the impact of the built environment on the human psyche (Webber 2019).

Additionally, with regards to basic needs and comfort, the International WELL Building Institute (2015) introduced the WELL Building Standard (figure 17) to enhance human health and well-being. This includes the considerate design and management of air, water, nourishment, light, fitness, comfort and the mind (International WELL Building Institute 2015).

Lastly, in 1976 Dr Hettler created the *Six Dimensions of Wellness* model (figure 18) that is currently being used by the National Wellness Institute. The six dimensions of wellness are physical (physical strength, flexibility, endurance and medical self-care), social (community, personal relationships and interdependence), emotional (awareness and management of feelings, behaviours and stress), occupational (contributing skills and personal satisfaction), spiritual (worldview, meaning and purpose, appreciation of life), and intellectual (stimulating activities, cultural activities, personal interests) (Hettler n.d.). This model describes how an individual contributes to their environment and community, the interconnectedness of life through work, the development of personal and worldviews, the benefits of physical health and medical self-care, self-regard, and stimulating mental activities (Hettler n.d.).

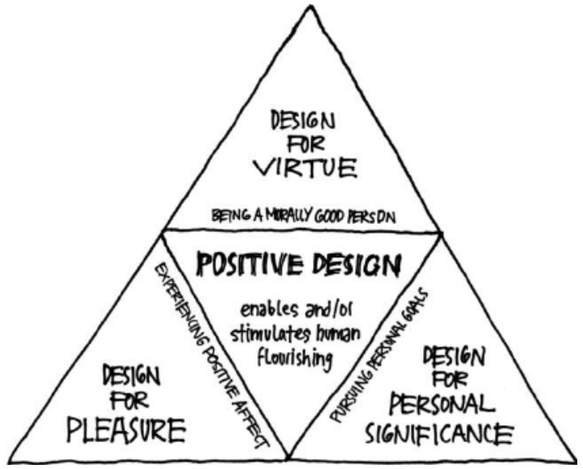


Figure 15 | Positive Design Framework by Desmet and Pohlmeyer (2013)

Figure 16 | Maslow's Hierarchy of Needs by Abraham Maslow (1943)

Figure 17 | WELL Building Standards by International WELL Building Institute (2015)

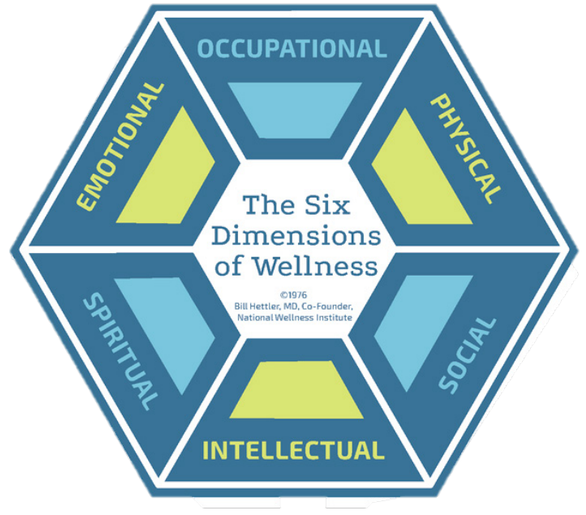


Figure 18 | Six Dimensions of Wellness by Hettler (1976)

The theoretical positioning is that urban users who experience a state of well-being will consequently thrive as individuals and as a community. Flourishing people live their lives to the fullest and act in the best interest of society due to having a sense of meaning, engagement, interest and purpose (Desmet and Pohlmeyer 2013).

A theoretical framework (figure 19) was developed to show the overlaps in the above theories and definitions. The framework allows for a holistic understanding of well-being.

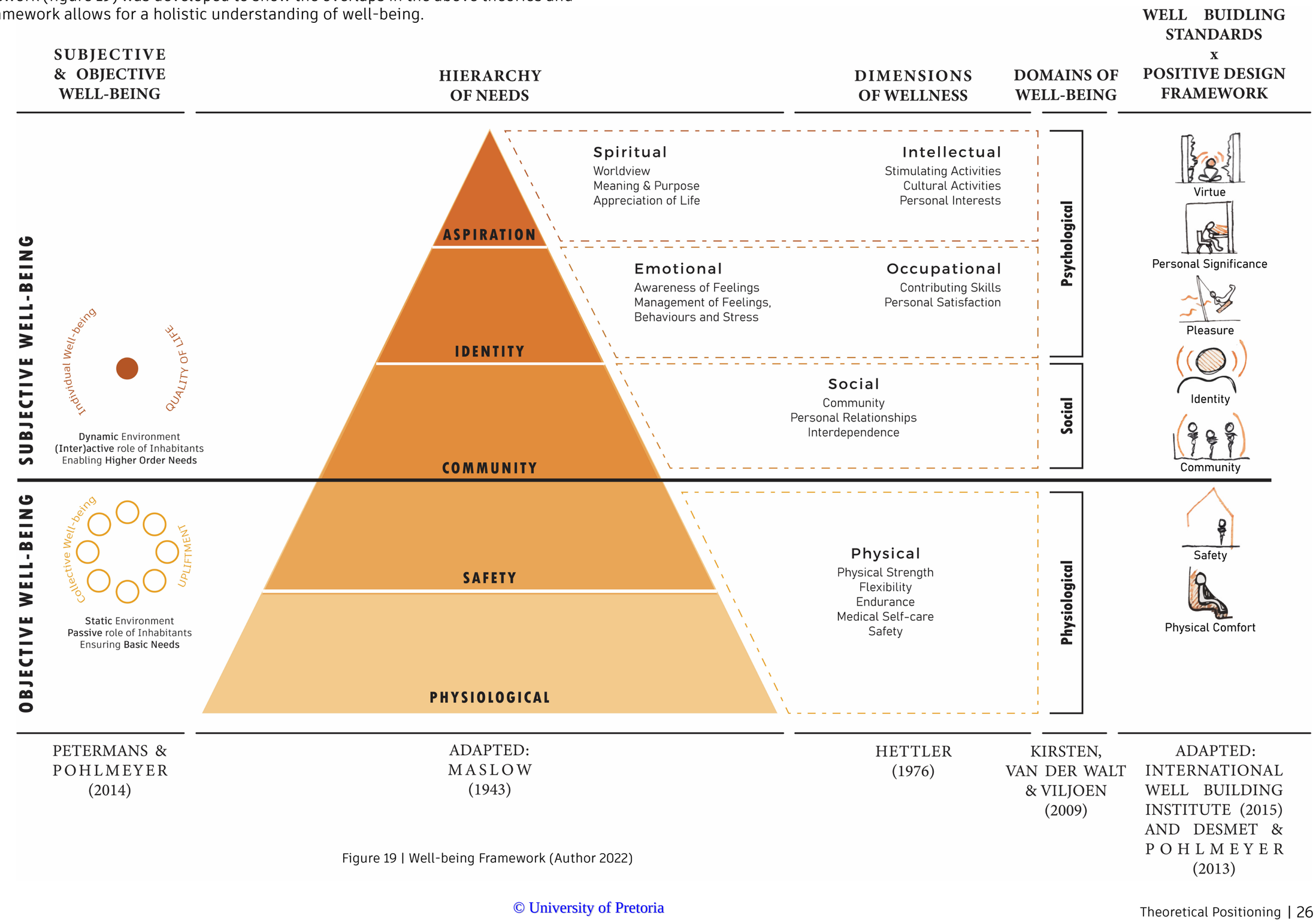


Figure 19 | Well-being Framework (Author 2022)

Theoretical Positioning | **Spatial Appropriation**

Authors of *Loose Space: Possibility and Diversity in Urban Life*, Franck and Stevens (2006), state that spatial appropriation, in the form of accessibility, freedom of choice and adaptable elements, is the main contributor to loose space. Spatial appropriation therefore allows loose spaces to represent the essence of urbanity, which is density, privilege of preference, accessibility and the amalgamation of diverse people and activities (Franck and Stevens 2006).

Psychologist Kaj Noschis (1978) defines spatial appropriation as the act of inhabitants transforming space to exhibit a sense of belonging and ownership. Spatial appropriation requires the existing context to stimulate and motivate the user's intervention, the user will then alter the space as a means to balance the relationship between man and the built environment (Noschis, Dosio, Feddersen and Triantis 1978).

Author, Carolina Coelho (2015), calls buildings the instruments of life as they act as a catalyst and facilitator for the actions and experiences that they host. Through spatial appropriation, the inhabitant offers the built form semantic and physical definition (Coelho 2015). As the user moulds their environment according to their needs, they consequently become its author by expressing a sense of belonging, ownership and identity (Coelho 2015).

Awan, Schneider and Till (2011) define appropriation as the uncovering of the potential of underused resources, a critical lens for public and private space, and a device for new activities. The intention of spatial appropriation is governed by the constraints and opportunities of the context, rendering the spatial agent as the negotiator of the extant and possible alteration (Awan, Schneider and Till 2011). The intention of said appropriation therefore needs to be flexible and responsive (Awan, Schneider and Till 2011).

The theoretical position is that spatial appropriation, while being informed by context, stands as an expression of belonging and ownership according to the occupant's needs and desires. The appropriation of spaces constitutes an architecture filled with creativity and meaning that allows the user to experience life fully.

In conclusion, spatial appropriation, along with its resultant sense of belonging, allows the inhabitant to ultimately experience a sense of place (Yilmaz 2006). This will allow the user to feel a deep association and consciousness of places which encourages individual and community identity (Yilmaz 2006). The consequent comfort and belonging engendered through spatial appropriation (and thus sense of place) will promote well-being in the urban users (Yilmaz 2006; United Nations 2016).

Petermans and Pohlmeyer (2014) state that environmental satisfaction relies on the actions that the inhabitant is able to do with and within a specific space. As spatial appropriation allows for a sense of ownership and identity, this imparted sense of control will positively affect the user's lived experience and therefore well-being (Schneider and Till 2007; Myers, Sweeney and Wilmer 2000). Noschis (1978:451-466) notes that "if an individual has a feeling of well-being in the built environment that surrounds him, this will be reflected in his activities…", the individual will therefore take interest and be content with their surroundings (Noschis *et al.* 1978). As the inhabitant is flourishing, they will consequently be able to serve their society and continually grow while fully living their lives (Desmet and Pohlmeyer 2013).

A strong sense of place and instilled well-being can potentially allow for the upliftment and a successful development of public space in the context of Hatfield. It will thus provide the neighbourhood with the opportunity to reach its full potential vibrancy and liveability (United Nations 2016; Hatfield City Improvement District 2021; Luckhoff 2022).

Figure 20 | Hatfield (Google Earth 2022)

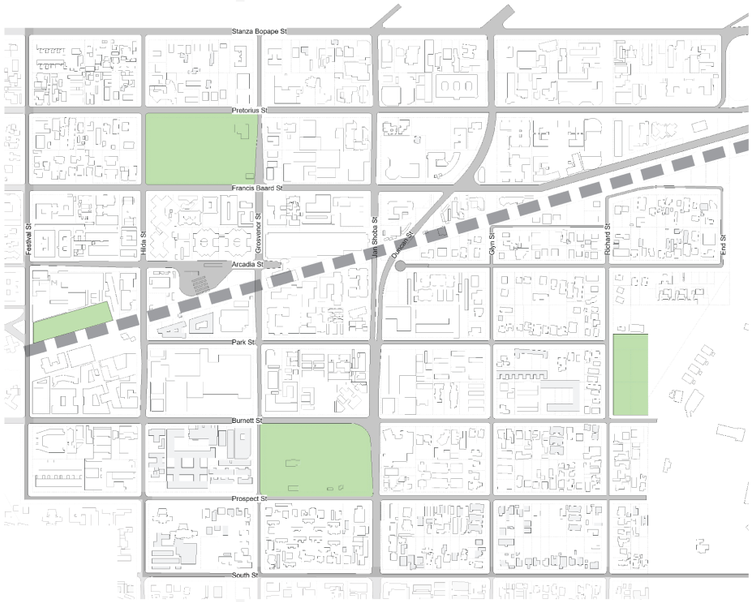
Context | **Hatfield**

The site is located in Hatfield (figure 20). Hatfield, as a study area, is an older yet rapidly evolving neighbourhood in the City of Tshwane (Hugo and du Plessis 2020). It originated as a simple neighbourhood adjacent to the University of Pretoria and experienced significant economic growth with the constant influx of students and the establishment of the Gautrain (Hugo and du Plessis 2020). The built fabric of Hatfield consists of a variety of building stock and hosts a transient student community and office worker population (Luckhoff 2022).

As per the methodology described in the first chapter (figure 11), Hatfield was studied by means of desktop mapping, layering of data and observational mapping of three specific lost spaces.

The desktop mapping and layering of data exhibited Hatfield as a mixed-use area governed by prominent road networks and public transit systems (figure 21.1 and 21.2). The area presents harsh boundaries, few open green spaces, vibrant student activity, masses of informal trade and countless lost spaces (figure 21.3 and 21.4). Hatfield exhibits a tendency of pedestrian movement toward transit nodes with informality following suit (figure 21.5). Pedestrian activity is predominantly accommodated by lost spaces and inaccessible interfaces (figure 21.6).

STUDY AREA

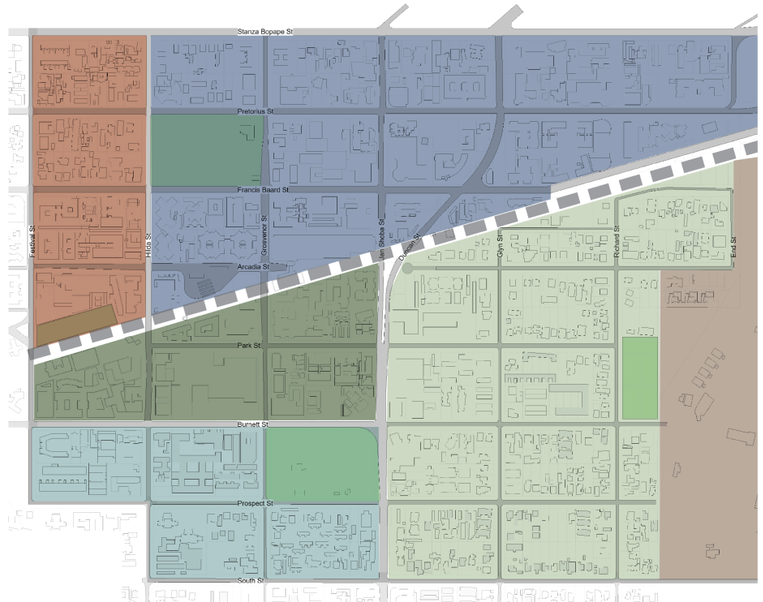


The Hatfield area is an everchanging precinct with a diverse community.

The study area is delimited by the following boundaries:

- South Str - which acts as a corridor between university campuses
- Festival Str - which starts to separate the university/business precinct from the CBD and Governmental areas.
- Stanza Bopape - which acts as a dominant artery and separates the study area from the residential Colbyn area
- End str - which is the last North/South arteries as the area sprawls into the Hillcrest campus and highway.

ZONING



The Zoning presents some diversity and a dominance in Residential and, Office and Commercial zones.

FIGURE GROUND

The Figure Ground map portrays the relationship between Mass and Void in the Hatfield area.

LAND USE

The Land Use map shows great variety in uses.

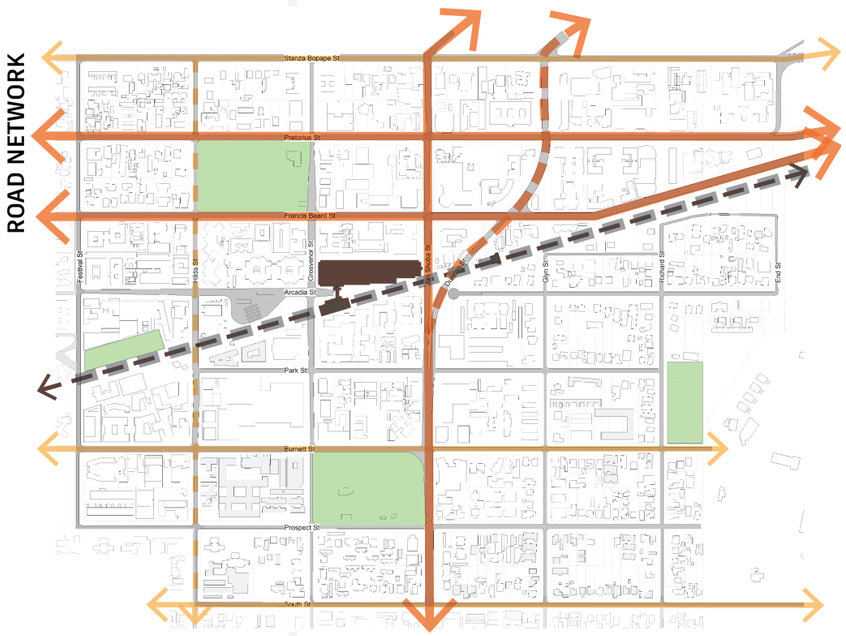
DESKTOP MAPPING

(Hatfield City Improvement District 2021)

500m

Figure 21.1 | Desktop Mapping (Author 2022)

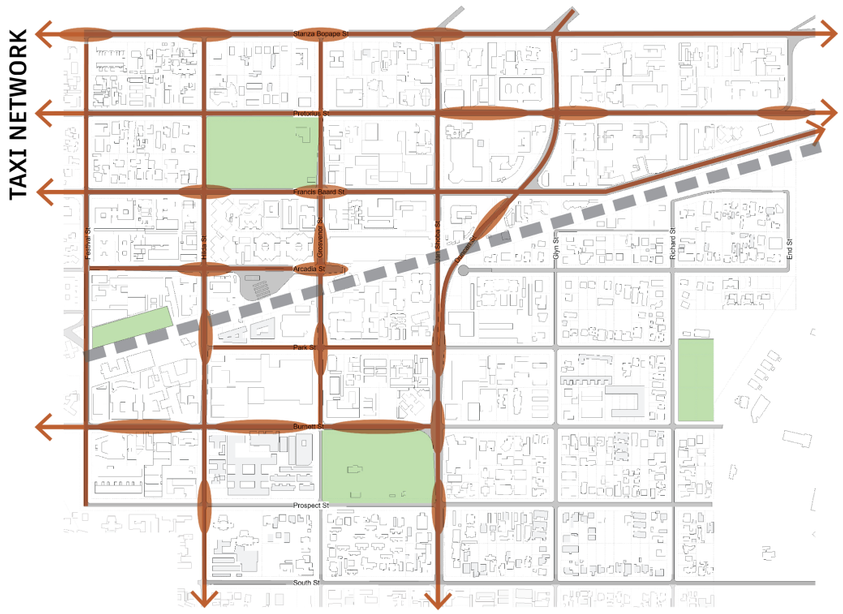
ROAD NETWORK



- Main Distributer
- High frequency Artery
- Railway

The Road Network presents good connectivity for the area.

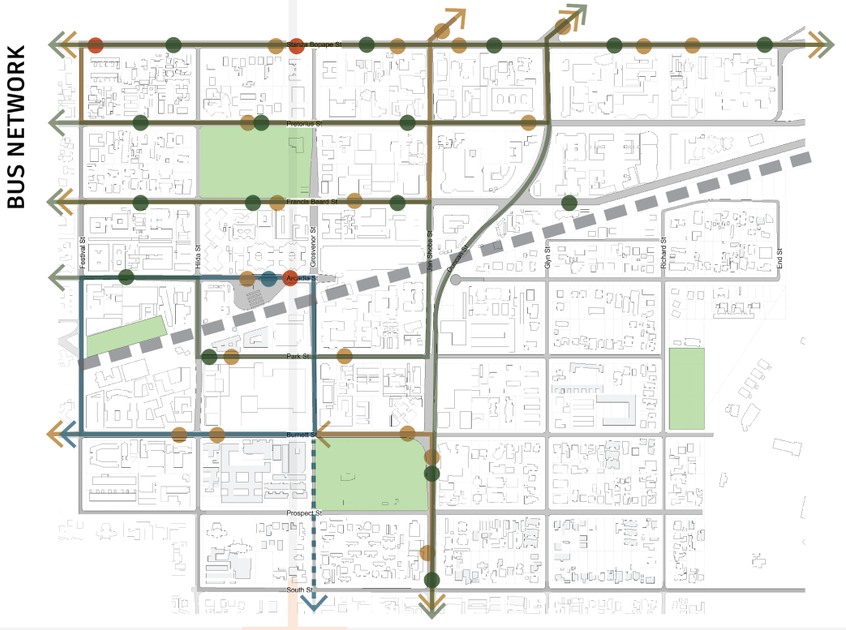
TAXI NETWORK



- Taxi Stops

The Taxi network portrays a system similar to that of the Bus Network; providing access to public transport along the main arteries and in areas of various uses.

BUS NETWORK



- BRT
- BRT Planned Extension
- Tshwane Municipal Bus
- Gautrain Bus
- Tshwane Bus Service

The Bus systems shows accessibility to public transport, excluding the major residential areas.

TRAFFIC

- Predominantly Influenced
- Less Influenced

The Traffic map displays the roads which carry the most vehicular transport, being Jan Shoba/Gordon street, Stanza Bopape street and Francis Baard street.

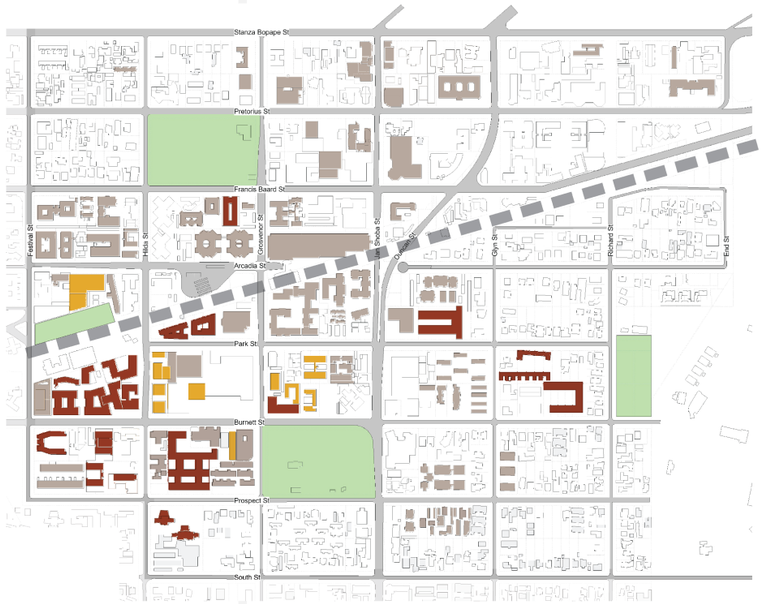
DESKTOP MAPPING

(Hatfield City Improvement District 2021)

500m

Figure 21.2 | Desktop Mapping (Author 2022)

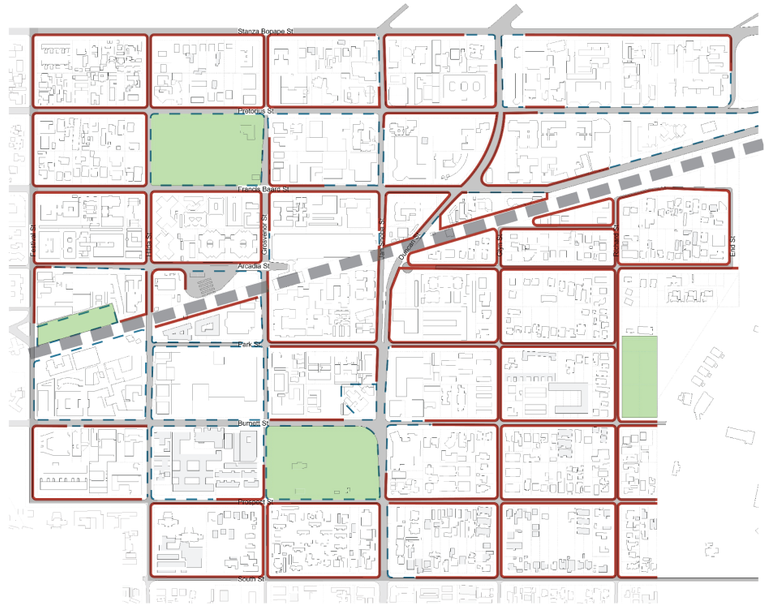
BUILDING HEIGHTS



- 11+ Storeys
- 6-10 Storeys
- 3-5 Storeys
- 1-2 Storeys

The majority of the building heights range from 1 and 5 storeys with a multitude of very tall apartment blocks (11+ storeys)

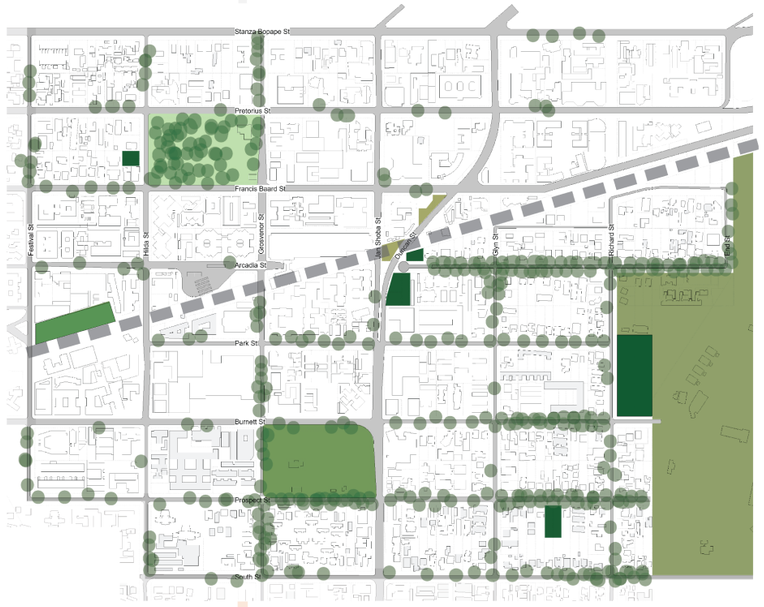
BOUNDARIES



- Barrier (Fence/Wall)
- Accessible Interface

The seeming trend for accessibility is highly exclusionary as most of the interfaces with the public realm are closed off.

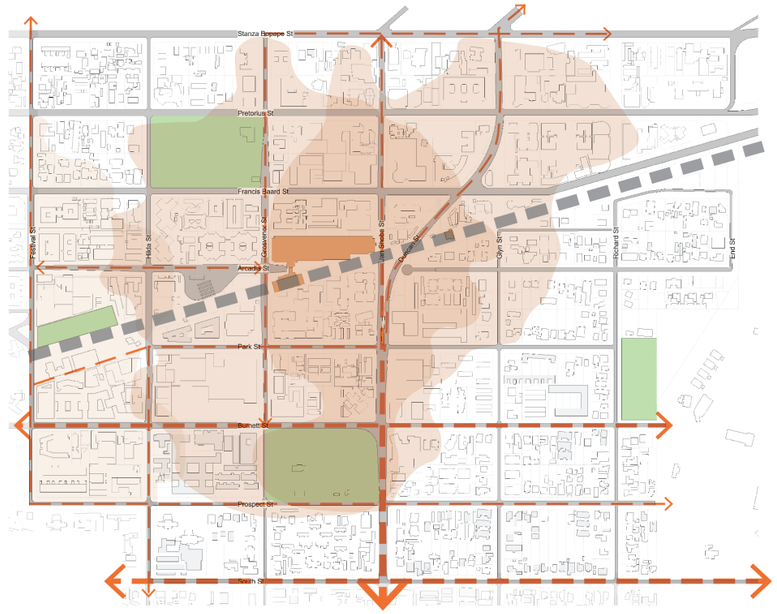
OPEN GREEN SPACE



- Public Open Green Space
- Semi-Public Open Green Space
- Private Open Green Space
- 'Lost' Open Green Space
- Street Tree Coverage

The Open Green Space map shows that majority of the green spaces are not accessible to the public. The only publicly open 'park' has a terrible reputation of being unsafe and hosting unsavourily activates.

PEDESTRIAN MOVEMENT



- Train Station Catchment - 500m radius

The Pedestrian movement map displays the predominant circulation along Jan Shoba street towards the south, as well as along Burnett street and South street as they serve as Eat/West corridors.

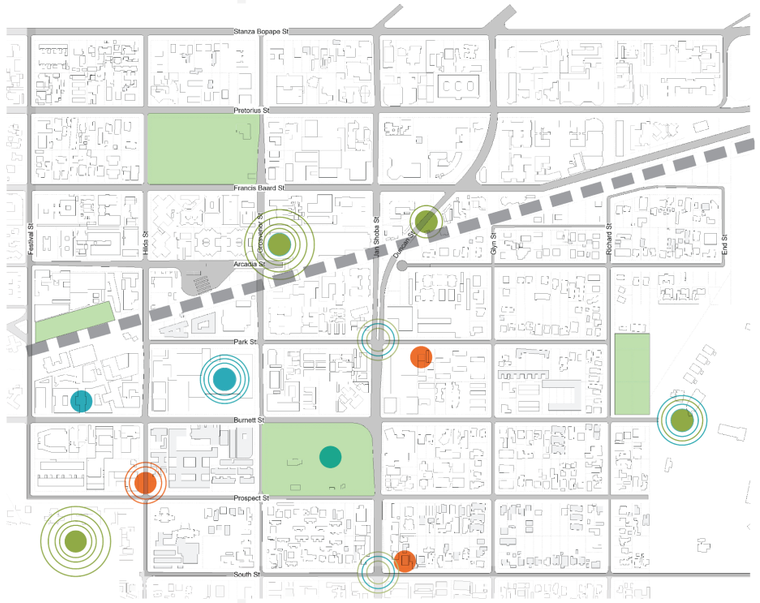
(Hatfield City Improvement District 2021)

500m

DESKTOP MAPPING

Figure 21.3 | Desktop Mapping (Author 2022)

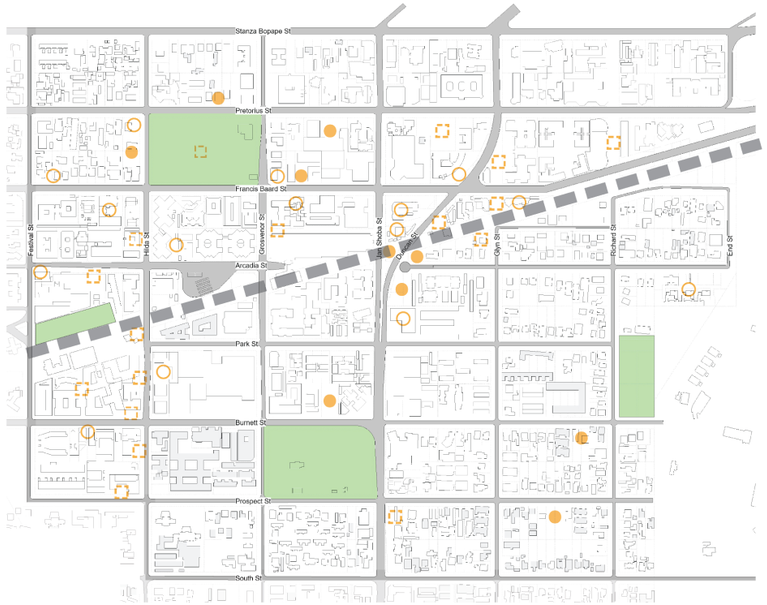
ACTIVITY



- Activity Node
- Density of Users
- Necessary Activity
- Optional Activity
- Social Activity

The Activity map depicts majority of the gathering occurs on the southern side of the railway which acts as a divider between the corporate/retail and the university/residential areas.

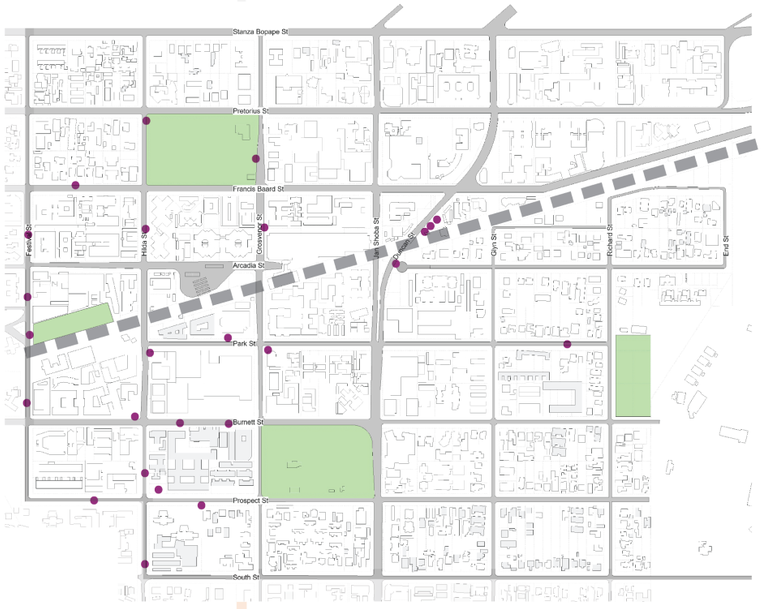
LOST SPACE



- Vacant Site
- Suboptimal Building
- Unprogrammed Space

The space presents a multitude of Lost Spaces of differing types and positioned for various reasons – see Overlays.

INFORMALITY



- Informal Trade

The informal traders tend to situate themselves along the main arteries and on the western side of the study area.

DESKTOP MAPPING

(Hatfield City Improvement District 2021)

500m

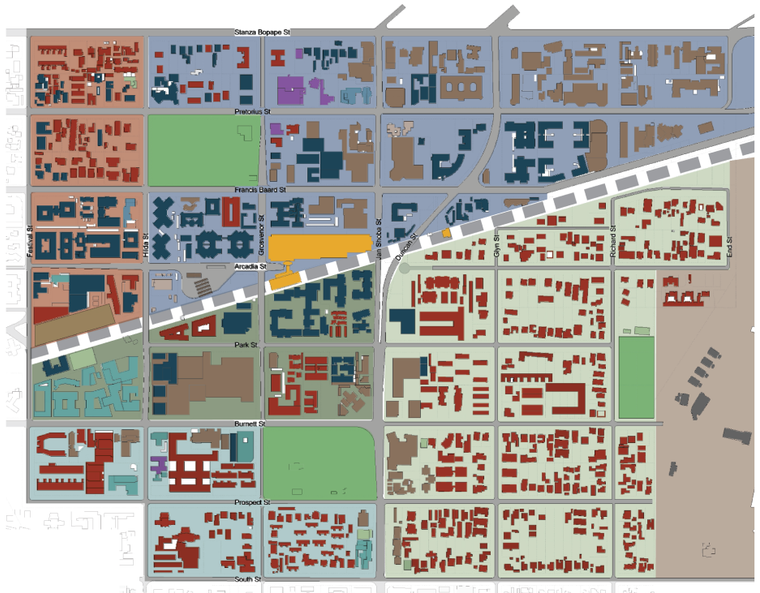
Figure 21.4 | Desktop Mapping (Author 2022)

FIGURE GROUND x OPEN GREEN SPACES x BUILDING HEIGHTS

- 11+ Storeys
- 6-10 Storeys
- 3-5 Storeys
- 1-2 Storeys
- Public Open Green Space
- Semi-Public Open Green Space
- Private Open Green Space
- 'Lost' Open Green Space
- Street Tree Coverage

This map shows the existing relationship between the built fabric and open/green spaces. It is evident that the area closer to the university has a denser and monumental nature, whereas the urban environment seems to sprawl towards the north.

ZONING x LAND USE



- University
- Residential
- Retail
- Education
- Medical
- Governmental
- Mixed Use
- Residential
- Office & Commercial
- School & Sports
- Government & Embassy
- Retail
- Corporate
- Public Transport
- Places of Worship
- Recreation

This overlay depicts the appropriation of spaces as per user needs. There is a distinct disconnect between the zoning and actual land use. The reality is of mixed use.

FIGURE GROUND x BOUNDARIES x LOST SPACE

- Barrier (Fence/Wall)
- Accessible Interface
- Vacant Site
- Vacant/Suboptimal Building
- Unprogrammed Space

This map displays the correlation between accessibility and lost spaces. It is clear that many lost spaces are situated in private (enclosed) spaces between buildings.

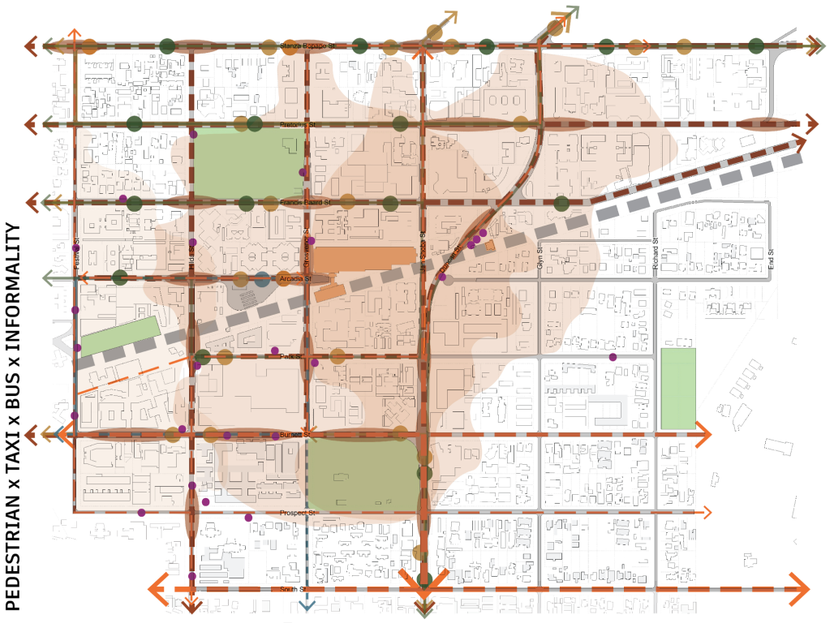
LAYERING

(Hatfield City Improvement District 2021)

500m

Figure 21.5 | Desktop Mapping (Author 2022)

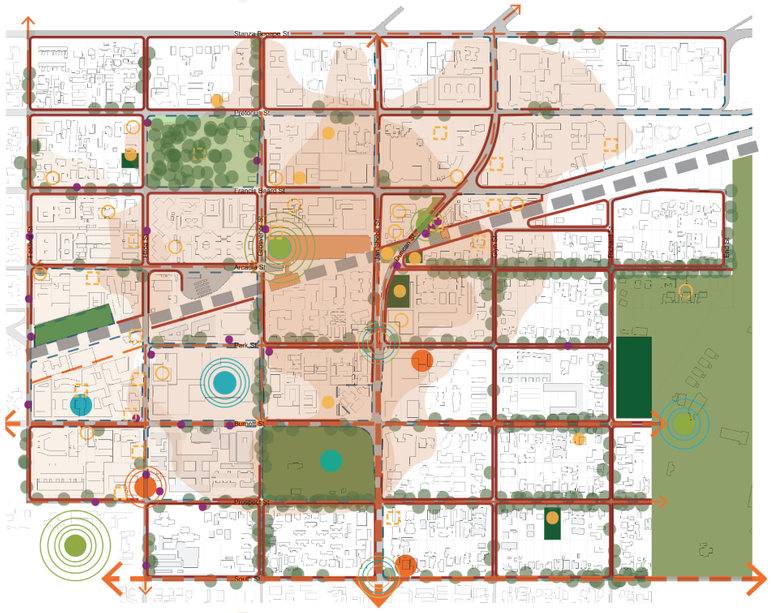
PEDESTRIAN x TAXI x BUS x INFORMALITY



- Train Station Catchment - 500m radius
- Taxi Stops
- BRT
- BRT Planned Extension
- Tshwane Municipal Bus
- Gautrain Bus
- Tshwane Bus Service
- Informal Trade

This map presents the relationship between public transport and pedestrians, and how informality seems to move towards these. Pedestrians and/or commuters play the main role of catalysing the gathering and circulation of other entities.

PEDESTRIAN x INFORMALITY x BOUNDARIES x OPEN GREEN SPACE x ACTIVITY x LOST SPACE



- Train Station Catchment 500m radius
- Informal Trade
- Barrier (Fence/Wall)
- Accessible Interface
- Public Open Green Space
- Semi-Public Open Green Space
- Private Open Green Space
- 'Lost' Open Green Space
- Street Tree Coverage
- Barrier (Fence/Wall)
- Activity Node
- Density of Users
- Necessary Activity
- Optional Activity
- Social Activity
- Vacant Site
- Suboptimal Building
- Unprogrammed Space
- Accessible Interface

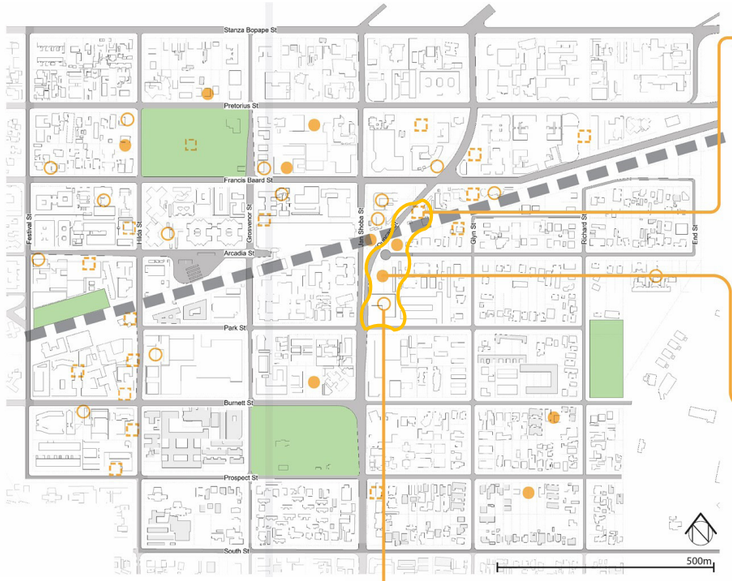
This map represents the movement of pedestrians towards certain nodes of activity or open space and how other activities (such as informal trade) follows them. It is also clear that lost spaces are a constant companion to the pedestrians as these spaces frequent the street interface which is where the pedestrian resides.

LAYERING

(Hatfield City Improvement District 2021)

500m

Figure 21.6 | Desktop Mapping (Author 2022)



Unprogrammed Space

A space that has been overlooked and lies along the blurred line of public/private. They are not intentionally designed and have no specific purpose. They are too flexible and frequently end up as parking lots.

This site is also located along Jan Shoba street, but it is at the interface of the open space in front of the Metro Rail station and the street. There are many pedestrians making their commute to work/school, but this space has a host of informal traders who welcome many customers. There exists a strong relationship between these people which activates the space into a social hub.

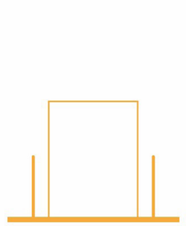
Vacant Site

A site that has been privatized and abandoned. Buildings on these sites frequently fall into disrepair and then get demolished, leaving the site bare and neglected.

This site is positioned on the very busy Jan Shoba street. There is a multitude of pedestrians and cyclists moving along this artery and even though they are fixed on their commute, many of them make the detour to engage with the informal trader.

Suboptimal Building

A building that is unfitting to the surrounding environment, either by it being vacant, insufficiently occupied or inappropriately programmed.



This site is at the intersect of the busy Jan Shoba street and the residential Park street. It hosts frequent pedestrian traffic and some interaction between pedestrians and roaming informal traders.

Figure 22 | Overall Site (Author 2022)

The observational mapping consisted of quantitative and qualitative documentation on three specific lost spaces (a vacant site, an unprogrammed space and a suboptimal building) which constituted the site of the project. The quantitative mapping was led by Jan Gehl and Birgitte Svarre's *How to study public life* (2013). This consisted of an age and gender tally (as well as noting their occupation type) to gauge the demographic, a people moving count and stationary activity mapping to document types of activities, a measurement of time spent moving through a space or lingering in a space to assess the interest and safety of the site, and finally, a quality analysis (using *Jan Gehl's twelve Quality Criteria* (2020)) to critique the success of the site as an urban space. The qualitative mapping consisted of empathy mapping (along with unstructured interviews to substantiate assumptions) to understand the goals and challenges of the characters on site, and site narrative to allow for a deeper understanding of the rituals that occur in and around the site (Andrews 2012). Documenting the site narrative took the shape of mapping according to anthropologist James Spradley's *Nine Dimensions of Observational Frame* (1979) which includes documenting the physical space, actors within the space, activities taking place, objects in the space, acts taking place, events occurring, sequence of events, and the goals and feelings of the actors. Documenting the site narrative also involved mapping the site through the lenses of appropriation/occupation, routes/activities, and ownership/authority.

The site (figure 22) is positioned along Duncan Street and includes the unprogrammed space in front of the Metrorail Station (Hartbeesspruit Station), the vacant site in the residential realm (Arcadia Street Erf) and the suboptimal office building on the threshold of the residential and business zones (Ditsela Place).

