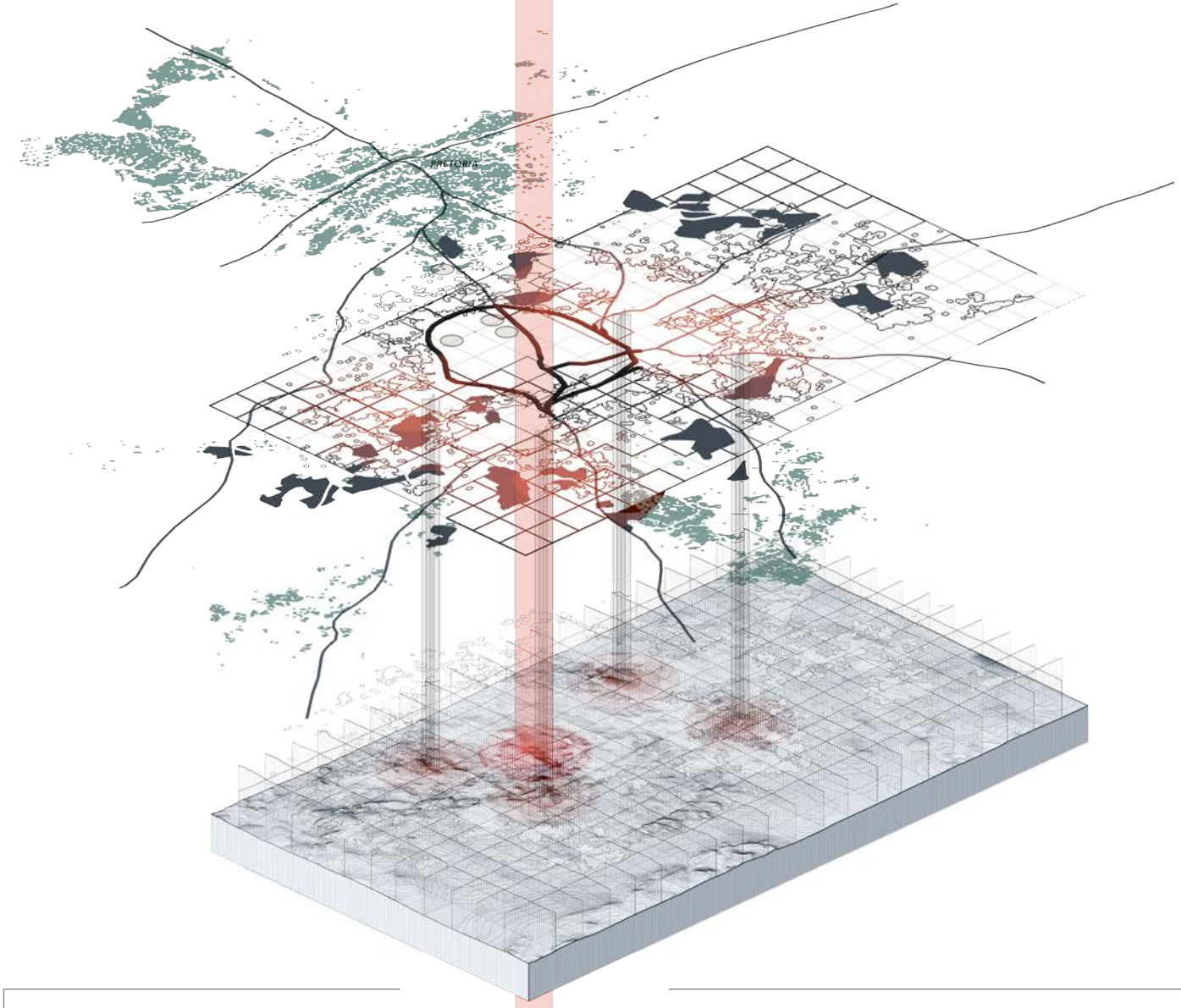

Provoking the possibilties of sites of significance to evolve the notion of the Grand Gesture:

A CASE FOR THE DRILL HALL

THE CRITICAL JUNCTURE

A dissertation by Nadine Mills
As part of the MArch(Prof) Program
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PROJECT TITLE

The Critical Juncture

PROJECT LOCATION

The Drill Hall,
Johannesburg Central
South Africa
GPS: 26.1990° S, 28.0488° E

MAIN FUNCTIONS

Transitional Housing; Horticulture & Water Recycling

CLIENT

Transitional Housing; Horticulture & Water Recycling

RESEARCH FIELDS

Human Settlements & Urbanism; Heritage & Cultural Landscapes

THEORETICAL PREMISE

The interrogation of the notion of the 'grand gesture' in the post-aprtheid context, as well as the investiagtion of alternative housing solutions and responses to heritage

KEYWORDS

historic provocation; temporary architecture; transitional housing; place-making; flexible dwelling; user appropriation

YEAR COORDINATOR

Prof. Arthur Barker

STUDY LEADER

Dr. Nico Botes

ABSTRACT

In attempt to bring symbolic and spatial restitution to the post-apartheid city, city-makers have introduced spatial gestures of compensation within the depraved landscapes to serve as symbols of the reformed city. Although on paper, such gestures have both symbolic and functional validity, theorists question the true relevance and integrity of these grand spatial gestures as icons of imagined communities, as they tend to succumb to the image-driven boosterist architecture of the new African megacity and fail to be the injections of infectious regeneration that their makers hope them to be.

Within a destitute and degraded 'urban void' of Downtown Johannesburg, sits such a site: the Drill Hall, which in 2004 after a series of fires was hoped to be transformed into a 'living museum'. The attitude towards the built fabric was highly preservationist as all fabric that could be saved was restored to its original state, yet programmatically it tried to achieve a conservationist outcome.

Some fourteen years later in 2018, the site and its buildings remained locked in time, unable to evolve with the context and the successful conservation of the site has not be achieved, as it has since been informally appropriated into informal housing and a skate park whilst the restored fabric is falling victim to urban decay.

Therefore, in attempt to reinterpret both the notion of the grand gesture and resolve the tug of war that exists between preservation and conservation on the site, the product of this dissertation will attempt to provoke the possibilities of the site through the temporal, flexible dwelling and facilitated conditions of personal appropriation to allow for new narratives to evolve the meaning of the site. This will be done in conjunction with the integration of permanent community serving functions (legal aid and youth support), infrastructure for informal trade and an environmental micro-infrastructure which will exist as the new backbone of the site, which collectively will serve as a relevant (and conceptually evolved) gesture of compensation to the site, the people and the inner city.

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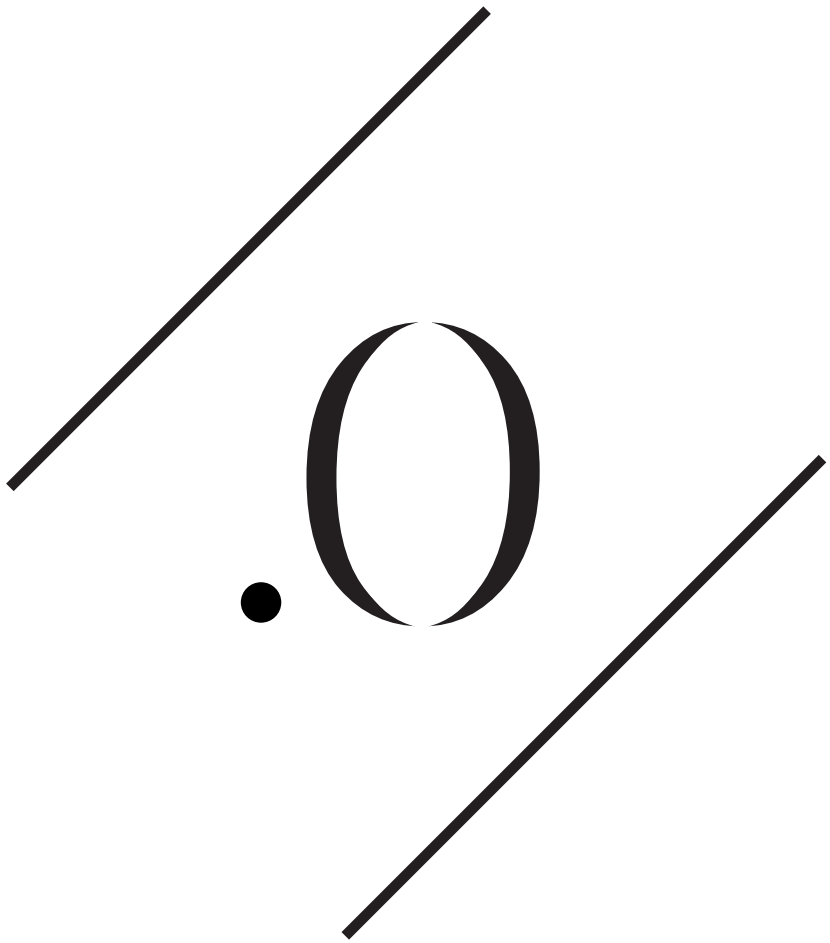


THANK YOU

Nico,

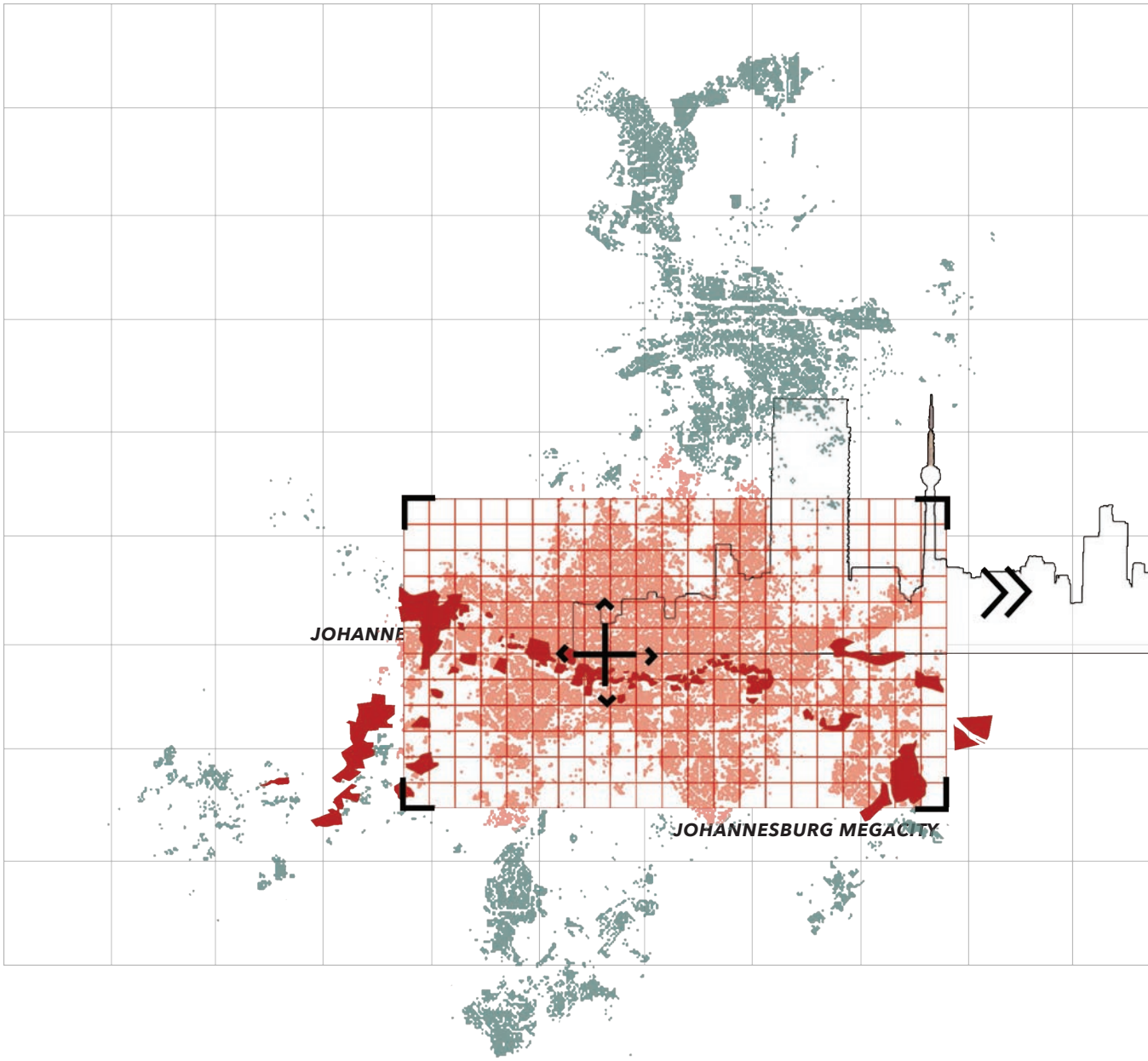
Thank you for your constant enthusiasm and support this year.
Thank you for encouraging me to be bold.