Figure 23 | Hartbeesspruit Station (Author 2022)

Hartbeesspruit Station is characterised as an unprogrammed space as the site portrays a large open space that is not designed with any intention or specific purpose in mind. The site mainly consists of an empty area with all determinate elements and activities pushed to its edge. The main features of the site are the neglected train station building, isolated pedestrian bridge, multiple boundaries and the busy Duncan Street (figure 23). Hartbeesspruit Station constitutes for an unpleasant sensory experience as it is constantly exposed to weather conditions along with noise and air pollution from traffic and trains (figure 27). The general demographic on site is informal traders and working-class people between the ages of 25 and 64 (figure 24, 25 and 26). Majority of the people on site are men, indicating that there is a safety concern as most women feel uncomfortable or unsafe moving through the site at certain times of the day (Gehl and Svarre 2013; Interviewee C 2022). The predominant activity on site is walking as majority of people passing through the site are making their hurried commute to or from work. Otherwise, urban actors are lingering, cycling or jogging. Lingering tends to happen in the form of informal traders sitting by their stall, and commuters pausing to make a quick purchase or for social interaction. The foremost event taking place on site is therefore that of commuters purchasing from informal traders.

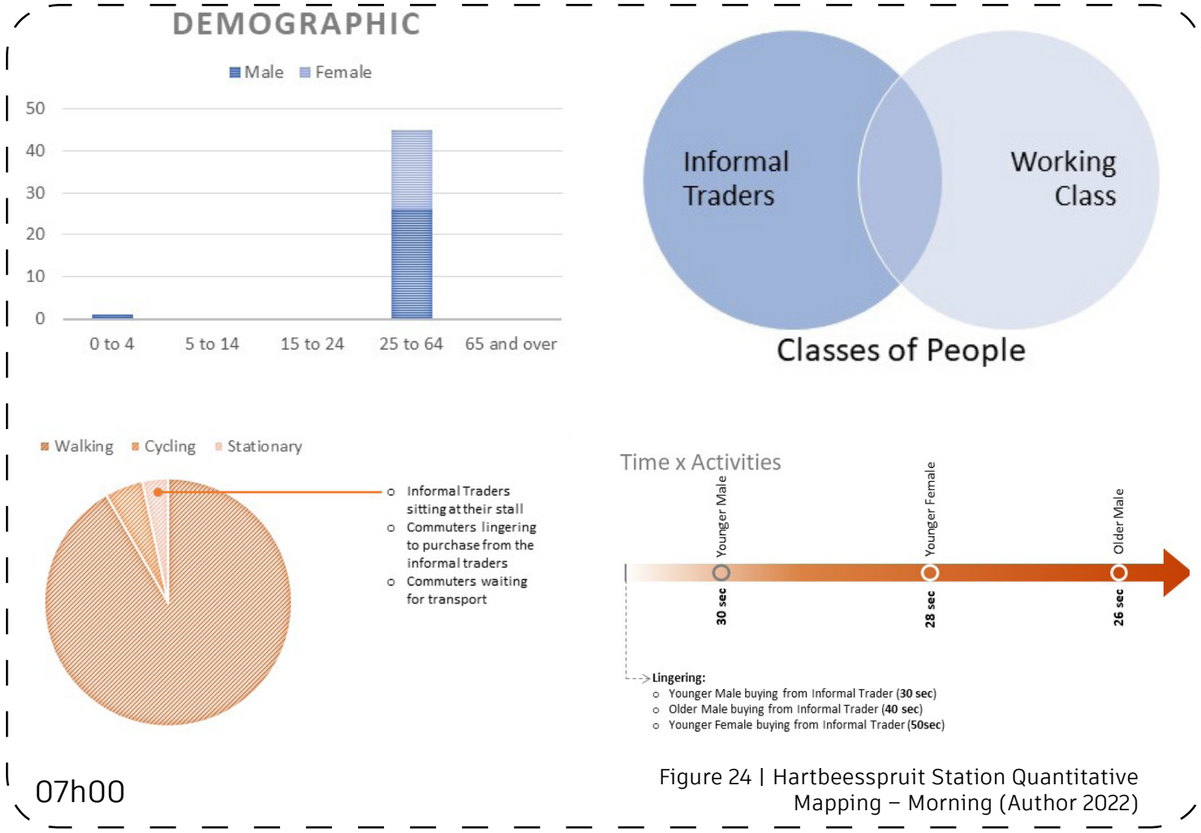


Figure 24 | Hartbeesspruit Station Quantitative Mapping – Morning (Author 2022)

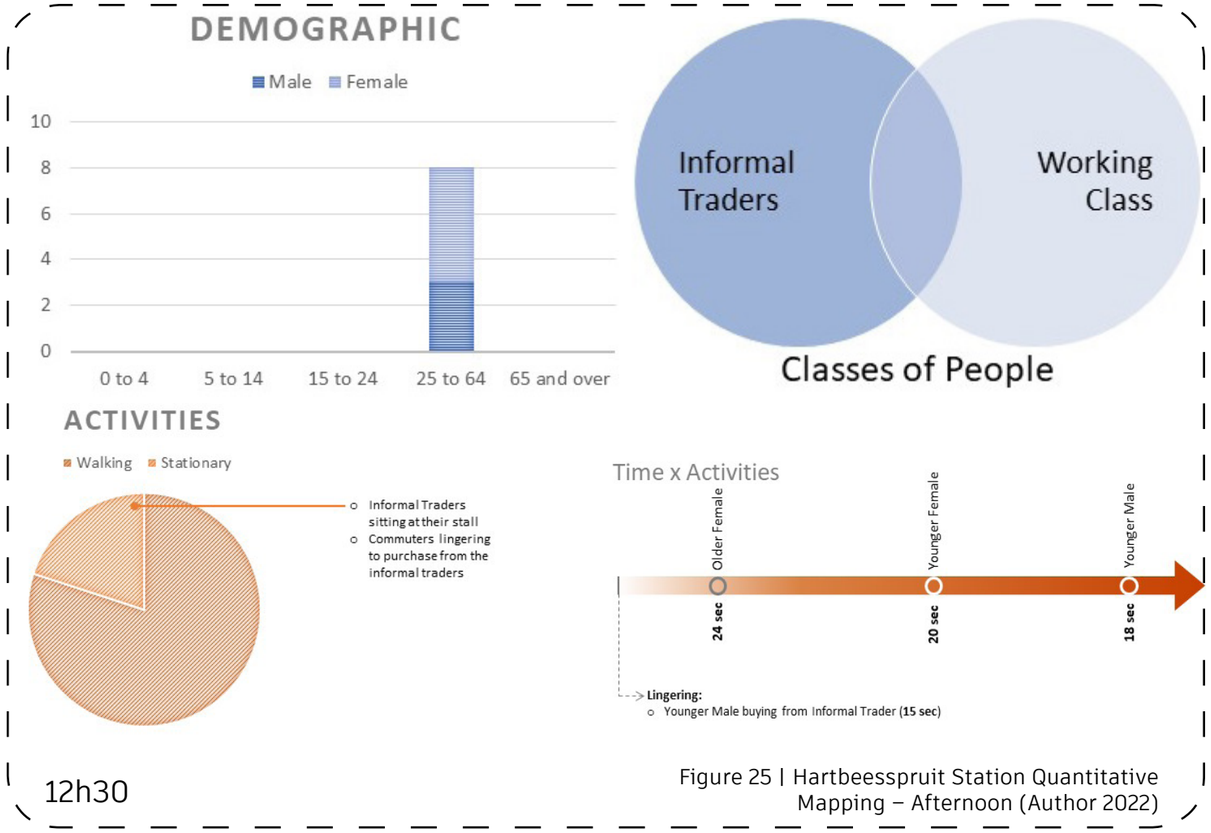


Figure 25 | Hartbeesspruit Station Quantitative Mapping – Afternoon (Author 2022)

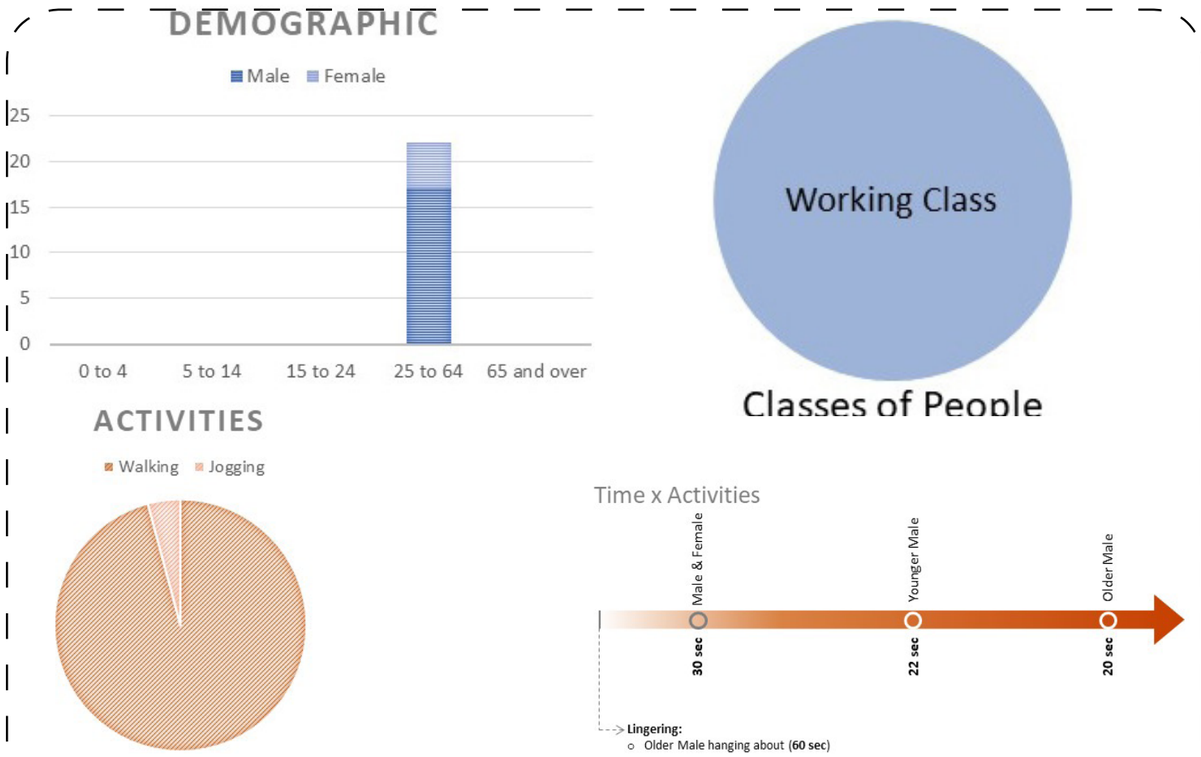


Figure 26 | Hartbeesspruit Station Quantitative Mapping – Evening (Author 2022)

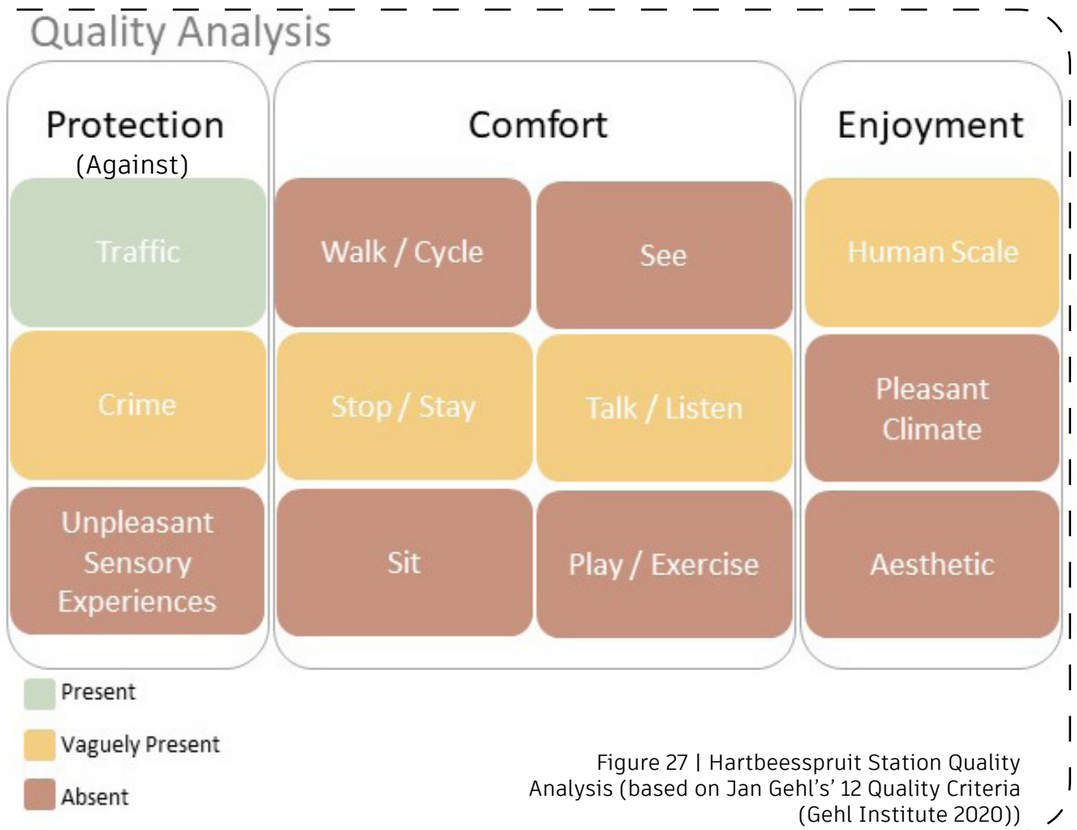


Figure 27 | Hartbeesspruit Station Quality Analysis (based on Jan Gehl's' 12 Quality Criteria (Gehl Institute 2020))

Figure 28 | Arcadia Street Erf (Author 2022)

Arcadia Street Erf is characterised as a vacant site as it represents an erf with a house that has since been abandoned and demolished. It has been left bare and neglected. The site is enclosed by boundaries, consequently disconnecting it from the streetscape and surrounding buildings. Arcadia Street Erf mainly consists of an empty and dilapidated plot of land, exclusionary fencing, a dead-end street and small uphill gated in from the busy Duncan Street (figure 28). This site also presents an unpleasant sensory experience; it is fairly exposed to weather conditions while also being subjected to noise and air pollution from traffic (figure 32). The general demographic on site is informal traders, working-class people and students ranging from the ages of 15 to 64 (with majority being men, also indicating a safety concern) (figure 29, 30 and 31). The predominant activity around the site is also walking, with some lingering, cycling and jogging. Stationary people tend to be the informal traders at their stalls and commuters buying from them. The foremost event on site is therefore that of the informal traders cooking food and a sale being made.

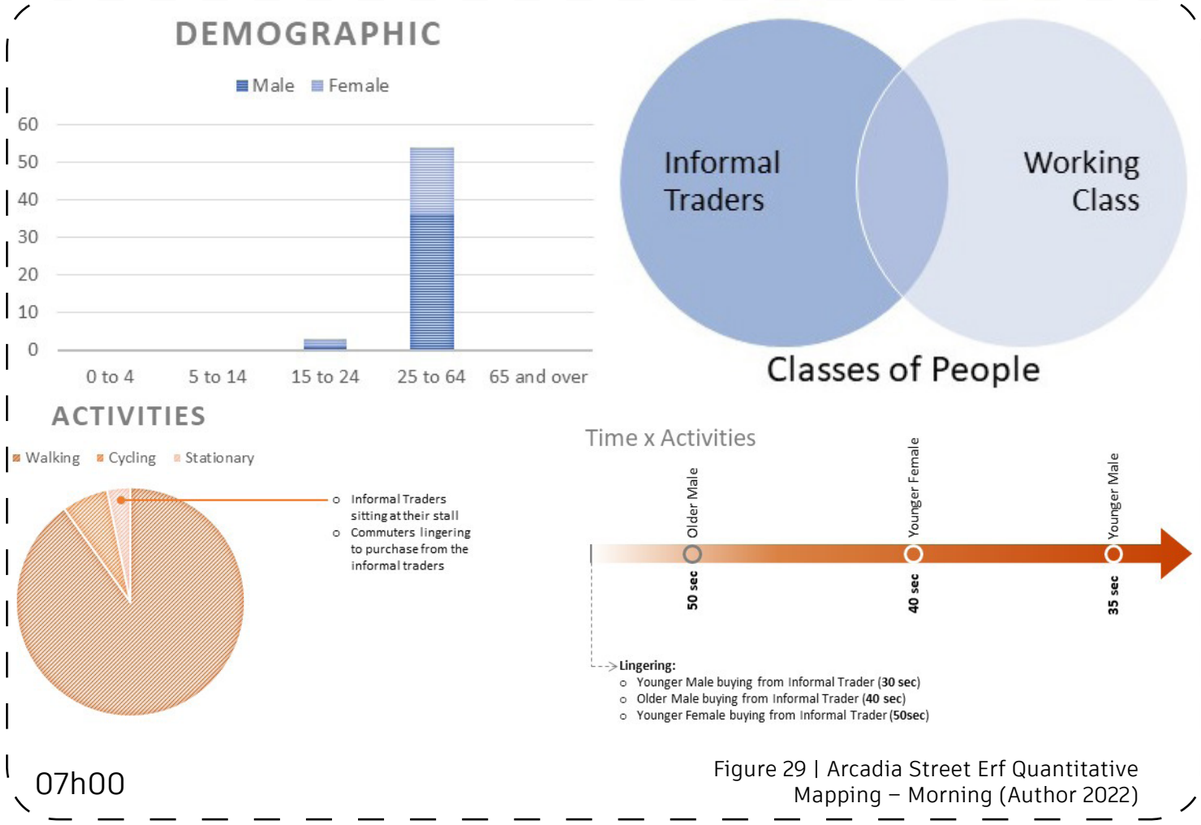


Figure 29 | Arcadia Street Erf Quantitative Mapping – Morning (Author 2022)

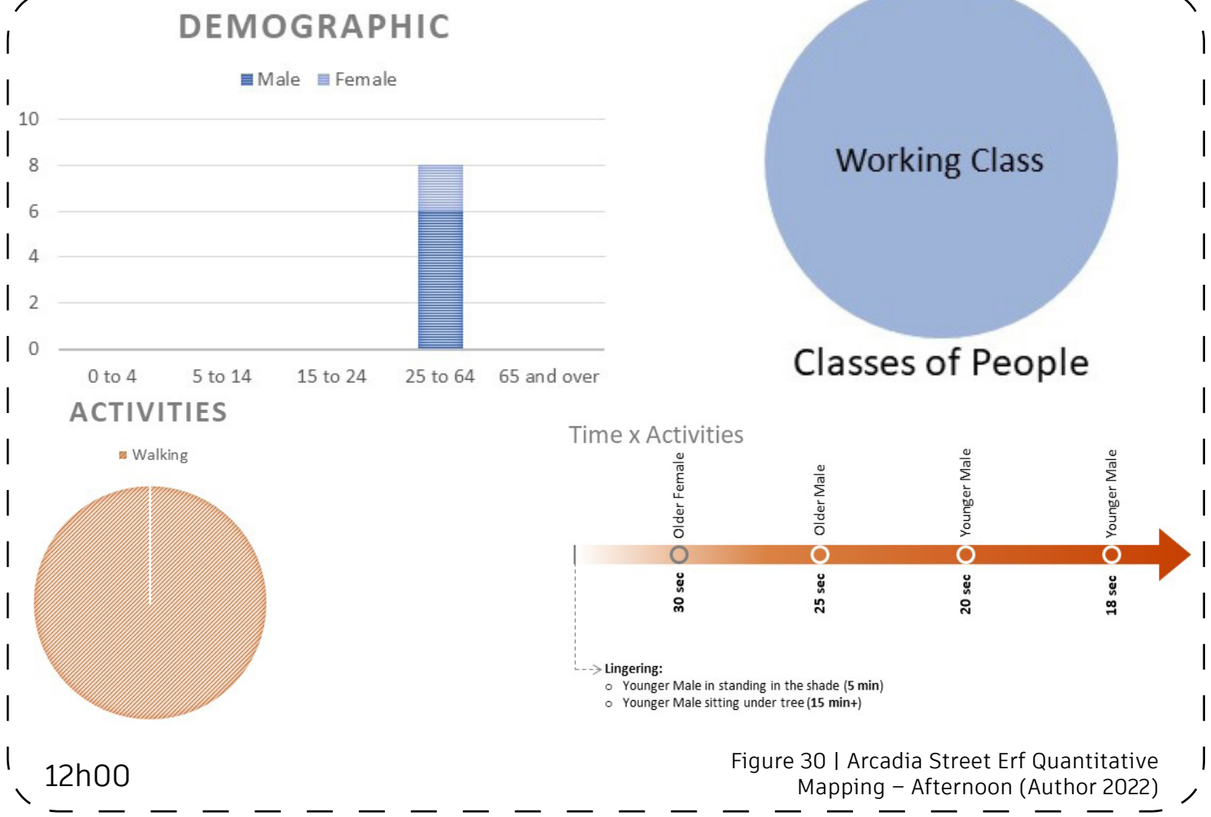


Figure 30 | Arcadia Street Erf Quantitative Mapping – Afternoon (Author 2022)

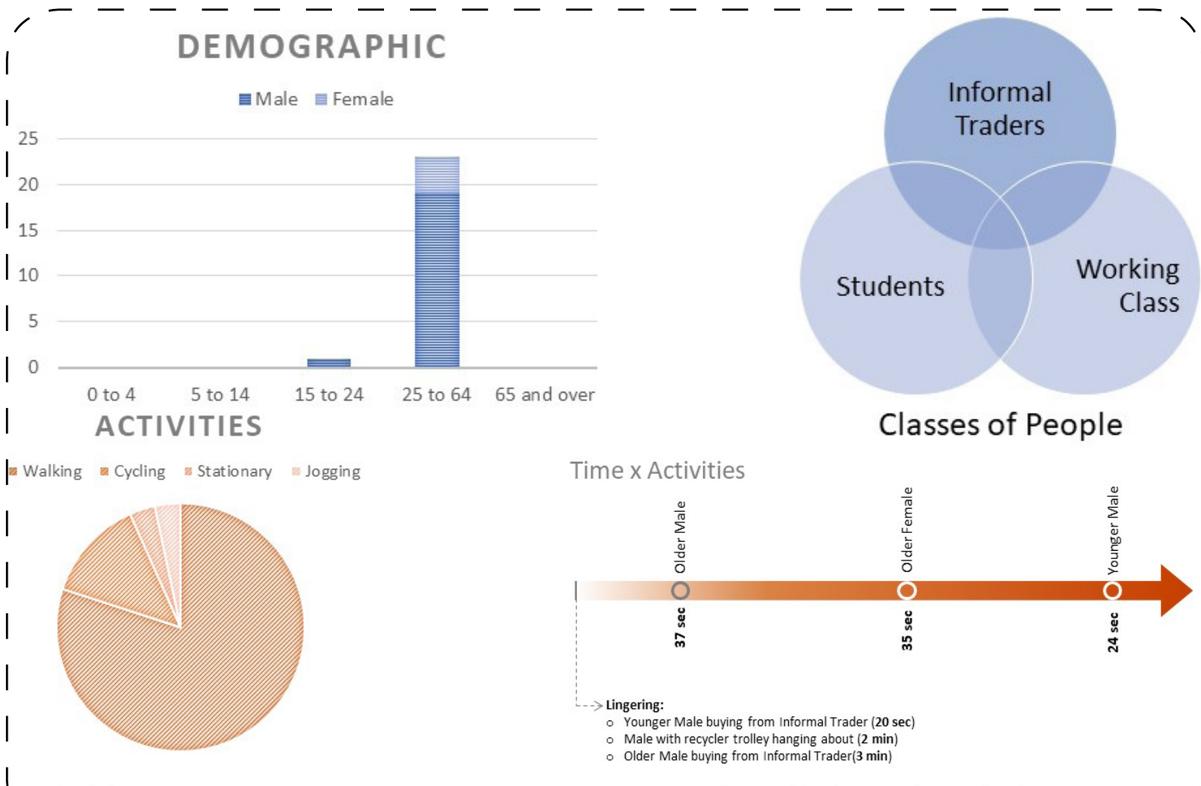


Figure 31 | Arcadia Street Erf Quantitative Mapping – Evening (Author 2022)

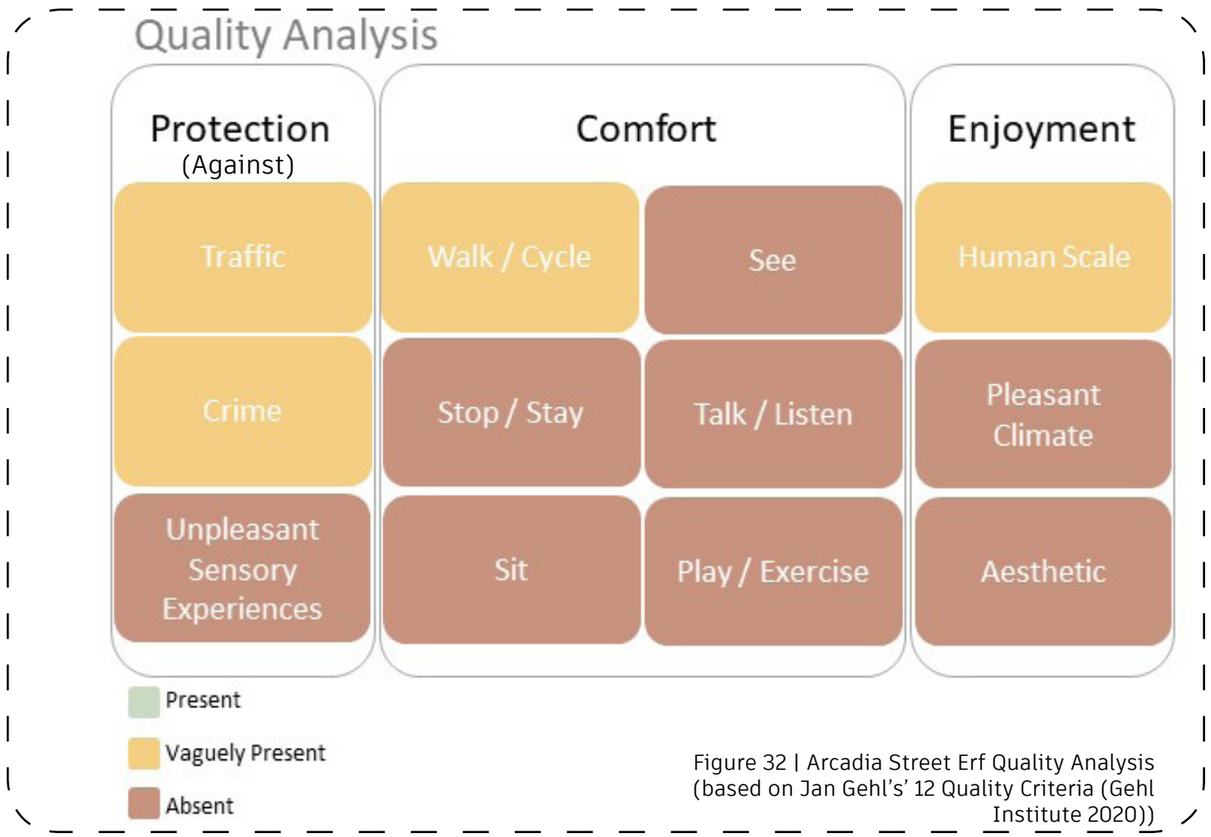


Figure 32 | Arcadia Street Erf Quality Analysis (based on Jan Gehl's' 12 Quality Criteria (Gehl Institute 2020))

Figure 33 | Ditsela Place (Author 2022)

Ditsela Place is characterised as a suboptimal building as it displays an office building that is inappropriately programmed in a residential area and consequently insufficiently occupied. The site mainly consists of a streetscape being used for parking, harsh boundaries and an exclusionary courtyard (figure 33). Ditsela Place also constitutes for an unpleasant sensory experience as it is overly shaded by tall buildings as well as noise and air pollution from traffic (figure 37). The general demographic on site is informal traders, working-class people and students ranging from the ages of 15 to 64 (with majority being men, once again indicating a safety concern), and some children present (figure 34, 35 and 36). The predominant activity around the site is also walking, with some lingering, cycling and jogging. Stationary activities are the informal trader waiting by their stall, commuters buying from them and Ditsela Place's security guard sitting in the street. The foremost event taking place on site is informal trade, especially around lunch time.

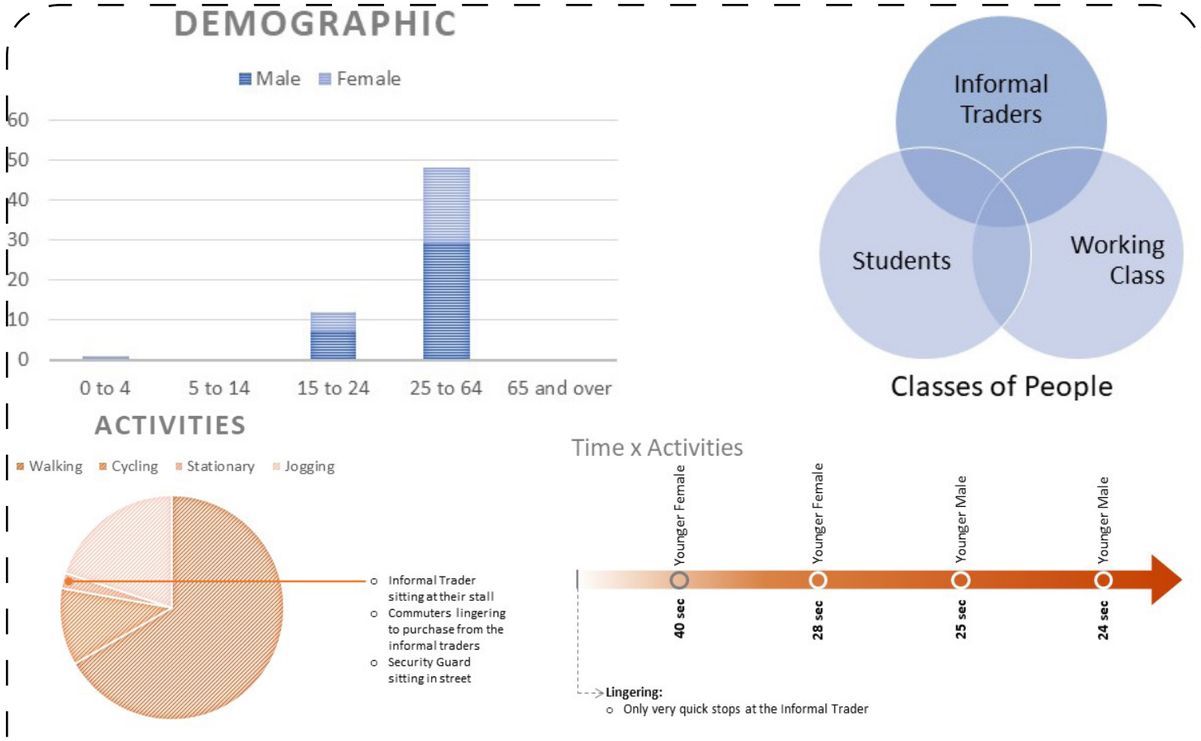


Figure 34 | Ditsela Place Quantitative Mapping – Morning (Author 2022)

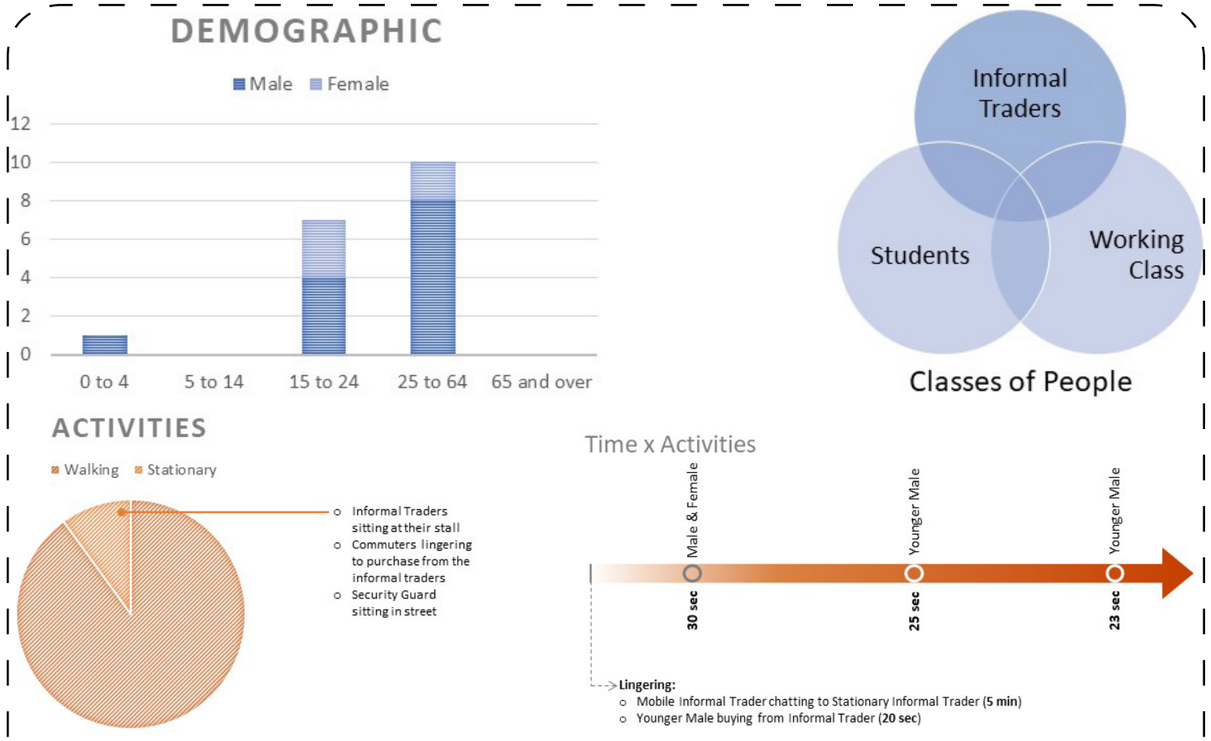


Figure 35 | Ditsela Place Quantitative Mapping – Afternoon (Author 2022)

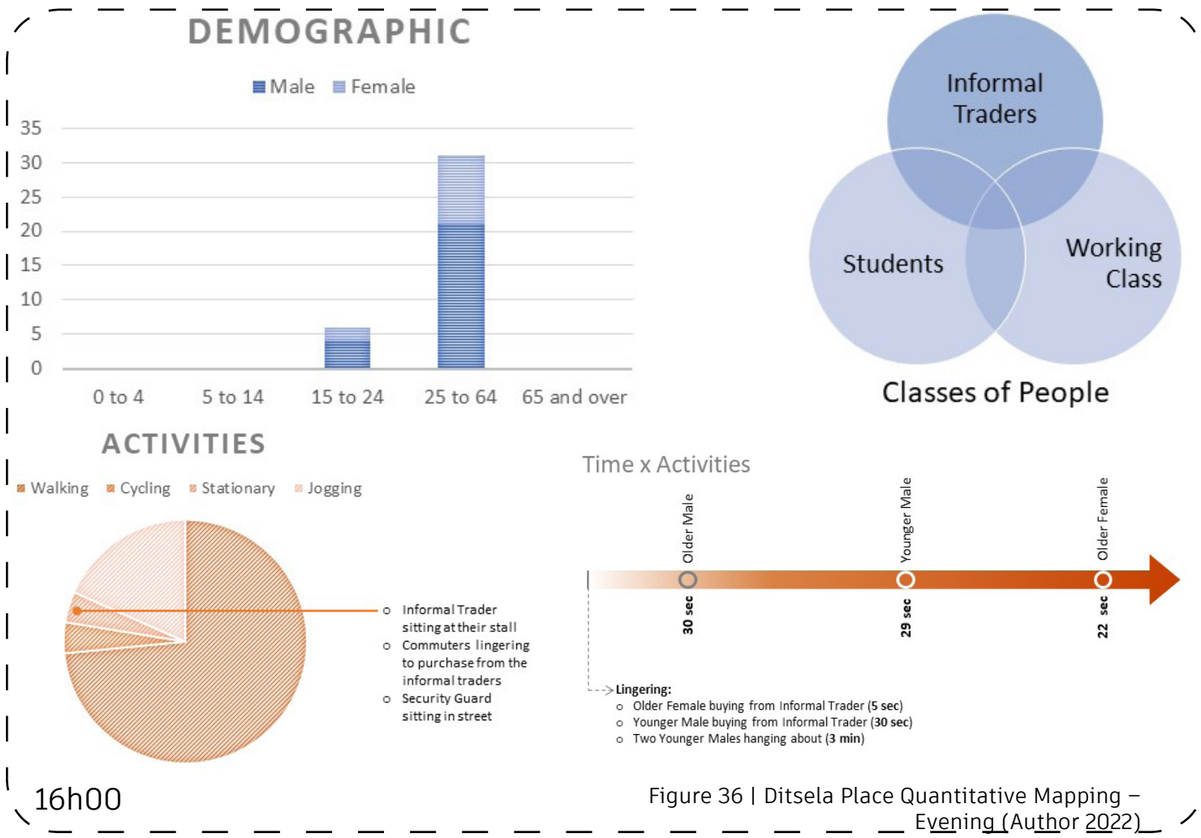


Figure 36 | Ditsela Place Quantitative Mapping – Evening (Author 2022)

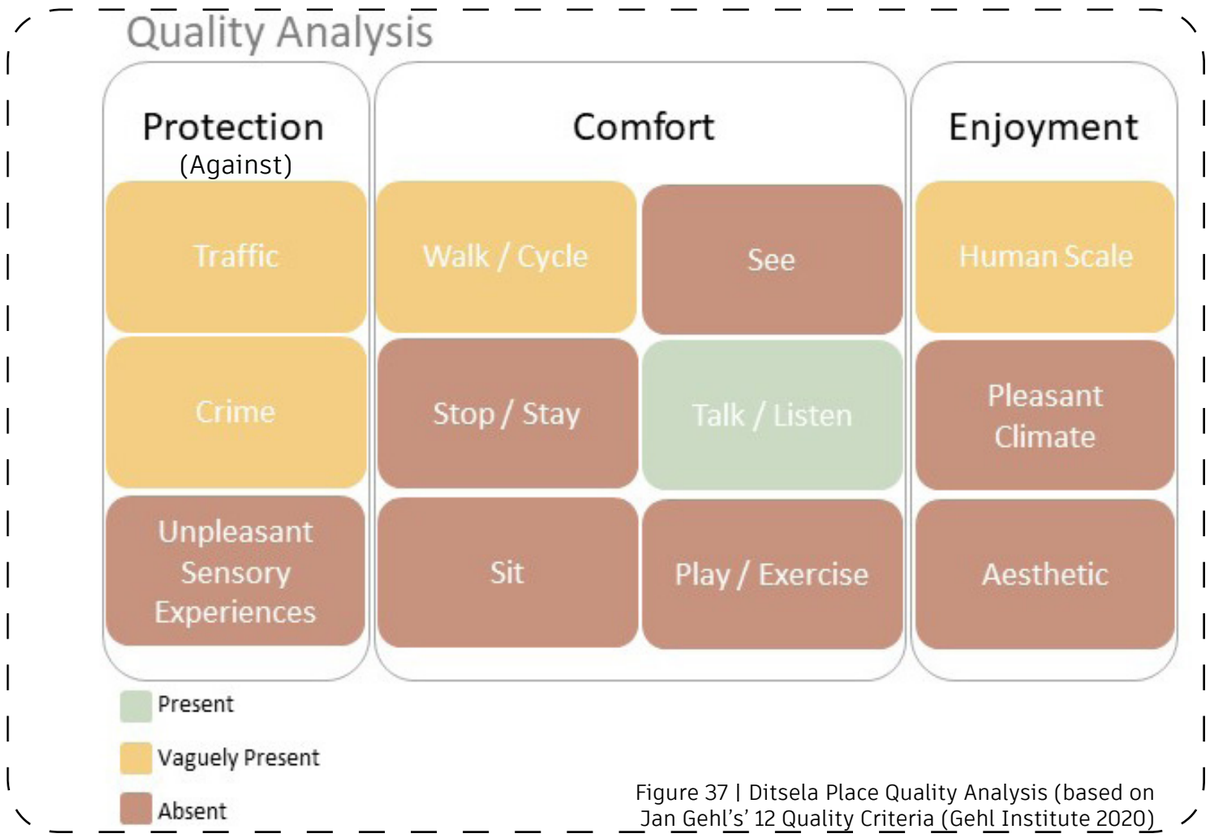
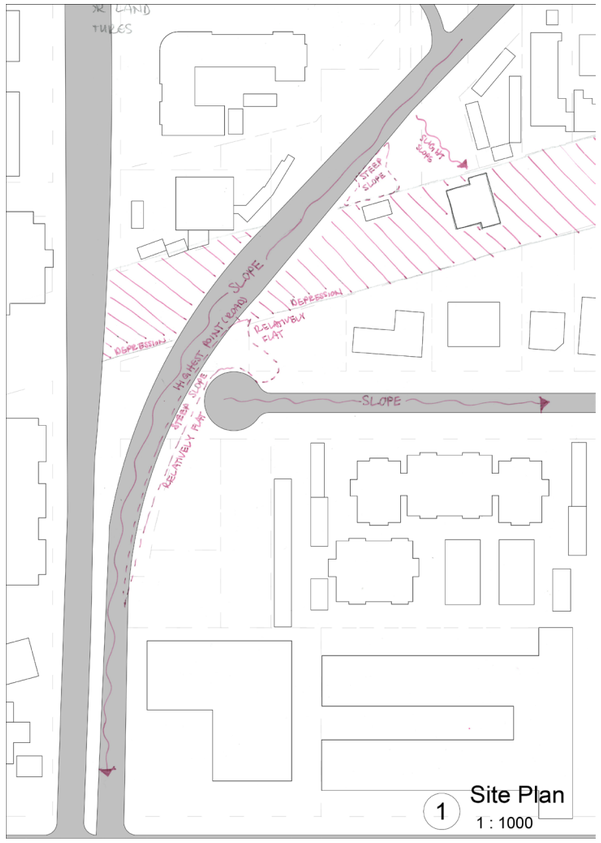
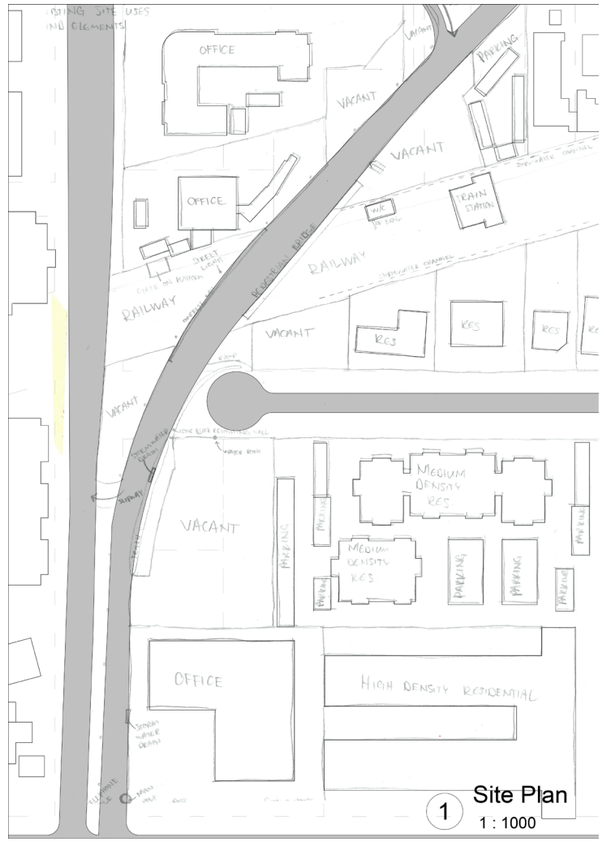


Figure 37 | Ditsela Place Quality Analysis (based on Jan Gehl's' 12 Quality Criteria (Gehl Institute 2020)

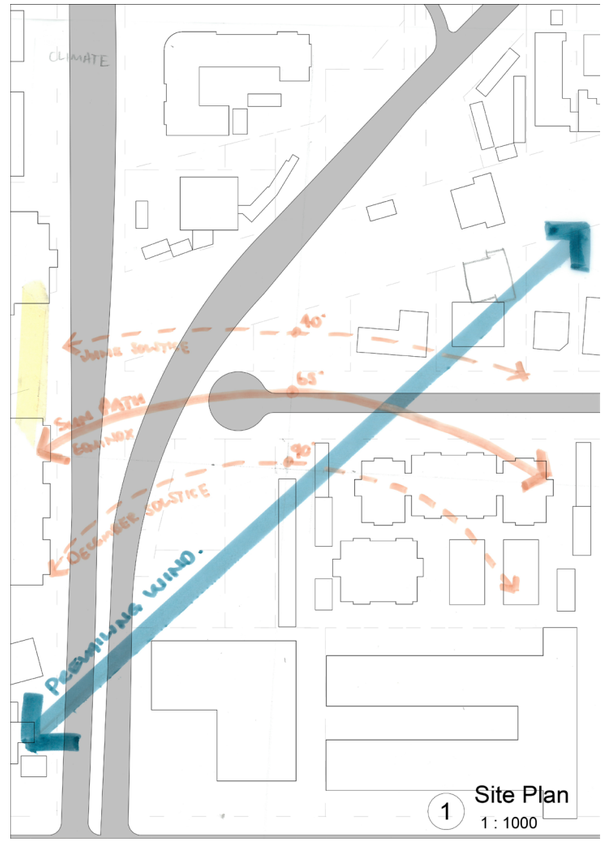


Topography (Author 2022)

Greenery (Author 2022)

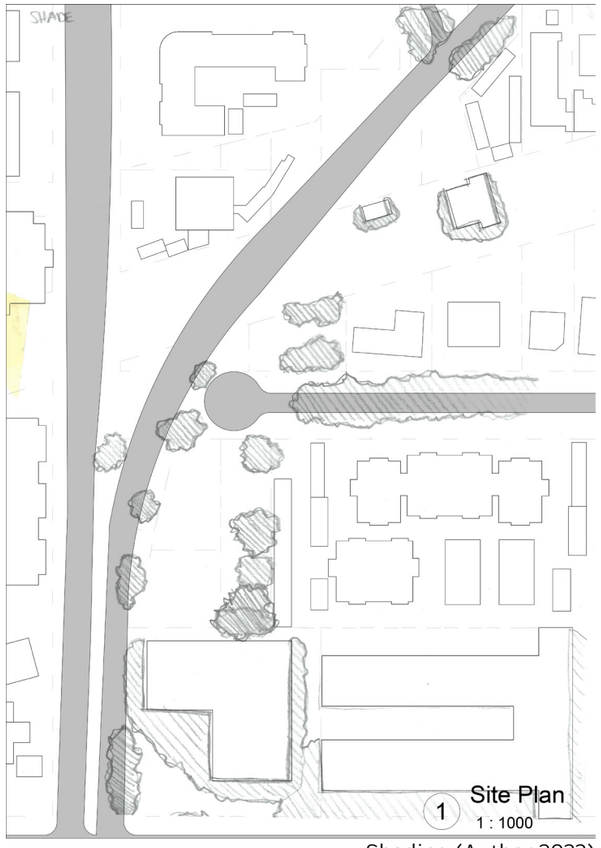


Existing Uses and Elements (Author 2022)

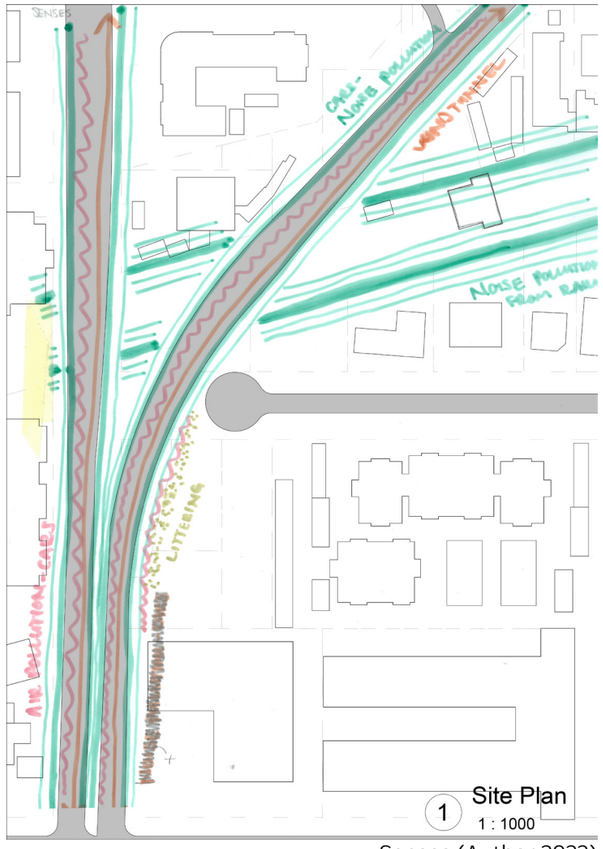


Sun and Wind (Author 2022)

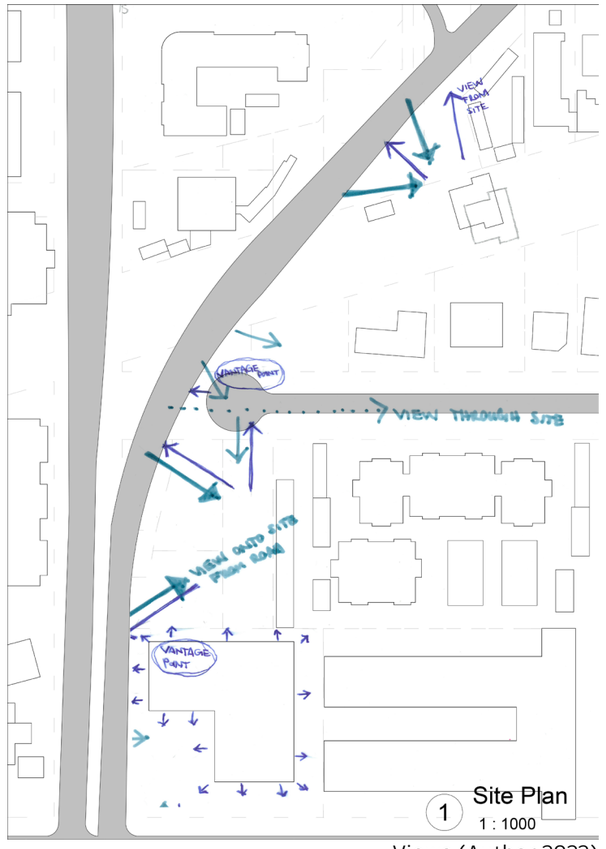
Figure 40 | Site Analysis (Author 2022)



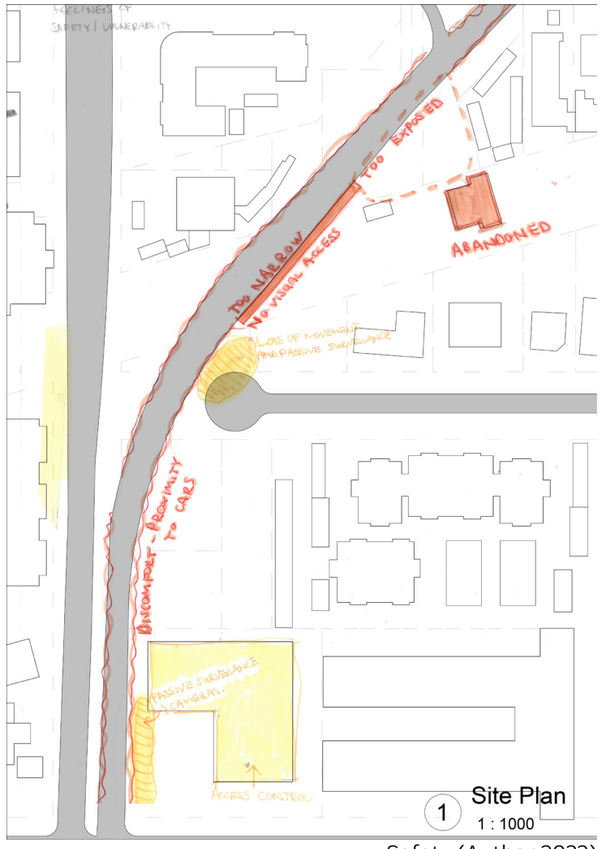
Shading (Author 2022)



Senses (Author 2022)

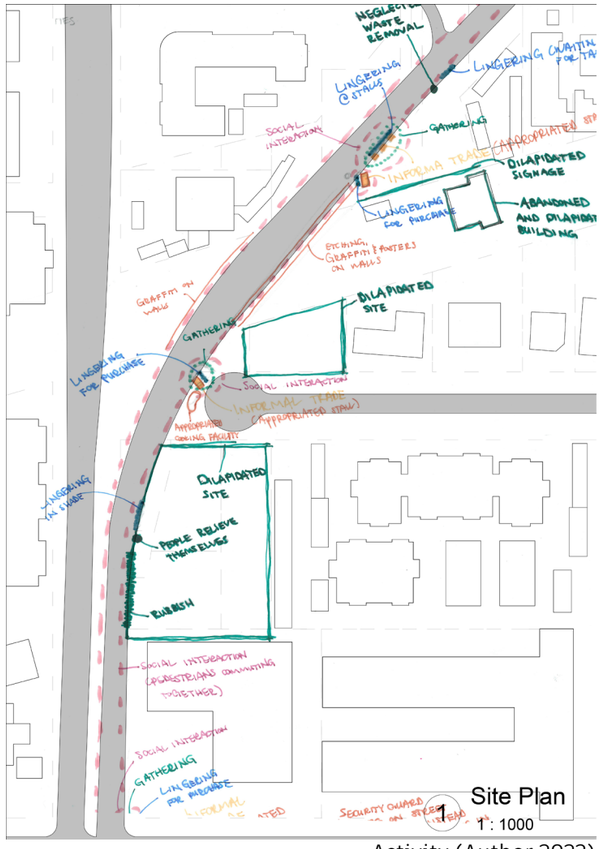


Views (Author 2022)

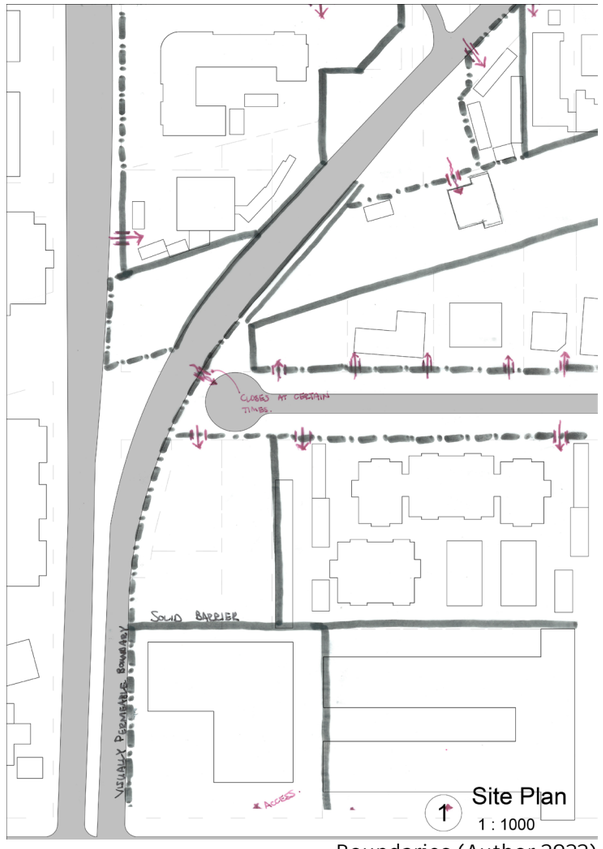


Safety (Author 2022)

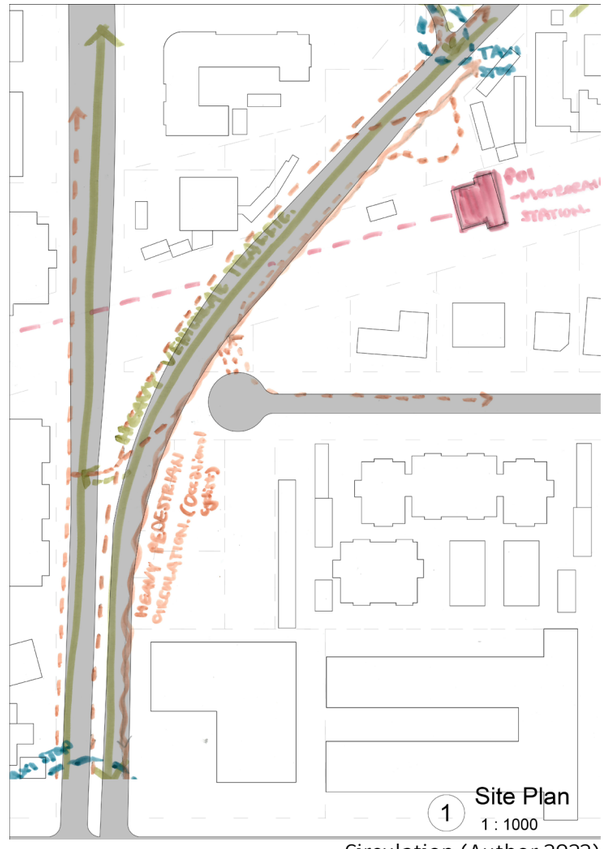
Figure 40 | Site Analysis (Author 2022)



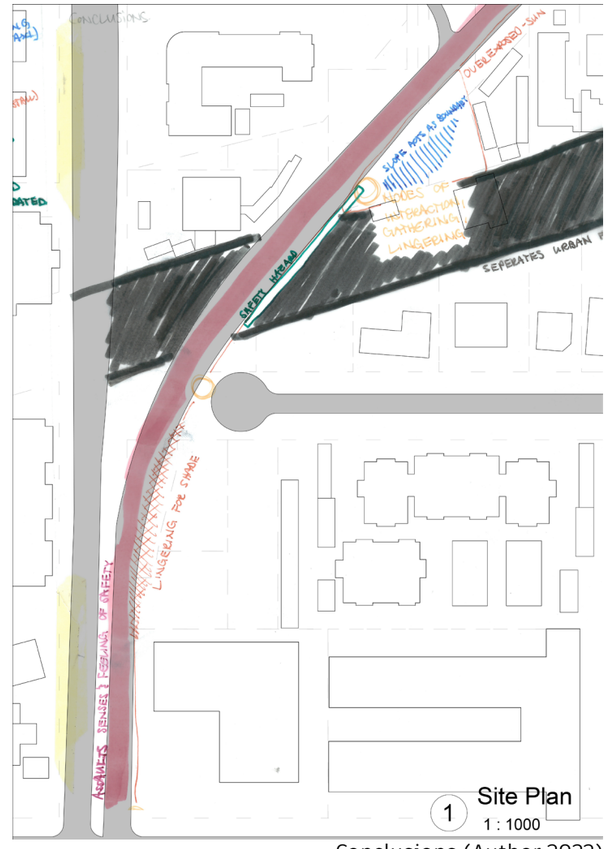
Activity (Author 2022)



Boundaries (Author 2022)



Circulation (Author 2022)



Conclusions (Author 2022)

Figure 40 | Site Analysis (Author 2022)

Figure 38 | Site Conditions (Author 2022)

In conclusion, the general conditions of the overall site are, firstly, that informal trade forms nodes of interaction, gathering and lingering; it is therefore an activator in the context. Informal traders tend to situate themselves at active interfaces and in spots where they have a good vantage point. Second, spatial appropriation is prevalent as a means to satisfy user needs and as a form of self-expression. Third, unused or dilapidated spaces do not act as a deterrent due to commuters being forced to move through these spaces to get to their destination and the trend of informal trade following pedestrians (these types of spaces present an opportunity for informality to occupy and appropriate them). Fourth, spaces are either overexposed due to lack of trees or underexposed due to very tall buildings. In spaces where there are trees, commuters were observed lingering in them. Fifth, the busy Duncan and Jan Shoba Streets create discomfort on the senses and a feeling of vulnerability. Sixth, the railway creates a chasm in the urban fabric with merely small interventions of maintaining this connection with bridges. Lastly, pedestrians seem to avoid spaces that aren't visually accessible as a means to protect themselves through passive surveillance (figure 39).

Informal Trade at open Interface with Good Vantage point

Spatial Appropriation of Informal Trader Stall and Cooking Food

Pedestrians moving past and through dilapidated spaces

Overexposure

Underexposure

Lingering in the Shade

Chasm of Railway

Threat of Traffic

Visually Inaccessible space without Pedestrians

Figure 39 | Site Conditions (Author 2022)

Considering the more qualitative aspects of the site, the overall narrative tells a story of appropriation, occupation and ownership. The larger site exhibits various forms of spatial appropriation (figure 41); first is the informal traders adapting spaces and site elements into trading stalls as well as areas to cook their products. Then, the expression of identity through posters, carvings and graffiti on the walls of public spaces. And, lastly, the use of space for a purpose other than what it was intended for, such as pedestrians resting on a walkway or a security guard sitting in the street rather than in the guard house.

Figure 41: Top Left: Informal Trader Stall. Top Right: Appropriated space to cook food to sell. Bottom Left: Appropriated Post Box for Informal Trade. Bottom Right: Posters, Carvings and Graffiti on Public Walls for Self-expression

In terms of occupation (figure 42 and 43), the commuters' route is controlled as it adheres to the sidewalk along the busy street. There tends to be an 'appropriation' of route when pedestrians informally cross over the street or take a shortcut for easy of movement. A sense of belonging and comfort is also present in the social interactions taking place, either just between pedestrians, or also with informal traders.

Figure 42: Left: Informal Trader Stall, Pedestrian on Pedestrian Bridge and Pedestrian walking aside Pedestrian Bridge. Right: Pedestrians walking along Sidewalk.

Figure 43: Left: Social Interaction between Informal Trader and Pedestrians. Right: Pedestrian exiting Pedestrian Bridge.

In terms of ownership (figure 44), the site portrays a struggle for control. Boundaries and security measures are harsh to dictate the movement and access of people. There exists a clear tension between authoritative entities (such as building owners) and the urban actors as spatial control tries to be implemented, but is met with resistance (such as the pedestrian gate by the Arcadia Street Erf being met with the informal trader still setting up stall next to it). The depiction of ownership does, however, contradict itself by failing to preserve the public spaces through interventions such as waste management and building maintenance.





Figure 44 | Top Left: Failure of Waste Management. Bottom Left: Dilapidated Train Station. Bottom Middle: Informal Trader at gate. Right: Harsh Boundary

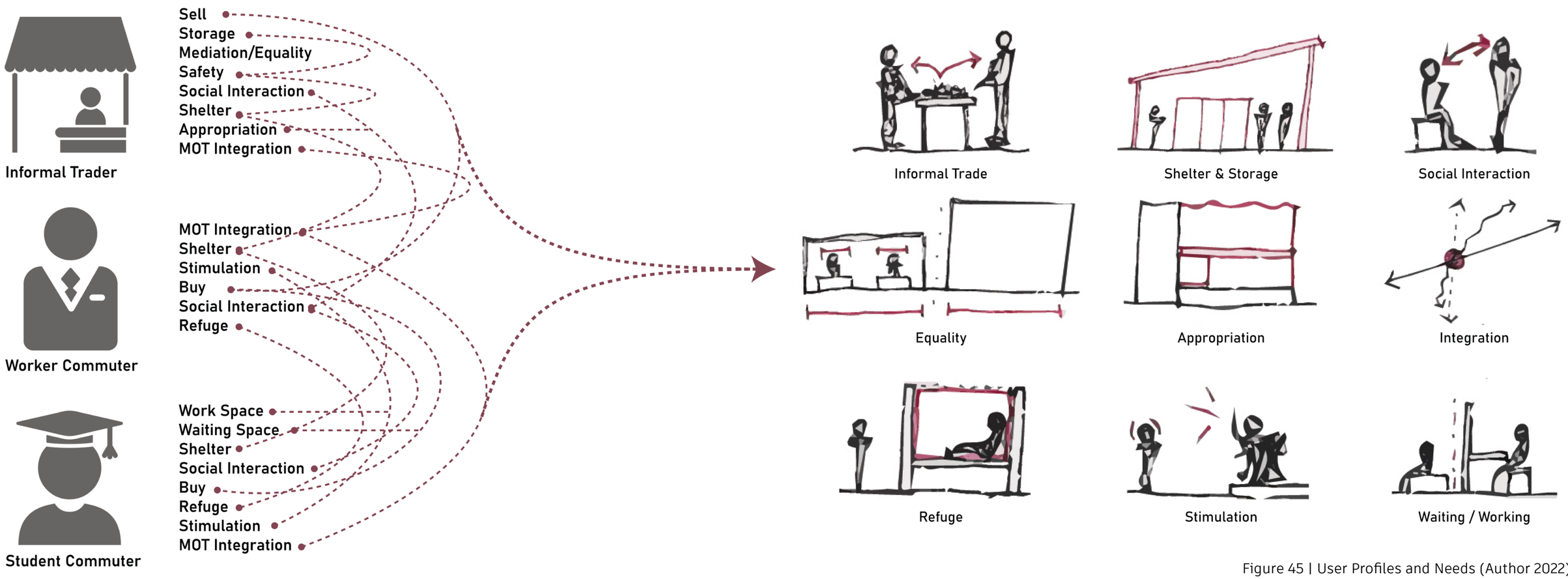


Figure 45 | User Profiles and Needs (Author 2022)

The general urban users on site includes informal traders, worker commuter, student commuters, private car commuters and office workers, with the first three constituting the main user profiles. Empathy mapping and on-site interviews revealed that the diverse users of the site share common goals and needs when moving through the site.

The informal trader has the main goal of selling goods, leading to an understanding of them being opportunistic and desperate to feed their low income (Interviewee A 2022, Interviewee B 2022). The informal trader is most at home in their setting as they spend the longest amount of time on site (Interviewee A 2022, Interviewee B 2022). They feel comfortable and safe at their appropriated stall and while enjoying social interactions with familiar faces (Interviewee A 2022, Interviewee B 2022). The informal trader does, however experience the threat of weather conditions, tensions with other traders and from authorities (Interviewee A 2022, Interviewee B 2022).

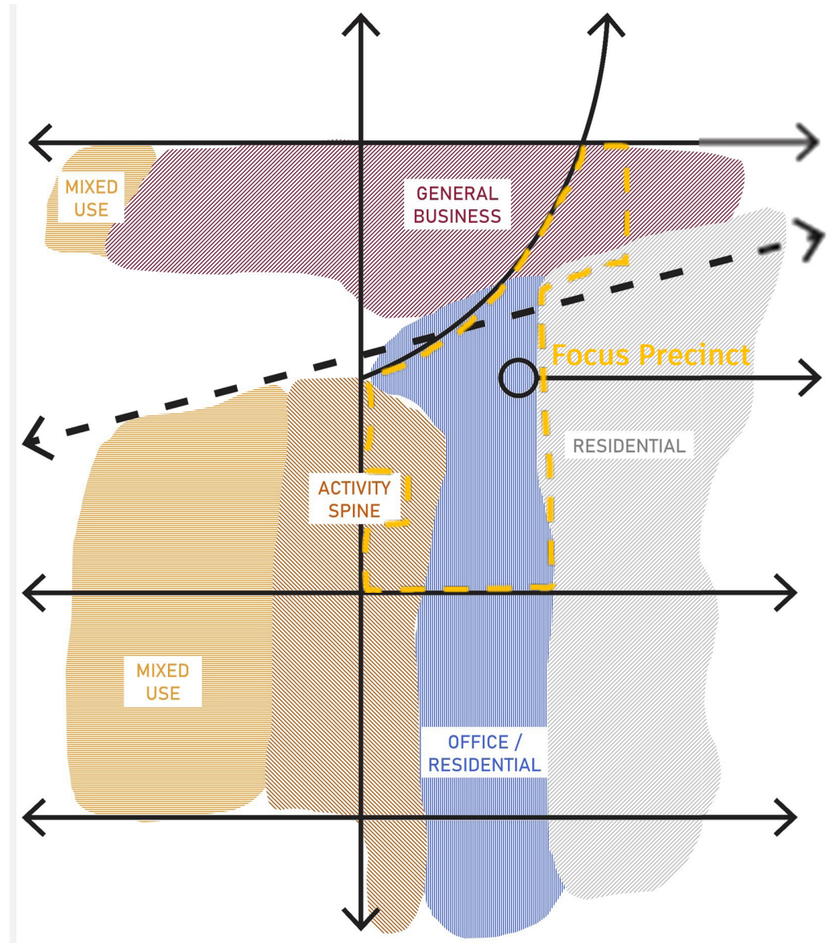
The worker commuter is generally someone that makes use of public transit and walking to commute to and from work (Interviewee C 2022, Interviewee D 2022). Their main goal is to reach their destination, making their trip mundane and rushed (Interviewee C 2022, Interviewee D 2022). The worker commuter tends to share a social relationship with the informal traders as they frequent the same public realm (Interviewee C 2022, Interviewee D 2022). The worker commuter experiences threats of fatigue, traffic, transit strikes, travelling costs, weather conditions and crime (Interviewee C 2022, Interviewee D 2022).

The student commuter is generally someone that relies on public transit and walking to get to their classes and back home (Interviewee E 2022, Interviewee F 2022). Their main goal is to get to their destination and complete their work (Interviewee E 2022, Interviewee F 2022). The student commuter has a good relationship with the informal traders and other pedestrians as they are curios when commuting and open to social interaction (Interviewee E 2022, Interviewee F 2022). The student commuter experiences threats of stress, time, traffic, crime and weather conditions (Interviewee E 2022, Interviewee F 2022).

The overlaps in user profiles exposed the overall needs of informal trade, shelter and storage, social interaction, equality, appropriation, integration, stimulation, refuge and a space to work or wait (figure 45).

Existing Framework

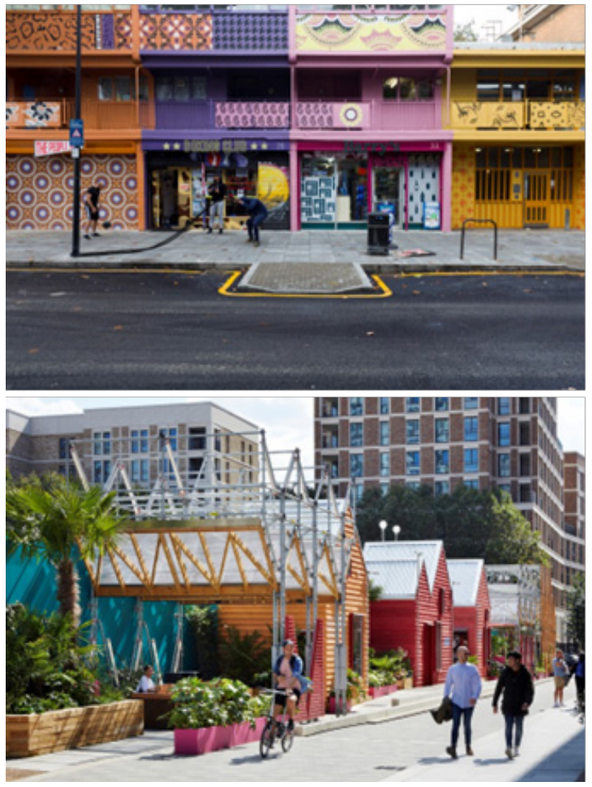
The Hatfield Metropolitan Node Precinct Plan (2021) proposes a land use framework with the objective of creating an integrated, educational community and business village that provides access to various components of the village via an integrated motorised and non-motorised public transit system, and that improves the quality, character, image and function of the environment. This framework (figure 46) exhibits a proposed activity spine along Duncan and Jan Shoba Street along with office, business, residential and mixed-use zones (Hatfield City Improvement District 2021). The project aligns with the notion of the activity spine and mixed-use zones, the framework therefore guided decision-making towards appropriate programmes within the proposed site.



LAND USE FRAMEWORK

	Desirable Land Uses	Compatible Land Uses
GENERAL BUSINESS	**Business Building**, Vehicle Sales, Showrooms, Laboratories, Computer Centre	**Shops**, Hotels, **Conference Centre**, **Retail**, **Open Space**, Institutions, **Places of Instruction**, Garage, Dwelling Units, **Bakery**, Car wash, Dry Cleaners, **Workshops**, Telecommunication Centre
RESIDENTIAL	Dwelling Units	**Corner Shop**, **Bakery**, Dry Cleaners, **Café**, **Takeaway**, **Open Space**, Institutions, Hotels, **Place of Instruction**, Place of Worship
ACTIVITY SPINE	**Shops**, **Business Buildings**, **Retail**, **Places of Refreshment**	Dwelling Units, Hotels, **Conference Centre**, Vehicle Sales, Showrooms, **Open Space**, Institutions, **Place of Instruction**, Laboratories, Computer Centre, Garage, **Bakery**, Car wash, Laundromat
OFFICE/RESIDENTIAL	Dwelling Units, **Offices**, Laboratories, **Incubator Business**, **Artisan Workshop**, Hotel	**Corner Shop**, **Bakery**, Dry Cleaners, **Café**, **Takeaway**, **Open Space**, Institution, **Conference Centre**, **Place of Instruction**, Place of Worship
MIXED USE	**Shops**, **Business Buildings**, **Retail**, **Place of Refreshment**, **Informal Trade/Market**, Light Industry, Hotel	**Place of Amusement**, **Conference Centre**, Parking, Institution, **Place of Instruction**, Telecommunication Centre

Figure 46 | Land Use Framework (Hatfield City Improvement District 2021)



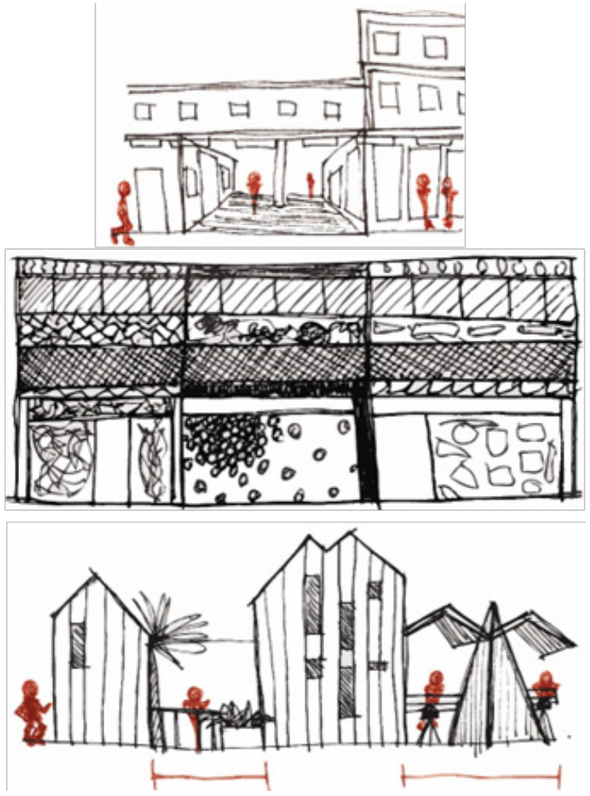


Figure 47 | Jan Kattein Architects Urban Regeneration (Joson 2022)

Figure 48: Top Left: Rhini Community Centre (Joson 2022.) Top Right: Playful Character. Bottom Left: Communal Courtyard tying together Ancillary Spaces. Bottom Right: Responsive Scale

Precedent Analysis

A few precedents were analysed to inform the programmatic and design response to the site and research question. The precedents were chosen to address the various layers of the project while adhering to the same agenda of public space and well-being.

Urban Regeneration | Jan Kattein

Jan Kattein Architects' Urban Regeneration (in London) was chosen as a precedent regarding urban and public space. The collection of projects endeavour to reactivate existing spaces and transform them into community hubs (Joson 2022). The precedent reveals the importance of emphasizing the pleasures of walking through the city by softly enclosing public areas (Joson 2022). Each of these projects provide reasons to wander, opportunities to meet and vantage points to view life going by. Jan Kattein Architects ultimately explain that civic spaces define a sense of belonging and that public interventions strengthen community identity and culture (Joson 2022).

Rhini Community Centre | MAtrix Urban Designers and Architects

Rhini Community Centre (in Grahamstown) by Matrix Urban Designers and Architects was selected as an example of a civic space with a community motive. The project exhibits a convenient and comfortable public facility that includes service accessibility, social development and community upliftment (Matrix 2009). The project displays the importance of using a responsive scale to play down the authoritative status and promote accessibility, openness and ease of use (Matrix 2009). The space exudes a playful character through colour and form, encouraging interaction with the public (Matrix 2009). The centre is laid out to allow each space to be experienced individually and then tied together by a large courtyard, this blurs the boundary between inside and outside (Matrix 2009).

Figure 49 | Metro Mall Public Interface (Chokupermall 2016)

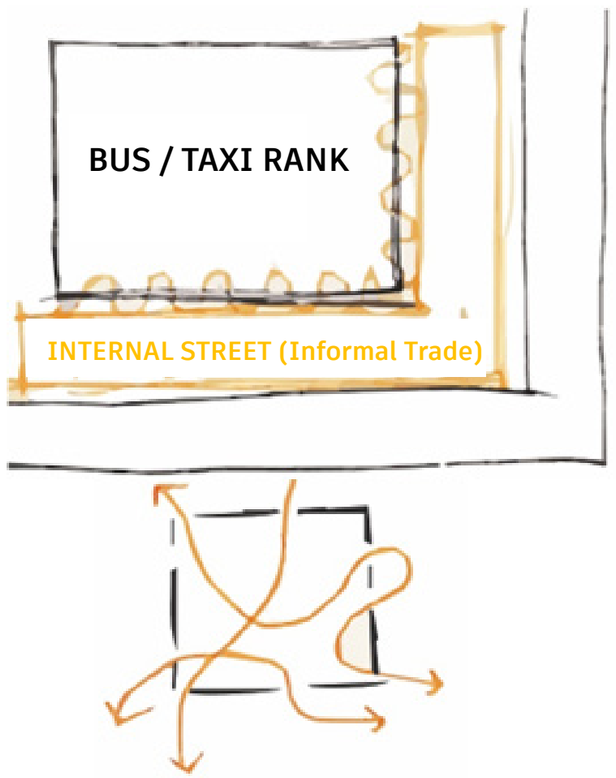


Figure 50 | Left: Internal Street (Chokupermall 2016). Top Right: Layout. Bottom Right: Continuous Movement

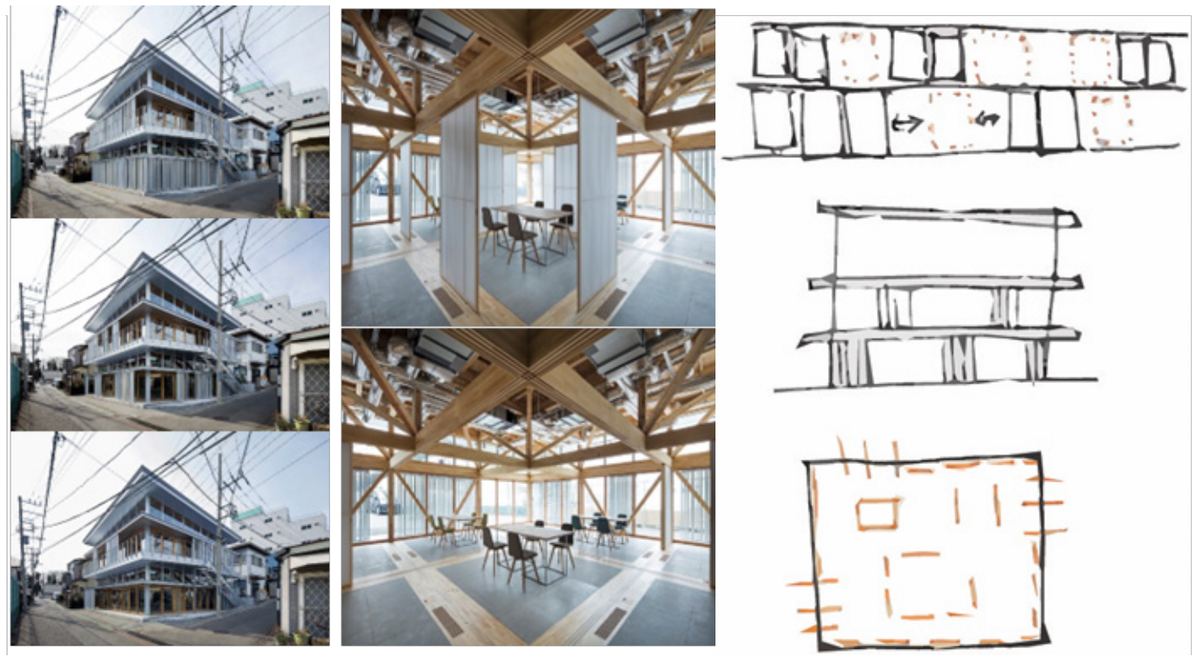


Figure 51 | Flexible Façade and Adaptable Interior of the Substrate Factory Ayase (Aki Hamada Architects 2017)

Metro Mall | Ludwig Hansen Architects and Urban Designers

Ludwig Hansen Architects and Urban Designers' Metro Mall (in Johannesburg) served as a precedent for public transit node that incorporates informal trade. The project acknowledges the significance of informal trade activities at transport interchanges (Chokupermall 2016). Metro Mall views streets as public space and consequently introduces an internal street as a medium for continuous movement (Chokupermall 2016). The project emphasises the importance of connecting to the surrounding built fabric and ensuring accessibility and freedom of movement (Chokupermall 2016). The building ultimately acts as a datum within its context by means of the tall entrance towers (Chokupermall 2016).

Sustrate Factory Ayase |Aki Hamada Architects

The Substrate Factory Ayase (in Japan) by Aki Hamada Architects acted as a precedent for designing for spatial appropriation. The project acts as a mixed-use building with one of the programmes being a showroom and multi-purpose space for the local community, making versatility and openness a priority (Aki Hamada Architects 2017). The building consequently mediates the relationship between the factory and neighbourhood by being publicly accessible and allowing users to adapt the space for their specific needs (Aki Hamada Architects 2017). The building ultimately houses a 'living layer' that allows for flexibility and ensures the possibility for various conditions of space (Aki Hamada Architects 2017).

Figure 52 | Left: Continuous Urban Surface. Middle and Right: Heydar Aliyev Centre (Zaha Hadid Architects 2013).

Heydar Aliyev Centre | Zaha Hadid Architects

Lastly, Zaha Hadid Architects' Heydar Aliyev Centre (in Azerbaijan) was chosen as a precedent for form. The design of the centre endeavoured to break away from the rigid and monumental notions in the surrounding context and rather expresses sensibility and prospective thinking (Zaha Hadid Architects 2013). The building depicts the continuous, fluid relationship between the surrounding plaza and building interior through the ground surface rising and enveloping the public space for accessibility (Zaha Hadid Architects 2013). The project represents the blurring of architectural object with urban landscape, and the building envelope with urban plaza (Zaha Hadid Architects 2013).

Conclusions towards a Conceptual Approach

From these theoretical and site informants, as well as and precedents, it is clear that an adaptable, accessible and integrative design approach seems most appropriate to generate a public space that integrates modes of transport, includes informal trade and accommodates the transient urban user while stimulating well-being. The design approach will ultimately be governed by the design principles of responsive, social, integration, sheltered and revitalisation.

These principles stem from the consolidation of the five theoretical and observed drivers of the project (figure 53). These are flexibility (indeterminacy, adaptability and circulation (Schneider and Till 2007)), public space (movement/stationing, commercial, social life, education/culture, regeneration, comfort/ image, access/linkage, uses/activities, sociability (United Nations 2016; Project for Public Spaces 2016)), well-being (safety, physical comfort, identity, pleasure, personal significance, virtue, community (Hettler n.d.; Kirsten *et al.* 2009; Petermans and Pohlmeyer 2014; Webber 2019)), site conditions (informal trade, physical comfort, safety, looseness, accessibility, integration and appropriation), and user needs (informal trade, shelter/ storage, social interaction, equality, integration, appropriation, refuge and stimulation). The principles will act as a means to guide decision-making of the design, while the three main drivers (flexibility, public space and well-being) will act as a set of criteria against which the design product may be measured.

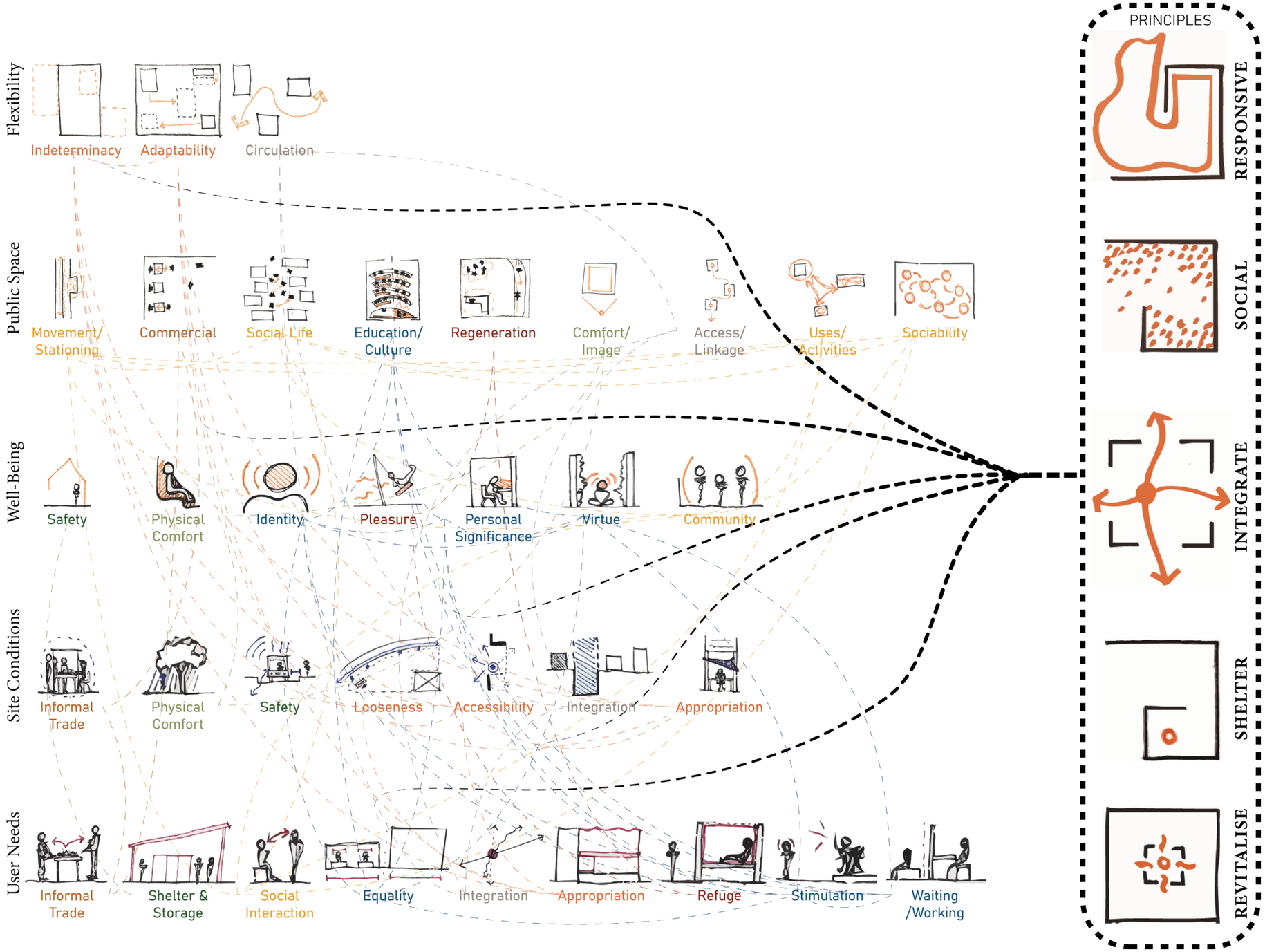


Figure 53 | Theoretical Framework (Author 2022)

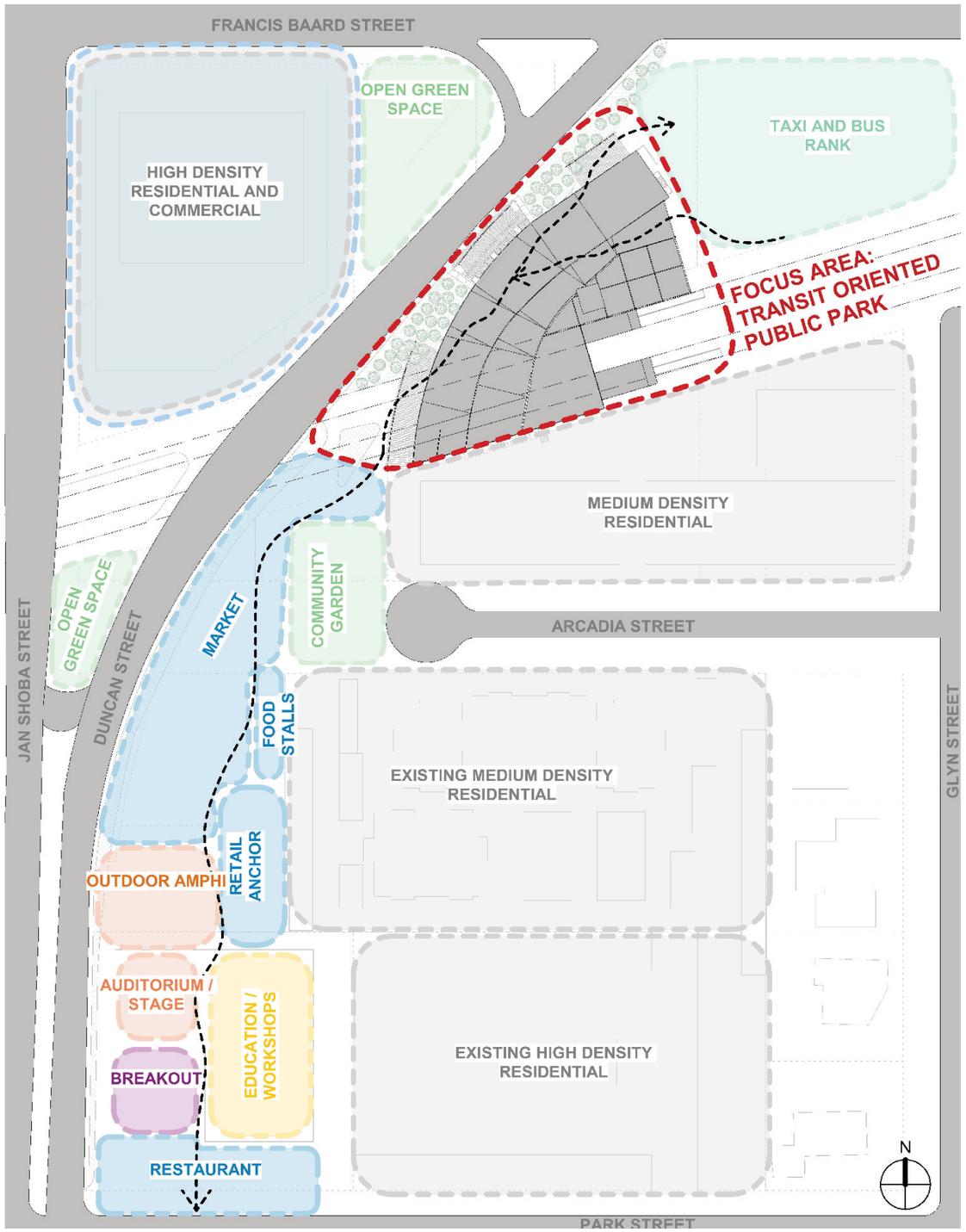


Figure 54 | Site Vision | Proposed Precinct (Author 2022)

Programmatic and Conceptual Approach

The inceptive response to these informants was the proposal of a mixed-use precinct that integrates various modes of transport while providing a multitude of services to the transient urban user (figure 54).