J,

Thank you for being the best supporter, model builder and sister. Your inherent dedication and discipline both inspired and motivated me this year and will continue to for years to come.

Mom & Dad,

This journey would have been impossible without you. Your unwavering love and support carried me through to the end. You are my heroes.



01

“within a city, there is always another city.....

CHAMBERS
1986:183

INTRODUCTION

1.1 THE URBAN CONDITION:
JOHANNESBURG AFTER APARTHEID

In the early 1990s, after 40 grueling years of political spatial fracturing, city-makers of the new democracy were faced with a momentous task. They were not only tasked to heal the segregational wounds left behind by the puppeteers of Apartheid (Morris 1998), but also had to bring the new romantic vision of the all-inclusive 'African megacity' to life (CoJMM 2011:2).

Some 20 years later, although some reintegration of the city has been achieved, Johannesburg still leads a dual life (see figure 1). On the one hand, the city portrays a vibrant and viable megacity which needs to fit seamlessly into the 'global developmental paradigm' (CoJMM 2011). It does so quite convincingly through its novelty architectures and infrastructures which ensure its credibility. However, on the other hand, behind the thriving façade, is the "miasmal city of those residual and stigmatized zones of impoverishment" (Murray 2011:3).

The booming epicentres of the city in contrast to the peripheral malnourished settlements (see figures 2 & 3) are evidence of a biased approach towards transformation, where the reinventing and showcasing of the reformed city has taken precedence to crucial spatial correction, allowing the social and spatial stratification established by the order of Apartheid to continue to manifest.

Fig. 1.1 - A contextual map of the megacity

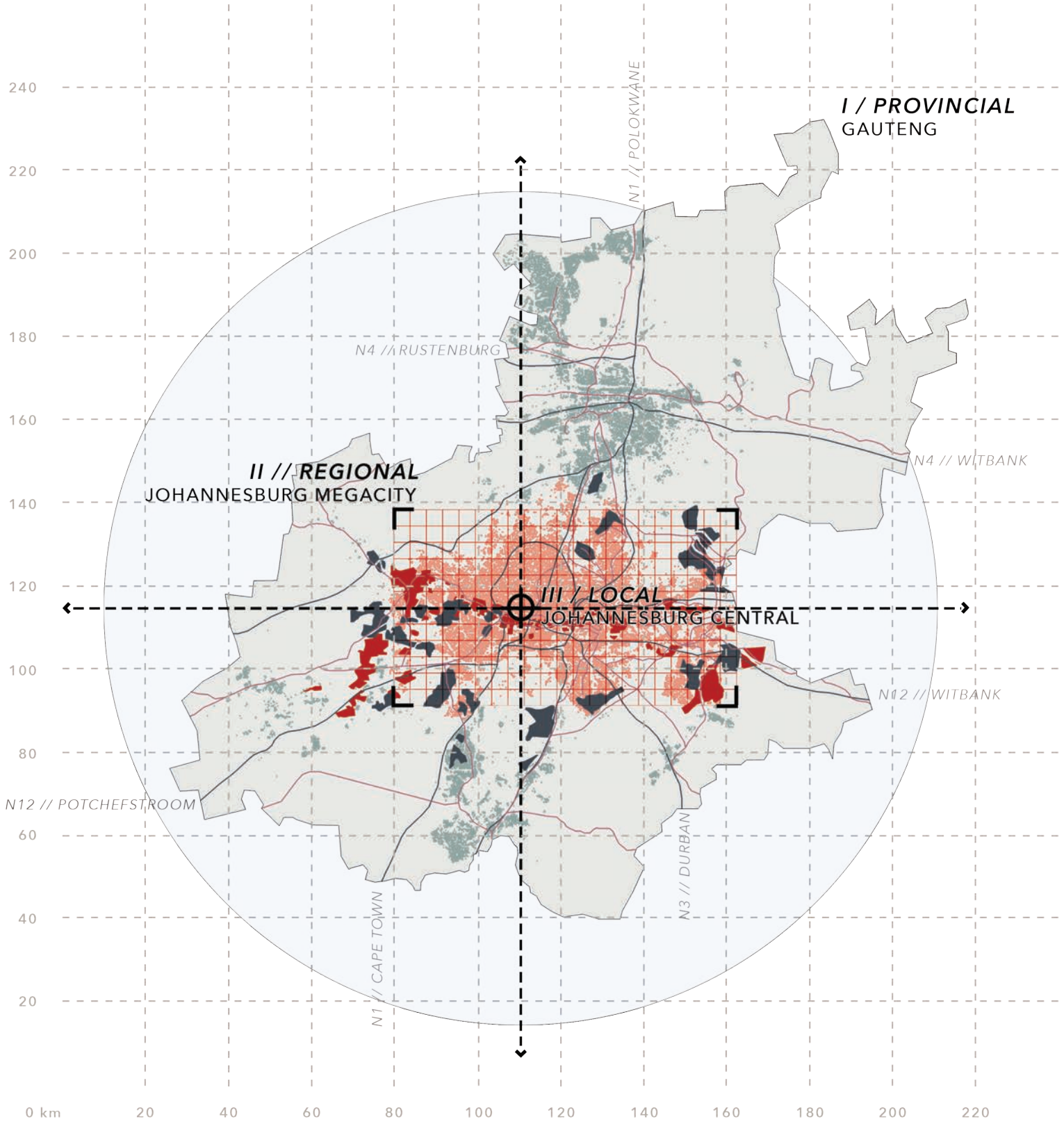


Fig. 1.2 - Aerial photograph of Sandton, Johannesburg

Fig. 1.3 - Aerial photograph of peripheral informal settlement, Johannesburg

1.2 SYMBOLS OF CHANGE

THE ROLE OF ARCHITECTURE IN THE NEW MEGACITY

Architecture has always had the inherent quality of representing people, culture and identity (Marschall 2003) and plays a complex role within the urban disparity of Johannesburg, demonstrated clearly in two polar conditions.

Within the privatised realms and international portals, flagship architectures construct the face of the city. They are hot on architectural radars and other social platforms, becoming prominent receivers of praise by city boosters and the general public alike. Their nature is often justified by the "contemporary language of instrumentalism" and "excelling performance assessment … mimicking global trends in other aspirant world class cities" (Murray 2008:7). This emphasis on architectural aesthetic and its representative role paints a very particular image of the city from the top down, reinforcing the illusion of the world class city and leaves the subject of their contextual validity and relevance unchallenged.

On the opposite end of the scale, community-oriented architectures which work through spatial regeneration and integration strategies hands on from the bottom up, seem to make but a mere dent in the impressions of those who propel the image of the city forward.

Whilst these architectural inverses individually fulfill specific roles within the post-apartheid city, neither contribute towards consolidating the polar conditions towards a reformed city from the top and bottom respectively.

As a result, issues such as stereotypes in architecture, its representative role in the past and present city, the image of the city and to whom it belongs remain largely unresolved.

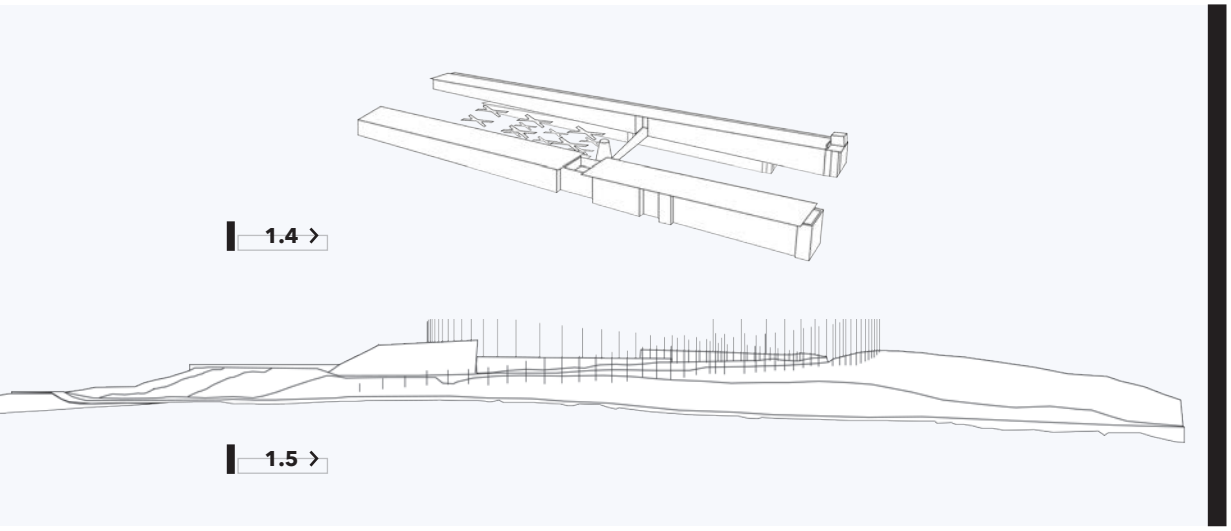


Fig. 1.4 - Graphic icon of Walter Sisulu Square, Kliptown, Johannesburg
Fig. 1.5 - Graphic icon of Freedom Park, Salvokop, Pretoria

1.3 AN UNLIKELY MEDIAN:
THE NOTION OF THE GRAND GESTURE

Spatial gestures of compensation born from sites of significance within the 'meta-narrative' of the struggle (Marschall 2004), present an architectural anomaly concerning the city's polar conditions.

Using their symbolic significance as a foundation for meaning, they have the ability to become valued places for communities to inscribe new narratives through use and appropriation (Freschi 2007), whilst simultaneously registering on the scale of the city as symbolic tools which "guide people's perception of the new socio-political order" (Marschall 2004:3) within the reformed city. Existing examples include Walter Sisulu Square in Kliptown, Soweto and Constitution Hill in Braamfontein and Freedom Park in Pretoria (see figures 1.4, 1.5, 1.6 & 1.7).

Fig. 1.6 - (top right) Aerial photograph of Walter Sisulu Square, Kliptown, Johannesburg
Fig. 1.7 - (bottom right) Aerial photograph of Freedom Park, Salvokop, Pretoria

1.4 PROBLEM STATEMENT

RELEVANCE OF GESTURES

Although grand gestures of compensation possess an immense potential to evolve into meaningful tools of enablement for the communities in which they are situated (Freschi 2007), theorists have come to question both the relevance and integrity of many of these gestures (see Granelli 2000; Garson 2002; Ballard 2004; Freschi 2007; Marschall 2012; Sheriff 2016). Some points of critique include:

- Many bear the grand and spaceless qualities of monuments which do not foster the scale of human activity, and they instead become contentious icons of "imagined communities" (Sheriff 2014:2);
- Others have been restricted by the exclusionary limits of gentrified destination architecture, driven by the same "appetite for architectural novelty" (Freschi 2007:33) as the megacity, and are essentially unable to evolve and expand beyond their prescribed functions;
- Some, which showed initial potential to evolve into enabling spaces with room for personal appropriation, have been abandoned, proving insufficient engagement or contextual irrelevance.

1.5 FOOD FOR THOUGHT

SCALES OF NECESSITY

In determining the necessity/relevance of such gestures, Lyotard (1978) suggests that grand, symbolic gestures should be rather reinterpreted into a multitude of smaller design gestures which capture the multiculturalism of place, which is appropriate in the South African context, such as Constitutional Court and the Northern Cape Governmental complex. On the other hand, Said (in Kennedy 2000) argues that grand gestures are still valid and necessary for those who have yet to be freed from the consequences of past legacies, such as Walter Sisulu Square and Freedom Park.