The predominant objective of the proposed precinct was to guide the movement of pedestrians off the busy Duncan Street and instead through the site. Next, was to integrate several modes of public transit to ensure ease of commute by merging railway, bus and taxi with pedestrian. Then, was the notion of encouraging the existing glimpses of informal trade (which act as activators in the context) through the implementation of larger market spaces. Lastly, was the introduction of diverse amenities to create opportunities for education, stimulation, recreation and business.

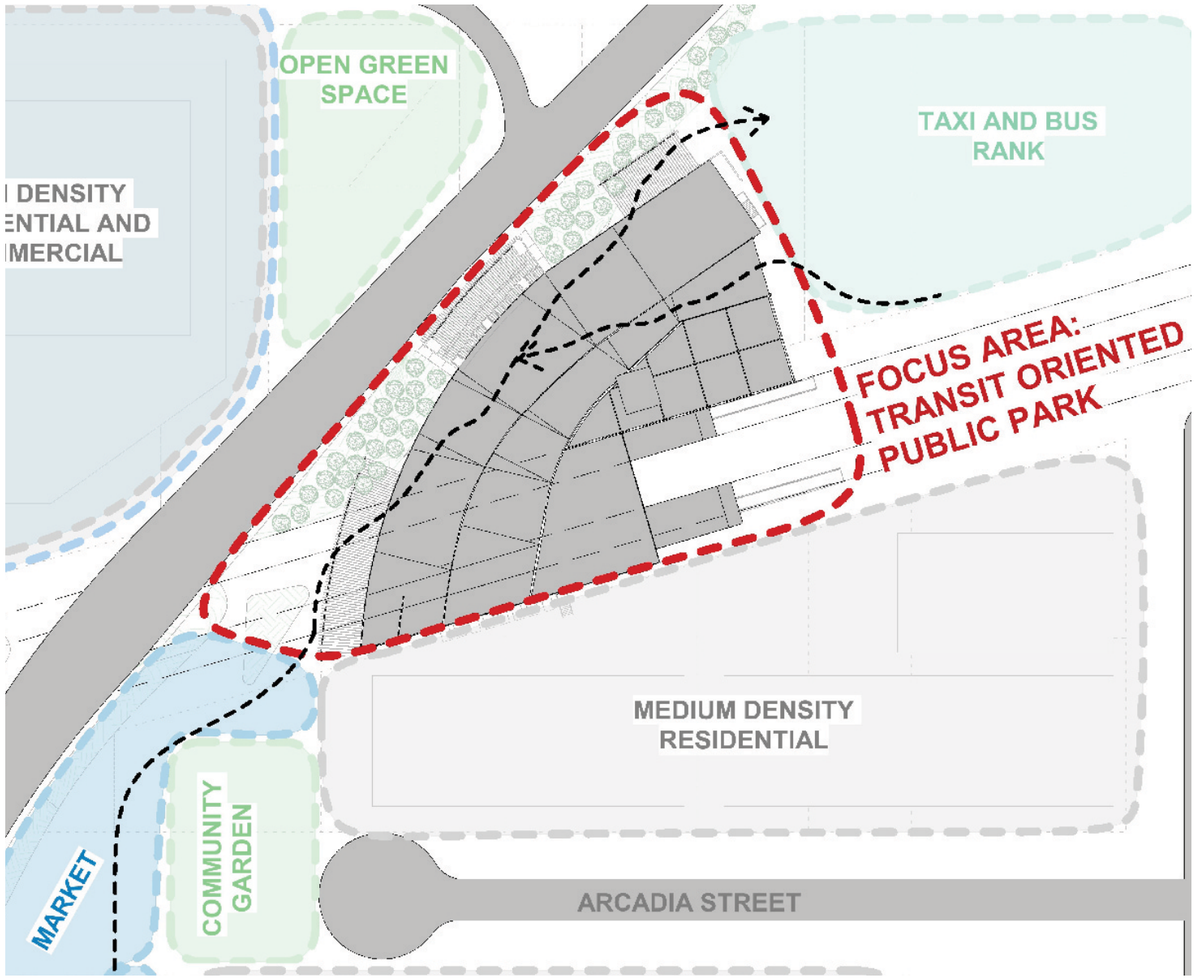


Figure 55 | Focus Area for Project (Author 2022)

A specific portion of the site was selected as the focus node within the precinct (figure 55), this was the mixed-use modal interchange which would act as a transit oriented public space. The project is envisioned as a publicly focused intervention that germinates from the need of integrated public transport. The intervention aims to stimulate user well-being while serving the transient urban user with added amenities such as co-work (work space), gathering and refuge spaces.

An appropriate client would be the Passenger Rail Agency of South Africa as there has been significant ventures by them to improve the railways and trains of South Africa (Magubane 2022). Funding may be acquired by PRASA's request to the National Treasury to shift funding from its capital budget to operational expenditure for overall upliftment of public transit (Magubane 2022).

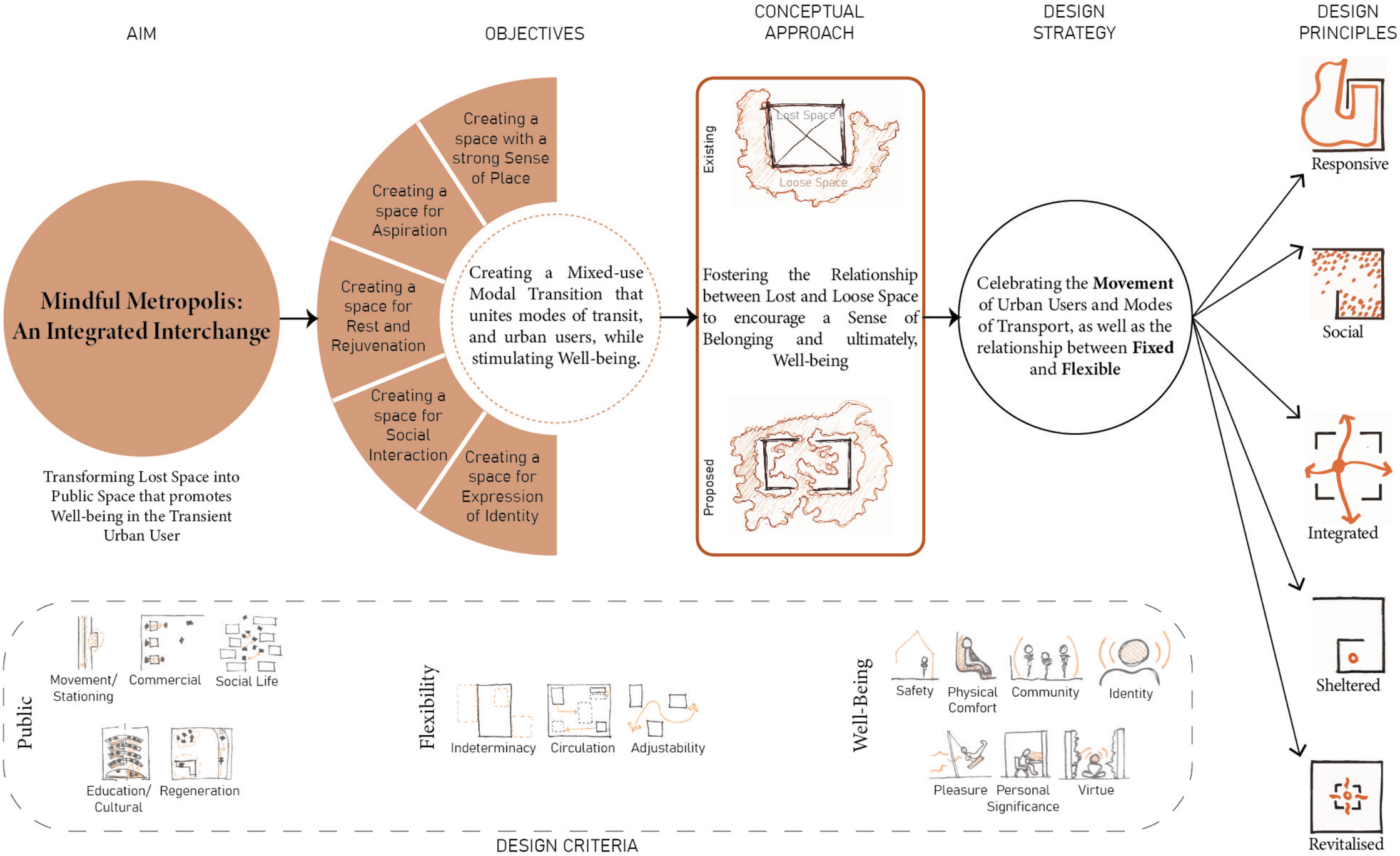
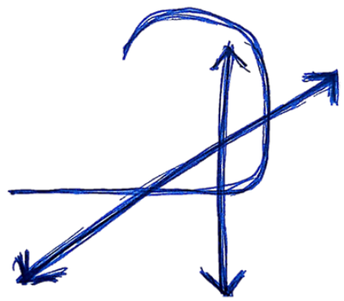
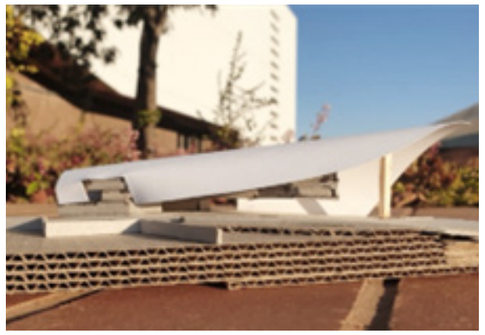
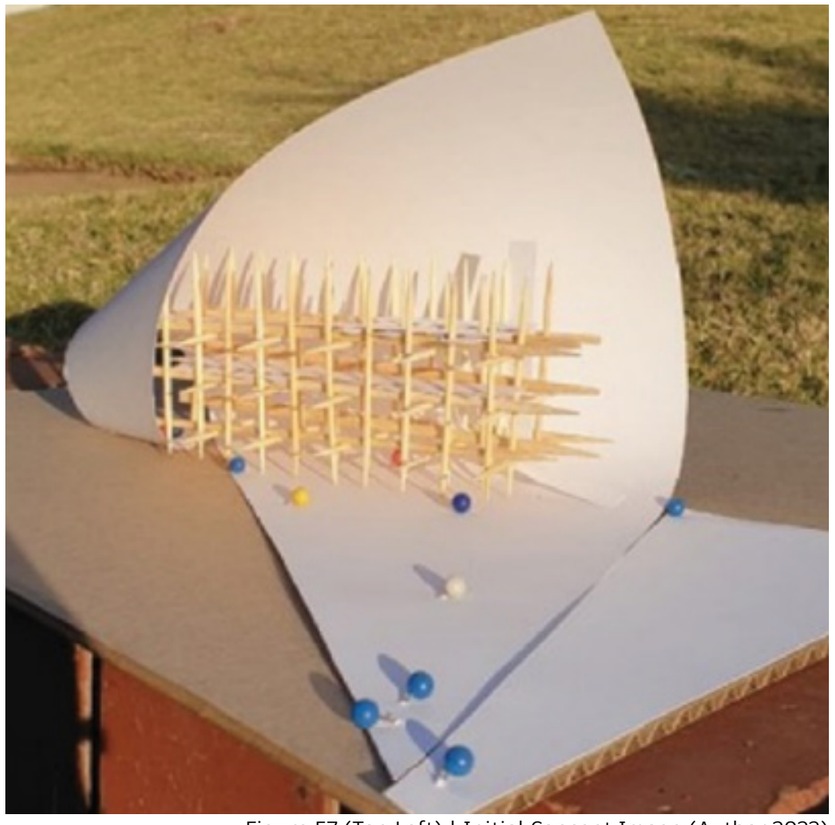


Figure 56 | Conceptual Framework (Author 2022)

In summary (figure 56), the aim of the project is to ultimately transform lost space into public space that promotes well-being of the transient urban user. The objective is to create a mixed-use modal interchange that incorporated a strong sense of place, aspiration, rest, social interaction and self-expression. The conceptual approach for this is to foster the relationship between lost and loose space to encourage a sense of belonging and, ultimately, well-being, while the design strategy is to celebrate the movement of urban users and modes of transport while negotiating these fixed and flexible notions. All of which will be governed by the five design principles (responsive, social, integrated, sheltered and revitalised) and critiqued by the three main drivers (public space, flexibility and well-being).







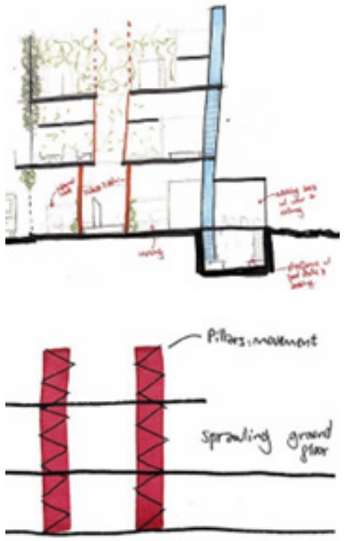


Figure 57 (Top Left) | Initial Concept Image (Author 2022)
Figure 58 | Right: Organic Shape. Bottom Left: Integration. Bottom: Organic Shape with Circulation (Author 2022)

The initial architectural response included an emphasis on integration, both in terms of integrating the modes of transport as well as the vertical integration of the building, railway and pedestrian movement (figure 57 and 58). This response also considered the use of continuous urban surface to create a dynamic space to celebrate movement. This resulted in an organic form that softly envelops the user and allows them to easily move through the space (figure 58). This concept also incorporated loose space into the design by organising determinate elements and allowing spatial appropriation in and around them to ensure a sense of belonging and overall well-being.

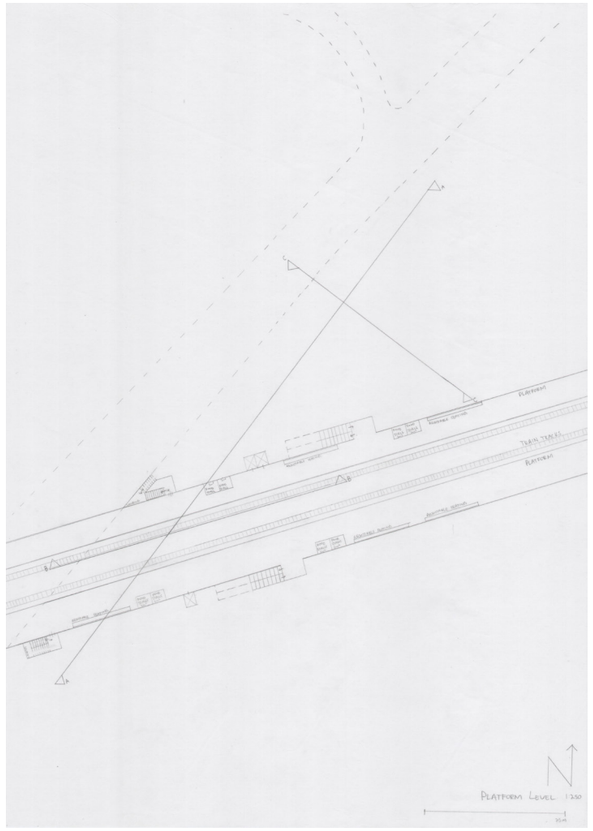


Figure 59 | Platform Level (Author 2022)

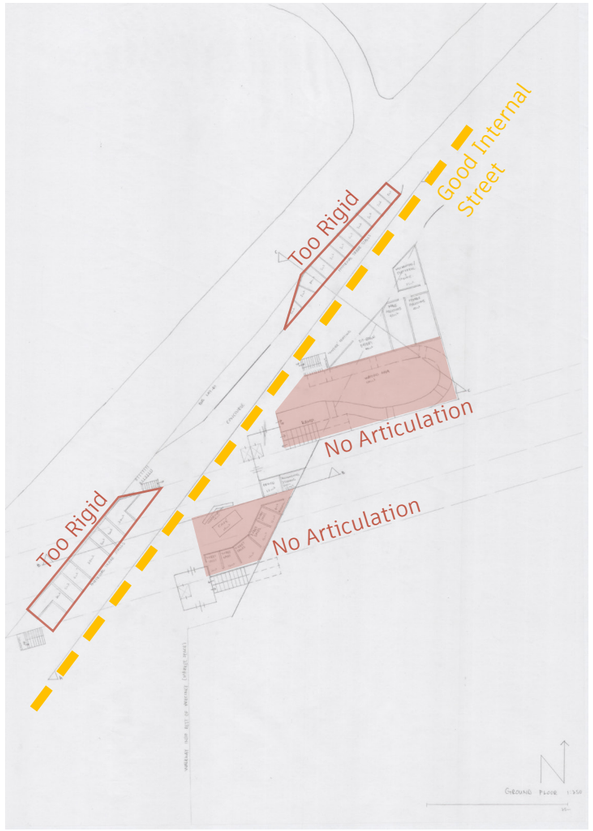


Figure 60 | Ground Floor (Author 2022)

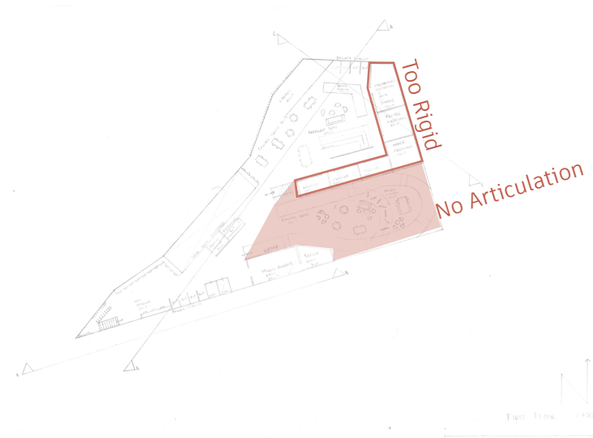


Figure 61 | First Floor (Author 2022)

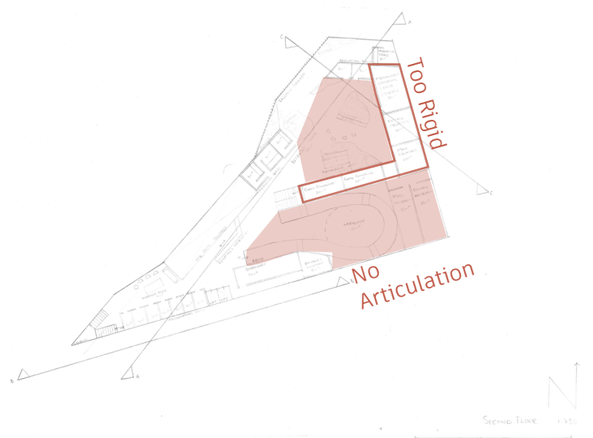


Figure 62 | Second Floor (Author 2022)

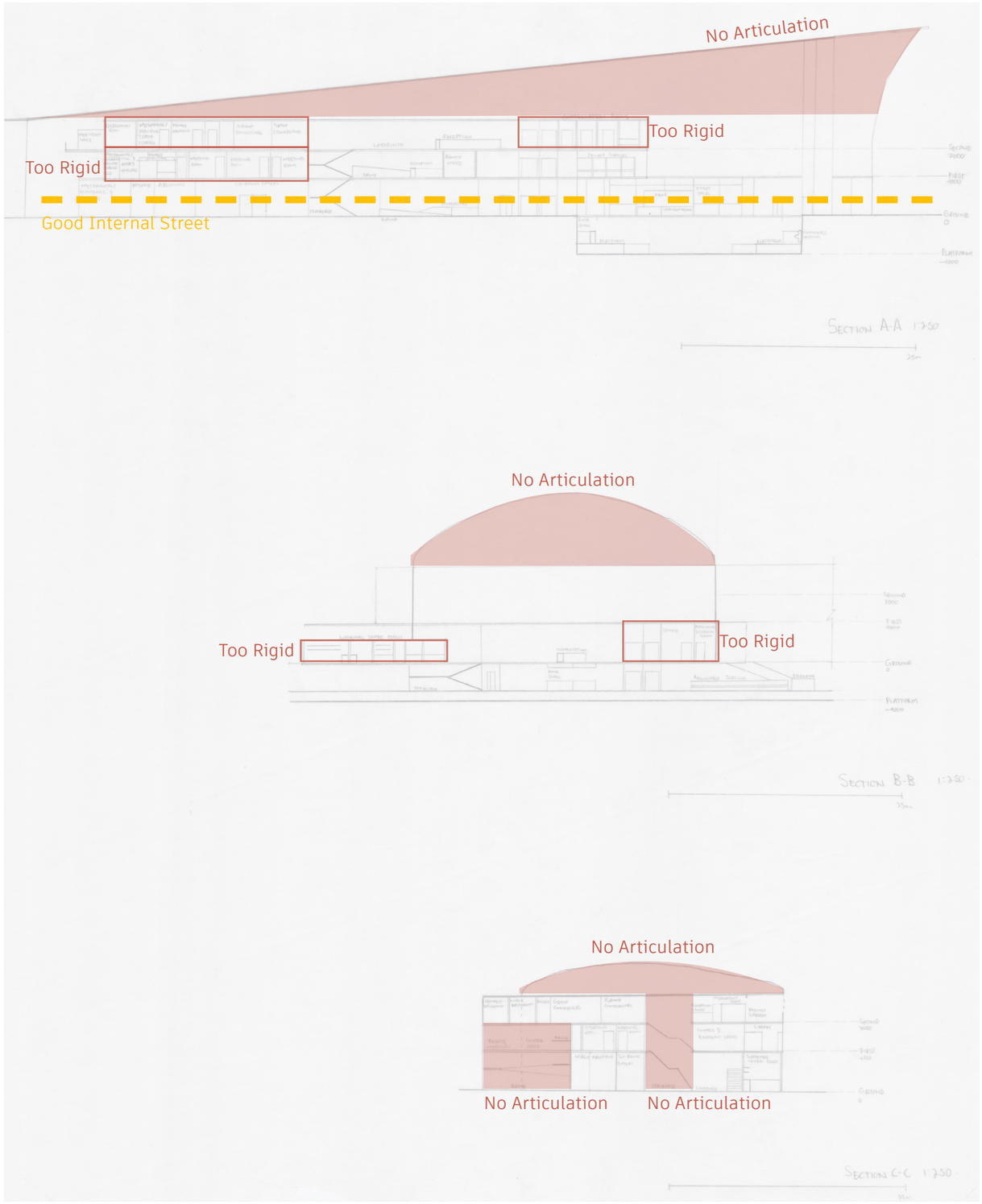


Figure 63 | Sections (Author 2022)

Critique on the initial response was that there was a need for better articulation, both of the form and space (figure 59, 60, 61, 62 and 63). This would have ensured that the design acted with intention and allowed the urban users to optimally occupy the space and use it as they please. There was also the neglect of incorporating the existing train station into the new proposal. This incorporation might have happened through a parasitic intervention or the use of the station's essential features. There was an opportunity for the entire scheme to act responsively to the user and surrounding context, whether this was in the shape of spatial appropriation, a dynamic façade and/or a reactive and defined form.

Conclusion

With the current condition of user detachment and lack of public space in the urban context, the pertinence of addressing promoted well-being in design is evident (Kataria 2021; Case 2019; Trancik 1986; United Nations 2016; Kirsten *et al* 2009). One can address this issue through the cultivation of loose space and consequent spatial appropriation (Franck and Stevens 2006; Schneider and Till 2007).

This chapter has expanded on the theoretical understanding of well-being and spatial appropriation, the site and its physical and social conditions, and relevant precedents. These informants allowed the response of the mixed-use precinct and the transit oriented public park with the intention of serving the transient urban users and stimulating well-being.

Further design exploration (in terms of articulation and incorporation of existing urban fabric) and investigation (of the spatial manifestation of appropriation and well-being) may lead to the objective of transforming this lost space into a multi-modal public space that encourages well-being.

CHAPTER THREE

Synthesis

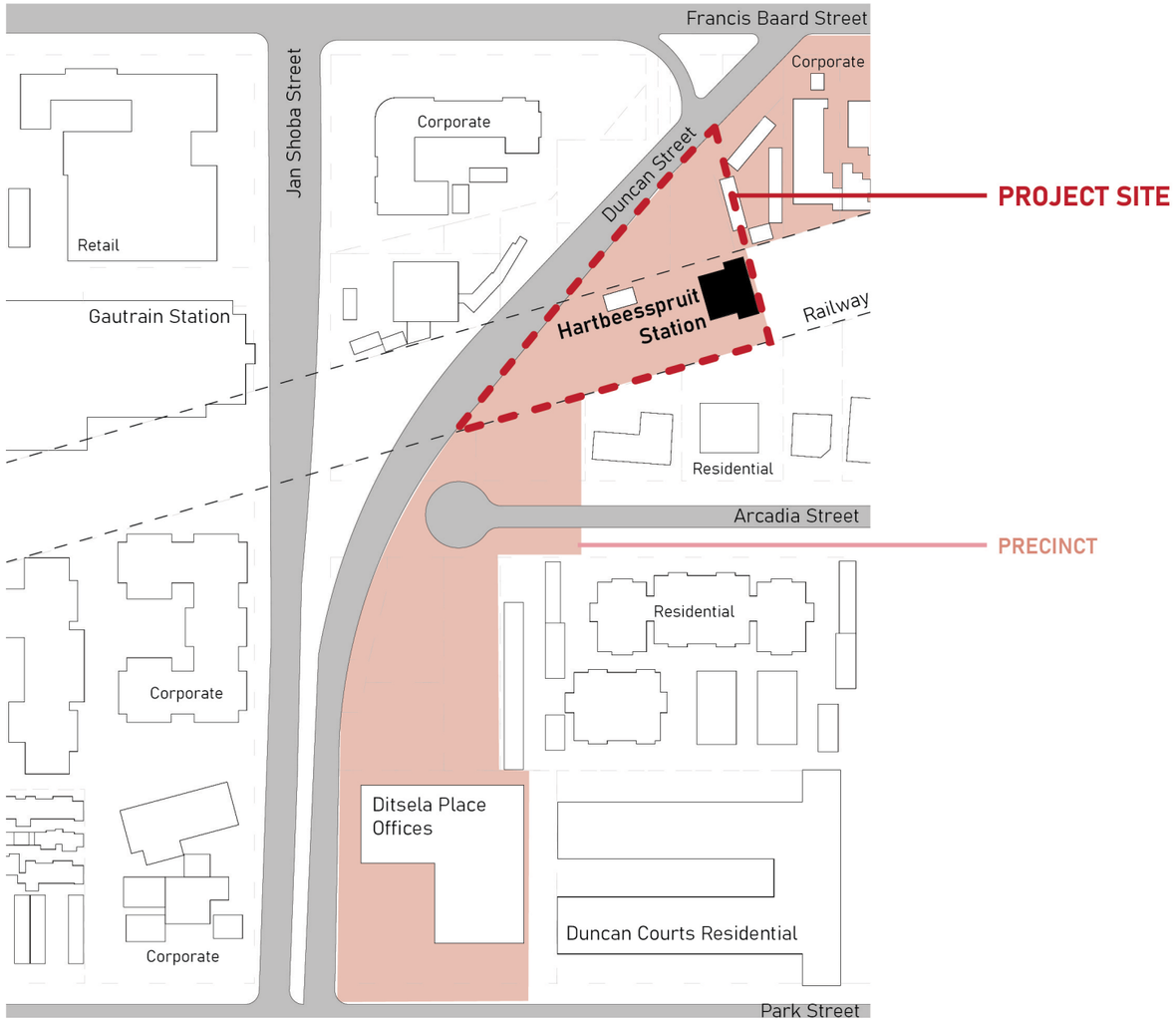


Figure 64 | Precinct and Project Site (Author 2022)

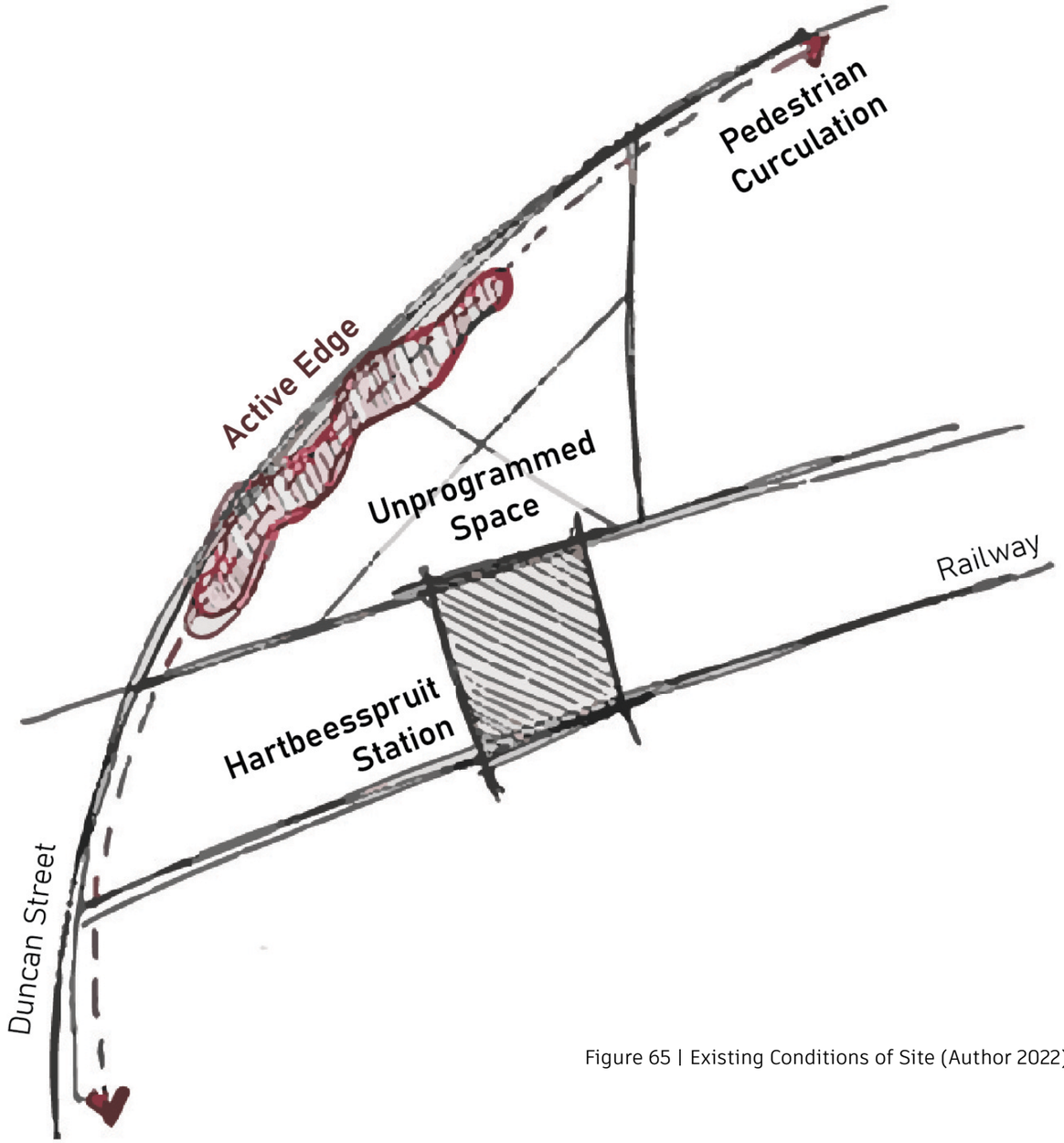


Figure 65 | Existing Conditions of Site (Author 2022)

Introduction and Intentions

The lost space that is Hartbeespruit Station imparts a sense of detachment within the urban user. The site yearns for the acknowledgement of its accommodating loose space and the cultivation thereof. If the loose space is allowed to infiltrate the lost space, the site may be activated and transformed into a convivial public space. This enhanced public space may then engender a sense of place and promote user well-being.

Hartbeespruit Station, the focus area within the project precinct (figure 64), acts as a lost space due to its site features. It comprises of the unprogrammed space in front of the station which is not intentionally designed and serves no specific purpose or positive contribution to its surroundings (figure 65). Then, it contains the neglected train station which acts as a suboptimal building, being predominantly vacant and also preventing the site from reaching its full potential occupation.

Lastly and conversely, the site does portray some loose space – the street edge that is activated by human input (Franck and Stevens 2006) in the shape of pedestrian movement and informal traders (figure 65). This poses an opportunity for the site as it constitutes for an active edge that may be cultivated.

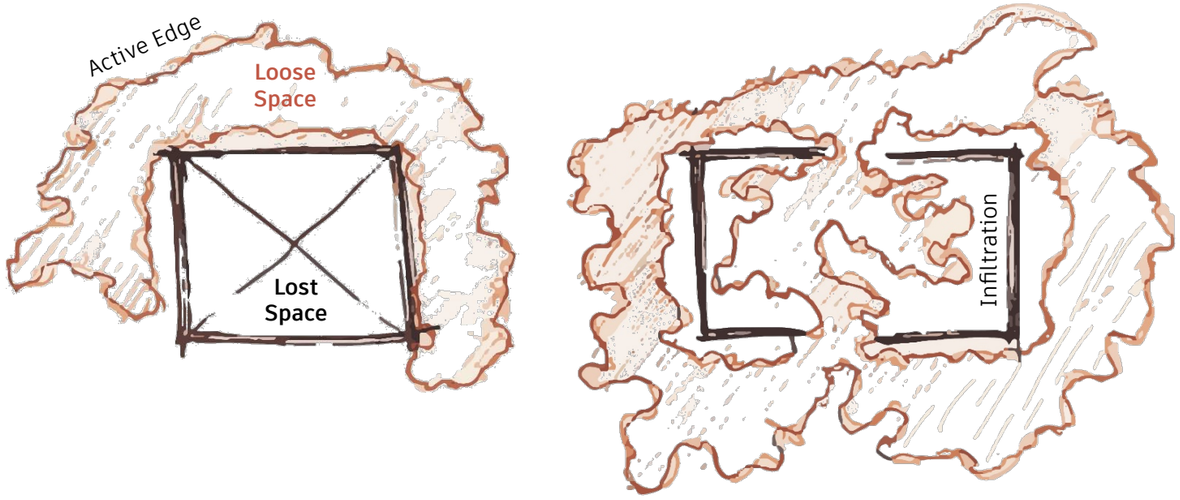


Figure 10 | Relationship between Lost Space and Loose Space (Author 2022)

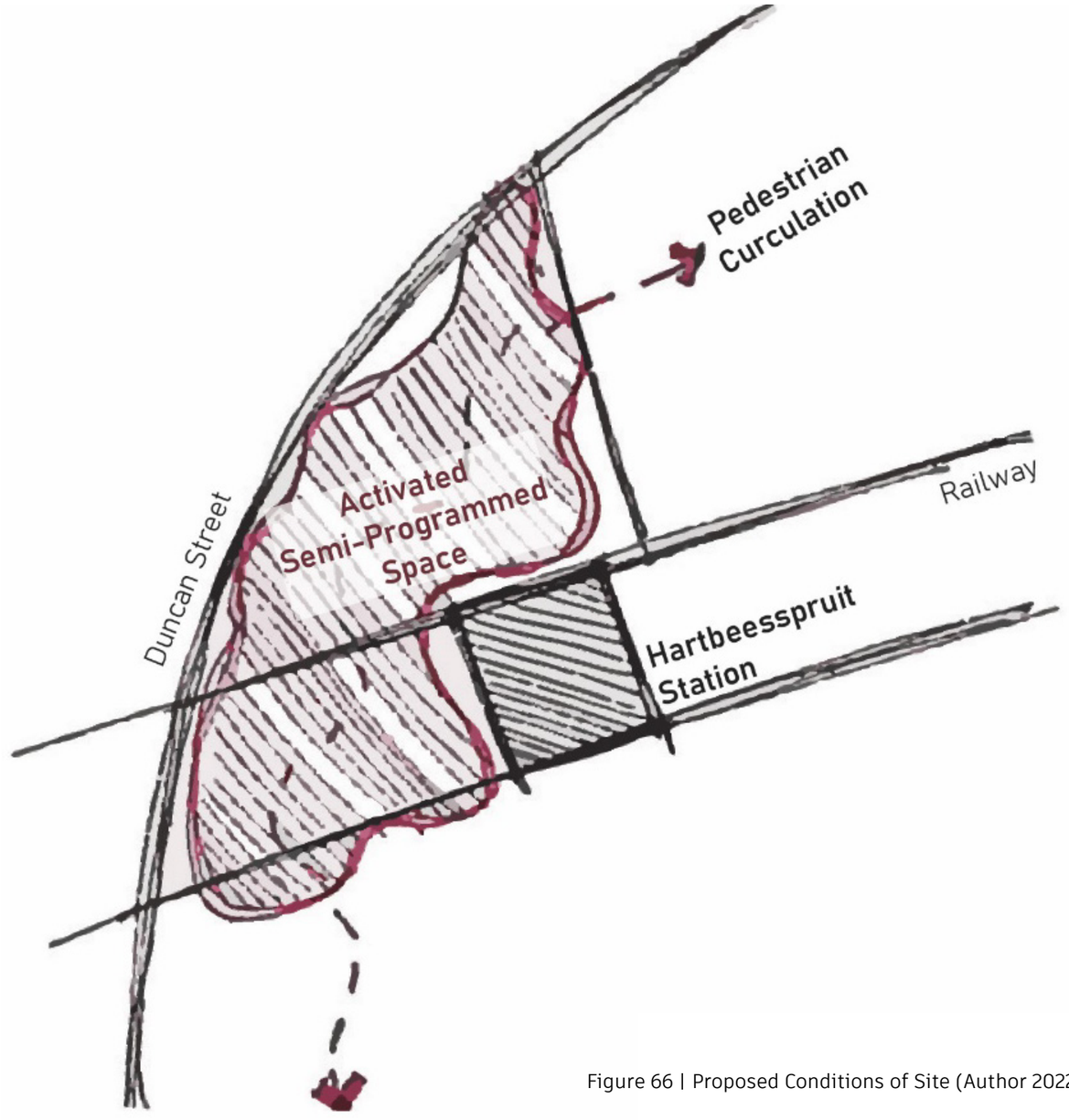


Figure 66 | Proposed Conditions of Site (Author 2022)

The conceptual intention of the project is to cultivate loose space as a means to allow it to infiltrate and consequently activate lost space.

This infiltration may physically manifest on the site by acknowledging that the active edge acts as loose space while the unprogrammed space acts as lost space. By allowing the loose space to permeate the lost space, the current underutilised site may be activated. The foremost method of promoting this activation is by guiding the pedestrian movement off the street edge and rather through the site (Gehl Architects 2015; Global Designing Cities Initiative 2016) (figure 54 and 66). This will encourage the informal traders to follow suit and provide the commuters with a more comfortable route and opportunity for lingering.

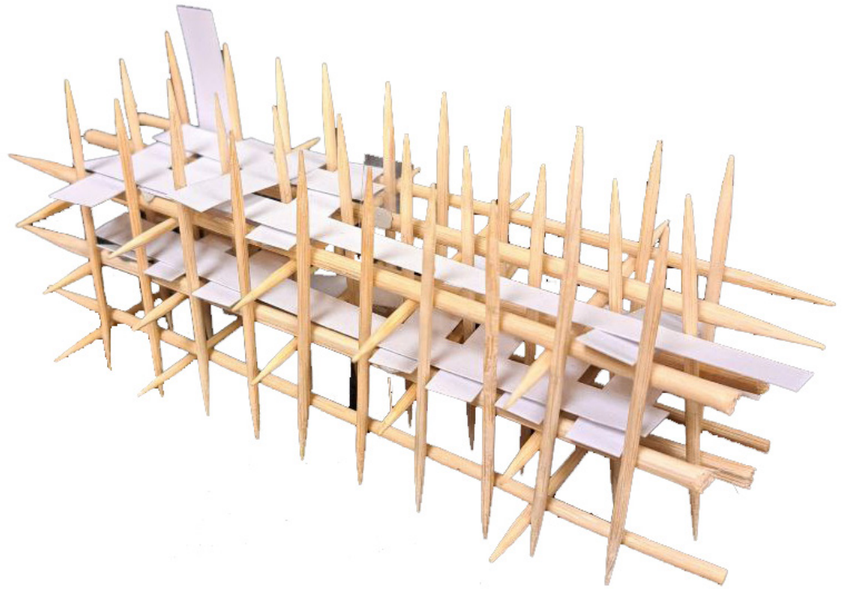


Figure 68.1 | Technical Response of Frame and Infill (Author 2022)

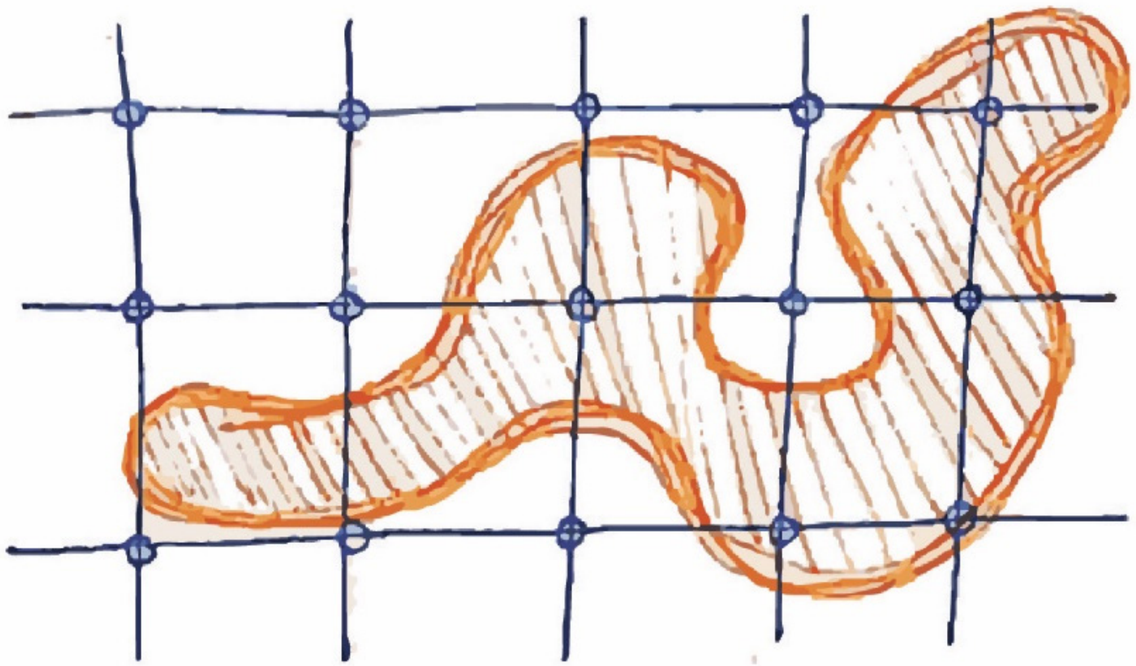


Figure 67 | Determinate Frame with Indeterminate Loose Space (Author 2022)

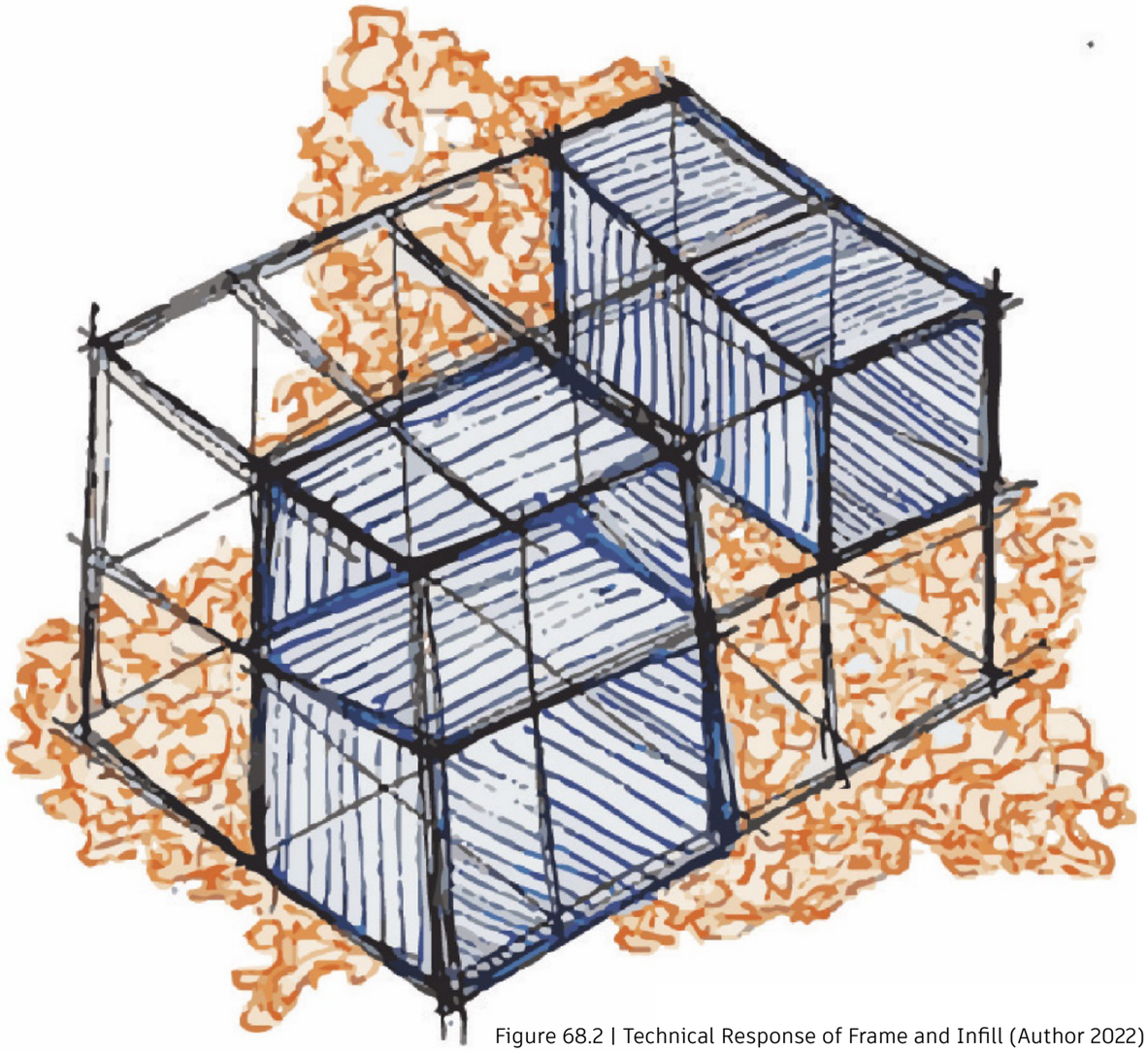


Figure 68.2 | Technical Response of Frame and Infill (Author 2022)

The conceptual intention for the project is to negotiate looseness and tightness (as coined by Franck and Stevens (2006) and also known as flexible and fixed). The response to the negotiation is to introduce permanent (determinate) and transient (indeterminate) entities to the site and allow a relationship to form between the two extremes (Schneider and Till 2007).

Dutch architect Herman Herzberger (in Schneider and Till 2007) states that the most successful loose spaces are those that act as armatures for occupation. Further, Herzberger (2007) states that by providing a permanent entity, it will constitute the frame within which change may take place.

The technical interpretation and response to the concept of negotiating fixed and flexible, is therefore frame and infill. The frame may act as the spatial determinant while the loose space and activity may act as the spatial and atmospheric infill.

Along with this response of frame and infill, the conceptual intention to celebrate the movement of the urban users may physically manifest as the continuous urban surface. In the previous chapter the concept of the continuous urban surface was explored as an organic shape that undulates from the ground up to envelope internal spaces. In this chapter, the continuous urban surface is rather explored in terms of various planes and levels as infill. This will better compliment the manifestation of the frame by allowing it to act as the determinate for the design rather than the shell-like shape.

This chapter will unpack the proposed site and building rationale as governed by the conceptual and technical intentions, along with the principles of responsive, social, integrated, sheltered and revitalising. It will present a technological and programmatic precedent and further unpack the project in terms of structure, materiality, environmental considerations and building systems.

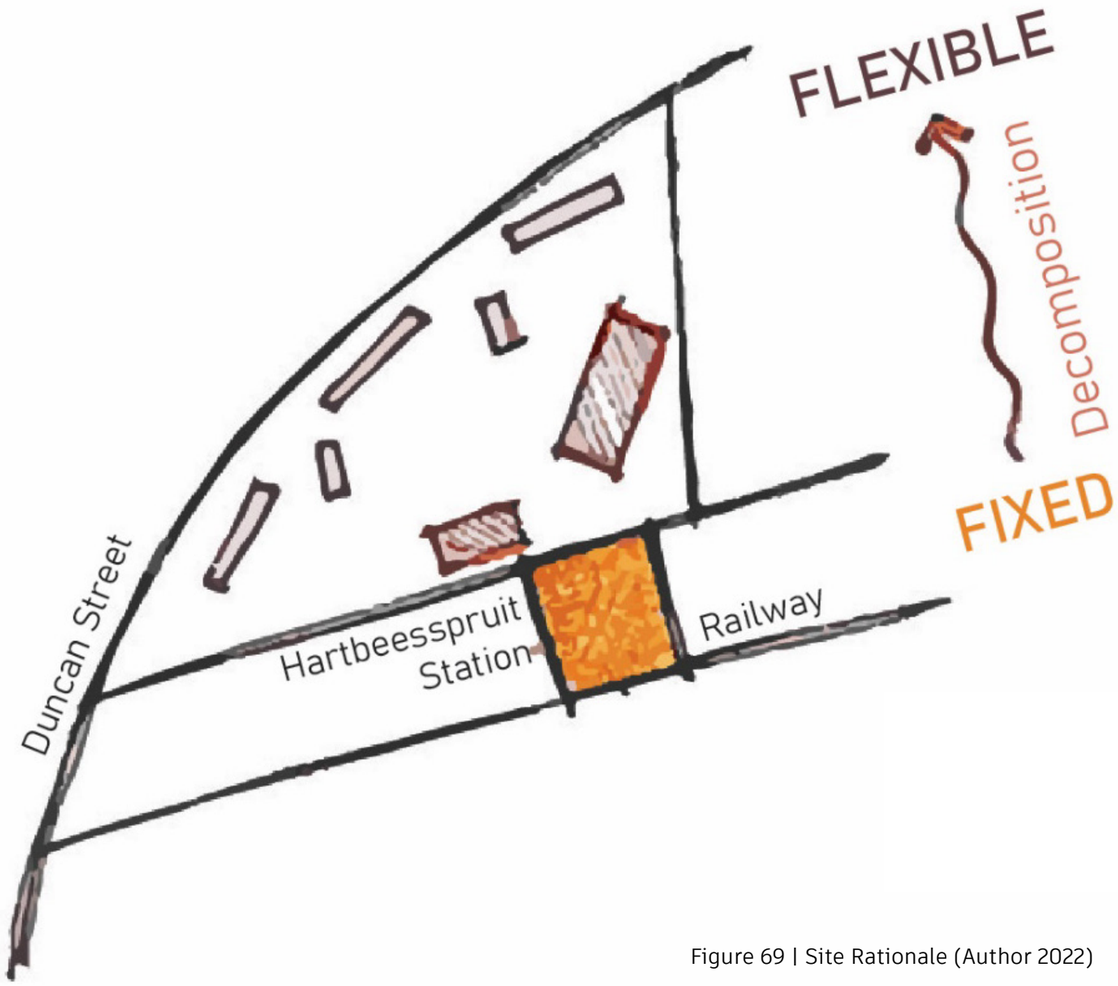


Figure 69 | Site Rationale (Author 2022)

Rationale | **Site**

The site rationale finds its origins in the conceptual relationship between the fixed and the flexible. It acknowledges the existing train station as the most fixed element on site while it considers the active edge as the most flexible element on site. The site then allows for the organic deconstruction from the fixed to the flexible to consequently encourage a relationship (integration) between the two extremes (figure 69). The proposed deviation from the existing fixed rationale allows for the introduction of more flexibility to the site. As the site experiences more flexibility, a higher level of indeterminacy may be present which will result in more loose space infiltrating the lost space (Schneider and Till 2007).

Rationale | **Frame**

The frame finds its origins in the site grid. The grid is a composite of three distinct grids that each consider a different part of the site rationale.

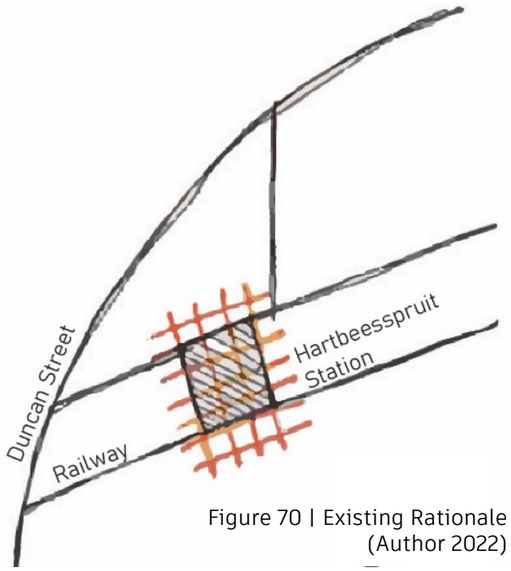


Figure 70 | Existing Rationale (Author 2022)

The first component is the existing orthogonal grid that is generated by responding to the existing site geometries (train station) (figure 70).

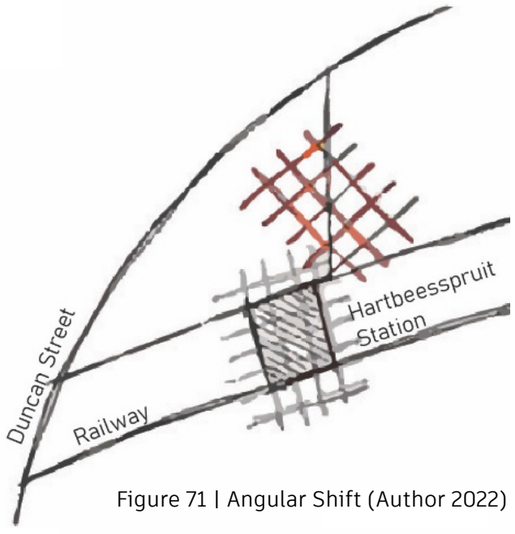


Figure 71 | Angular Shift (Author 2022)

The second component makes a clear angular shift, breaking away from the existing rationale. This shift is made to accommodate and accentuate the overall site deconstruction as well as to create of a focal point (core) within the space (figure 71).

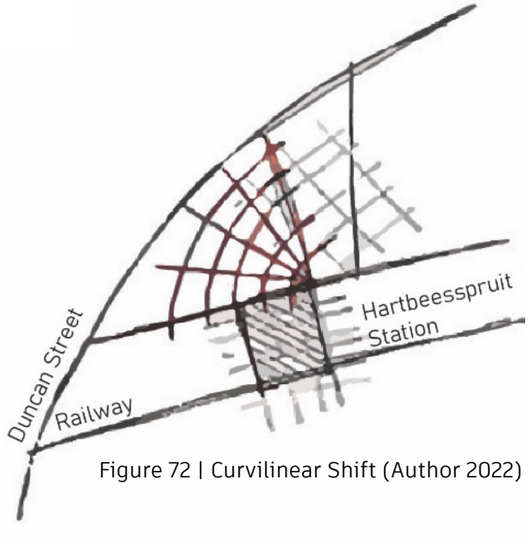


Figure 72 | Curvilinear Shift (Author 2022)

The final component makes an additional curvilinear shift, again breaking away from the existing and angular rationales. This alteration is made to accommodate the further site deconstruction as well as increased flexible space (figure 72).

The grid (frame) and site rationale informs the formal language of the project. They determine the location of massing as well as its relationship with voids and activities.

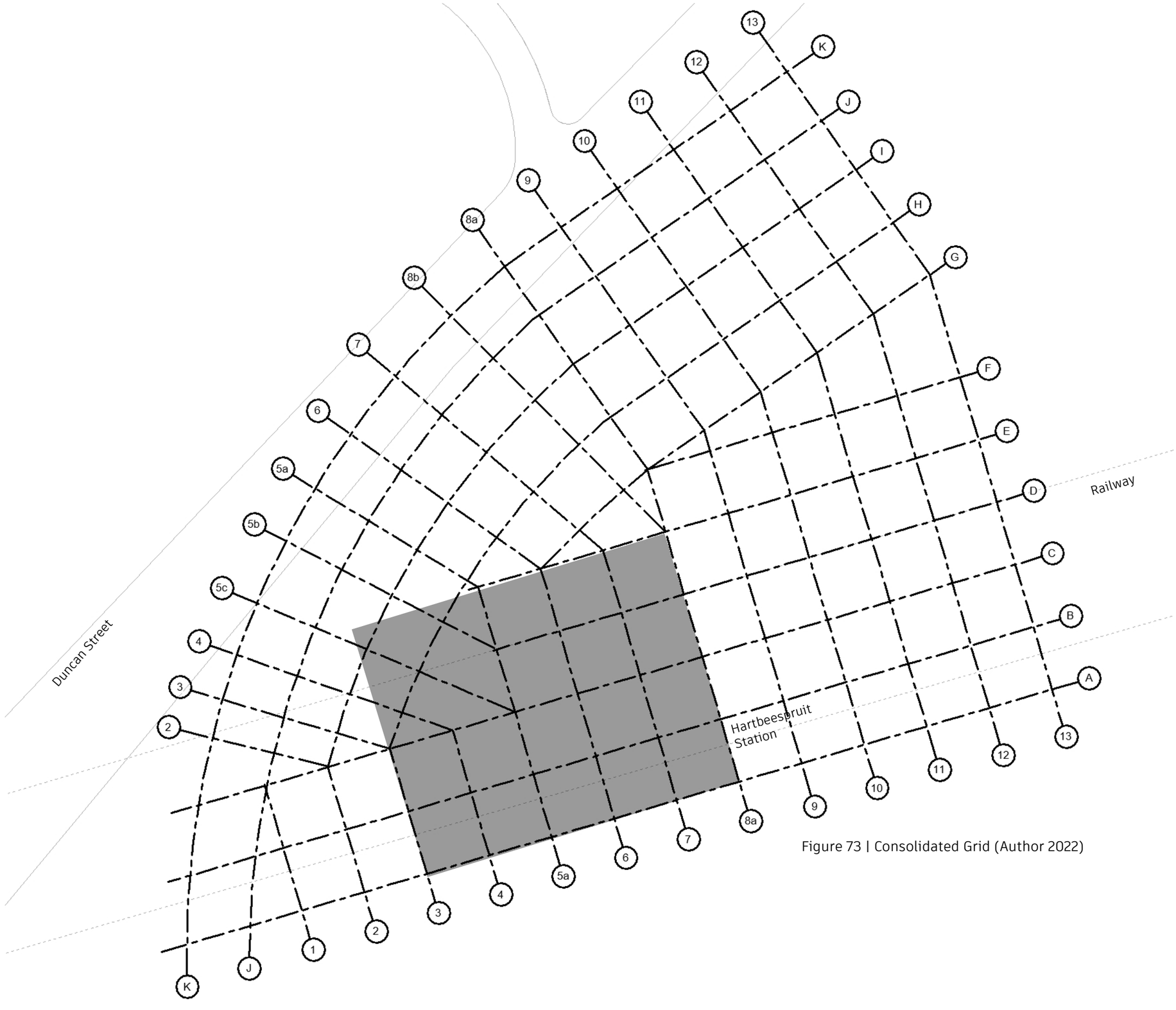
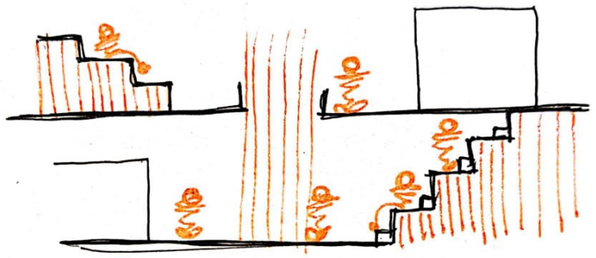


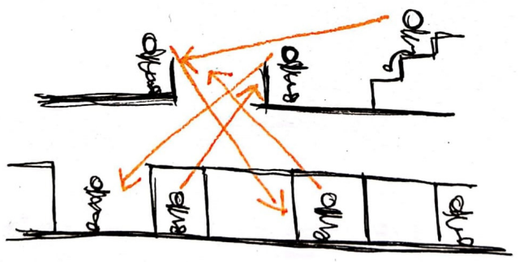
Figure 73 | Consolidated Grid (Author 2022)

Internal Street

Customizable Trader Stalls



Various Planes and Integration thereof



Reciprocity between Planes

Figure 74 | Watershed (Author 2022)

Internal Street and Integration with Market and Co-working

Various Planes integrated by Communal Space

Co-work Typologies overlooking Market Space

Figure 75: Watershed (Wolff Architects 2015)

Technological and Programmatic Precedent

The Watershed in the V&A Waterfront (Cape Town) by Wolff Architects serves as a precedent for the spatial application for public space with the added programme of co-working. The precedent informs the project in terms of types of spaces, configurations and positioning of programmes.

The project demonstrates how a work-space agenda may play a role in the formation of the city which serves interests beyond a business incubator (Wolff Architects 2015). The architects' aim was to increase the intensity and diversity of human interactions in the city, this was achieved by integrating a market, exhibition venue, rentable office space and green spaces (Wolff Architects 2015). The project proposes to set up an urban network by introducing a streetscape within the shed (Wolff Architects 2015). Urbanity is emphasized within this space through the street acting as a means to host the public space within the larger business incubator (market) and by allowing the tenants to customise their individual stalls as they please (Wolff Architects 2015). The high pedestrian traffic on the internal street encourages the popularity of the space and creates 24-hour activity within it (Wolff Architects 2015). Over the market space hovers the first floor hosting the co-work spaces and presenting large cut-outs in its floorplate. These cut-outs and various planes allow reciprocity and social integration between the activities on both the lower and upper floors (Wolff Architects 2015).

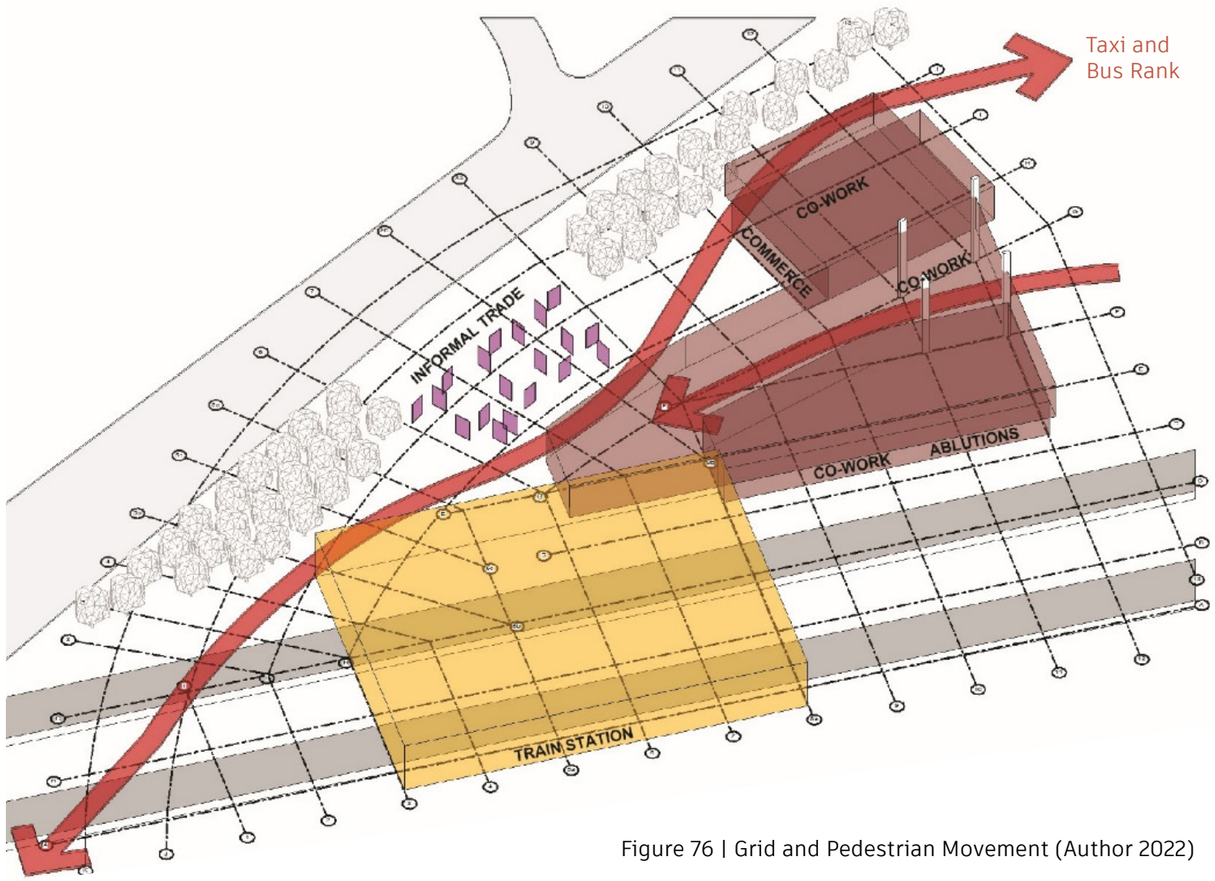


Figure 76 | Grid and Pedestrian Movement (Author 2022)

Figure 77 | Existing Train Station.
Left: Ramp and underside of existing floor plate. Top Right: Existing Floor plate. Bottom Right: Existing Ramps and part of Floor plate.

Rationale | **Building**

The building rationale is mainly informed by the grid, pedestrian circulation, existing train station and accommodation list. The grid has informed the architecture by it acting as a guide for the frame within which the fabric and spaces may fill. The significance of pedestrian circulation (Gehl 2010) informed the design by moulding the spaces according to the movement through the precinct (either to the taxi and bus rank, or to the market space and the rest of the precinct) (figure 76).

The existing train station informed the design by it acting as a fixed entity for the architecture to incorporate and form around. The decision was made not to use the train station as is, seeing as it is not operating successfully in its current condition (refer to the site analyses in Chapter 2), but rather to preserve its essence and extend upon that. This means that the train station's floor plate, ramps and platforms (figure 77) would be incorporated into the newly proposed train station. These elements portray the essence of the train station due to them being the main means for transferring users through the space and onto the platforms.

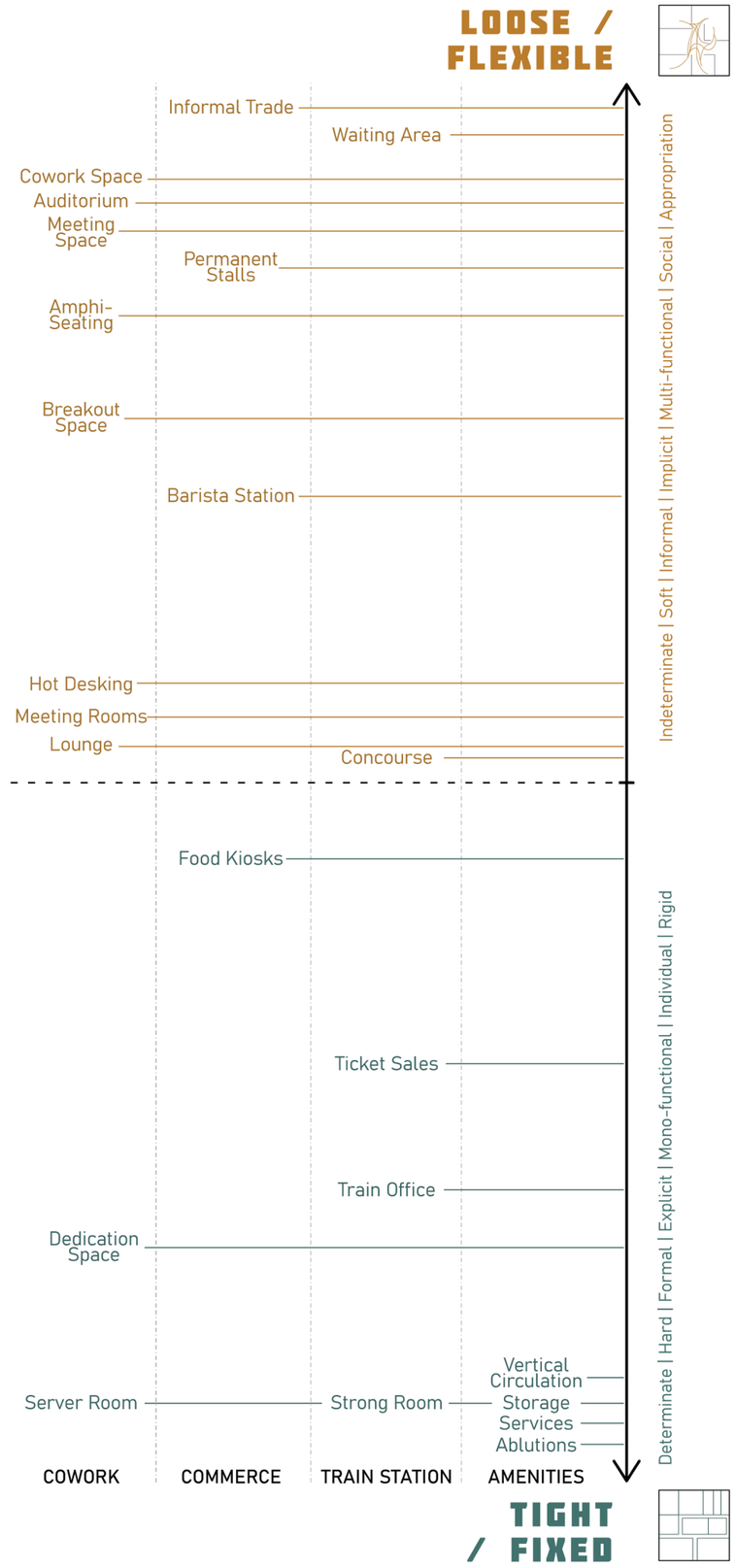


Figure 78 | Accommodation List – Determinacy Framework (Author 2022)

Finally, the accommodation list informed the development of the proposal as it considers the fixed and flexible natures of programmes. A framework was introduced to plot programmes within and consequently define their spatial determinacy or indeterminacy (figure 78). This allows the programmes and their consequent massing to be positioned on the site according to the site rationale as well as the grid rationale where they correlate with fixed and flexible notions.

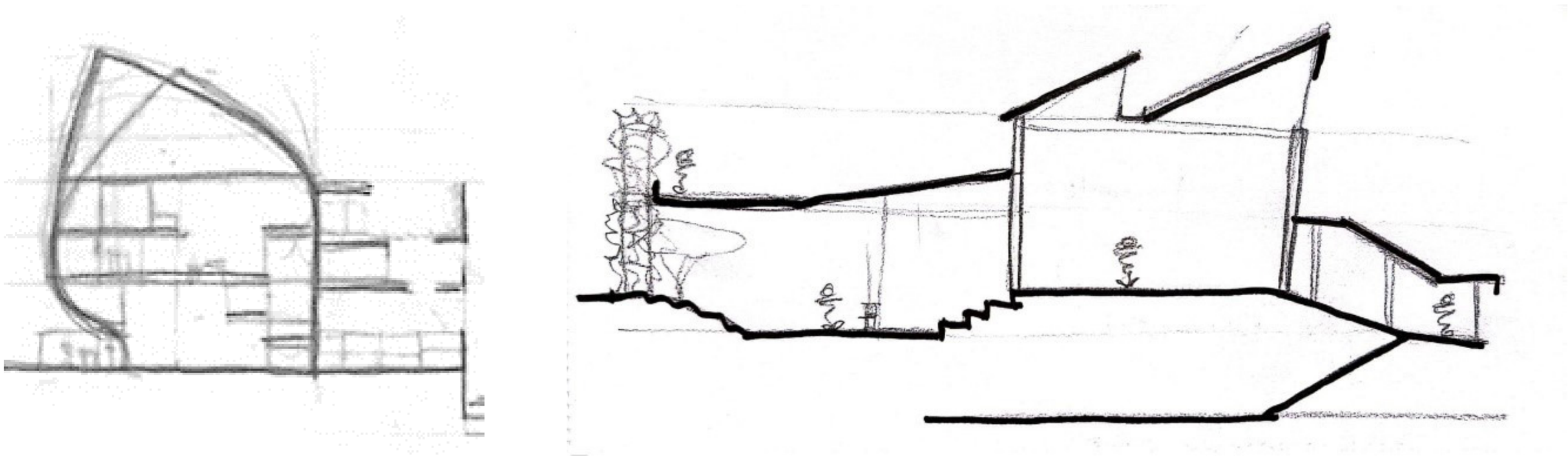


Figure 79 | Shift from continuous urban surface as enveloping shell (left) to continuous urban surface as integrated planes (right) (Author 2022)

With the project's predominant focus being placed on the transient urban user (pedestrian commuter), movement acts as an essential aspect and needs to be celebrated within the design. The project does this in many ways, such as it ensuring a public nature, accessibility and integration, but the foremost way in which it celebrates movement is by incorporating the continuous urban surface into the design. The implementation of the continuous urban surface will allow for a dynamic notion throughout the space (Zaha Hadid Architects 2013) which is synonymous with the routine of commuters. There is, however, the introduction of lingering opportunities throughout the space that allows the users to break away from this routine if they please.

The first architectural response to incorporating the continuous urban surface was to wrap the internal space and structure in an organic shell-like skin (figure 79). The intention of this iteration was to blur the line between floor, wall and ceiling as a means to express space as an uninterrupted and accessible entity. This iteration was, however, unsuccessful as it allowed the shell to act as the determinant which resulted in a poor spatial quality with little articulation and order.

A pivotal shift was then made to rather place the focus on the structure which the shell enveloped. By focusing on the structure, the concept of frame and infill was able to become the determinant for space and it allowed for the previous organic response to take shape in loose spatial quality and the roof layout. With frame and infill leading the design process, the continuous urban surface could be interpreted as a more ordered concept and rather took the shape of varying levels, planes, steps/stairs, ramps and platforms (figure 79). The integration of this continuous urban surface provided the design with multiplicity and loose uses of space (Schneider and Till 2007).

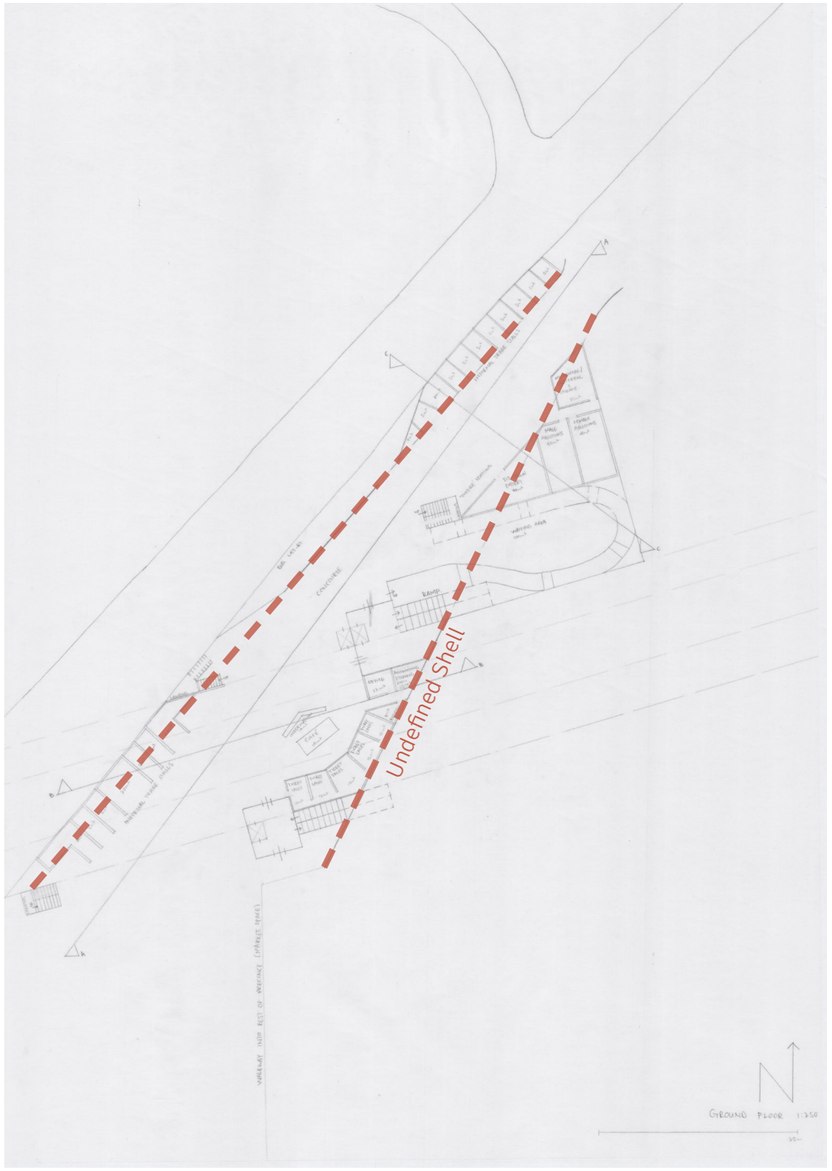


Figure 80 | Initial Architectural Response (Author 2022)

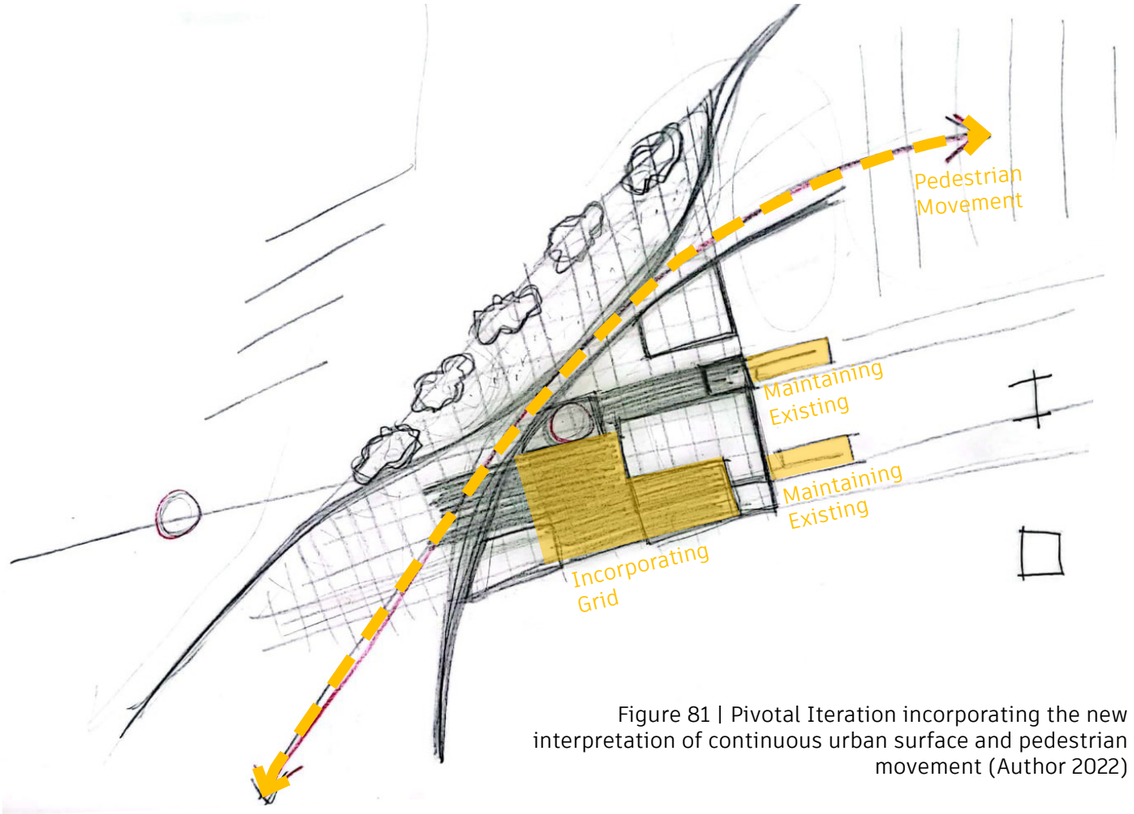
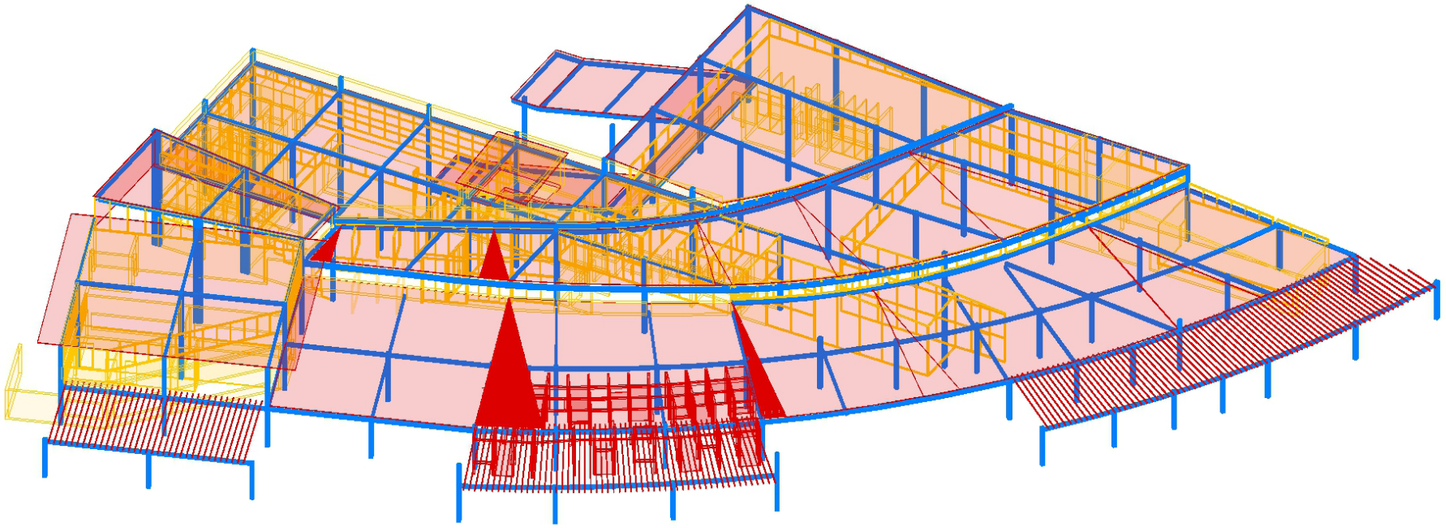
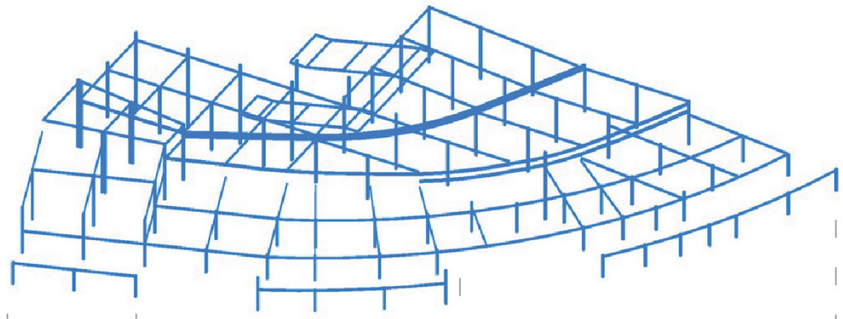


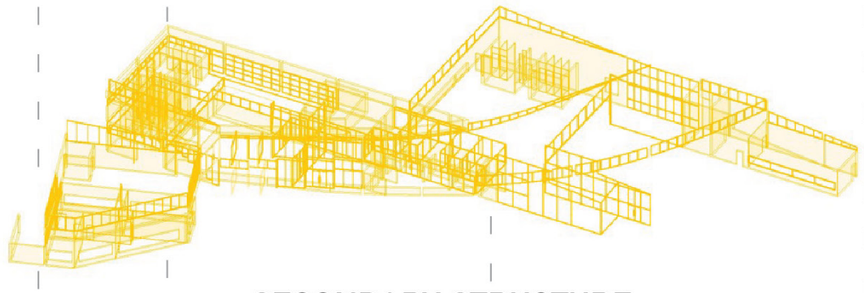
Figure 81 | Pivotal Iteration incorporating the new interpretation of continuous urban surface and pedestrian movement (Author 2022)

Figure 82 | Latest Iteration (Author 2022)

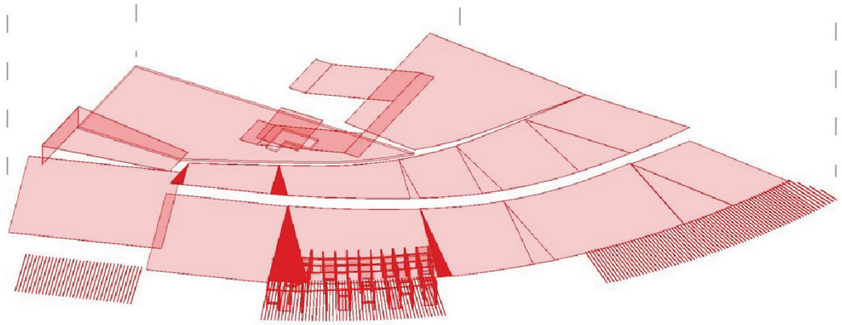




PRIMARY STRUCTURE
Load-bearing Concrete Frame into Timber Frame



SECONDARY STRUCTURE
Brick and Glass Infill



TERTIARY STRUCTURE
Lightweight TImber Frame and Panels

Figure 83 | Structural Hierarchy (Author 2022)

The architectural outcome embraces the notion of frame and infill. This notion is evident in the structural hierarchy - the primary structure acts as the conceptual frame and comprises of a load-bearing concrete frame which transforms into a timber frame where the load lessens. The concept of infill is perceptible in the secondary structure which comprises of brick and glass infill. And a certain amount of flexibility is present in the tertiary structure which comprises of lightweight timber framing and panels (for adaptable informal trade stalls) and the lightweight roof.

The final architectural product presents the ground floor and its relation to the larger precinct; it being betwixt the bus and taxi rank, and the greater market space. Firstly, the ground floor exhibits the existing train station floor plate and ramps (indicated in grey in figure 82), it then shows the train station addition extending to the west and straddling the railway. This floor further comprises of the introduction to the co-work space (on the first floor) in the shape of amphi-seating. This space acts as a loose space due to it providing multiple ways of using it (gathering, meeting, addressing). It also serves as the main means for vertical circulation and integration between the two floors. The food kiosks are also present on this floor, serving both fast and slow users – fast users on their route to or from the rank, and slow users while they enjoy the outdoor, gathering or work spaces. Furthermore, is the berm to the north-western part of the site, which hosts the informal trading stalls, informal stage and lingering spaces. These are all loose spaces as they are adaptable and open to interpretation in terms of their usage. The informal trader stalls comprise of lightweight timber framing with panels for customisation by traders.