1.6 RESPONSE

THE CRITICAL JUNCTURE

Using this quandary as a point of departure, this dissertation will ask the citywide question as to what role gestures of compensation, and by extension other public buildings and spaces with similar intentions, have within the trajectorial course of the image of the post-apartheid city, its architectural representative role, and its ability to contribute to the reintegration of the fractured city.

This will be done through investigating the possibilities of sites of significance within the struggle to work from both the top and bottom simultaneously, finding the critical juncture within the urban landscape to become catalysts of urban regeneration. Furthermore, it will challenge that only in utopia can grand spatial gestures and the right to appropriate space be absorbed in context and restore the right to the city, especially without the correct infrastructure and appropriate tools to facilitate place-making. Therefore, the possibility of a strong underlying infrastructure and tools encourage the evocation of a new meaning in place resulting in ownership and belonging will be included as part of the investigation.

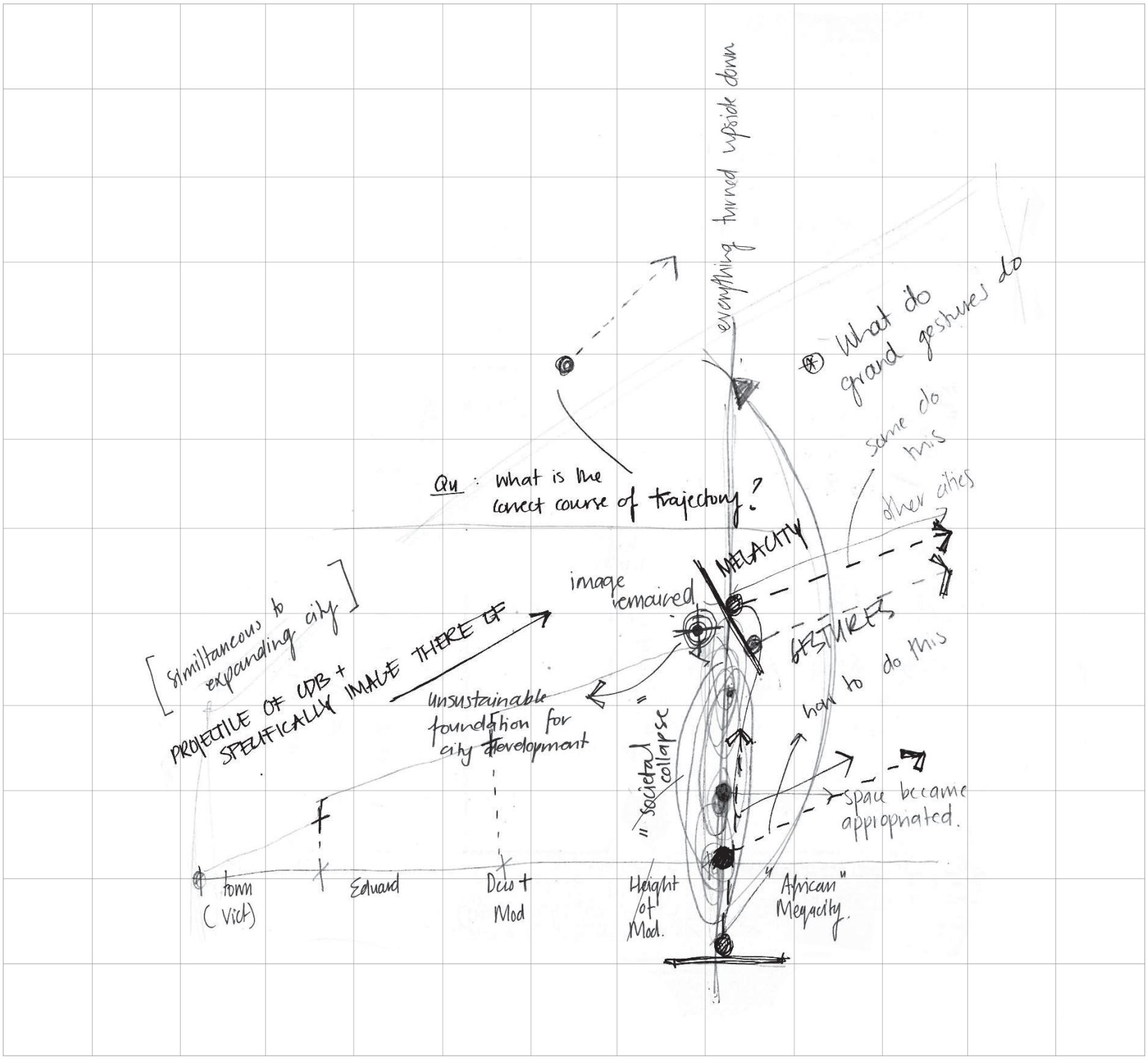


Fig. 1.8 - Preliminary sketch diagram questioning how image and architecture have evolved in the Johannesburg Megacity

SUMMARISED QUESTION

Therefore, through reinterpreting the notion of the grand gesture into a platform of regenerative architectural infrastructure, which is strengthened by and not built around memory and heritage, to serve as a better model of sustainable urban regeneration as opposed to a pedestaled monumentalisation to history, the product of this dissertation/ investigation will attempt to become an active contextual participant and re-generator of place and not just a blank slate, which theoretically begins to question the role that architecture and urban intervention should take within the architectural trajectory in rebuilding the image of the city as opposed to conforming to the current propelled image trajectory that the city has adopted.

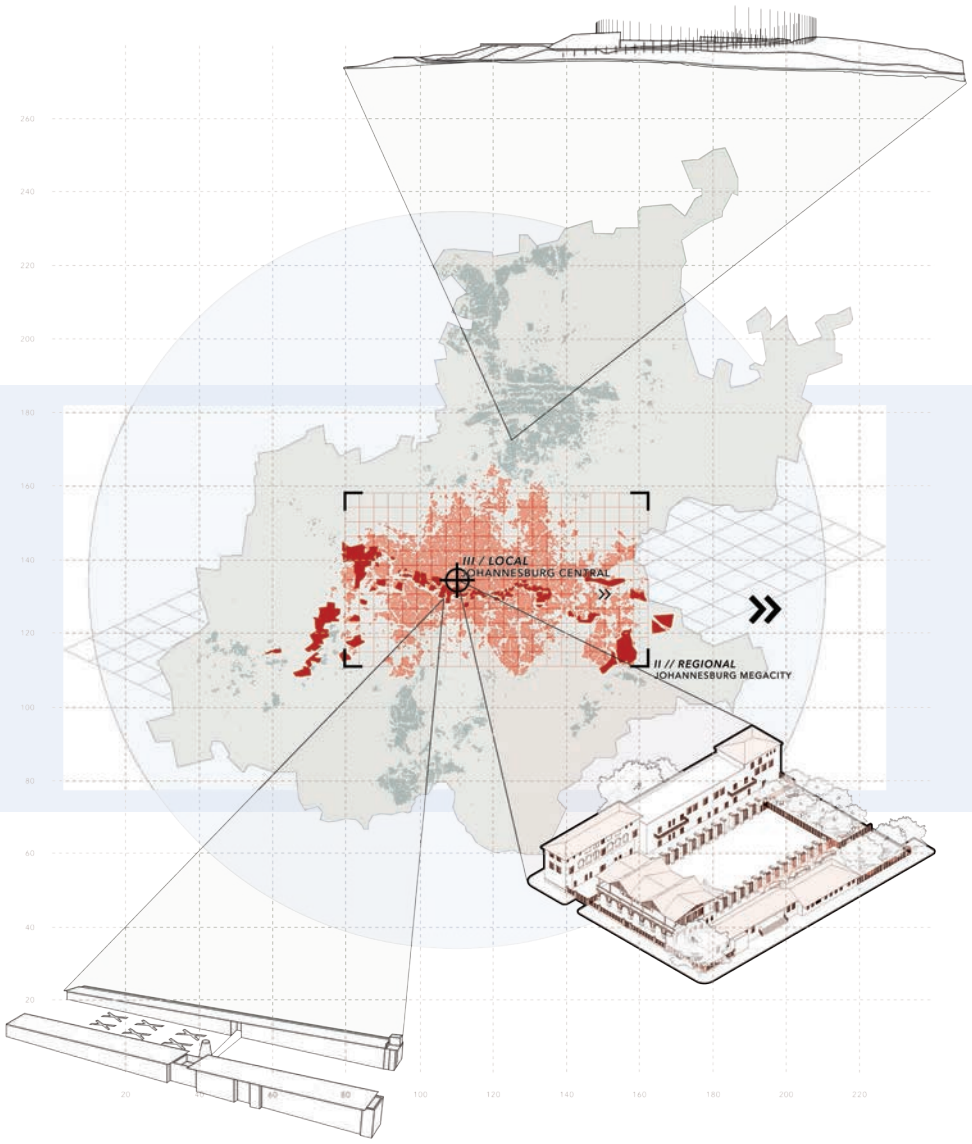
› *Fig. 1.9 - Graphic locating the Drill Hall and the CBD within the megacity*

1.7 A SITE FOR TESTING

1.7.1 THE LEGACY OF THE CENTRAL BUSINESS DISTRICT

As the very origin of the city, the CBD tells the oldest stories of Johannesburg and its complex relationship with perception and representation which has been embedded in its buildings since the very beginning as the first icons of the city of gold. This relationship is still true today as the CBD's iconic skyline is one of Johannesburg's star emblems, whose condition within is described by Mosondo (2011) as a 'barometer' for determining the viability of a city. This belief has prescribed the approach to regeneration taken to the inner city since the turn of democracy, which has kept in line with the ideals of the megacity (Bremner 2000) by limelighting specific high profile zones, and leaving less significant areas to deteriorate.

Therefore, the dense and complex inner city presents not only the complex relationship between image and architecture that the megacity lives by, but also presents the condensed reality of the dichotomous megacity, where polar conditions not only exist, but confront one another face to face, as inverted images of one another and proof of its bias towards transformation. Together these factors present the richest urban condition with which to engage.