Figure 82 | Ground Floor NTS (Author 2022)

The first floor hosts the co-work programme (figure 84). It endeavours to serve users that need a space to work, wait or study and does this in a more flexible way as the spaces are customisable and multi-purpose. The floor once again presents the double volume amphi-seating that allows users both visual and physical access. The first floor comprises of various ways of working, both indoors and outdoors. There are private meeting spaces, the covered balcony, lounge, hot desks, adaptable co-work area and a small auditorium. The auditorium spans over the ground floor walkway into the site, consequently defining this entrance. It also acts as a space for meetings and gatherings which is flexible in the sense that it may be partitioned off to form smaller auditoria spaces within it. The first floor acts as a means for passive surveillance in the way that it looks onto the courtyard space on the ground floor as well is into various of its own interior spaces due to glazed partitions.

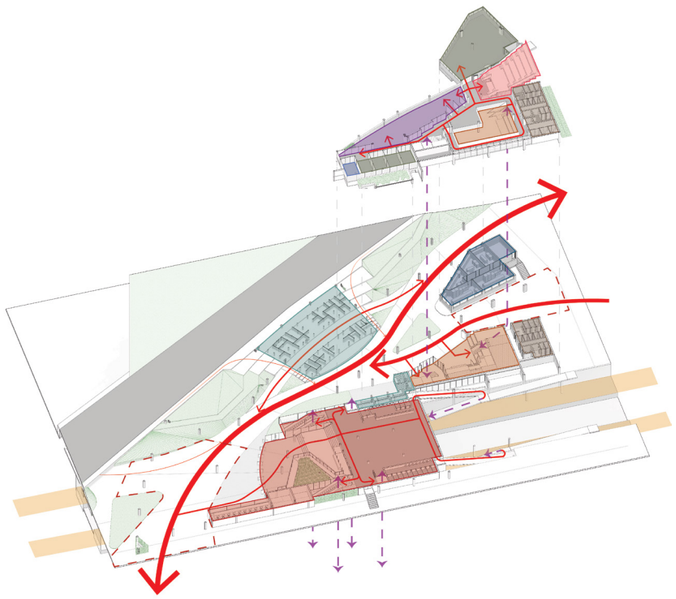


Figure 84.2 | Proposed Spaces and Circulation (Author 2022)

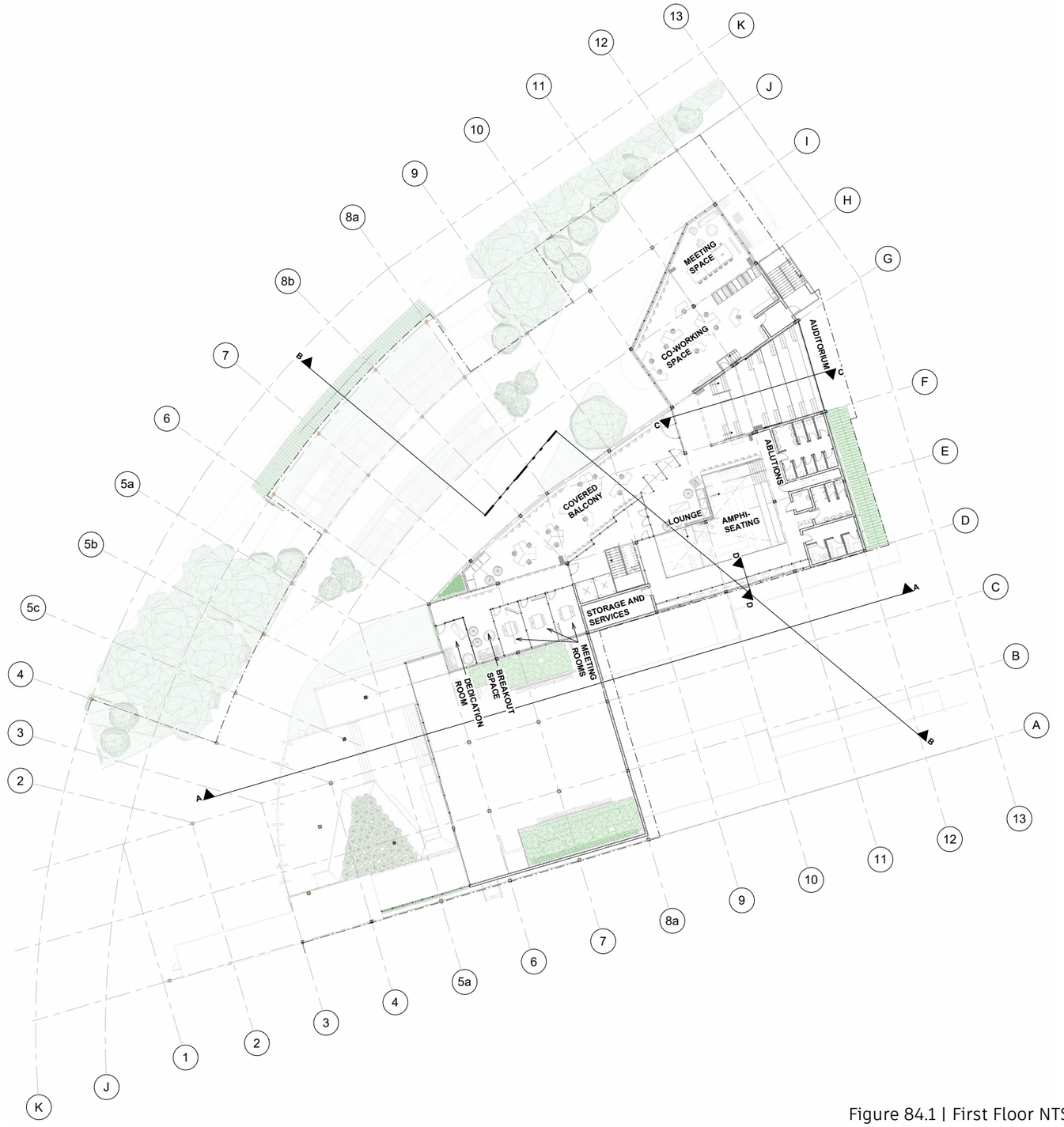


Figure 84.1 | First Floor NTS (Author 2022)

All of the spaces on both the ground and first floor are united by the perceptible frame running throughout as well as the large overarching roof structure embracing it (figure 85).

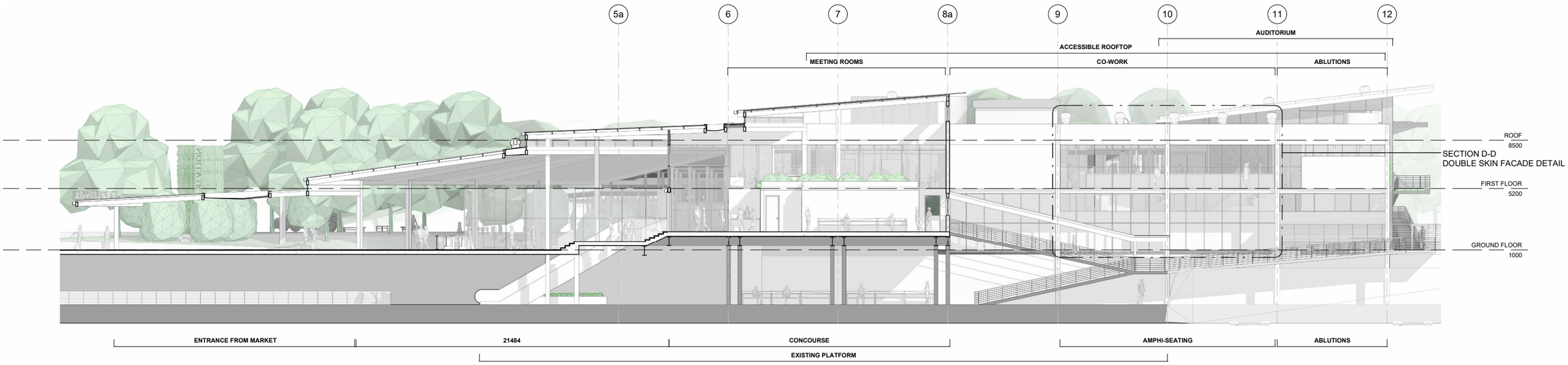


Figure 85 | Sections showing Frame and Roof NTS (Author 2022)

Materials and Systems

The material intent stems from the aim to provide a space that encourages well-being, public access, sustainability and safety. In terms of well-being, materials were chosen according to their ability to communicate warmth and familiarity, as well as their effects on indoor lighting quality (Building Centre 2017). In terms of public accessibility, materials were chosen according to how they ensure visual access, as a means to prevent a feeling of exclusion, as well as the material's regular presence in the streetscape - by incorporating the everyday element, the user will not perceive a boundary into the public space (Wenthal, 2011:164). In terms of environmental considerations, materials were chosen according to their local availability and longevity (Forestell 2020). As public well-being is threatened by industrial materials and their manufacturing processes, the intent is to introduce more natural materials in the design (Gattupalli, 2022). Natural materials have negligible carbon footprints and therefore help to control energy consumption, develop renewable energies and build local circular economies (Gattupalli, 2022). Lastly, in terms of safety, materials were chosen according to their structural integrity and ability to resist fire.

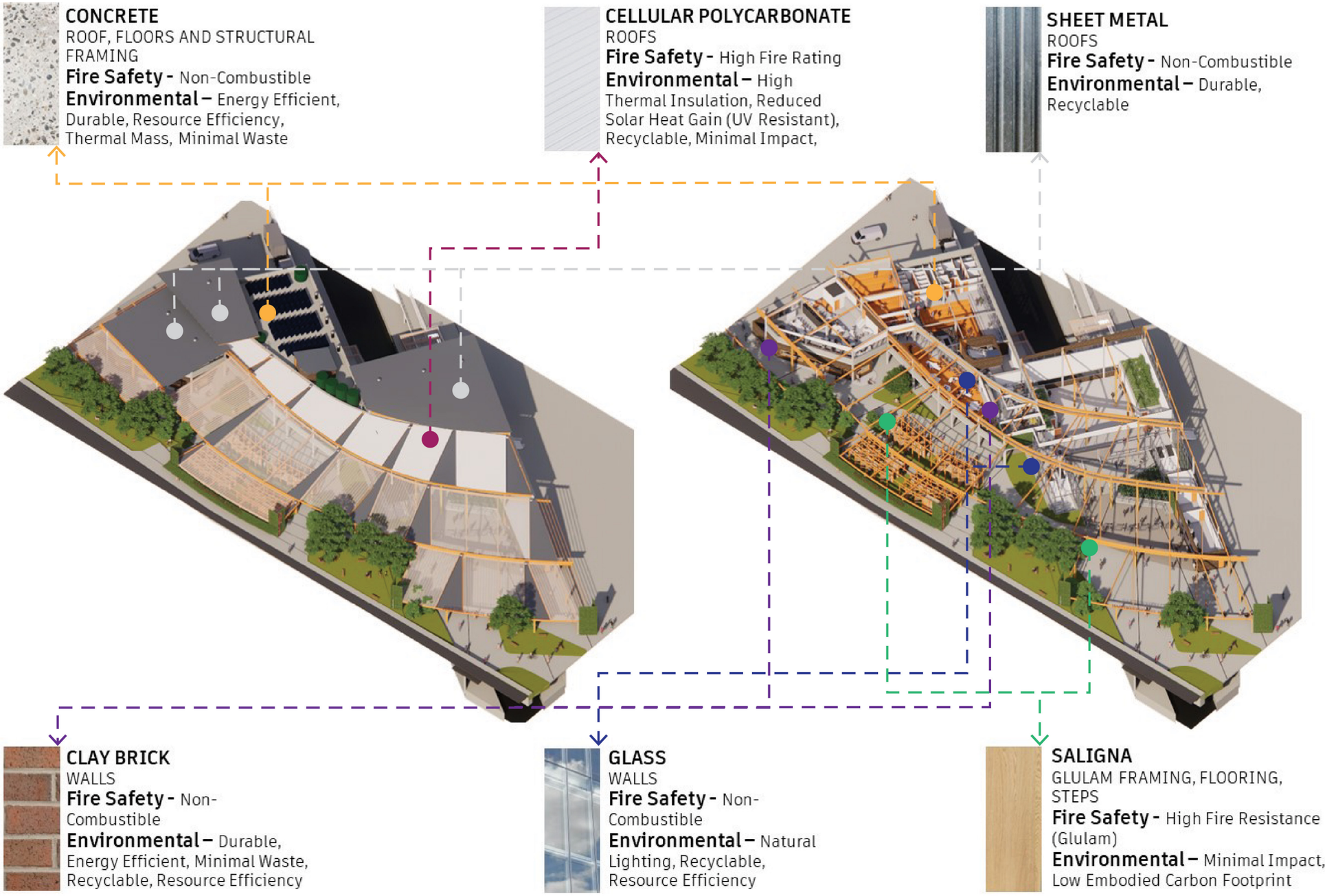


Figure 86 | Material Considerations (Author 2022)

The predominant materials chosen for the project are concrete, Saligna timber, clay brick, glass and cellular polycarbonate sheeting (figure 86). Concrete is prevalent in the structural framing, floors and roofs. It was predominantly chosen for its structural integrity, but also for its fire performance (non-combustibility) (SABS 2011) and sustainability (energy efficiency, durability, thermal mass and minimal waste) (Balogh 2020). Saligna timber is prevalent in the structural framing (as glulam components), flooring and steps. It was predominantly chosen as a biophilic intervention, but also for its fire performance (glulam having a high fire resistance) (Timberlab 2015) and sustainability (minimal environmental impact and low embodied carbon footprint) (Designing Buildings 2021).

Clay bricks are prevalent in the walls. It was predominantly chosen for its familiarity in the urban fabric, but also for its fire performance (non-combustibility) (SABS 2011) and sustainability (durability, energy efficiency, minimal waste and recyclability) (Go Smart Bricks 2018). Laminated safety glass is used in curtain walls and clerestories. It was predominantly chosen for visual accessibility and indoor lighting quality, but also for its fire performance (non-combustibility) (SABS 2011) and sustainability (natural lighting, recyclability and resource efficiency) (HMC Architects 2018). Cellular polycarbonate sheeting is employed in the roof. It was predominantly chosen for natural daylighting, insulation and aesthetic performance, but also for its fire performance (high fire rating) and sustainability (high thermal insulation, reduced solar heat gain, recyclability and minimal environmental impact) (Palram South Africa 2020)

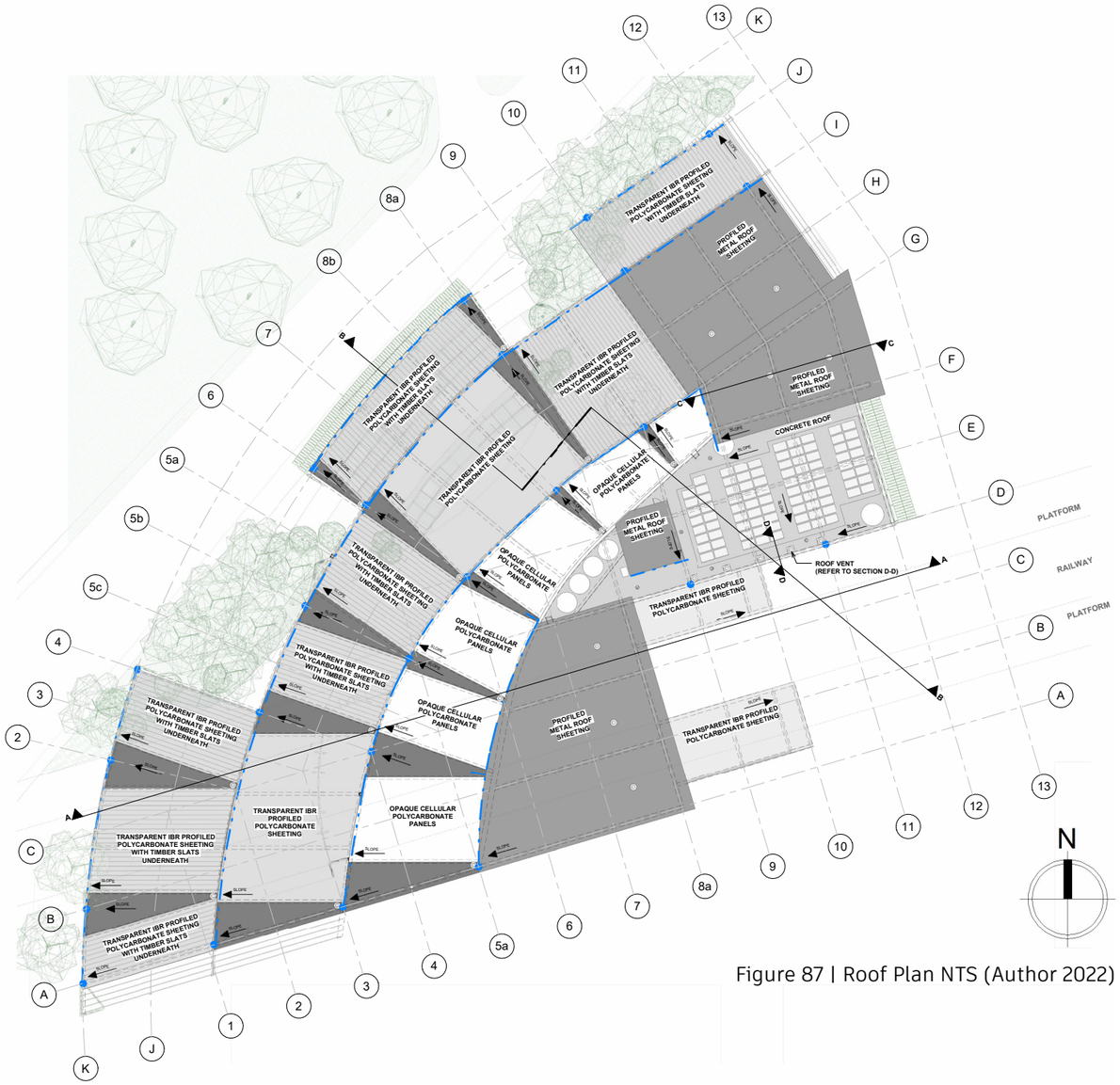


Figure 87 | Roof Plan NTS (Author 2022)

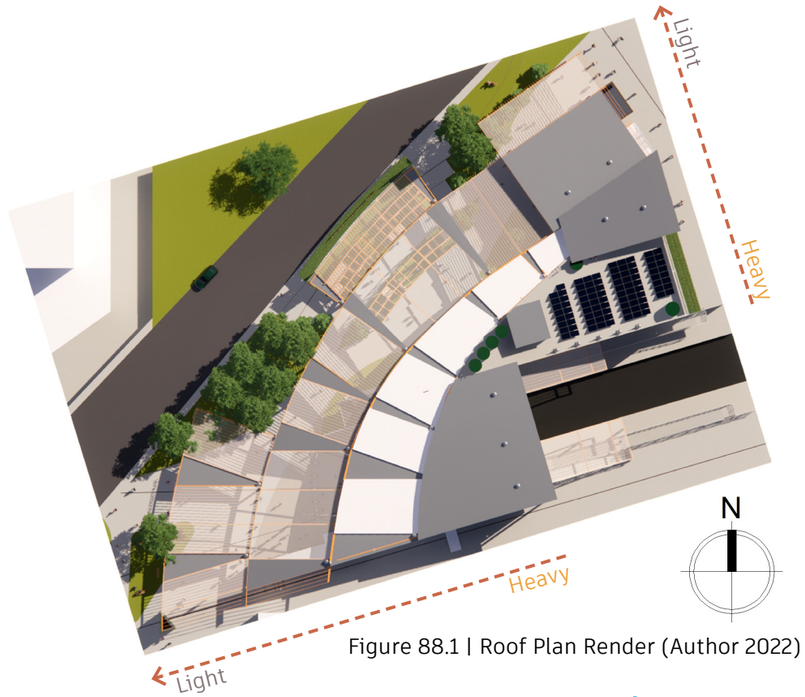


Figure 88.1 | Roof Plan Render (Author 2022)

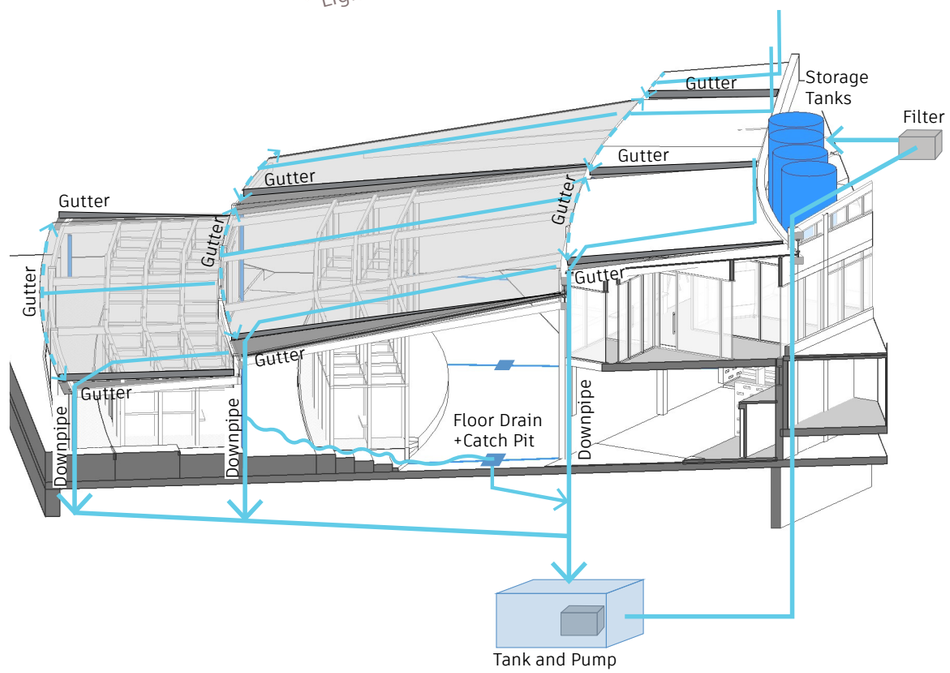


Figure 88.2 | Rainwater System NTS (Author 2022)

A significant system present in the design, is that of the roof system. The roof serves as an overarching element which binds the spaces (both indoor and outdoor) and systems. The roof aptly reinforces the notion of the site rationale (deconstructing from fixed to flexible). It does this in its materiality which transforms from heavy and solid materials, to light and translucent ones (figure 87).

The roof materials include concrete, metal sheeting, cellular polycarbonate sheeting (of varying renderings spanning from opaque to transparent), corrugated polycarbonate sheeting and timber slats. The materiality also displays small breaks in the sheeting (where applied on a curved line) to accommodate for available sheet size and shapes. The curved roof shape also accentuates the dynamic movement through the site. The roof plan (figure 87) indicates some sustainable interventions such as the gutters (indicated in blue) which will collect and store rainwater to use as grey water, fire water and irrigation as a means to sustainably utilising this resource. Furthermore, the concrete portion of the roof includes photovoltaic panels to assist with energy generation and reducing the dependence on existing systems.

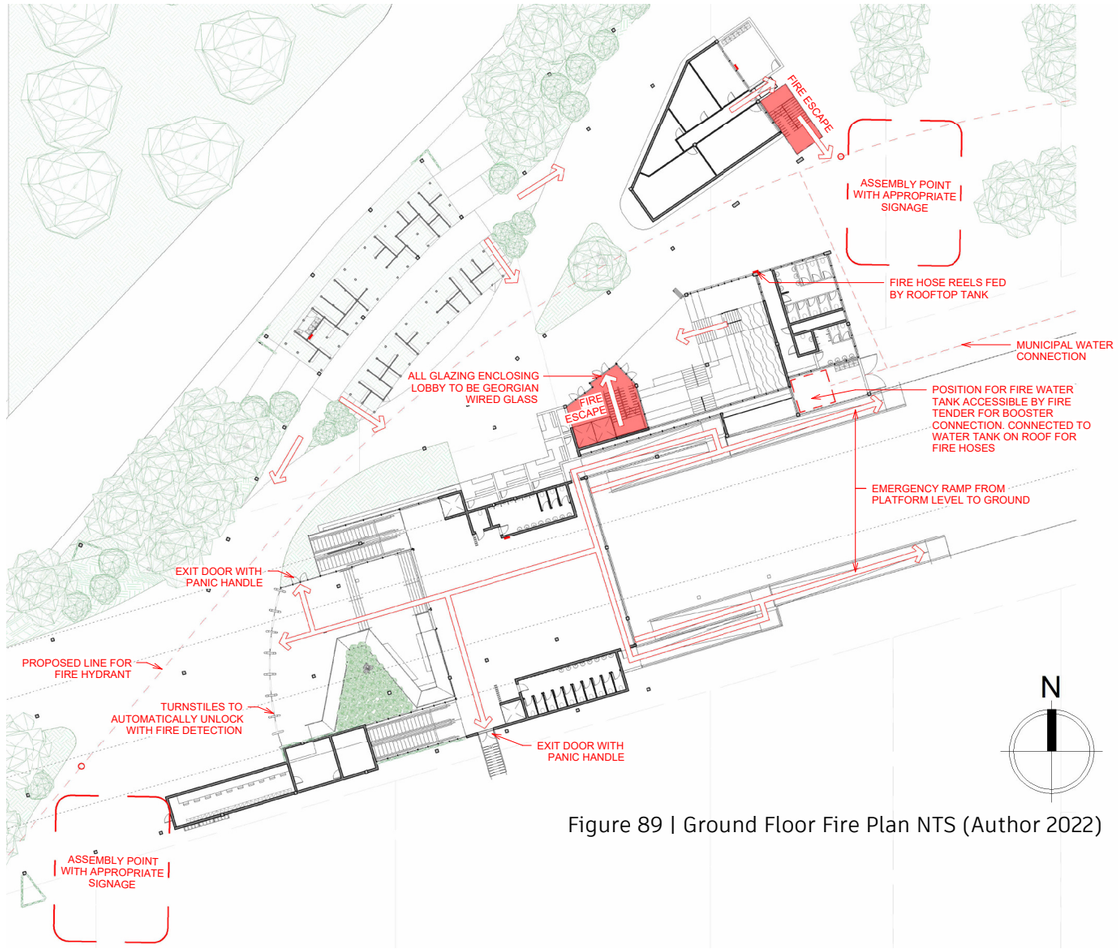


Figure 89 | Ground Floor Fire Plan NTS (Author 2022)

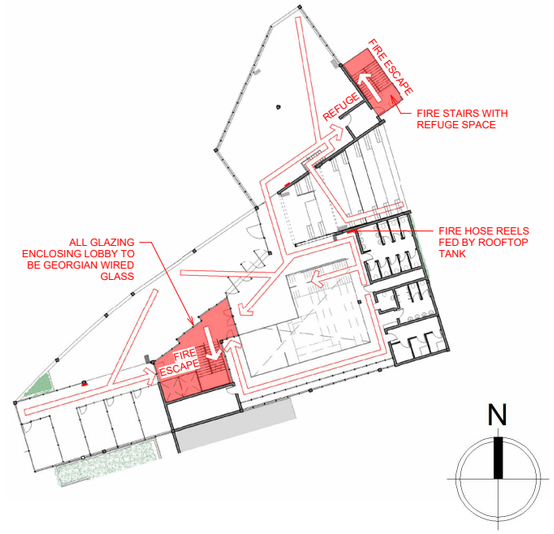


Figure 90 | First Floor Fire Plan NTS (Author 2022)

Another essential system present in the design is that of fire safety. Seeing as the site hosts a transit oriented public park, the nature of the programme demonstrates a high frequency of foot traffic and public access throughout the space. This results in the need for the design to be inclusive and safe. The inclusion of the train station and consequent railway leads to a heightened risk of fire on site (The Economic Times 2015) and therefore the need for fire safety considerations. Fire protection design decisions were made based on the regulations stipulated in SANS 10400 Part T (SABS 2011). The first consideration was the materials used in the space, the intentions was to incorporate materials that are either non-combustible or have a high fire resistance (figure 86) (SABS 2011). Structural walls have a minimum thickness of 230mm and therefore minimum fire resistance of 240 minutes (SABS 2011). In terms of escape routes, the building comprises of two storeys and the amount of people on the first floor will exceed 25, therefore two fire escapes will be required (SABS 2011). The travel distance to the nearest escape door or fire escape does not exceed 45m (figure 89 and 90) (SABS 2011). All escape doors lead to an open space and there is also a designated assembly point with appropriate signage (figure 89) (SABS 2011). All exit doors have a clear width of more than 750mm (SABS 2011) and in the case of them being electronically locked for access control, these will automatically unlock upon fire detection. The first fire escape presents an enclosed lobby (for smoke and fire protection) and the second is an external staircase accommodated by a refuge space (for users in need of assistance) (figure 89 and 90). The building is also equipped with a multitude of fire hose reels, all able to reach up to 30m and overlap with one another (figure 89 and 90) (SABS 2011). Fire hoses will be supplied by a 2000L pressure vessel on the rooftop and there is provision made on the ground floor for fire water tank (which is connected to the rooftop pressure vessel) and accessible by a fire tender if necessary (refer to figure 89 and 91).

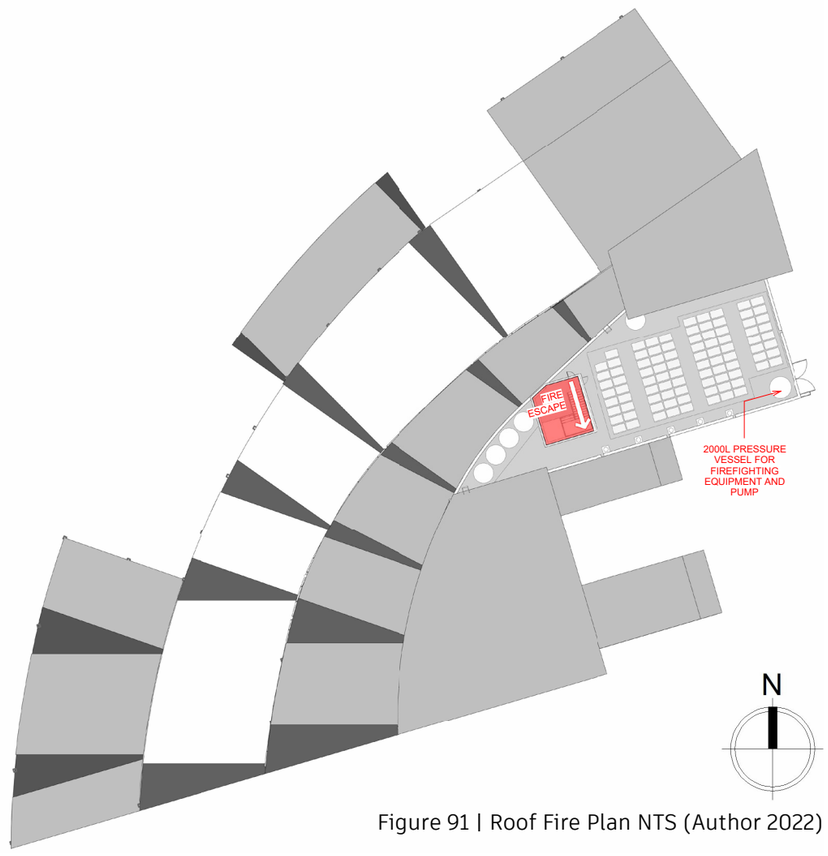


Figure 91 | Roof Fire Plan NTS (Author 2022)

BI	Building Information	Target	Achieved
		5,0	4,3

BI 1	Building Targets	Target	Achieved
EN	Energy	5,0	2,6
WA	Water	5,0	3,2
WE	Waste	5,0	4,0
MA	Materials	5,0	4,0
BI	Biocapacity	5,0	3,5
TR	Transport	5,0	5,0
LE	Local Economy	5,0	4,1
MN	Management	5,0	5,0
RE	Resources	5,0	3,5
SP	Services and Products	5,0	5,0
AC	Access	5,0	4,4
HE	Health	5,0	5,0
ED	Education	5,0	5,0
IN	Inclusion	5,0	4,6
SC	Social Cohesion	5,0	5,0

BI 2	Priority Key (Not Performance Key)	
VH	Very High	5,0
HI	High	4,0
ME	Medium	3,0
LO	Low	2,0
VL	Very Low	1,0
NA	None / Not Applicable	0,0

Passive Design and Details

The project incorporates many passive design systems such as natural ventilation and natural daylighting. These are evident in the double skin façade and auditorium, respectively, which will be discussed in this portion. Furthermore, the Sustainable Building Assessment Tool (SBAT) was used to test the project in terms of its social, environmental and economic sustainability performance.

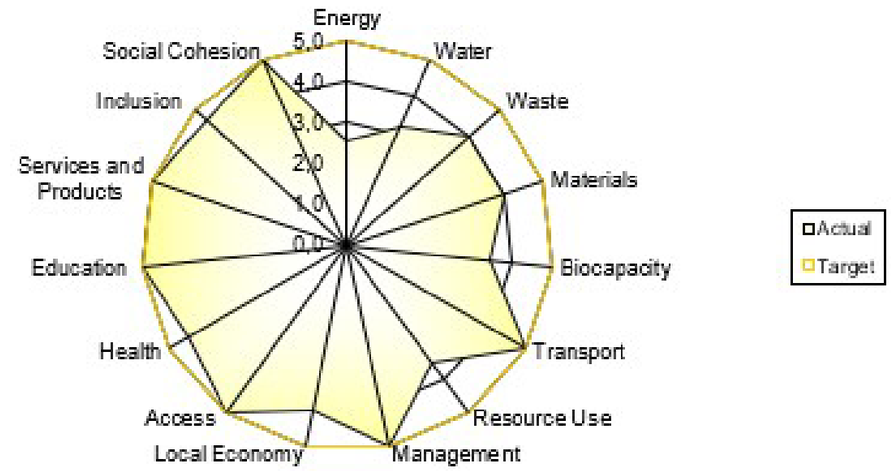
The SBAT report (figure 92) presents a high achievement for transport, management, services and product, access, education and social cohesion. This scoring resonates with the project intentions of it being a transit interchange that promotes public access and especially user upliftment and well-being. The report does, however exhibit a potential improvement of water and energy performance within the project.

SB SBAT REPORT	Achieved 4,3

SB1 Project
Mindful Metropolis

SB2 Address
Duncan street, Hatfield, Pretoria

SB3 SBAT Graph



SB4 Environmental, Social and Economic Performance	Score
Environmental	3,4
Economic	4,5
Social	4,8
SBAT Rating	4,3

SB5 EF and HDI Factors	Score
EF Factor	3,9
HDI Factor	4,5

SB6 Targets	Percentage
Environmental	69
Economic	90
Social	96

SB7 Self Assessment: Information supplied and and confirmed by

Name	Date
Signature	

SB8 Validation: Documentation validated by

Name	Date
Signature	

SB9 Validation Report Version
IVR

Figure 92 | SBAT Report (Author 2022)

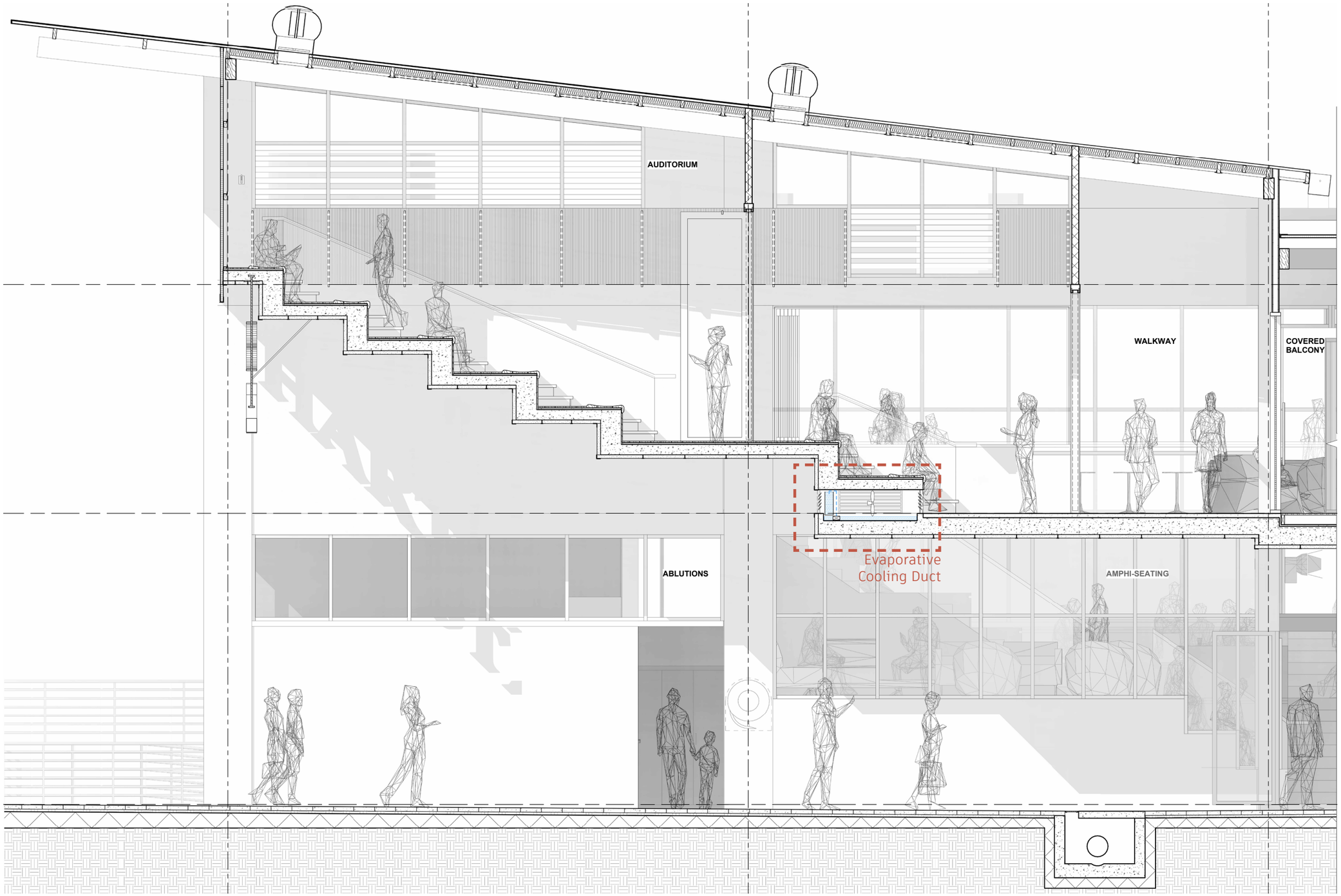
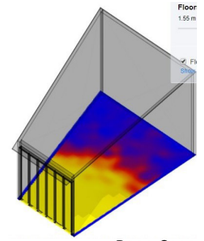
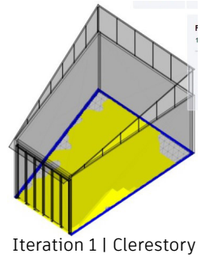


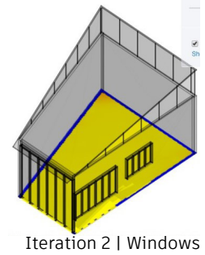
Figure 93 | Auditorium NTS (Author 2022)



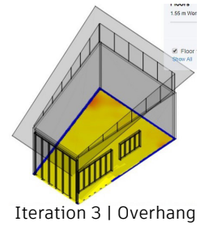
Base Case



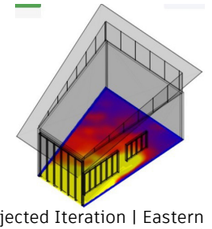
Iteration 1 | Clerestory



Iteration 2 | Windows



Iteration 3 | Overhang



Rejected Iteration | Eastern Brise Soleil

Figure 94 | Daylighting Iterations (Author 2022)

Natural daylighting is important within the internal spaces as it promotes comfort and wellness in the users, while it also reduces artificial lighting requirements and saves energy (Greenhome 2014). Natural light is primarily introduced into the design through the use of translucent and slatted roof materials and clerestory windows. A space where daylighting is especially evident, is in the auditorium on the first floor (figure 93). The space requires a comfortable atmosphere as well as appropriate lighting levels for meeting (150 lux) (Department of Employment and Labour 1993).

Various iterations were conducted to improve the lighting quality of the space (figure 94). These included the introduction of a clerestory window and side windows to increase the amount of natural light infiltrating the space. These were then followed by another iteration introducing an overhang to prevent the space from being overlit and the introduction of an eastern brise soleil. The latter iteration was rejected as it overly reduced the lighting quality of the space. The final lux level of the space was 200 lux.

Natural ventilation is important for a comfortable indoor spatial quality; it provides free cooling and reduces energy usage (Greenhome 2014). Natural Ventilation is primarily introduced into the design by using evaporative cooling, cross ventilation and hot air extraction. A space that clearly incorporates natural ventilation is the amphi-seating with its double skin façade (figure 95). Cool air will enter the space via an inlet from an evaporative cooling duct situated within the auditorium seating. Using the premise of cross ventilation, the cool air will move through the space from the inlet to a high-level outlet (as it heats up and rises) (Moffitt 2016) on the opposite double skin façade (figure 96). To assist the extraction of hot air (and therefore cross ventilation) turbine ventilators accommodate the double skin façade.

As the façade is positioned adjacent to the railway, the need for an acoustic barrier became apparent for a comfortable interior quality of the amphi-seating. This resulted in the incorporation of a ventilated acoustic baffle throughout the façade. The site experiences periodic exposure to noise. This is produced by the trains or the cars on Duncan Street. The noise pollution is only present during peak traffic at approximately 73dB for a minute with 3-minute breaks in between. The nature of the space is public and lively with only a few spaces for peaceful focus. The spaces in need of a quiet atmosphere will therefore be treated with acoustic control (mainly with acoustic absorbent panels).

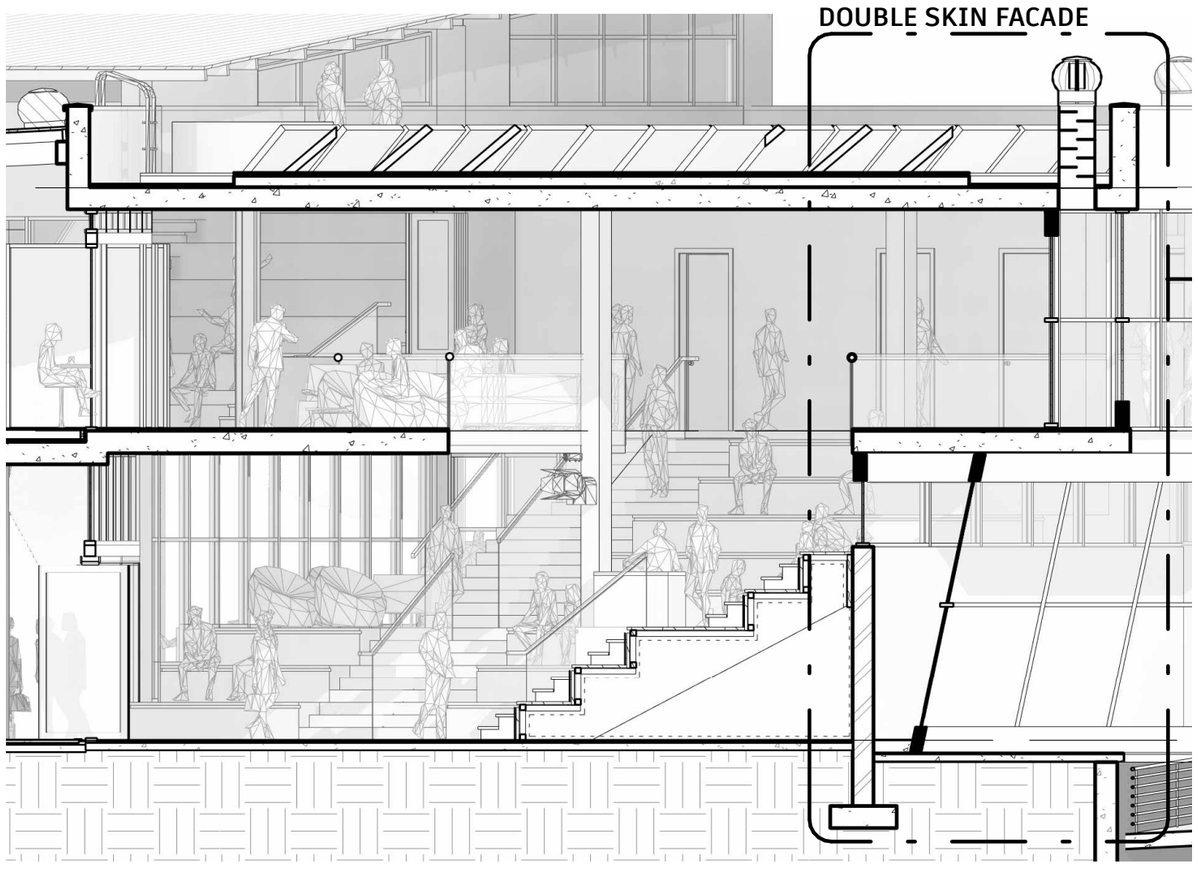


Figure 95 | Double Skin Façade in Context NTS (Author 2022)

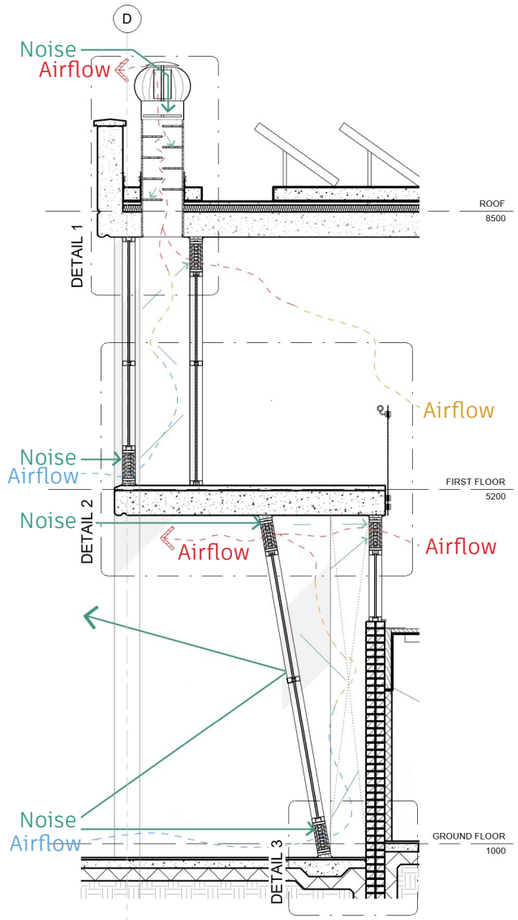


Figure 96.1 | Double Skin Façade Ventilation NTS (Author 2022)

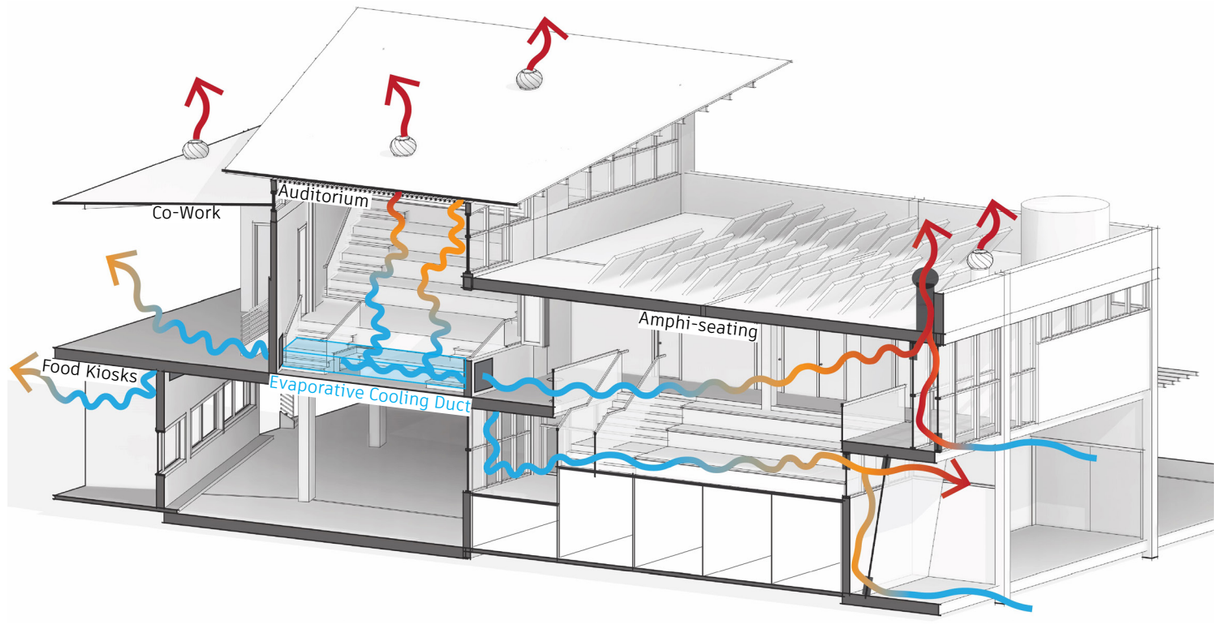


Figure 96.2 | Double Skin Façade Ventilation NTS (Author 2022)

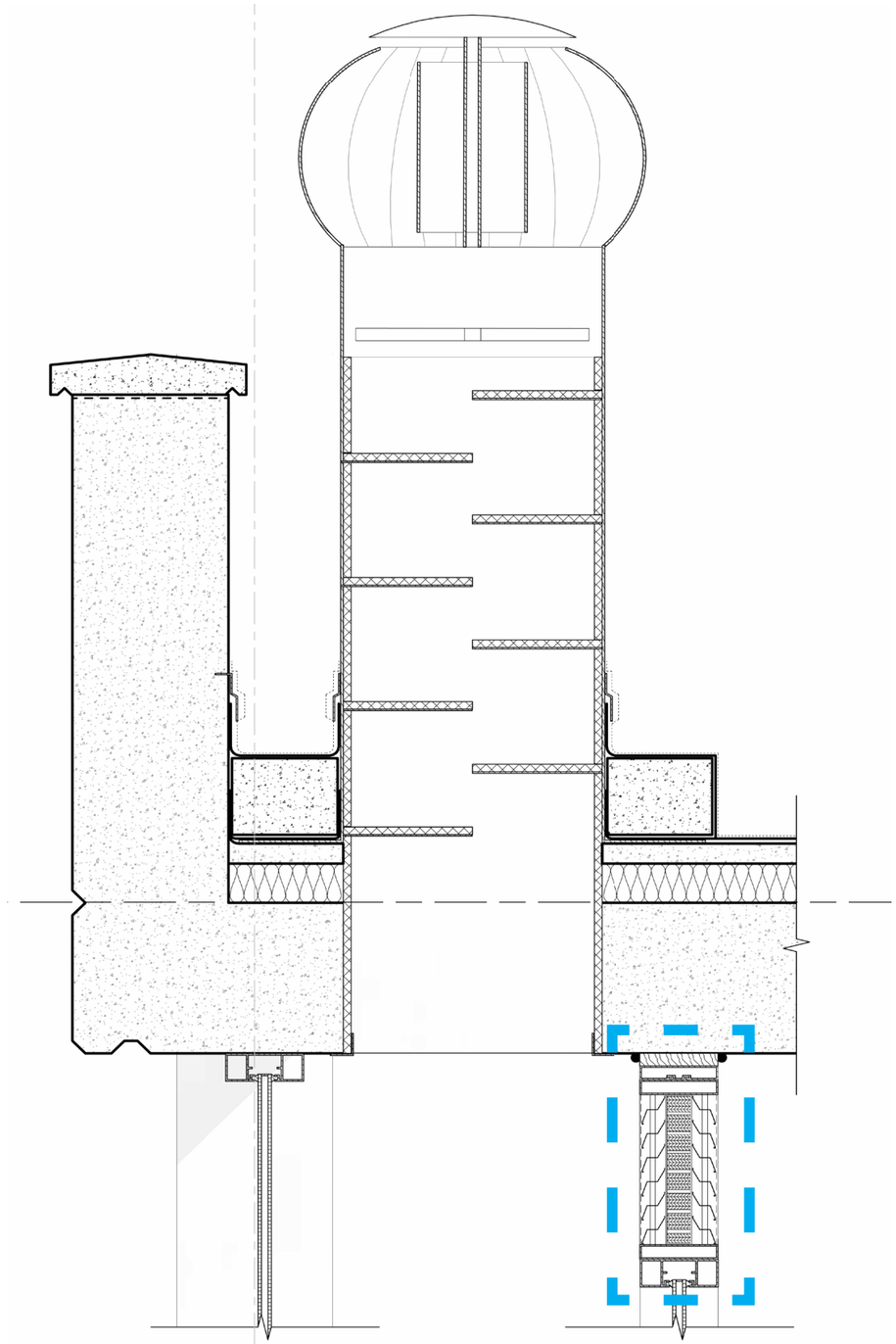


Figure 97 | Detail 1 NTS (Author 2022)

Detail 1 presents the top portion of the double skin façade. It comprises of the accessible concrete rooftop (with turbine ventilator) and the double skin façade (with ventilated acoustic baffle) (figure 97). The ventilated acoustic baffle (indicated in blue) mainly consists of a weather louvre section with a perforated acoustic absorber panel in between. It functions on the premise that air will be able to flow through the system, but sound would be absorbed by the panel. Additionally, the turbine ventilator will incorporate a solar-powered fan to further aid the extraction of hot air if necessary. The ventilator pipe is internally clad with mineral wool and includes cladded fins to break and absorb noise.

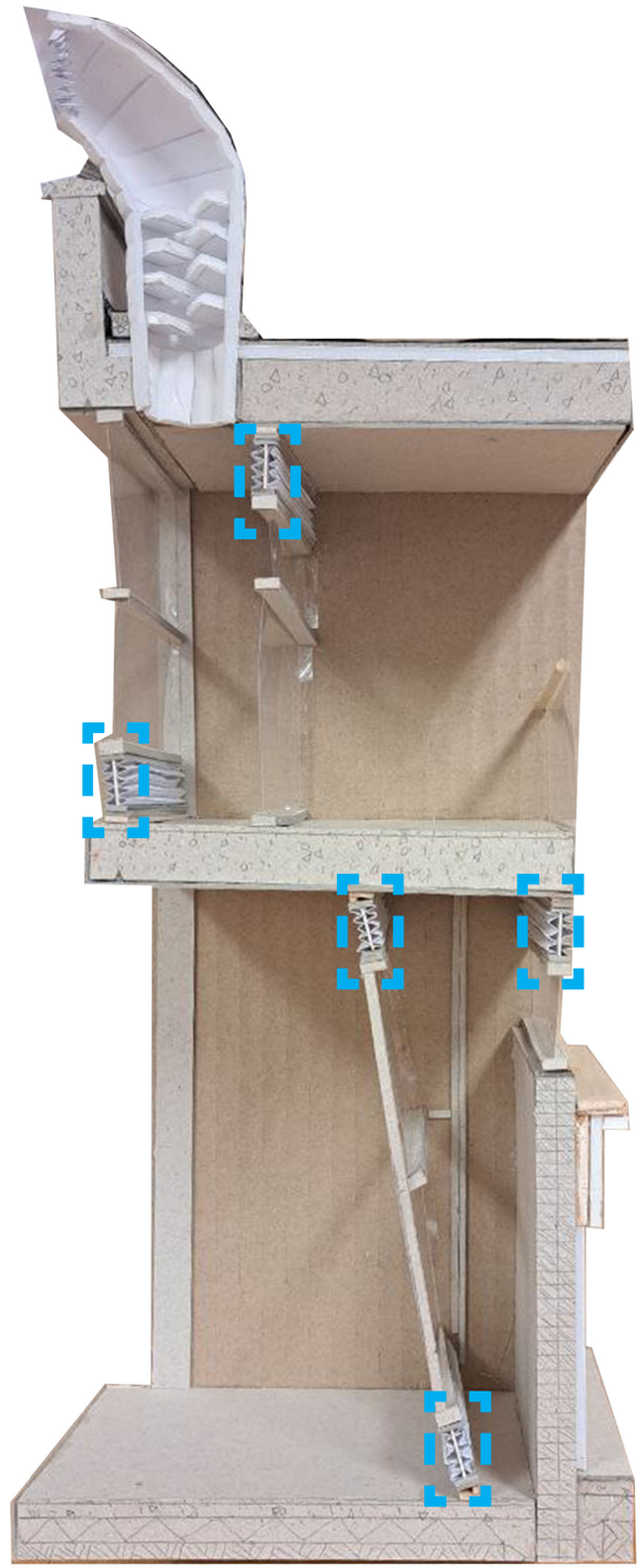


Figure 98 | Initial Double Skin Façade Sectional Model (Author 2022)

Detail 2 presents the junction between the double skin façade and the first-floor slab (figure 98). It once again indicates the ventilated acoustic baffle (in blue), but also shows the slanted glazed unit between the soffit and the ground floor. The slanted glazing lays within steel equal angle sections and serves as a means to both reflect the sound coming from the railway and enhance the natural ventilation.

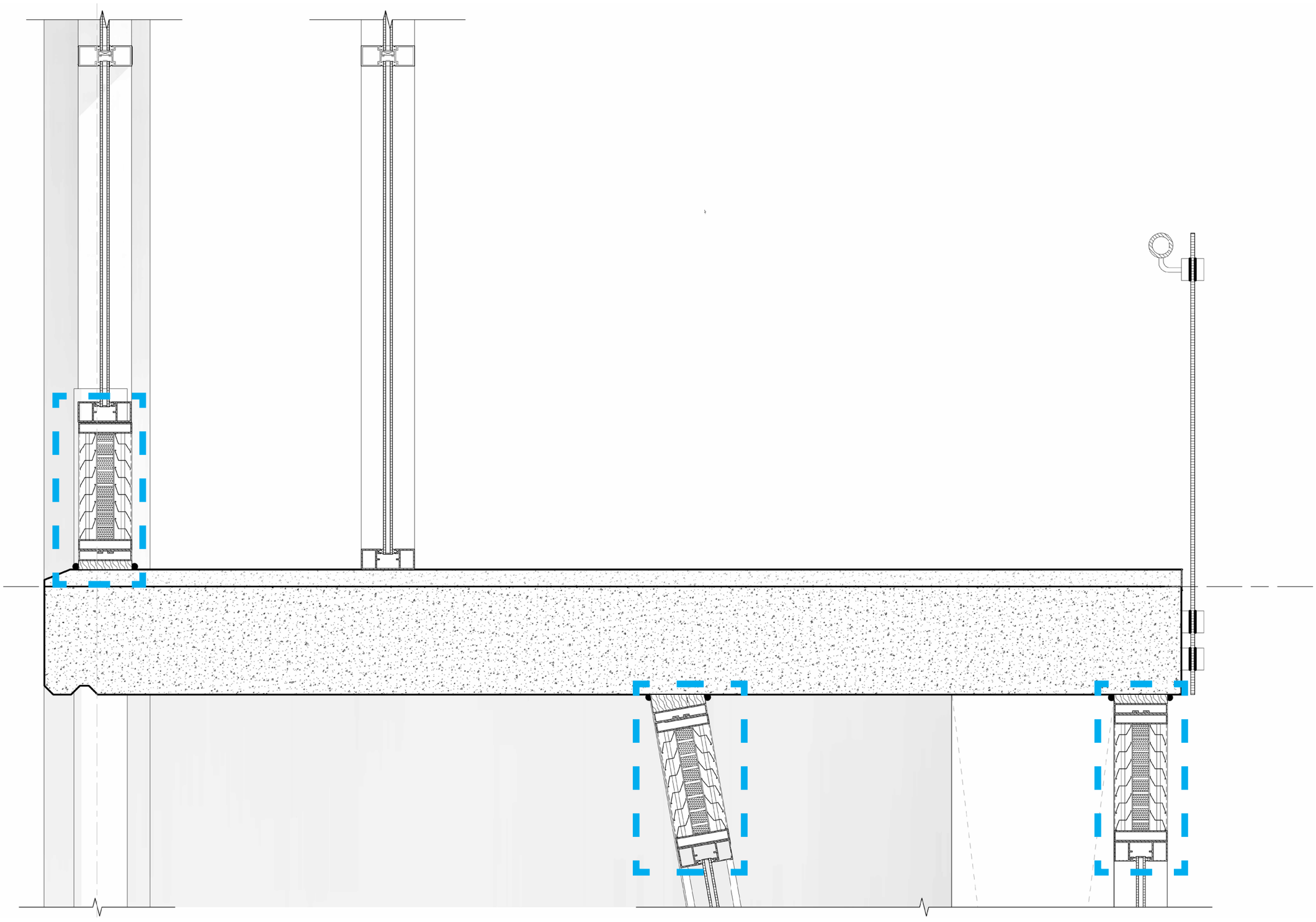


Figure 99 | Detail 2 NTS (Author 2022)

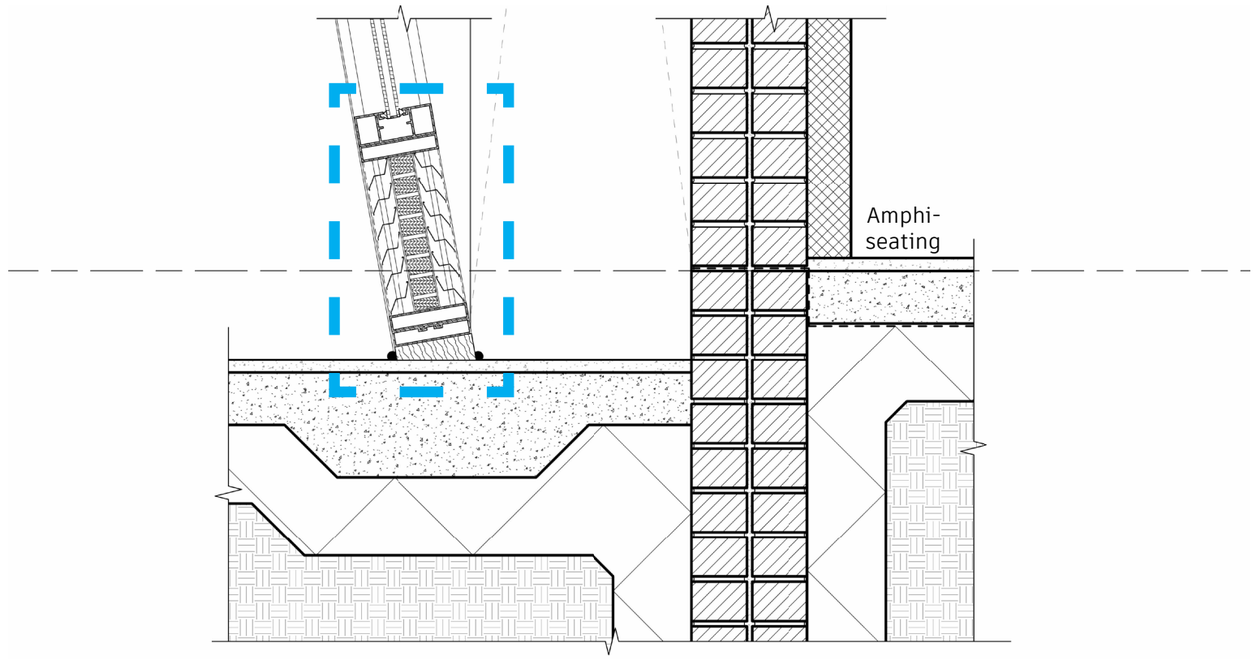


Figure 100 | Detail 3 NTS (Author 2022)

Detail 3 portrays the junction between the double skin façade and the ground (figure 99). The slanted version of the ventilated acoustic baffle (in blue) is again present and a portion of the internal amphi-seating (lined with mineral wool for acoustic absorption) is visible.

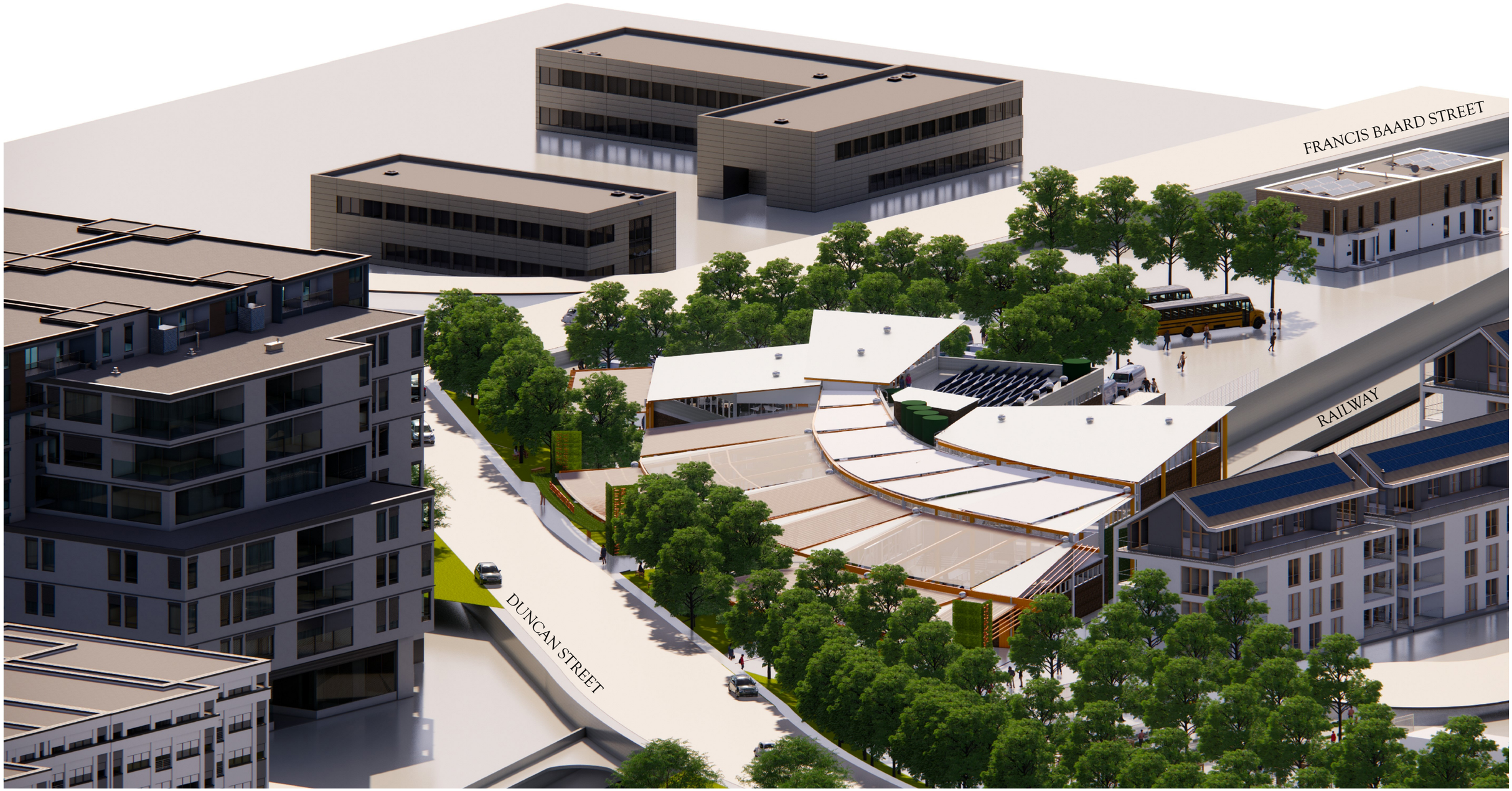


Figure 101 | Building in Context (Author 2022)

Conclusion

The Hartbeesspruit station presents a lost space that is desolate and neglected. It does, however, present the encouraging aspect of an activated edge. The main objective for the project is to transform this lost space into a successful public space that invites transient users in and assists their transit needs, uplifts them and ultimately promotes their well-being. This may be done by reconfiguring their circulation pattern and introducing a transit oriented public park. All of which may be achieved through the concept of frame and infill, guided by the site, grid and building rationales. The architectural outcome would be a lively extension of urbanity; incorporating trade, transportation, work space and rejuvenation while considering its environmental impact and fire safety. By allowing the loose space to infiltrate and activate the lost space, a strong sense of place is achieved and this leads to the promoted well-being of the urban user.

CHAPTER FOUR

Critical Reflection

Introduction

'How can architecture consolidate lost space with loose space to generate a public space that will serve the transient urban user and stimulate well-being?'

The research question prompted investigations into lost space, loose space, public space, transient urban users and well-being. It allowed for the uncovering of the causes and effects of lost space, the nature and characteristics of loose space and, the trends and values of public space. Furthermore, it led to discovering the needs and attributes of the transient urban user, as well as the types and worth of well-being.

The endeavor of responding to the research question led to the architectural outcome of a transit oriented public park. The aim of the intervention was to transform lost space into a successful public space that serves the transient urban user and ultimately promotes their well-being.

The Intentions

The research intention consisted of uncovering various lost spaces in the neighbourhood as well as exposing their commonalities. The methodology followed to explore Hatfield and its lost spaces rendered successful in this regard. Most importantly, the methodology allowed for an in-depth analysis of each of the chosen lost sites. This analysis revealed nuanced site narratives, user needs and pragmatic factors. All of which acted as design informants that led the development of the architectural intervention.

Along with the site informants, research was conducted to further understand two conceptual objectives – loose space and well-being. Loose space acted as a critical objective due to the conceptual intention entailing the fostering and encouragement of loose space. The theoretical position concluded that the inclusion of loose space (in the shape of spatial appropriation) was imperative as it allows for expression of belonging and creativity and results in a meaningful user experience (Yilmaz 2006; Schneider and Till 2007). Well-being acted as the ultimate objective to be achieved through this cultivation of loose space. The theoretical position concluded that well-being as an end-product is imperative as it leads to a thriving individual and community (Desmet and Pohlmeyer 2013). Finally, the incorporation of both loose space and well-being in the intervention, will allow for a strong sense of place and a more liveable neighbourhood (United Nations 2016; Hatfield City Improvement District 2021).

The Process

The design development was largely led by the site informants gained from the mapping and site analysis. While precedent studies primarily informed spatial qualities, composition, materiality and programmatic requirements. Initially, the process was guided by the five design principles (responsive, social, integrative, sheltering and revitalising) which informed conceptual design intentions. The principle of integration played a large role at several scales – from the integration of multiple modes of transport, to the integration of various spaces and uses.

Responding to a multitude of informants proved challenging and resulted in the initial architectural response which lacked definition and sound articulation. This was resolved by focusing the intentions on the pedestrian movement and the concept of frame and infill. Once the conceptual and design intentions were distilled, the project could be developed towards a better defined and organised intervention.

The Outcome

The architectural outcome presents a transit oriented public park; transforming the tedious activity of commuting into a stimulating walk in the park.

Adhering to the distilled intentions of allowing the loose space to infiltrate the lost space, and creating a movement spine through the site rather than on its edge, enabled activation within the site. This activated core in turn acted as a focal point around which many programmes were situated and aligned.

The technical response of frame and infill, the deconstructing site rationale, overall grid and accommodation list successfully informed site massing as well as the configuration of programmes and spaces. The guidance offered by these rationales clearly facilitated the design development. The final architectural outcome poses a mixed-use transit interchange with a variety of programmes, such as gathering, working, trade, reflection and upliftment. The product presents an interplay between inside and outside, activated thresholds and suggestive spaces for many interpreted uses, all while creating a strong sense of place and a lively identity.

The Contribution

The study contributes to the continuum of architecture by investigating both lost and loose space as well as the relationship between the two (Trancik 1986; Franck and Steven 2006). Additionally, it attempts to uncover the potential of loose space while exploring a public space that focuses on well-being.

The project further contributes by addressing the trend of depreciating public space in South Africa. It does this by introducing a public space geared towards improving the everyday and mundane activity of commuting. The transit oriented public park has the potential to add value to the fabric of Hatfield as it accommodates various needs of both transient and permanent users and therefore adds to their overall upliftment.

The Way Forward

Although the project may seem quite site specific, the initial desktop mapping proved that Hatfield was riddled with lost spaces similar to that of the chosen project site. This may be true for many other neighbourhoods in South Africa, especially due to the ongoing trend of rapid urbanisation. This project may therefore be viewed as a guide for future regenerative public space projects. Intensive site analyses, the emphasis on loose space and a public well-being agenda may present a possible solution to the issues of lost space, user detachment and lack of public space.

The position for this dissertation stands that architecture should be focused on user experience and well-being, albeit for the individual or community. In a time of acute spatial crisis, there is great value in the repurposing of lost or wasted spaces within the urban fabric. This regeneration may be accomplished by acknowledging the loose spaces that generally accommodate lost spaces and to encourage these to spread and activate.

In terms of my personal reflection, I realise that designing for flexibility and therefore incorporating suggestive spaces acts as a pivotal means to instil user satisfaction through a sense of belonging. I also appreciate the richness provided to a project once the nuanced site narrative and user needs are uncovered and consequently create a design filled with meaning and multiplicity.

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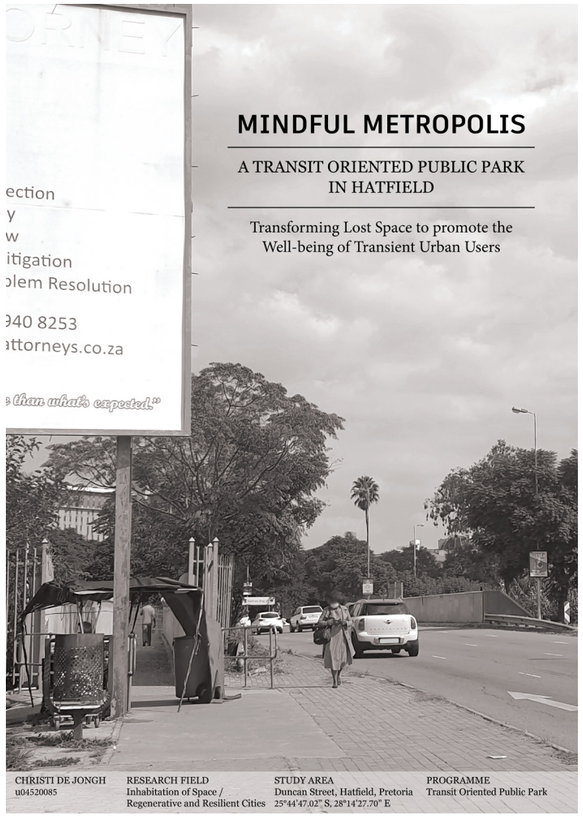
FINAL PRESENTATION



MINDFUL METROPOLIS

A TRANSIT ORIENTED PUBLIC PARK IN HATFIELD

Transforming Lost Space to promote the Well-being of Transient Urban Users

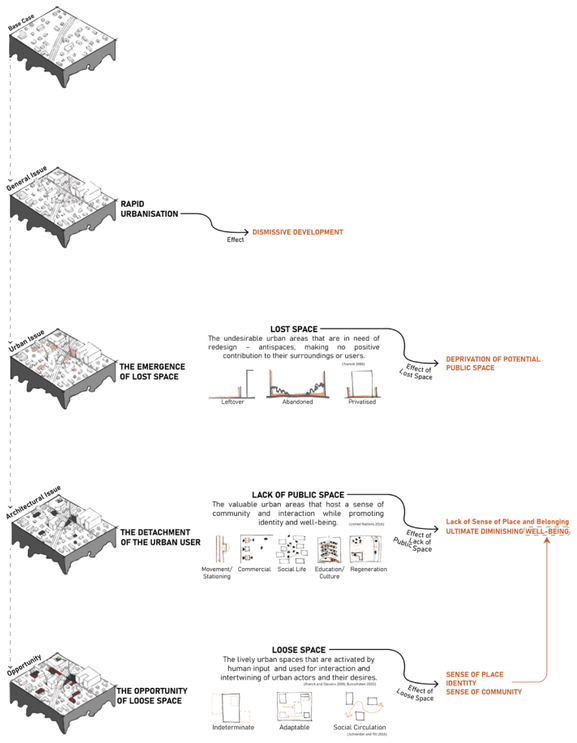
CHRISTI DE JONGH
u04520085

RESEARCH FIELD
Inhabitation of Space / Regenerative and Resilient Cities

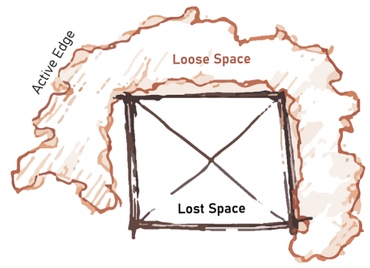
STUDY AREA
Duncan Street, Hatfield, Pretoria
25°44'47.02" S, 28°14'27.70" E

PROGRAMME
Transit Oriented Public Park

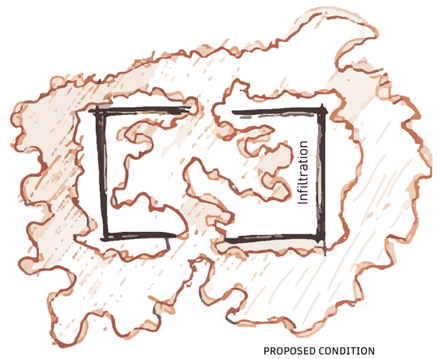
CONTEXT | HATFIELD



THEORETICAL PREMISE



EXISTING CONDITION



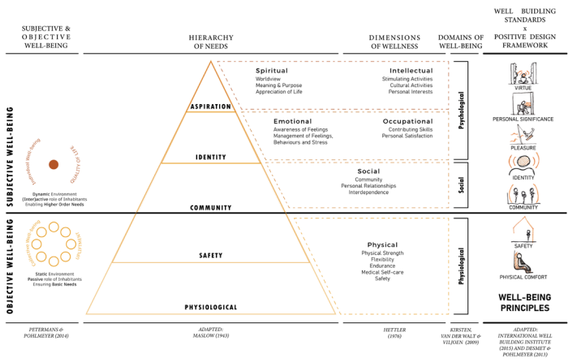
PROPOSED CONDITION

CONCEPTUAL INTENTION

PHILLIP
- **Informal Trader**
- Stays in Mamelodi
- Sets up stall each day
- Commutes via **Metrorail** to Hatfield

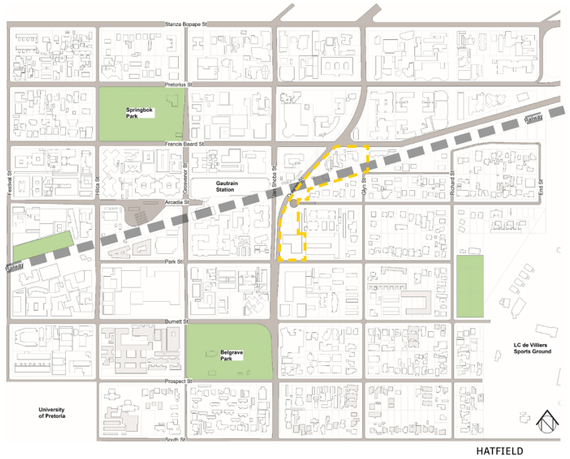
THANDI
- Part-time **Student**
- Stays in Silverton
- **Office Job** in Centurion
- Commutes via **Taxi** to Hatfield

TWO NARRATIVES

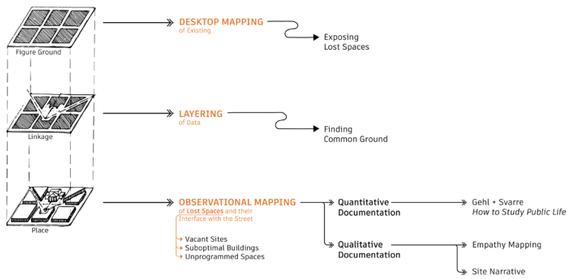


WELL-BEING FRAMEWORK

THEORETICAL PREMISE | WELL-BEING

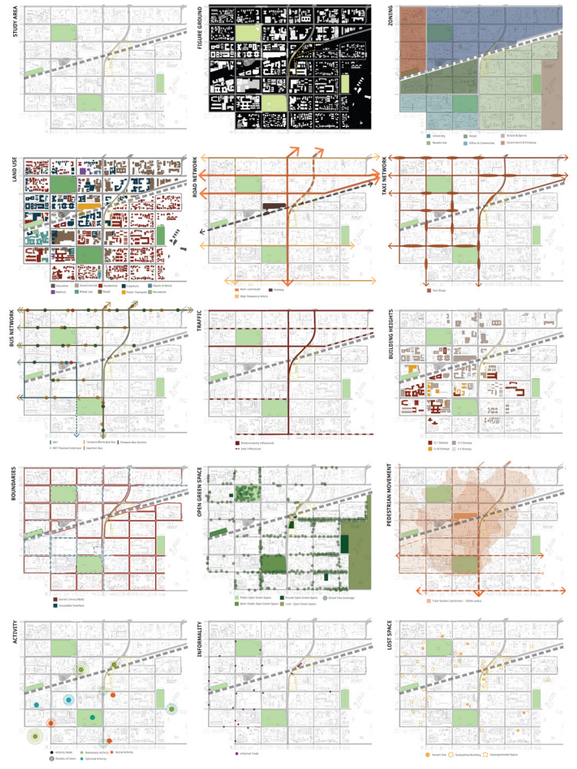


HATFIELD

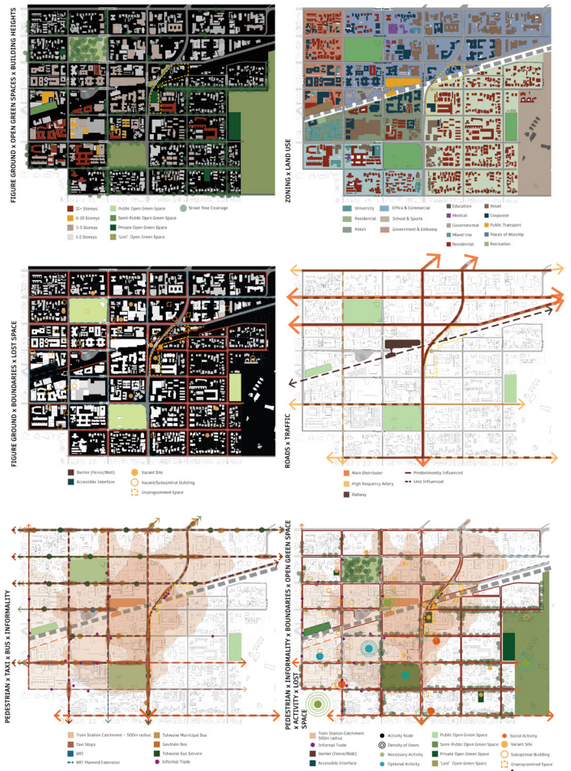


METHODOLOGY

SITE SELECTION | METHODOLOGY



SITE SELECTION | DESKTOP MAPPING



SITE SELECTION | LAYERING

Unprogrammed Space

A space that has been overlooked and lies along the blurred line of public/private. They are not intentionally designed and have no specific purpose. They are too flexible and frequently end up as parking lots.

This site is located along Jan Shoba street, but it is at the interface of the open space in front of the Hartbeesspruit Metro Rail station and the street. There are many pedestrians making their commute to work/school, but this space has a host of informal traders who welcome many customers. There exists a strong relationship between these people which activates the space into a social hub.

Vacant Site

A site that has been privatized and abandoned. Buildings on these sites frequently fall into disrepair and then get demolished, leaving the site bare and neglected.

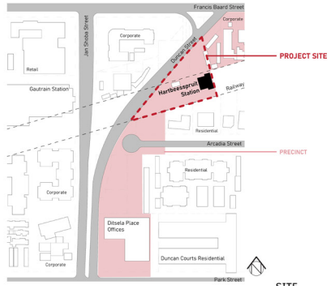
This site is also positioned on the very busy Jan Shoba street. There is a multitude of pedestrians and cyclists moving along this artery and even though they are fixed on their commute, many of them make the detour to engage with the informal trader.

Suboptimal Building

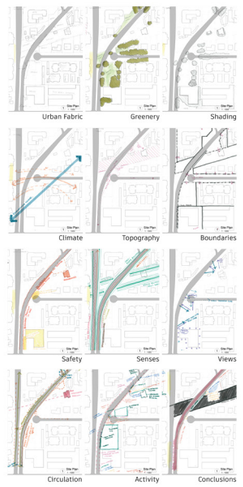
A building that is unfitting to the surrounding environment, either by it being vacant, insufficiently occupied or inappropriately programmed.

This site is at the intersect of the Jan Shoba street and the residential Park street. It hosts frequent pedestrian traffic and some interaction between pedestrians and informal traders.

SITE SELECTION | OBSERVATIONAL MAPPING

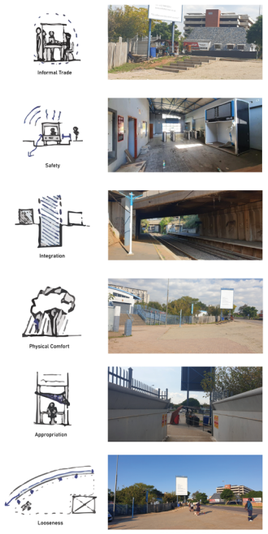


SITE

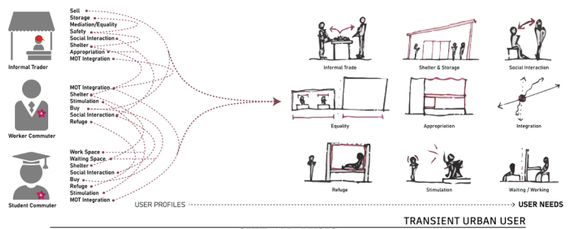


ANALYSIS

SITE

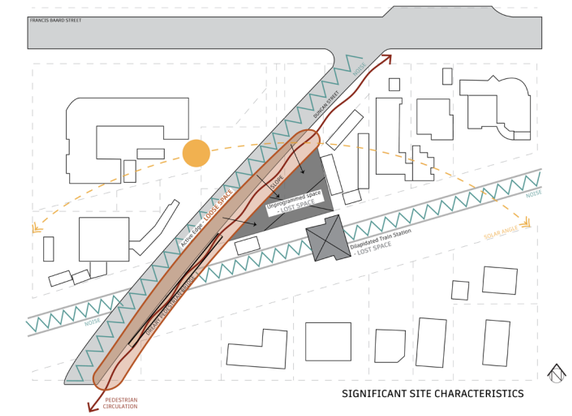


SITE FEATURES

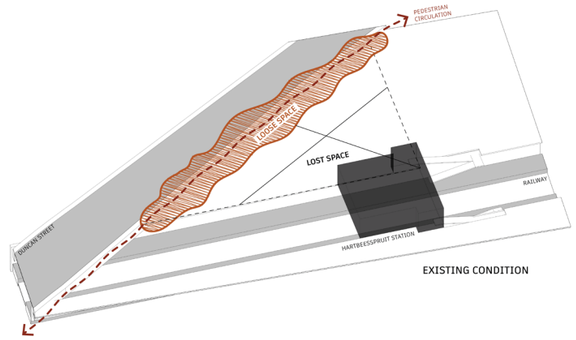


TRANSIENT URBAN USER

SITE ANALYSIS

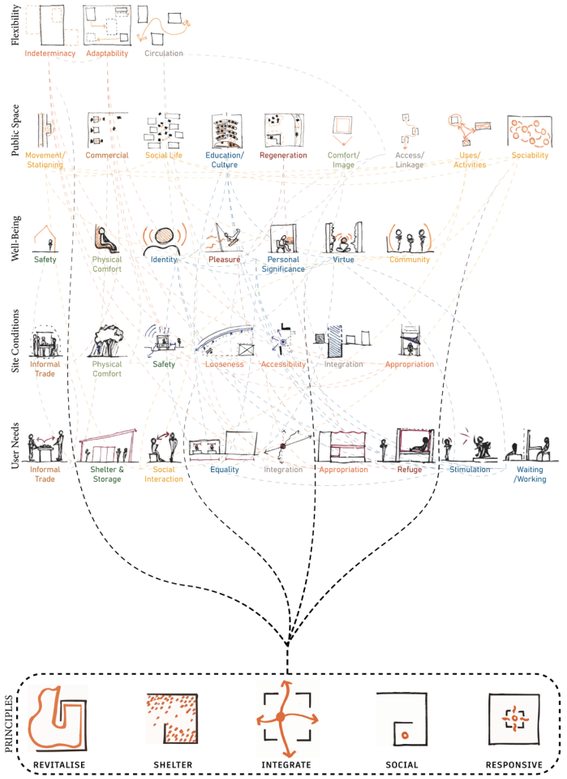


SIGNIFICANT SITE CHARACTERISTICS

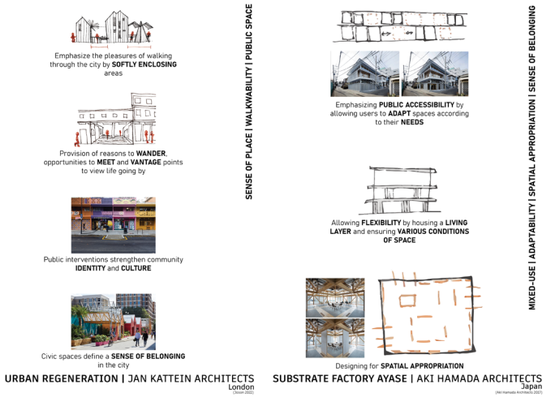


EXISTING CONDITION

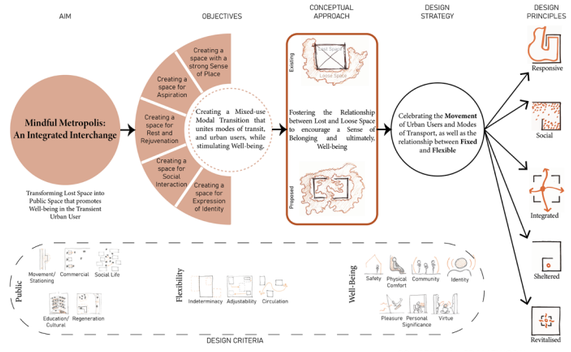
SITE CONCLUSIONS



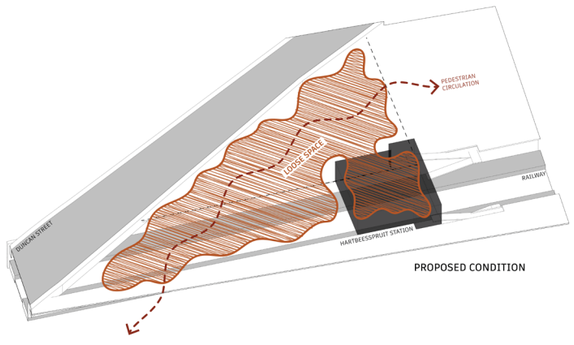
INFORMANT FRAMEWORK



PRECEDENT STUDIES

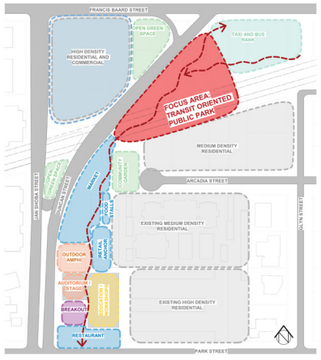


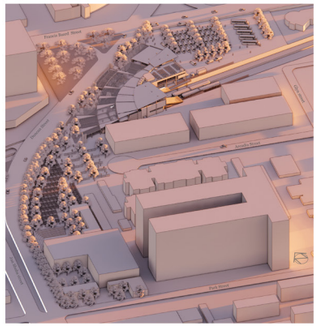
CONCEPTUAL FRAMEWORK



PROPOSED CONDITION

DESIGN INTENTIONS





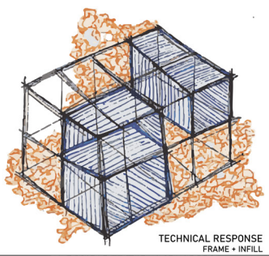
DESIGN INTENTIONS | SITE VISION

NEGOTIATING LOOSENESS AND TIGHTNESS
FLEXIBLE AND FIXED

The most successful Loose Spaces are those that act as Armatures for future occupation – providing clues that suggest rather than determine.