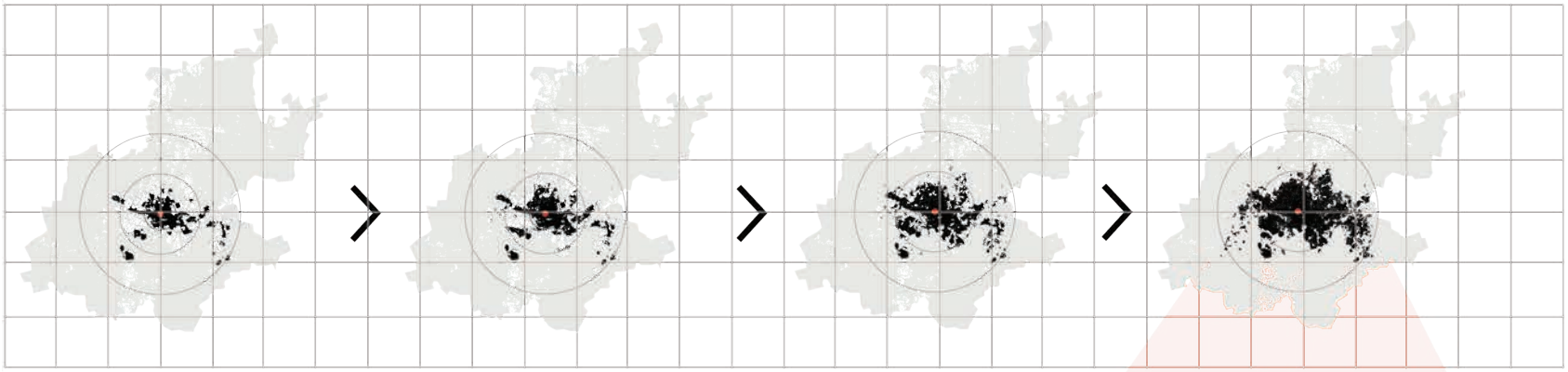
1.7.2 THE DRILL HALL

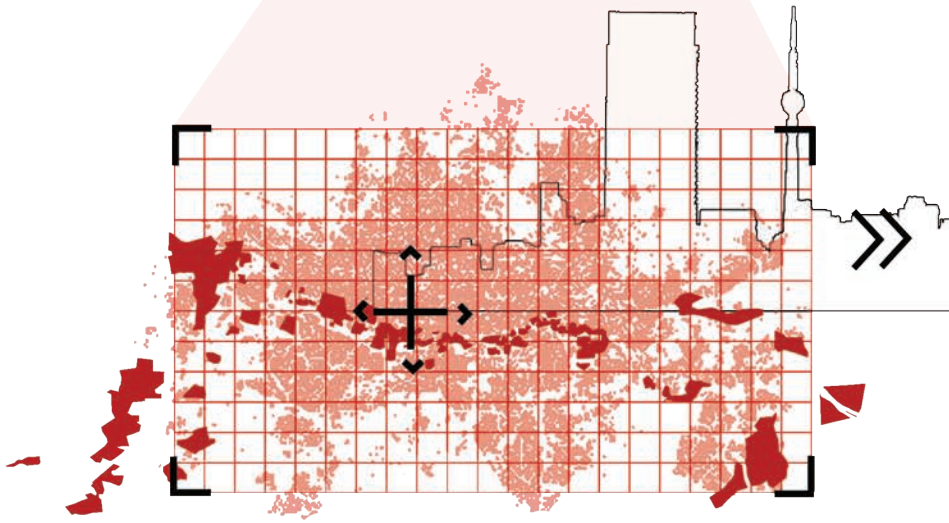
Located in one of the highly dilapidated parts of Johannesburg's CBD is the old Drill Hall. Built in 1904, it was the former military powerhouse of Johannesburg for 90 years, and during its time of reign, it hosted the preliminary examinations of 156 activists of the African National Congress during the infamous Treason Trial of 1956. As a result, the Drill Hall which was "a site of former oppression, has become a site of potential empowerment" (Marschall 2004:4) and an important symbolic icon in the struggle against Apartheid.

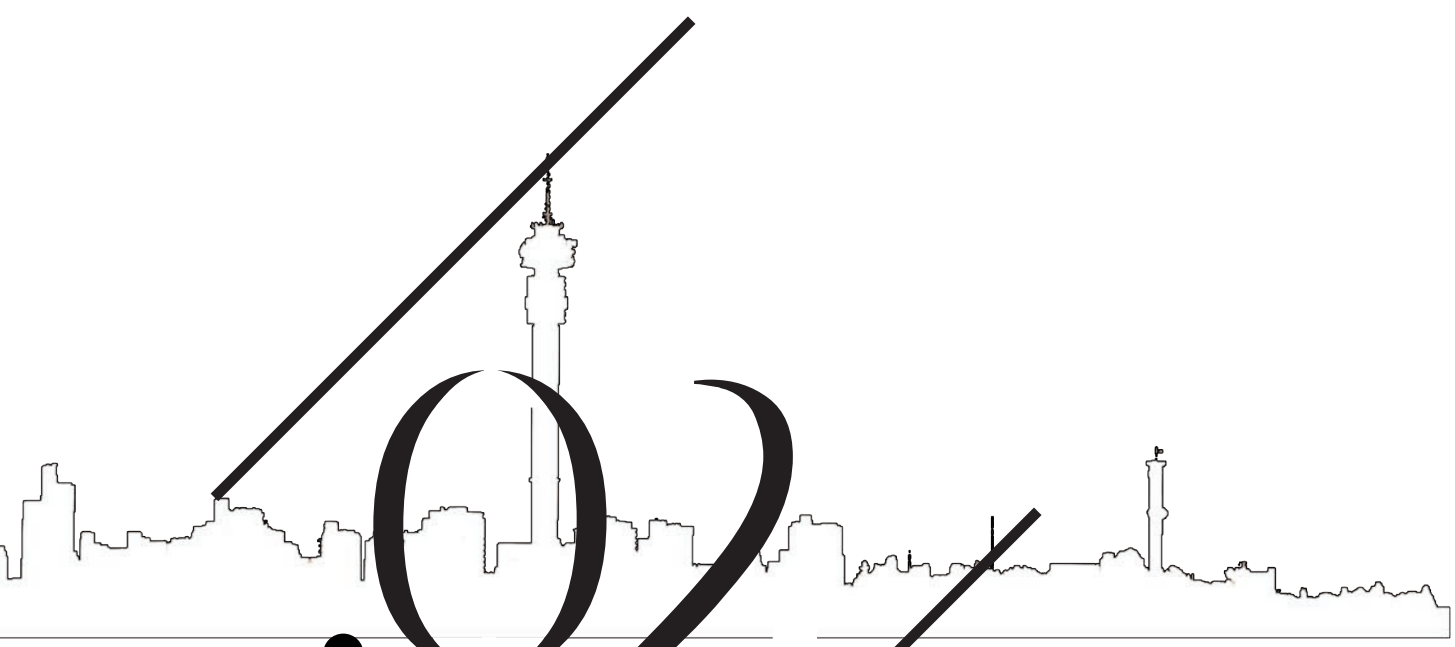
In 2004, after a series of fires which left the site in need of repair, the site was simultaneously monumentalised to pay homage to the struggle and sensitively adapted to become useful to its context.

Fourteen years later, the adaptation has not taken to its overwhelmingly dire and desperate context and the site is falling victim to urban decay.

The site brings forth symbolic viability, valued architecture, public space and a need for reinvention in a destitute zone in the inner city, and is thus a highly appropriate site to investigate.





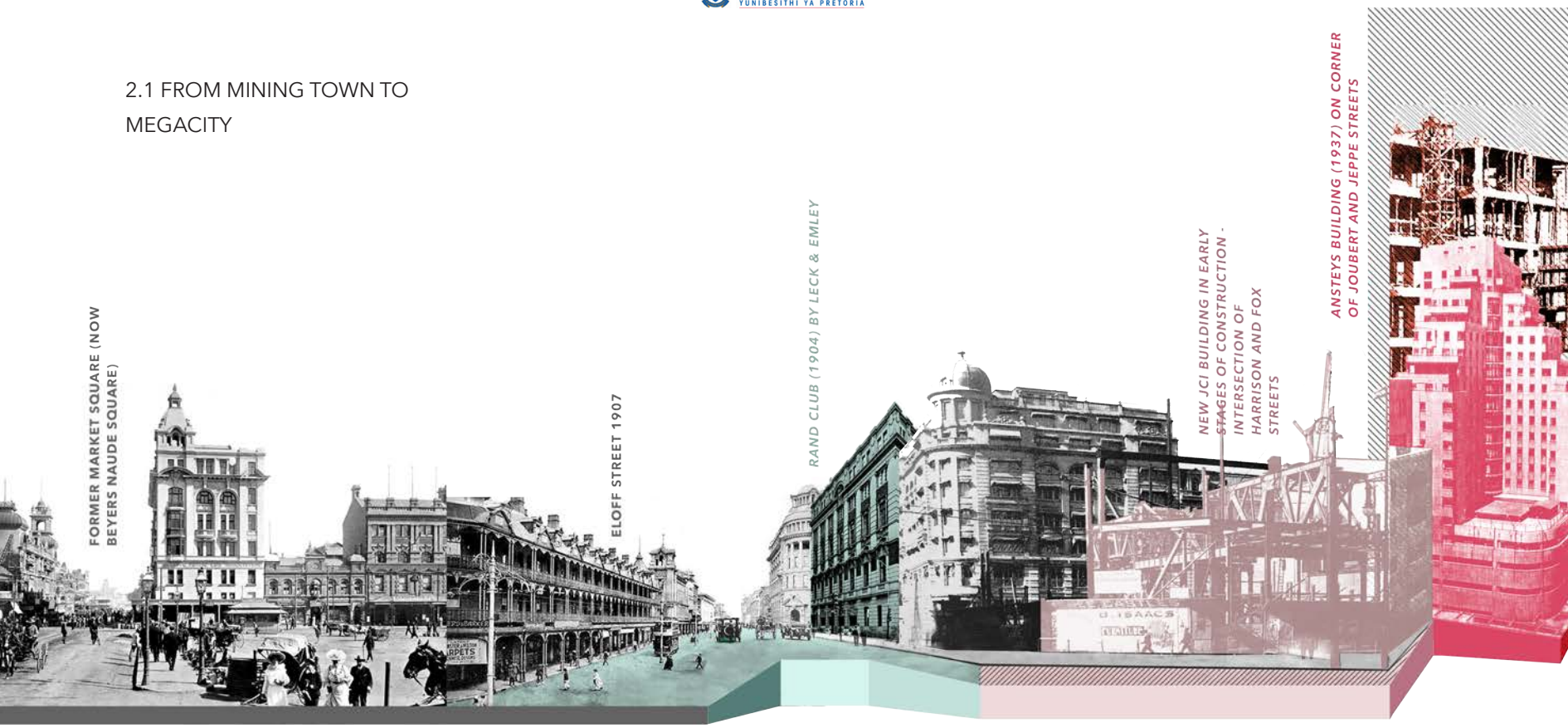


02

“ a reading of the inner city.....

CONTEXT PART I

2.1 FROM MINING TOWN TO MEGACITY



2.1.1 BUILDING UP

In comparison to other centurial city centres which still exhibit rich evidence of their architectural past times, the Johannesburg CBD – now the dense collection of modern skyscrapers - bares little evidence of the identities that it once knew. The discovery of gold and the types of people it attracted, (city-planners, corporate entities etc. all driven by a hunger for capital gain and growth) played the dominating role in establishing the steamroller trend that the CBD was to grow by. The city was consciously and relentlessly rewritten every few decades in accordance with global architectural trends to portray the world class metropolis that its curators wanted it to be (Murray 2011).

From its inception in 1886, Johannesburg began as a quaint Victorian townscape which grew from the Randjeslaagte - a triangular piece of land adjacent to the mining belt (Murray 2011:40). The tight grid on which the town was laid was a reflection of the capitalist attitude towards real-estate in the race for space. Land parcels of Johannesburg were quickly sold off as financial assets (taking precedence over its public spaces and spatial variety), which detrimentally impacted the evolution of place and the embedded attitude towards building in the city to come (JDA 2009:5). From the early 1900s, as the British finance houses, mining company headquarters and stock exchange moved in, establishing their "stronghold of overseas capitalism" (Murray 2011:42), the quaint Victorian townscape was quickly replaced with the larger and grander language of Edwardian Classicism which was strongly representational of the dominating British presence in the country (Murray 2011).

As the mines of Johannesburg remained fruitful, a few years of growth turned into decades, and by the 1930s a new lust with verticality had turned Edwardian Classicism into Early Modern Art Deco

Fig. 2.1 - Evolution of the architectural language of the inner city

RISES

high-rises. The new vertical accent of the city was made possible by building advances in America, whose flourishing urban life was greatly envied and subsequently mimicked in Johannesburg, even to the extent of giving many of its new buildings borrowed names from Manhattan including Chrysler House and Astor Mansions (Murray 2011).

By the 1940s - although Johannesburg had now expanded far beyond the Randjeslaagte - the inner city remained the central hub of financial dominance, luxurious living and vibrant entertainment that crowds still flocked back to (Chipkin 1993). The bulk of the last remaining emblems of British colonialism were demolished, opening up voids which the new wave of modern skyscraper architecture quickly filled.

The International Style fully matured throughout 1950s and 1960s into what Chipkin (1993:247) called the new "regional office vernacular" and thus "the reconfigured central city awaited its imminent rebirth as a new recognized site of world class corporate vitality" (Murray 2011:63). A pure example of this is the Carlton Centre (see figure 2.1) which at the time of completion was the tallest building in the world. It was hailed to represent a "new image for Johannesburg" (Murray 2011:75). As the skyline was rewritten and real estate parcels remained treated as profitable commodities, pedestrian life was predominantly sacrificed for sterile street edges of privatized ground floors and vehicular channels which logically traversed through the jungle of megastructures. With more than 50 new towers built in just over a decade (JDA 2009:6) and after seasons of cycles, this era marked the pinnacle of the inner city's developmental climb, which was to come to an abrupt end and face a sharp, steep decline.

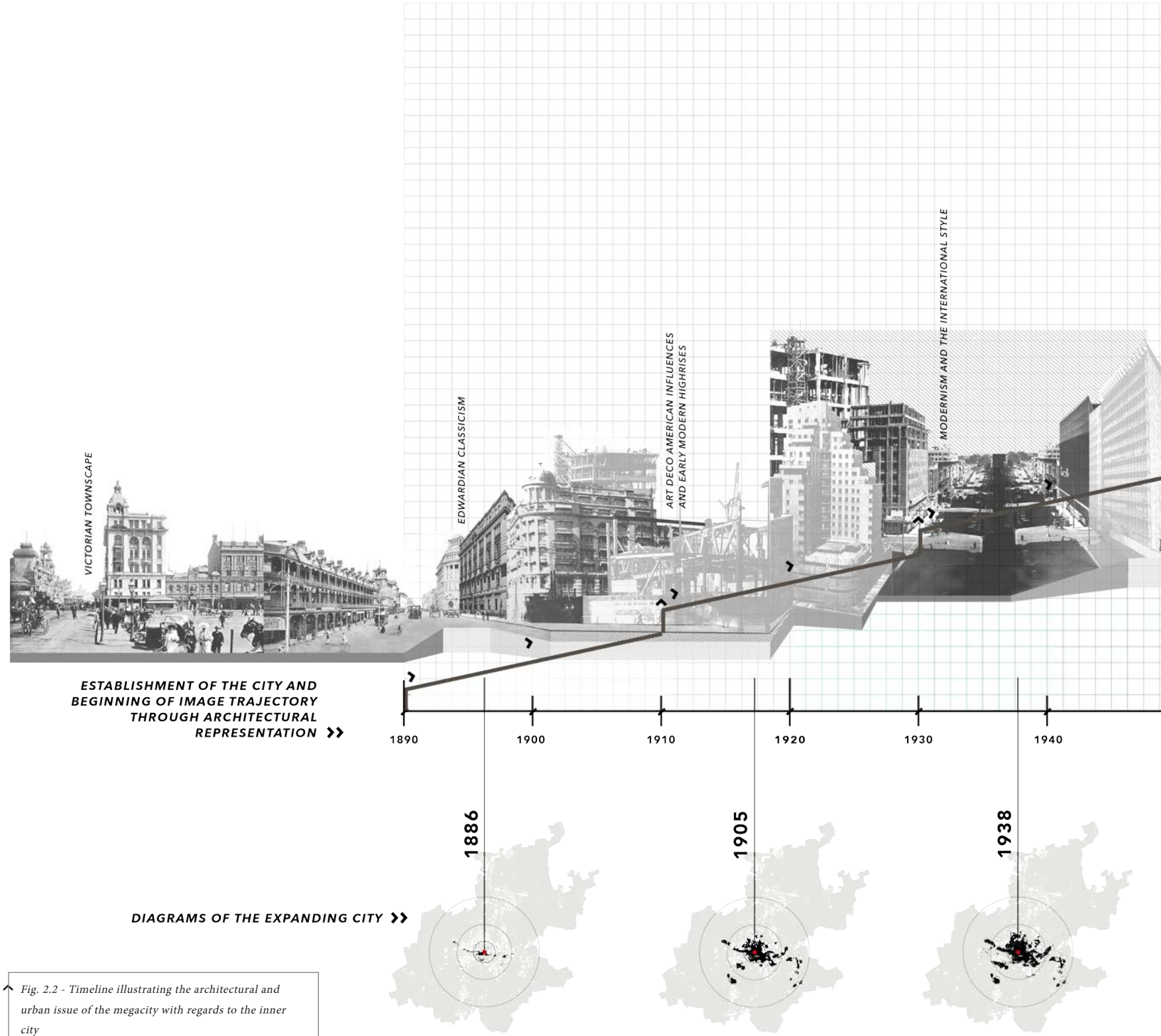
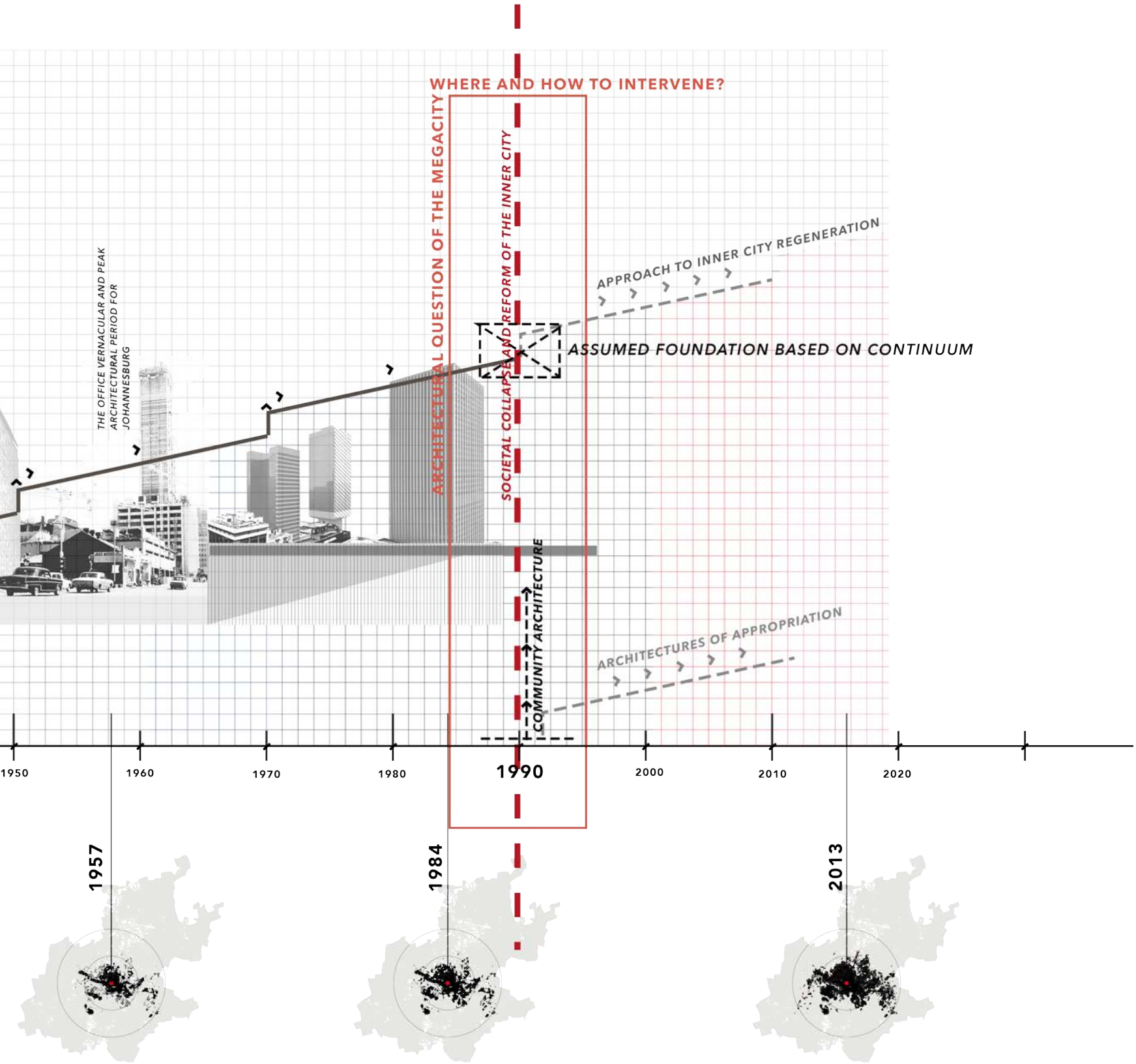


Fig. 2.2 - Timeline illustrating the architectural and urban issue of the megacity with regards to the inner city



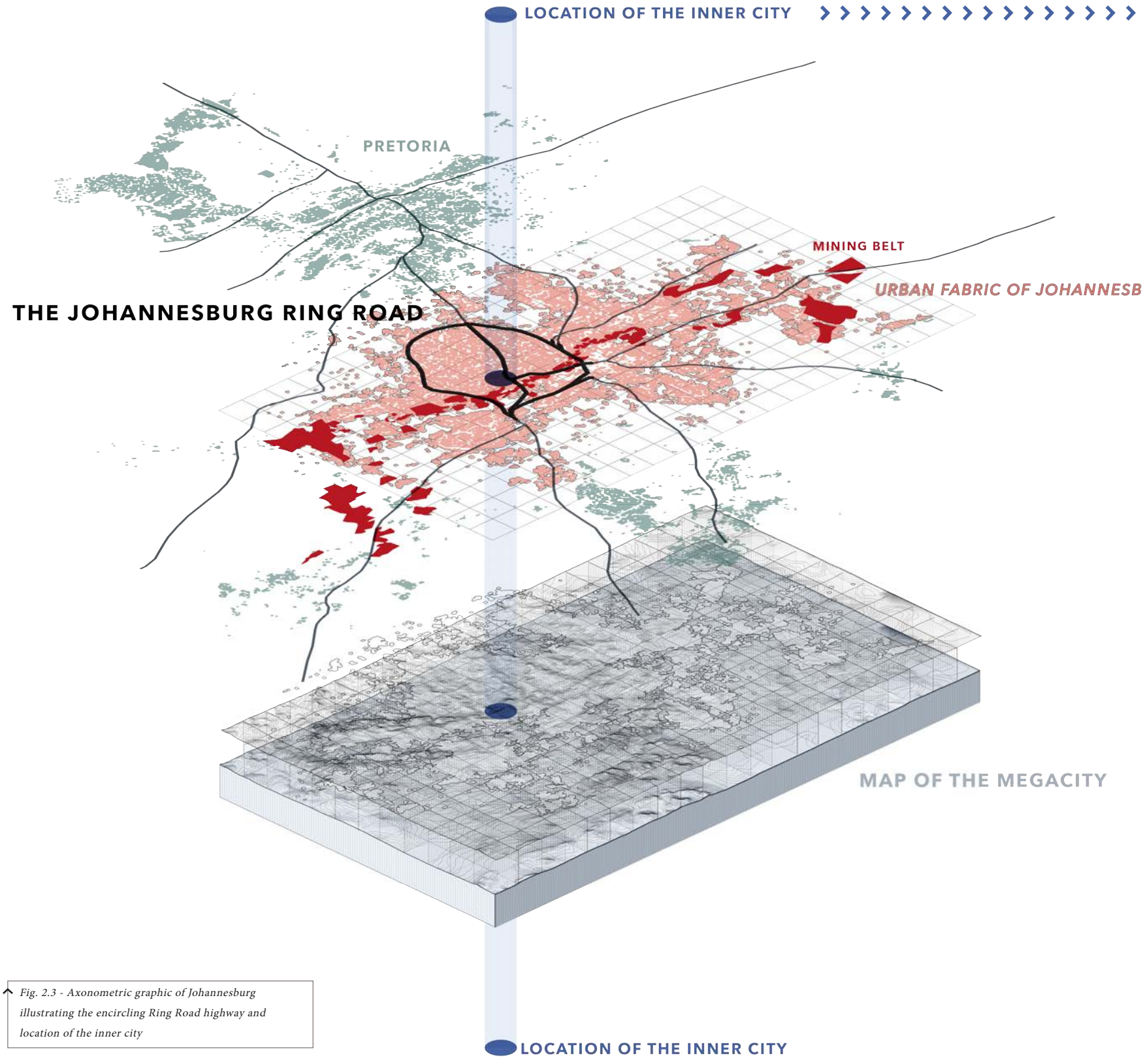


Fig. 2.3 - Axonometric graphic of Johannesburg illustrating the encircling Ring Road highway and location of the inner city

URG

2.1.2 COMING DOWN

To accommodate the expanding city, the 'ring-road' highway was built in 1986 to encircle the city which allowed for convenient travel to a multitude of locations, including the blossoming epicentres of Sandton, Randburg and Midrand (see figure 2.3). This new ease of access quickly undid the ties people and businesses had to the CBD and subsequently triggered a collapse in the inner-city property market, further accelerating the "mass exodus" (Murray 2011:2) that the CBD was facing. By 1990, apart from a few anchoring businesses that remained, the CBD had become a modern ghost town. Furthermore, this collapse coincided with the eradication of the Group Areas Act of 1950[1], allowing large groups of black people to move from the peripheral segregated zones into the inner city in search of work (Morris 1998).