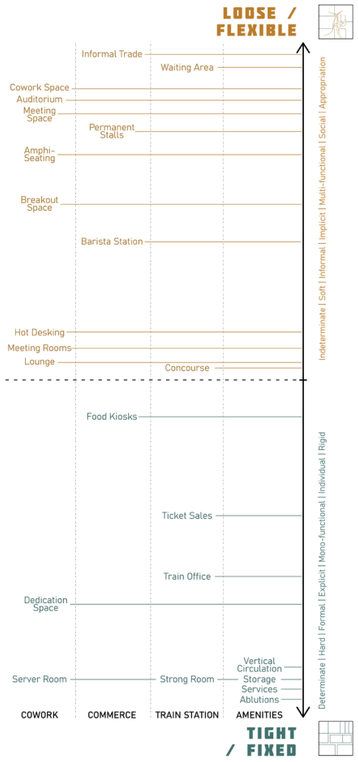
'The permanent constitutes the frame within which change can take place'
Herman Herzberger

Frame | Determinate **Loose Space** | Indeterminate



TECHNICAL RESPONSE
FRAME + INFILL

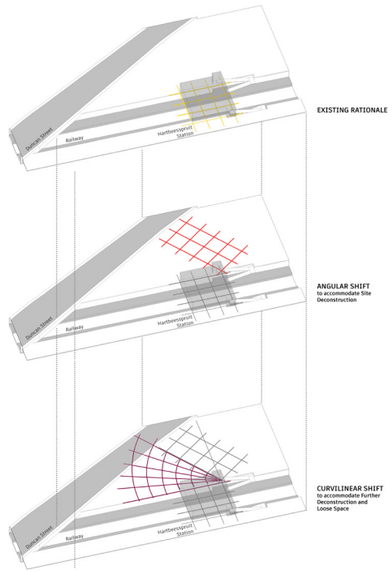
TECHNICAL INTENTIONS



DETERMINACY FRAMEWORK

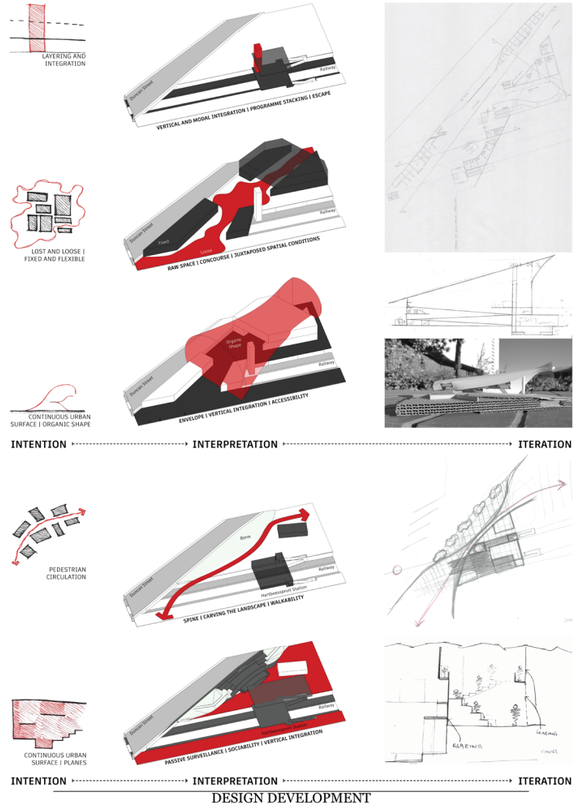
DEVELOPMENT | ACCOMMODATION LIST

SITE RATIONALE | DECONSTRUCTION

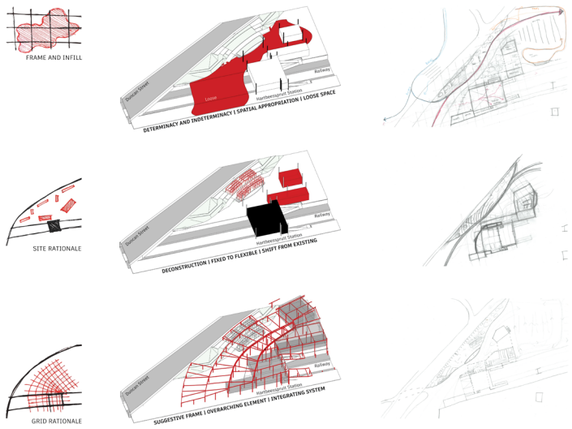


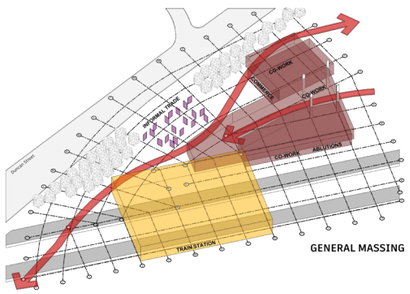
GRID RATIONALE

DEVELOPMENT | RATIONALES



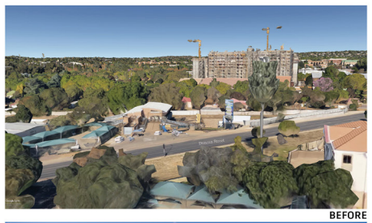
DESIGN DEVELOPMENT





DEMOLISHEN STRATEGY

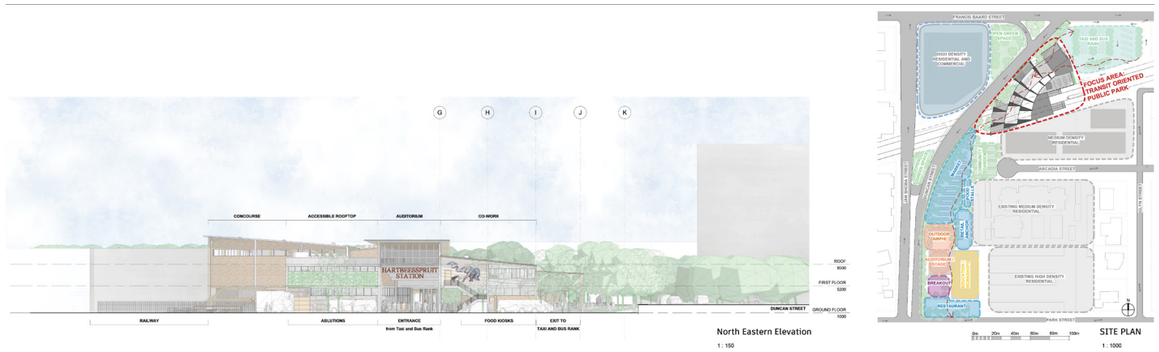
DESIGN DEVELOPMENT

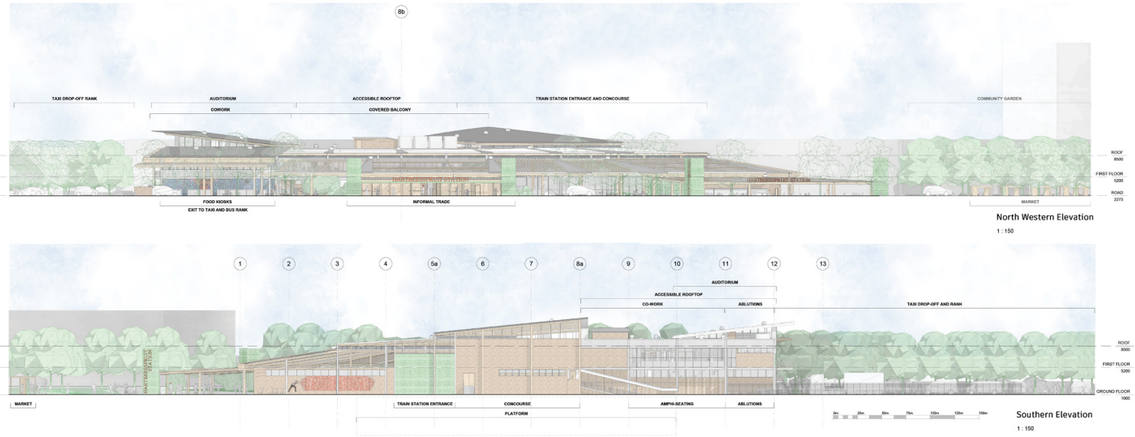


BEFORE

AFTER

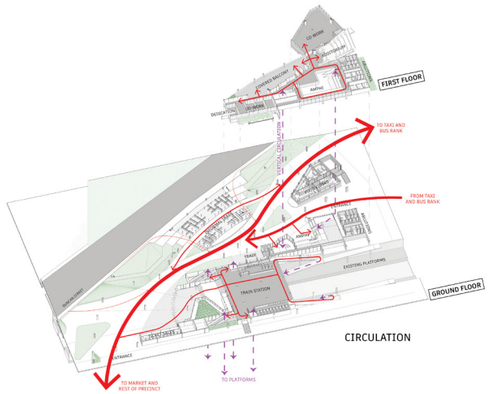
DESIGN PROPOSAL



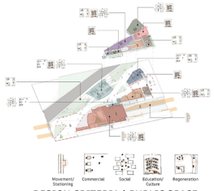


SITE PLAN AND ELEVATIONS

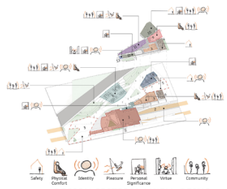
ZONING



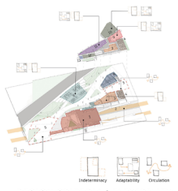
CIRCULATION



DESIGN CRITERIA | PUBLIC SPACE



DESIGN CRITERIA | WELL-BEING

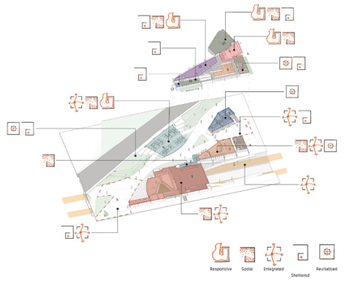


DESIGN CRITERIA | FLEXIBILITY

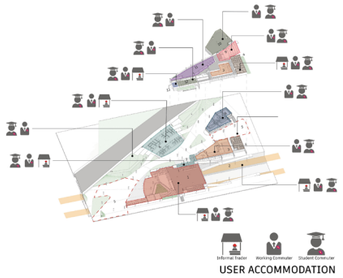
GROUND FLOOR
1 | TRAIN STATION
2 | EXISTING PLATFORMS
3 | AMPHI-SEATING
4 | ABLUTIONS
5 | ENTRANCE
6 | INFORMAL TRADE
7 | PERMANENT TRADE
8 | FOOD KIOSKS

FIRST FLOOR
9 | AUDITORIUM
10 | CO-WORK
11 | COVERED BALCONY
12 | MEETING ROOMS
13 | DEDICATION ROOM

ZONING KEY



DESIGN PRINCIPLES



USER ACCOMMODATION

DESIGN PROPOSAL

THEORETICAL-CONCEPTUAL MANIFESTATION

DESIGN PROPOSAL

FOOD KIOSKS 4

INFORMAL TRADE 3

WALKWAY AT TRAIN STATION 2

ENTRANCE FROM REST OF PRECINCT 1

WALKWAY AT AMPHI 5

ENTRANCE FROM TAXI AND BUS RANK 6

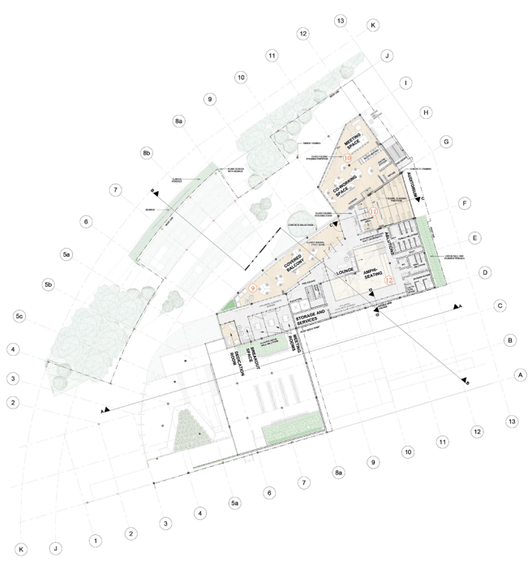
AMPHI-SEATING 7

TRAIN STATION 8

GROUND FLOOR PLAN 1:200

CO-WORKING SPACE 10

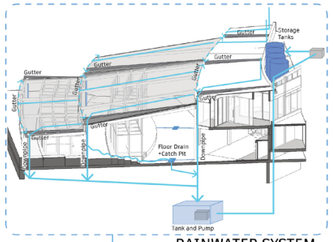
COVERED BALCONY 9



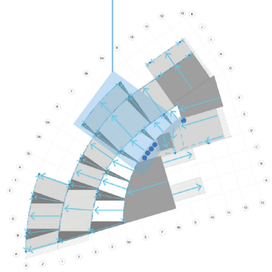
AUDITORIUM 11

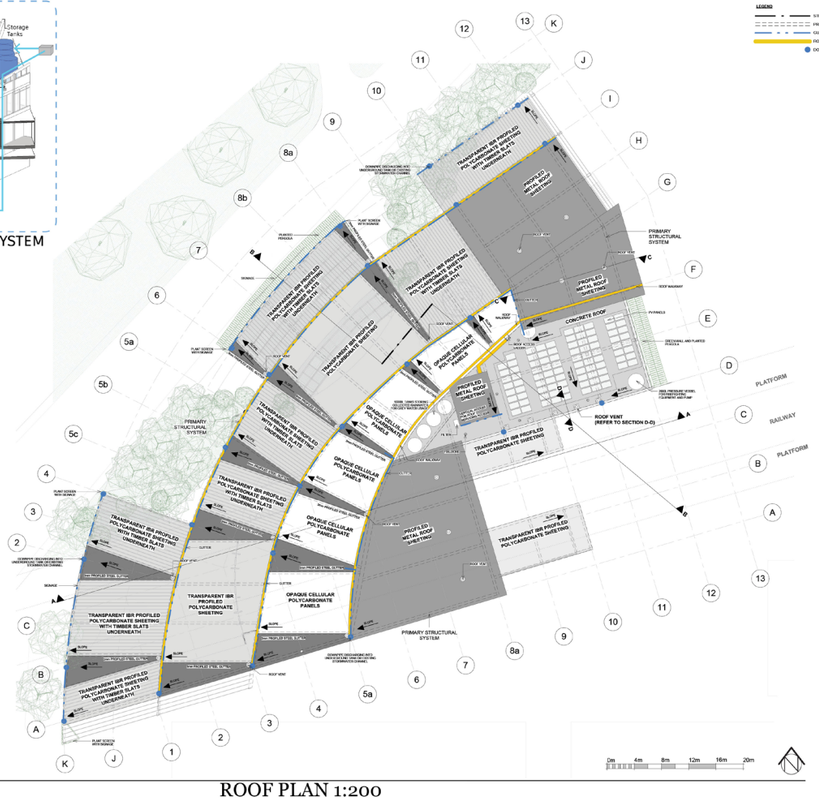
AMPHI-SEATING 12

FIRST FLOOR PLAN 1:200

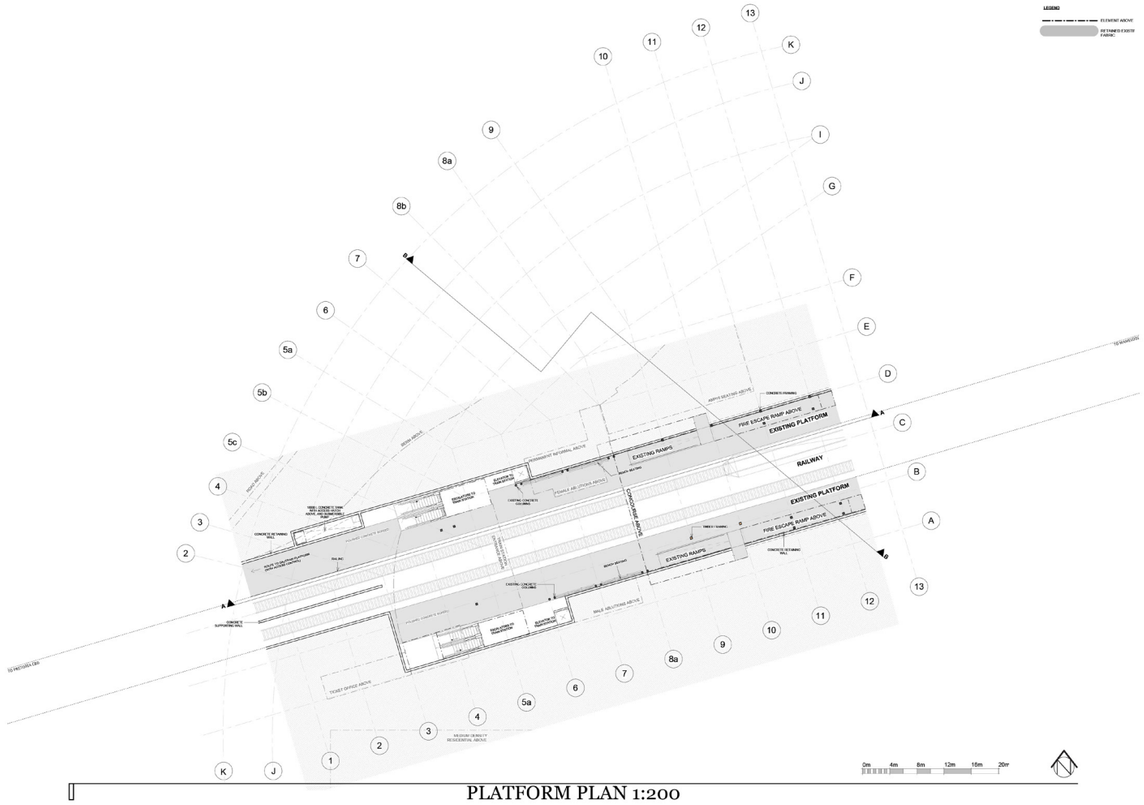


RAINWATER SYSTEM

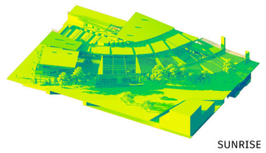




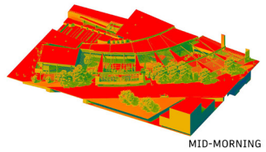
ROOF PLAN 1:200



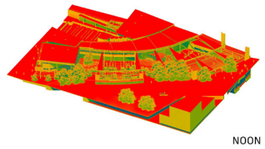
PLATFORM PLAN 1:200



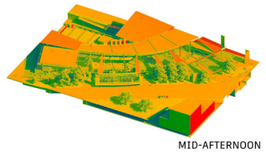
SUNRISE



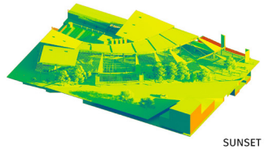
MID-MORNING



NOON

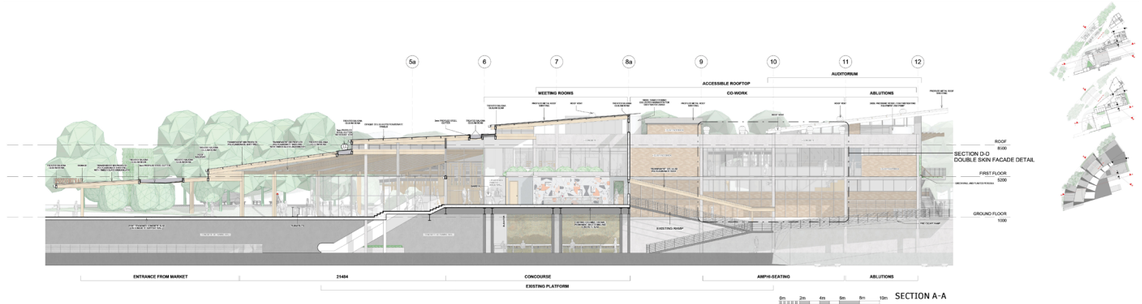


MID-AFTERNOON

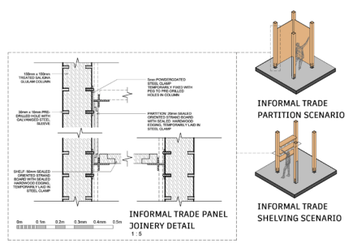


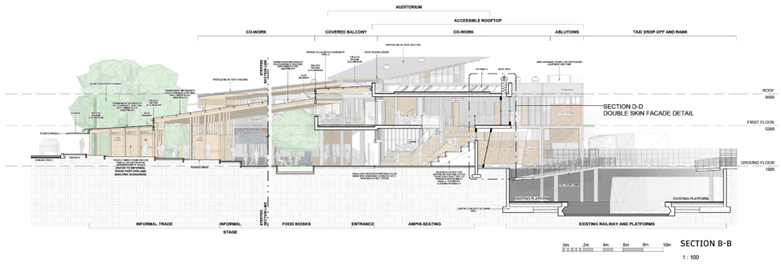
SUNSET

SOLAR STUDY

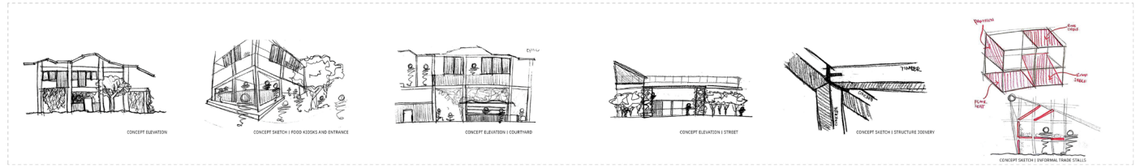


SECTION A-A
1 : 100

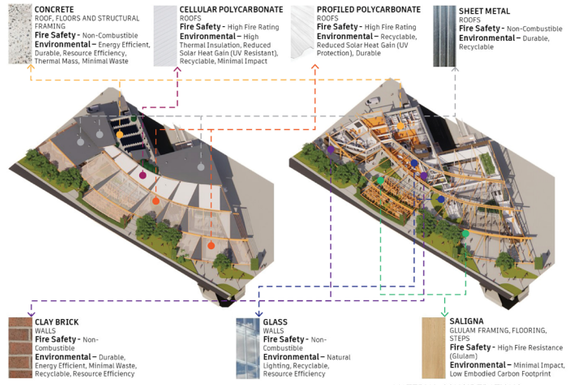




SECTION B-B
1 : 100

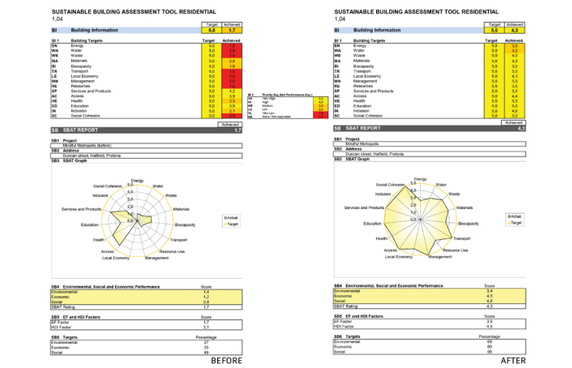


SECTIONS 1:100

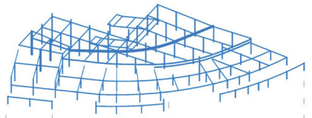


MATERIAL CONSIDERATIONS

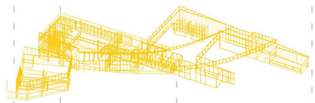
Well-Being | Lighting Quality | Visual Access | Local Availability | Longevity | Fire Safety



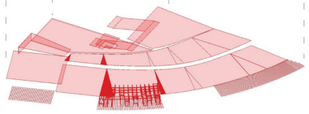
ENVIRONMENTAL CONSIDERATIONS



PRIMARY STRUCTURE
Load-bearing Concrete Frame into Timber Frame

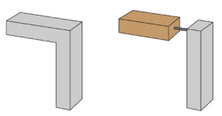


SECONDARY STRUCTURE
Brick and Glass Infill



TERTIARY STRUCTURE
Lightweight TImber Frame and Panels

STRUCTURAL HIERARCHY

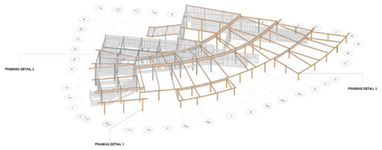


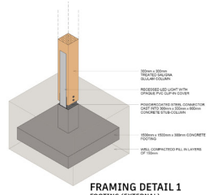
HOMOGEMOUS MATERIALITY ASSEMBLY

HETEROGENOUS MATERIALITY ASSEMBLY

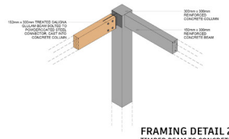
FRAMING RATIONALE

FRAMING

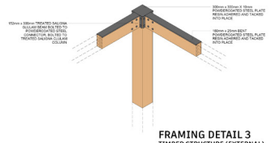




FRAMING DETAIL 1
FOOTING (EXTERNAL)
1:20

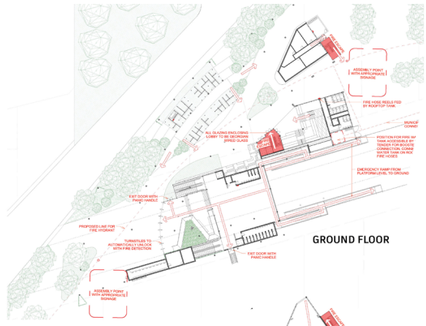


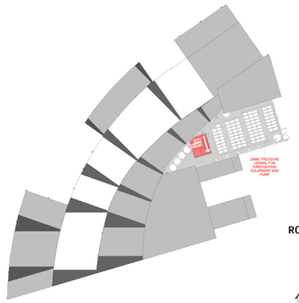
FRAMING DETAIL 2
TIMBER BEAM TO CONCRETE STRUCTURE (INTERNAL)
1:20



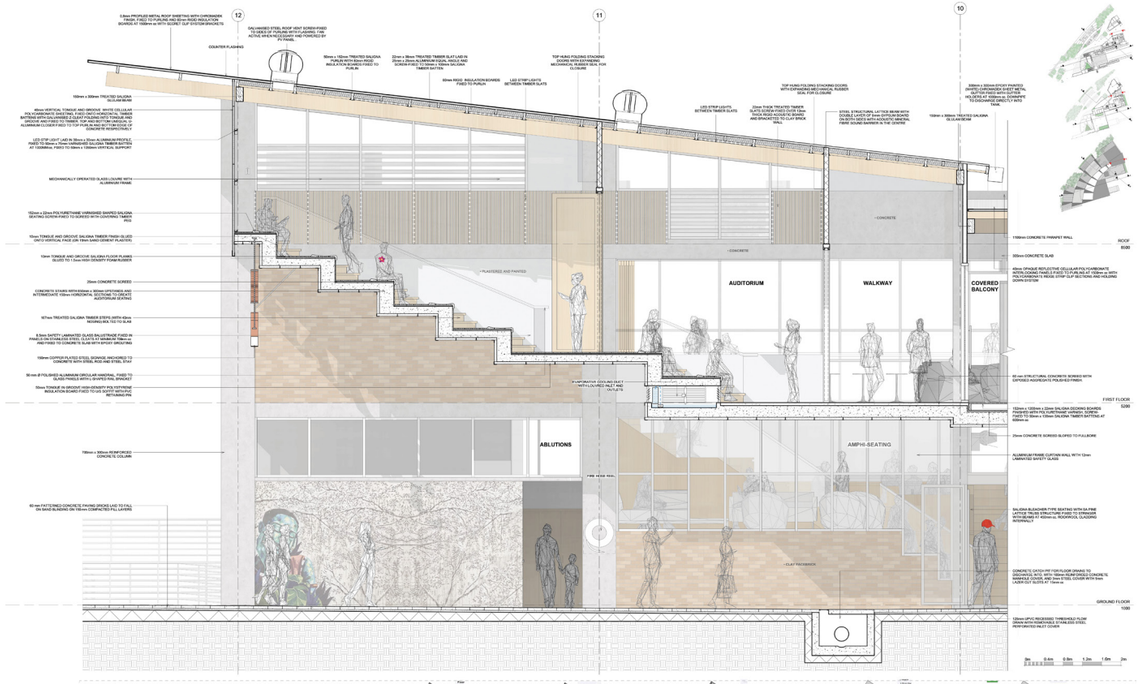
FRAMING DETAIL 3
TIMBER STRUCTURE (EXTERNAL)
1:20

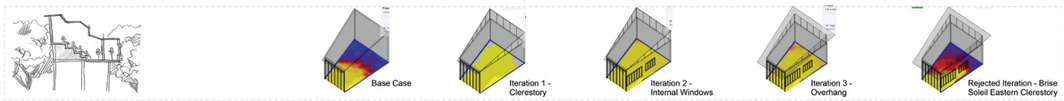
FRAMING



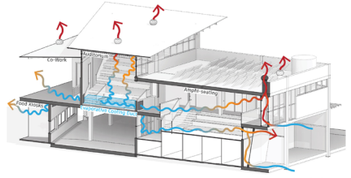


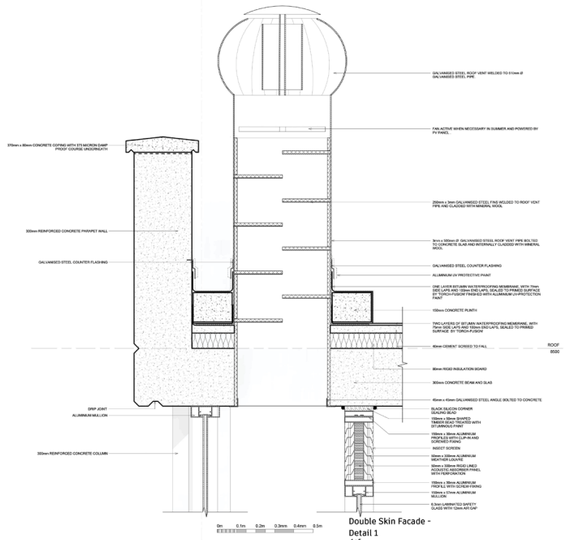
RATIONAL FIRE SAFETY DESIGN (NTS)



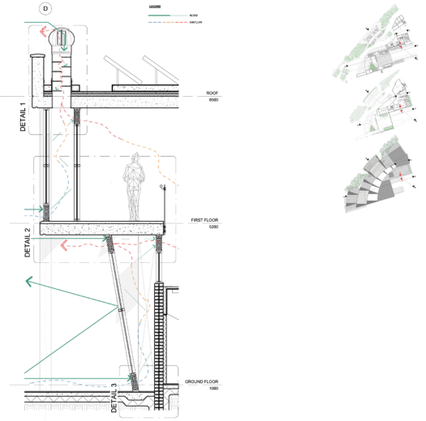


SECTION C-C | AUDITORIUM 1:20

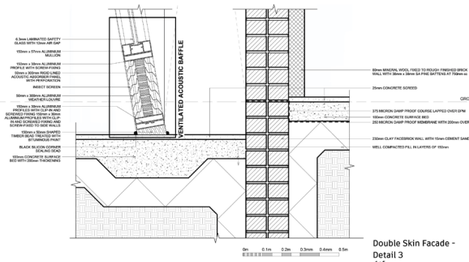




Double Skin Facade - Detail 1
1 : 5

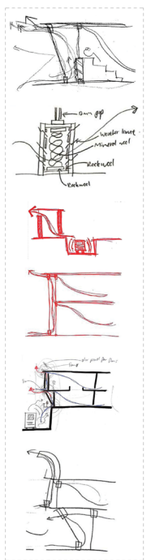


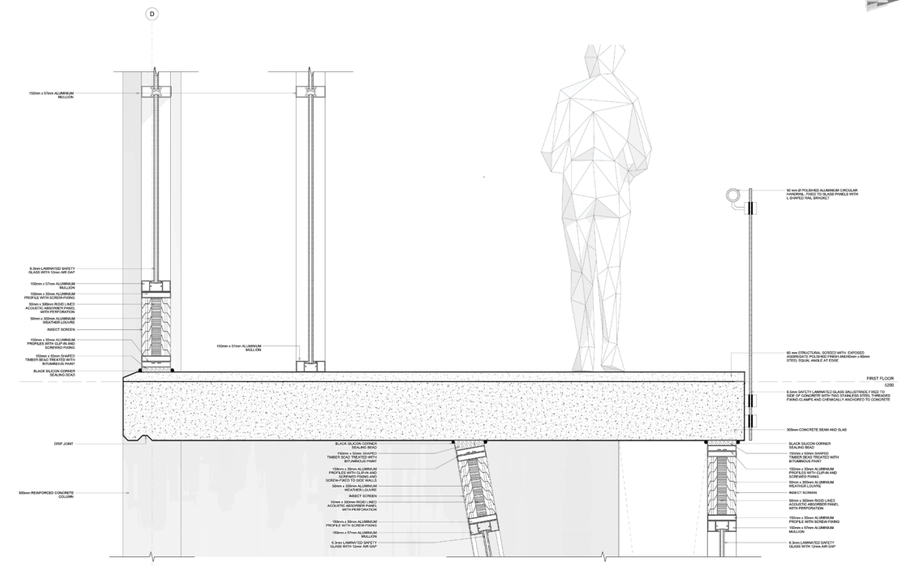
DETAIL SECTION D-D - Double Skin Facade
1 : 25



Double Skin Facade - Detail 3
1 : 5

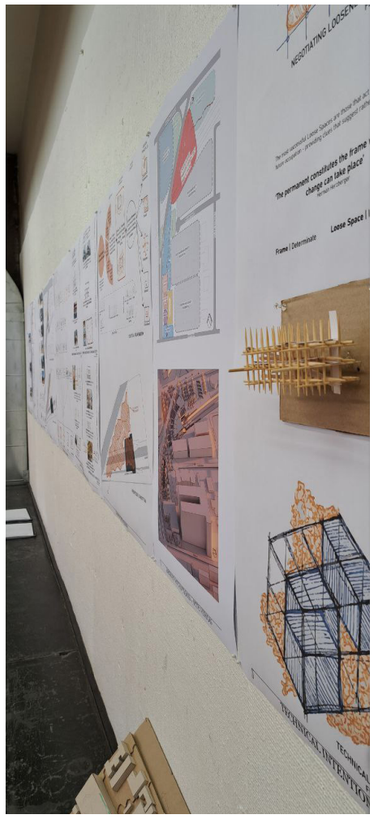
SECTION D-D | DOUBLE SKIN FACADE





SECTION D-D | DOUBLE SKIN FACADE

CONCLUSION



APPENDICES

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Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

23 May 2022

Reference number: EBIT/46/2022

Ms C de Jongh
Department: Architecture
University of Pretoria
Pretoria
0083

Dear Ms C de Jongh,

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Approval is granted for the application with reference number that appears above.

1. This means that the research project entitled "Mindful Metropolis" has been approved as submitted. It is important to note what approval implies. This is expanded on in the points that follow.

2. This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Research Ethics Committee.

3. If action is taken beyond the approved application, approval is withdrawn automatically.

4. According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.

5. The Committee must be notified on completion of the project.

Where applicable, no data is to be collected without first obtaining permission letter(s). The permission letter(s) from the organisation(s) must be signed by an authorized person and the name of the organisation(s) cannot be disclosed without consent.

The Committee wishes you every success with the research project.

Prof K.-Y. Chan
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

APPENDIX A

Ethical Clearance

Interview Example Questions

Informal interviews were conducted on site with informal traders and pedestrians to gain an understanding of the everyday users and uses of the space. The information obtained from the interviews also acted as a means to substantiate assumptions made in the empathy mapping.

Furthermore, a structured interview was conducted with the manager of the Hatfield City Improvement District to gain a better understanding of Hatfield as a whole. The information obtained from this interview gave insight into the demographic, safety and inner workings of the neighbourhood, as well as the positive and encouraging attitude of the CID towards public space.

Interviewees:

Interviewee A. 2022. Interview with de Jongh, C. 25 May, Hatfield. [Informal Trader]

Interviewee B. 2022. Interview with de Jongh, C. 25 May, Hatfield. [Informal Trader]

Interviewee C. 2022. Interview with de Jongh, C. 25 May, Hatfield. [Worker Commuter]

Interviewee D. 2022. Interview with de Jongh, C. 25 May, Hatfield. [Worker Commuter]

Interviewee E. 2022. Interview with de Jongh, C. 25 May, Hatfield. [Student Commuter]

Interviewee F. 2022. Interview with de Jongh, C. 25 May, Hatfield. [Student Commuter]

Luckhoff, L. 2022. Interview with de Jongh, C. 30 May. Hatfield. [CEO of the Hatfield City Improvement District]

Format:

1. Question? (Possible answer)

Informal Traders:

1. Why have you chosen this spot to set up your stall? (Open ended answer)
2. Who do you sell to? (Pedestrian commuter/taxi drivers/other)
3. When is your busiest time of the day in terms of customers? (Morning/Afternoon)
4. What do you sell? (Open ended answer)
5. How long have you been selling here for?
6. Which areas are included in your route? (Open ended answer)
7. How did you get here? (Train/Bus/Taxi/Walking)

Pedestrians:

1. Where are you coming from? (Train station/Bus stop/Taxi stop/Private mode)
2. Where are you heading? (Work/School)
3. Do you feel safe/comfortable walking in this area? Why or why not? (Yes/no; open ended answer)
4. Do you feel safe/comfortable using your preferred mode of transport? Why or why not? (Yes/no; open ended answer)
5. Do you make stops along your route? If so, for what purpose? (Yes/no; open ended answer)

Hatfield CID Manager:

1. What are the aims of the CID? (Open ended answer)
2. What does the CID do to uplift and engage the community? (Open ended answer)
3. How does the CID prevent urban decay? (Open ended answer)
4. What is the CID's attitude towards lost urban spaces? (Open ended answer)
5. Does the CID intend to make any changes to the existing lost spaces? If so, what are the intentions? (Yes/no; open ended answer)
6. What is the CID's perspective on the existing public spaces in the area? (Open ended answer)
7. Does the CID intend on adding public space to the existing fabric of Hatfield? (Yes/No)

1	2
Class of occupancy of building	**Occupancy**
A1	**Entertainment and public assembly** Occupancy where persons gather to eat, drink, dance or participate in other recreation.

1	2
Class of occupancy of room or storey or portion thereof	**Population**
A1, A2, A4, A5	Number of fixed seats or 1 person per m^2 if there are no fixed seats

1	2	3	4	5	6
Population	**Number of sanitary fixtures to be installed**				
	Males			**Females**	
number of people	**Toilet pans**	**Urinals**	**Wash-hand basins**	**Toilet pans**	**Wash-hand basins**
≤ 50	1	–	1	1	1
≤ 100	1	1	1	2	1
≤ 150	1	2	1	3	2
≤ 250	2	3	2	5	3
≤ 500	2	4	3	6	4
≤ 1 000	2	6	5	8	6
≤ 1 500	3	7	6	10	7
> 1 500	Add 1 sanitary fixture to the above for every 1 000 persons	Add 1 sanitary fixture to the above for every 500 persons	Add 1 sanitary fixture to the above for every 700 persons	Add 1 sanitary fixture to the above for every 300 persons	Add 1 sanitary fixture to the above for every 700 persons

APPENDIX B

Plumbing Fixtures

The amount of plumbing fixtures provided was derived from SANS 10400 Part P. As the project does not have a specified amount of people moving through it, the occupancy was identified as A1. Then, the population was extracted as one person per m^2. With a total floor area of 1375m^2, an estimate of 1500 occupants was settled upon (25 being personnel). The amount of fixtures within the Train Station was determined with the 1500 occupancy count. The smaller and more transient spaces' fixtures were derived as a reduced amount in comparison to that of the Train Station.

Fixture Water Demand	
Flushing of water saving Toilet (L)	2,5
Washing Hands (L)	2,1
TOTAL DEMAND per person (L)	**4,6**
Estimated amount of people per day	5000
Daily water demand (L)	**23000**

AREA CALCULATIONS			
Catchment	Area, A (m²)	Runoff Coefficient,	
		C	C (weighted)
Roof	**3648**	**0,85**	0,80
Paving	**214**	**0,8**	0,04
TOTAL	**3862**		**0,847229415**

TOTAL YIELD		
Month	Total Yield (m³/month)	
January	**452,492**	
February	**252,9**	
March	**275,804**	
April	**174,372**	
May	**50,036**	
June	**30,404**	
July	**17,316**	
August	**27,132**	
September	**79,484**	
October	**239,812**	
November	**328,156**	
December	**367,42**	
ANNUAL TOTAL	**2295,328**	**2295000 Litre**

APPENDIX C

Rainwater Calculations

The large roof structure is equipped with gutters and downpipes which will run directly into the ground)refer to figure 88.2). The rainwater harvested from the roof and paving will pass through a filter system and be stored in four 10000L tanks on the concrete roof. The maximum daily water demand is 23000L which means that the tanks kan provide 1,74 days of water. The excess water harvested will be discharged into the existing stormwater pipes on site.

APPENDIX D

Solar Power

Annual solar potential

Month	Days	Avg peak sun hours (kWh/m2)	Effective collection area (m2)	Total possible energy (kWh)
January	31	5,5	110	18755,00
February	28	5,5	110	16940,00
March	31	5,5	110	18755,00
April	30	5,5	110	18150,00
May	31	5,5	110	18755,00
June	30	5,5	110	18150,00
July	31	5,5	110	18755,00
August	31	5,5	110	18755,00
September	30	5,5	110	18150,00
October	31	5,5	110	18755,00
November	30	5,5	110	18150,00
December	31	5,5	110	18755,00
Total possible annual collection (kWh)				220825,00
Total possible daily collection				605

The concrete roof contains 90 photovoltaic panels which constiture a total collection area of approximately 110m^2.

This system yields 605kWh per day, 18755kWh per month and 220825kWh per year.

The system's purpose is not for the whole building to depend on the photovoltaic panels in terms of electricity. The intention is that the panels serve as a supplementary source of power for low demand equipment (such as lights). This will reduce the demand on the on the national grid and reduce the project's carbon footprint.

Thank You.