The vacant towers which were once the city's emblems of power, rationality and efficiency devolved into the appropriated, stigmatised ghetto of the urban poor, falling victim to illegal squatting and unregulated subletting (Silverman & Zack 2007). This led to grossly overcrowded buildings, excessive pressure on infrastructure and an urban life of unregulated street trading, neglected public spaces, crime and poor service delivery which manifested throughout the late 1980s and early 1990s (JDA 2009).

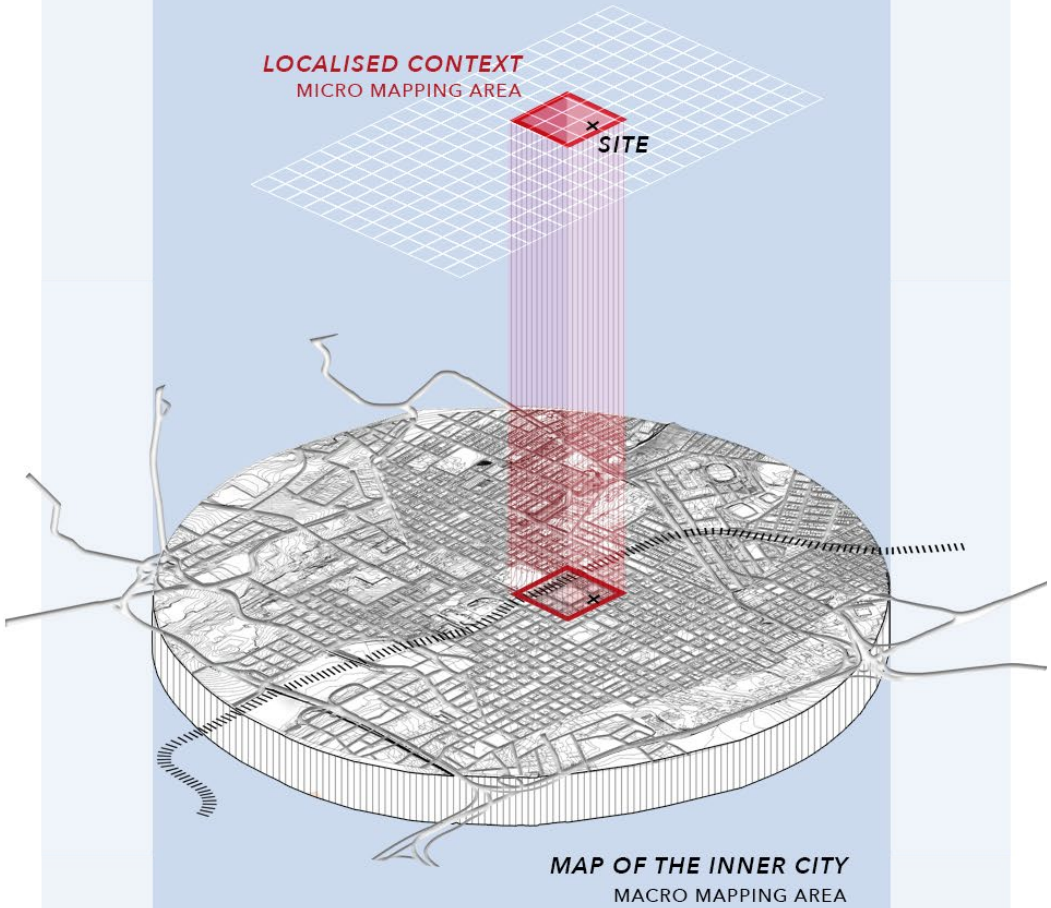


Fig. 2.4 - Locating macro and micro mapping zones in context

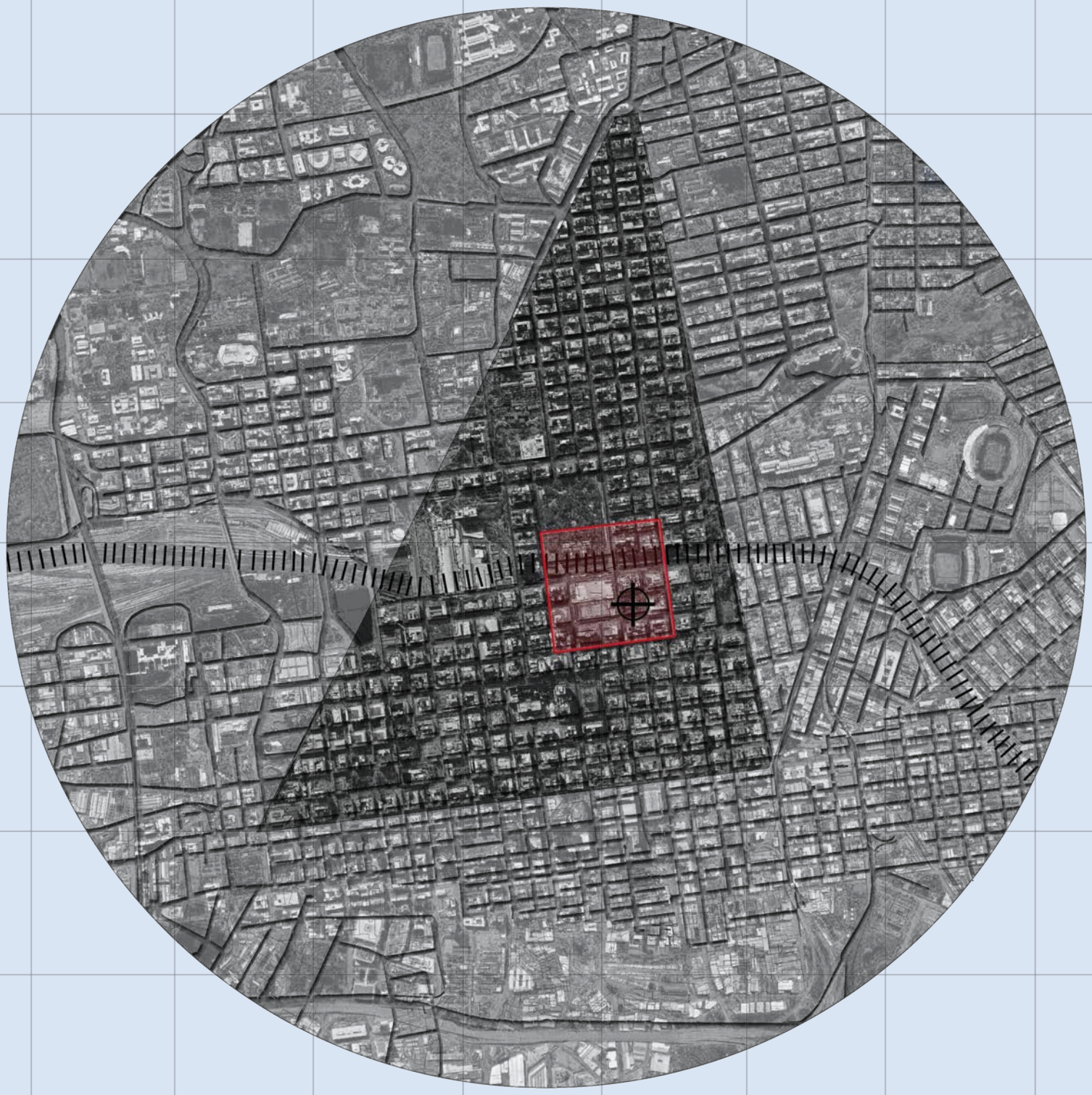


Fig. 2.5 - Aerial photograph of the inner city

Fig. 2.6 - Map of the inner city

2.2 BUILDING BACK UP

2.2.1 ACTS OF RESUSCITATION

Between 1992 and 2010, soon after the infamous decline, roughly 35 frameworks/ strategies were implemented by various public and private institutions in attempt to revive the inner city (JDA 2009) (see Appendix A). The Inner City Economic Development Strategy of 1999 was a key strategy as it was herein that the idea to implement various themed 'precincts' (which would each have their own identity and function) was developed and has since changed the identity of the CBD (see figure 2.7 and 2.8). These included the Jewel City Precinct, the Newtown (the cultural precinct) and the Greater Ellis Park (sports precinct) to name a few (JDA, 2009:8). The language of these new precincts and their activities within portray a multi-cultural cosmopolitan energy, embedded in niche restaurants, art markets and contemporary residential conversions, fitting seamlessly into reinvention of the image of the 'new African megacity'. Le Roux (2006) states that Johannesburg inner city is unable to fully reinvent itself in the absence of capital, but is too valuable a physical asset to be lost which has resulted in a very tailored form of urban regeneration.

2.2.2 IMPACT ON INNER-CITY INVESTMENT

According to Silverman & Zack (2007) and Bremner (2000), the underlying intention behind these frameworks has been to elevate the inner city back to a point where it is fit for (and attractive to) private investment in order to re-engage the upward growth pattern that the city lived by before (see figure 2.2). In this sense, the regenerative strategies have been successful as - in conjunction with special incentives, subsidies and tax abatements - private investors such as Old Mutual, ApexHi Properties and Standard Bank have reinvested back into the inner city, primarily turning abandoned office buildings into high and medium grade properties (Murray 2008) demonstrating a typical "property-lead" approach to regeneration (Bremner 2000:188).

Fig. 2.7 - Map of the inner city precincts

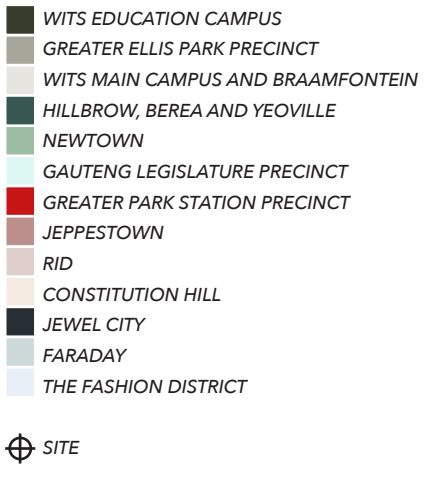


Fig. 2.8 - Inverted Realities: Life within the voids

2.3 CRITIQUE

2.3.1 THE PARADOXICAL CITY

In 2005, Trafalgar Properties (2005:4) reported that "the inner city is gentrifying with a vengeance", masked in the light of "trendy urbanism" (Murray 2008:191) of the new identity of the South African city, and is in fact exclusionary to and rejecting of the urban poor who inhabit the inner city. Furthermore, as throughout its history of valuing property as commodities, Murray (2008:194) critiques that the primary focus has been on "the revalorisation of real estate values for higher-income newcomers, rather than the revitalisation of urban communities and neighborhoods for current moderate and low income residents" as if the collapse and social inversion of the inner city was but a minor occurrence in its lifespan.

Credit must be given to the upgrade that precincts have brought to parts of the inner city, however, Bremner (2000) critiques that the strategies have drawn predominantly from American and European cities whose urban regeneration focuses strongly on physical image and in new buildings an infrastructure. This has resulted in the glossing over of the social and economic instability that the inner city had acquired.

Furthermore, urban critics fear that these hasty decisions of urban injection based on image transformation (once again as in history) primarily appealing to the private markets - which without thorough consideration of the new social, economic and urban dynamic - may result in a short-lived "phase" come the turn of the next economic earthquake (Murray, 2008; Chipkin, 1993; Bremner, 2000).

2.3.2 CURTAINED VOIDS (FLOTSAM JETSUM)

Thus, as the precinct areas have become cleaner and safer, the interstitial "blighted places" or "grey areas" (JDA 2009:6) which exist in limbo in between the gentrified islands have become more dangerous, run down and densely populated with the "marginalized and socially excluded" (Murray 2011:2). These areas remain harshly reputed as the "no-go" zones of the inner city, and thus "regeneration and ruin have proceeded in tandem as distorted mirror images of each other" (Murray 2008:2) (see figure 2.8).

2.4 THE STATE OF HOUSING AND CONDITIONS OF LIVING WITHIN THE VOIDS

As the haste to jumpstart and the growth of the inner city propelled development and investment in a specific direction, Murray (2008) states that in conjunction with urban poverty, affordable housing for lower income residents has been insufficiently addressed. Even though over 50 000 new housing units have been added to the inner city over the past decade (African News Agency 2017), a dire chasm exists as explained by Misago & Wilhelm-Solomon (2016):

> *"...low-income residents of the city, in particular households earning below R3,200 per month, remain widely bypassed in these housing developments, as organisations like the Socio-Economic Rights Institute have documented, with only a few thousand units catering to this income group. The Inner City Housing Implementation Plan proposal estimates that over half of the inner city's households fall beneath this level"*

In 2011 it was recorded that roughly 300 000 people live in 42 000 residential units (Murray 2011:144). In Hillbrow alone, roughly 135 000 people living in just under 2km² (67 500 people per square kilometre) which is almost triple the density of Hong Kong, the world's densest city Silverman & Zack (2007) see figure 2.9). A third of these are in poor or very poor condition, often without water and electricity (Mosselson, 2017).

As of 2016, inner city housing for lower income residents is still a grave shortage, as explained by Simon Sizwe Mayson, an employee of the Department of Housing, who states that the government is currently still allocating dwellings to people who have been on a list since 1997 (Le Roux 2016).

Fig. 2.9 - Map illustrating residential population distribution of the inner city

2.5 EXISTING URBAN HOUSING STRATEGIES

In attempt to rectify this shortcoming, various projects and initiatives have been implemented and driven by companies like AFHCO (Affordable Housing Company), JOSHCO (Johannesburg Social housing Company) and Ithembu Properties, all catering to moderate and low-income housing (JDA 2009) (see figure 2.10).

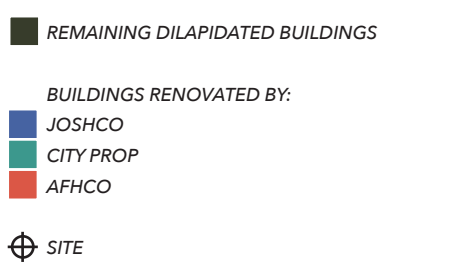
A good example of this is the Joburg Inner City Property Scheme or JICPS (formerly the Bad Buildings Project) whereby the private sector acquired dilapidated buildings through the city council for them to refurbish and either sell off the units or rent them out at affordable rates (Silverman & Zack 2007). However, on the eviction of residents, Mosondo (2011) stated that the struggle with the Bad Buildings Project process was to find transitional housing for those evicted so that they could correct the buildings, resulting in an only half successful strategy. Furthermore, once the renovations were completed, the prior inhibitors most often could not afford to pay the new rental fees (Silverman & Zack 2007), thus this initiative has not managed to fully cater to full spectrum of the social needs within the city.

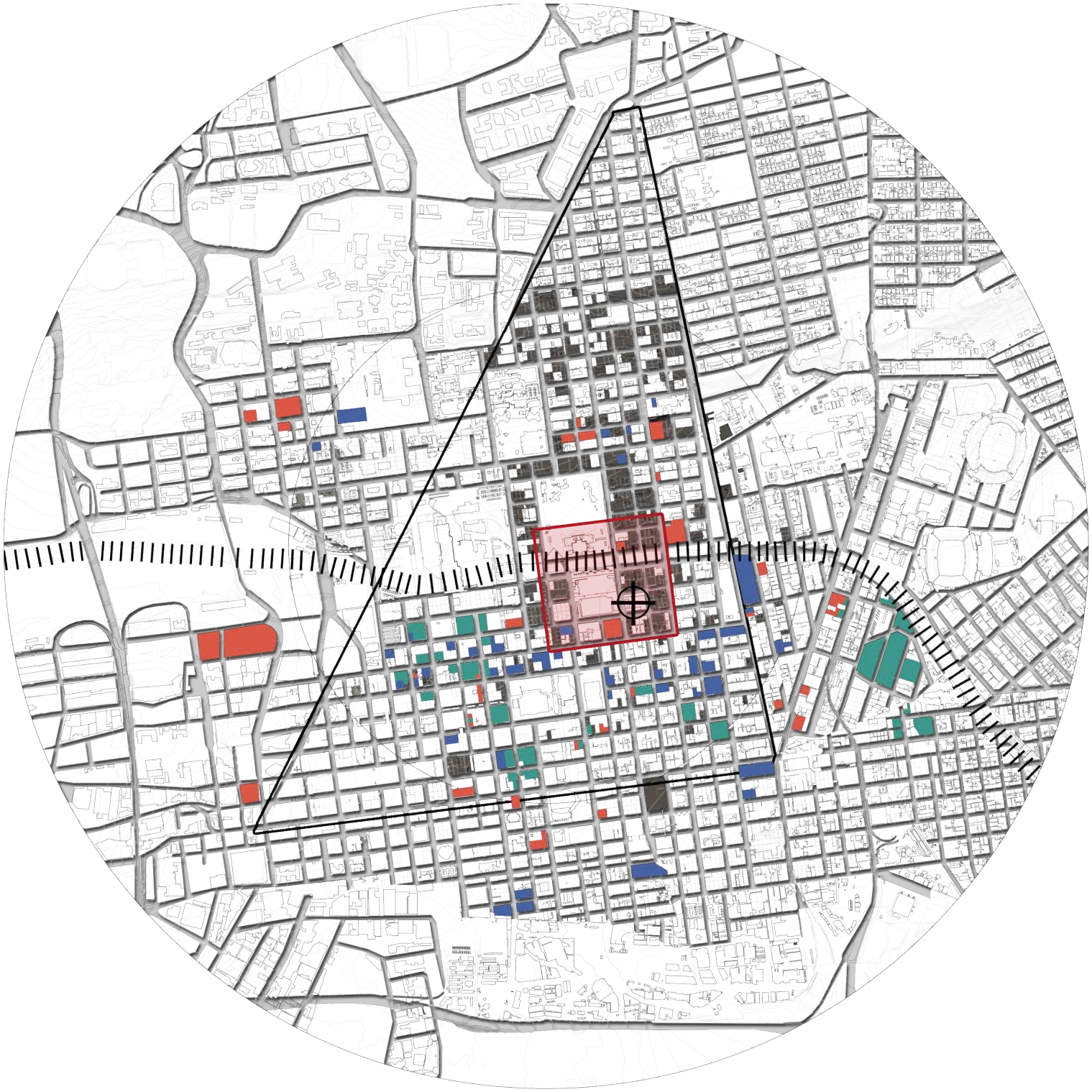
Another example, the Inner City Housing Strategy & Implementation Plan or ICHIP (2014-2021), developed by the Rebel Group consultancy, is a R2.1-billion plan which proposes the development of 9 500 accommodation units between 2014 and 2021 focusing on "subsidised rental housing aiming to cater for low-income households earning R1,500-R7,500 per month" (Misago & Wilhelm-Solomon 2016) and has been described as "a major step towards a more pro-poor and egalitarian city" (Misago & Wilhelm-Solomon 2016). However, similarly to the Inner City Property Scheme, as there is nowhere to transfer the residents, in protection of their human right to housing, the process has been stagnated, leaving many buildings to further decay, and the living conditions within to worsen (Misago & Wilhelm-Solomon, 2016).

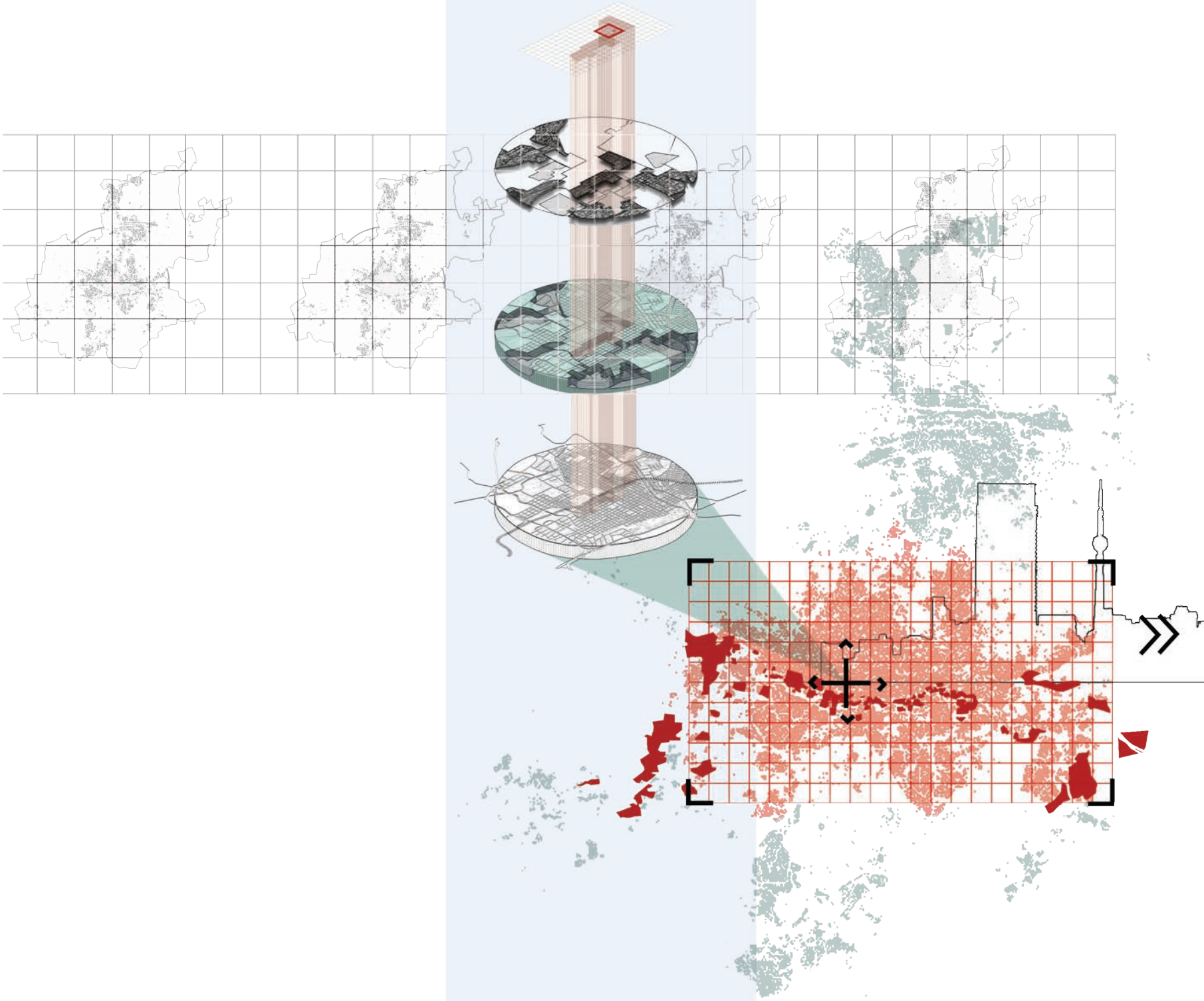
2.6 ESTABLISHED NEED FOR TRANSITIONAL HOUSING

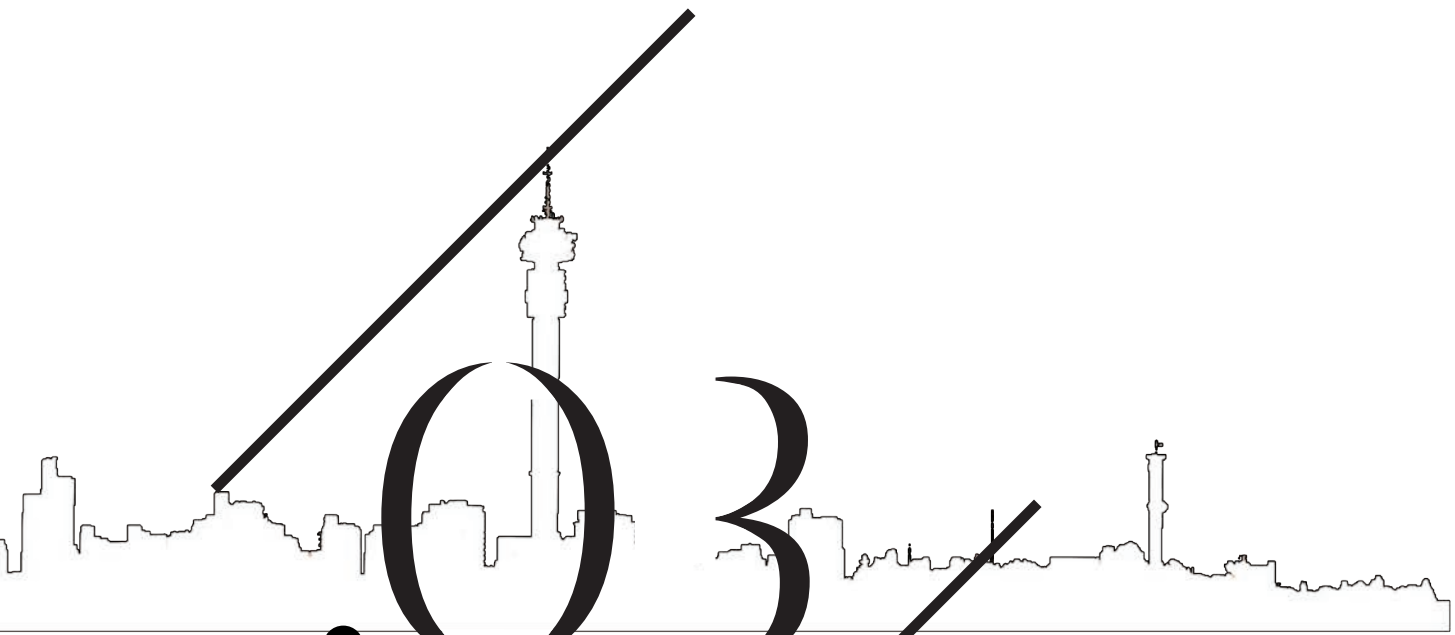
In attempt to address the need for transitional housing, the ICHIP in partnership with JOSCHO has so far developed 3 000 of the 30 000 needed units (African News Agency 2017) and thus temporary emergency accommodation still faces a grave shortage as one of the primary barriers hindering residential upgrade within the inner city.

Fig. 2.10 - Map illustrating residential transformation in the inner city









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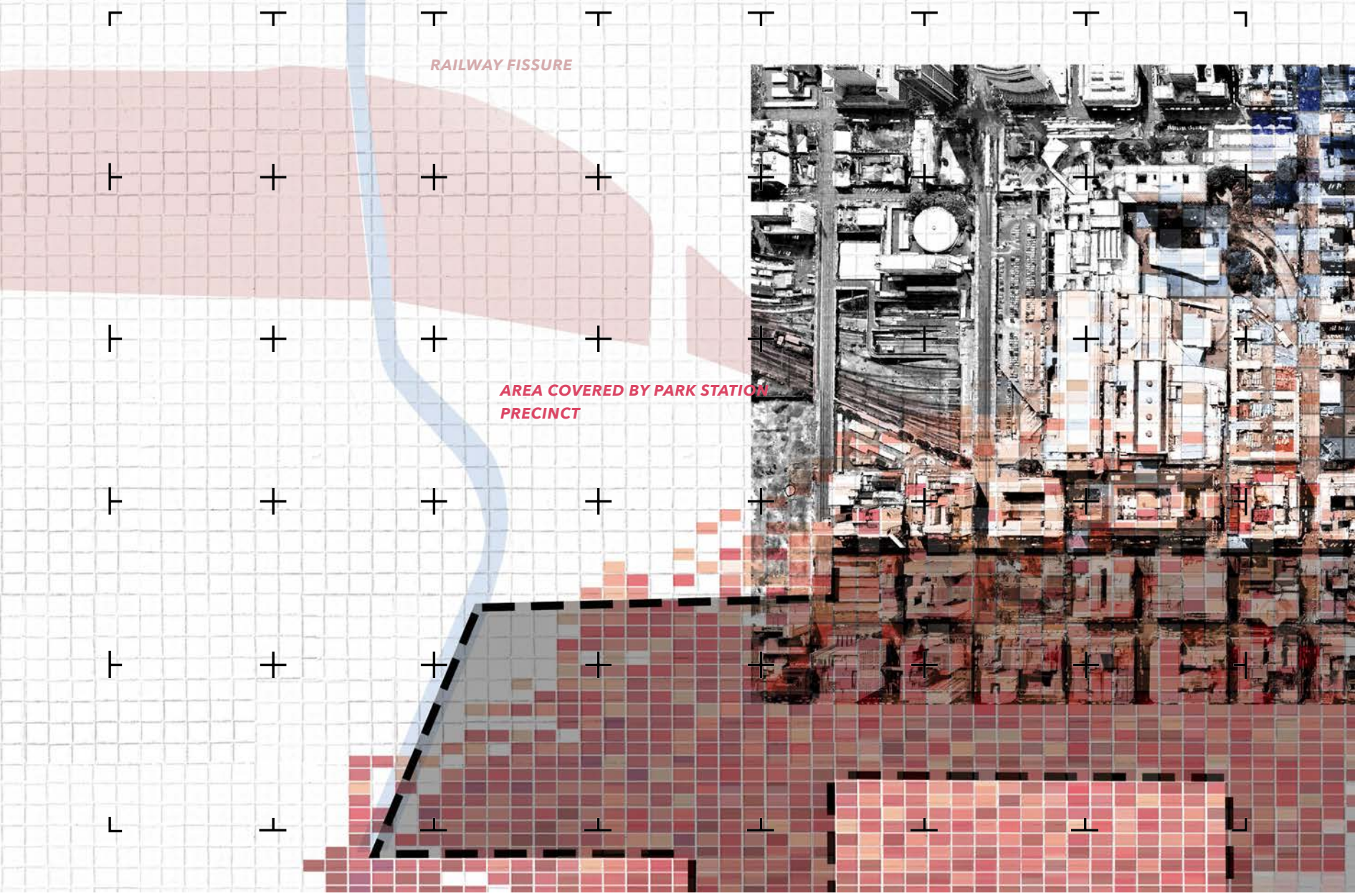
Localised context: Life around the Drill Hall within an urban void

CONTEXT PART II



3.1 ASSESSING THE RELATIONSHIP OF THE MICRO-MAPPING AREA TO THE GREATER URBAN CONTEXT

3.1.1 ON THE BRINK OF TWO CONDITIONS

The Drill Hall is situated on the very boundary of the precinct void disparity, and thus, both the urban and site strategies need to address the role of the site in dealing with this junction.

3.1.2 IN THE TRANSITIONARY ZONE

The Drill Hall is located in a space caught between an evolving architectural language from the irregular and smaller scale residential typologies to the regular and rectangular language of the prominent icons of the CBD. The Drill Hall is almost lost within this high-rise transition and therefore has to respond to both its north and south counterparts as an entity not fully immersed in one or the other.

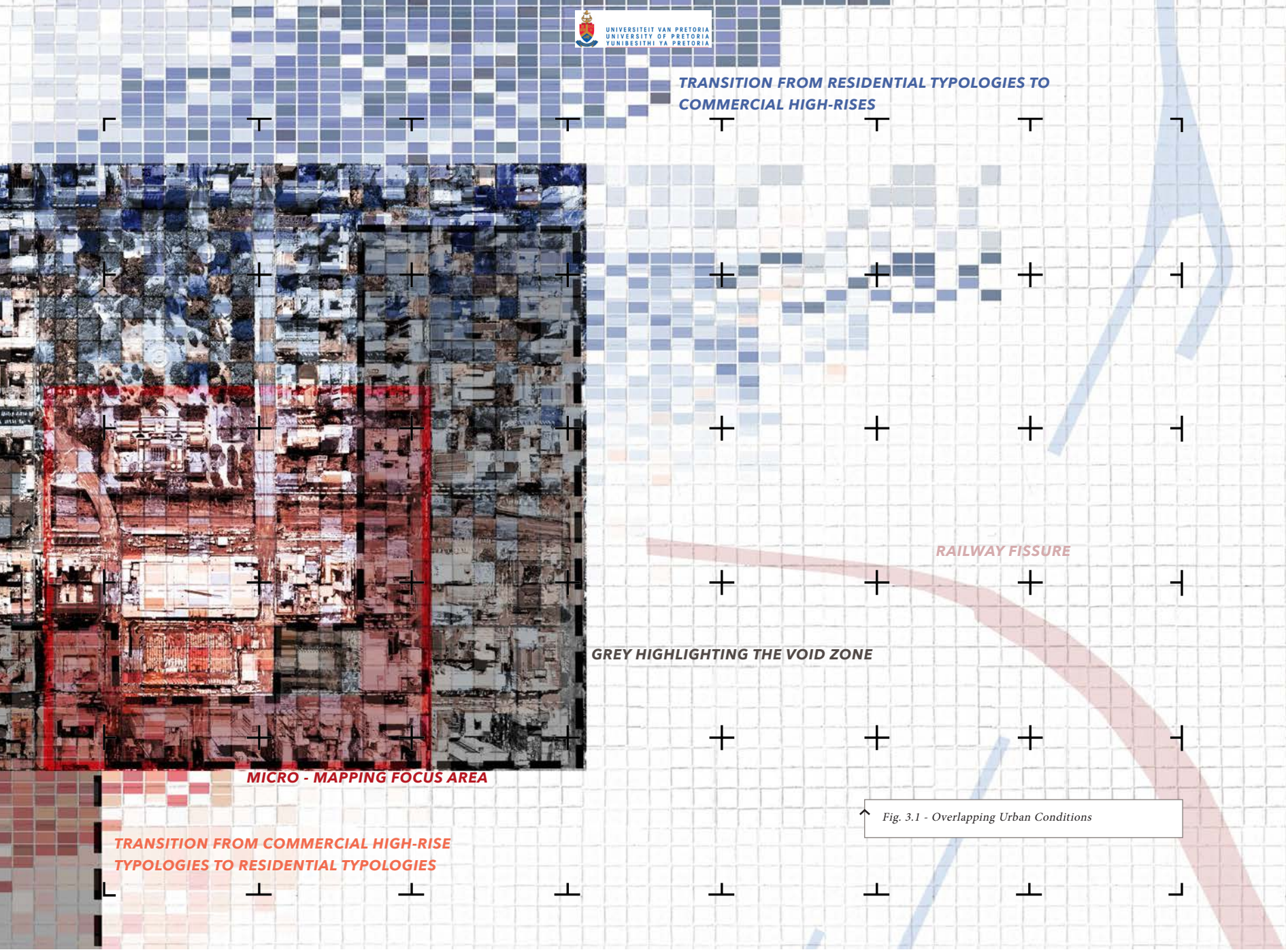


Fig. 3.1 - Overlapping Urban Conditions

3.1.3 GAP IN THE URBAN FABRIC

Contrastingly to the density of both the residential typologies of Hillbrow and the commercial typologies of the CBD, the Drill Hall, Jack Mincer Taxi Rank, Park Central Shopping Centre, the railway fissure and Joubert Park create an opening in the urban fabric which needs to be considered and strategically used. Ways in which this can be considered includes direct sunlight, lines of sight, building edges and relationships to neighbouring architecture and the manipulation of scale.

GAP IN THE FABRIC

CAUGHT BETWEEN RESIDENTIAL AND COMMERCIAL SUBURBS AND SUBSEQUENT TYPOLOGIES

SPATIAL IMPLICATIONS OF THE IDEALS OF THE PRECINCT AGAINST THE NECESSITIES OF THE VOID

› *Fig. 3.2 - (top right) Photograph taken from building adjacent to Joubert Park towards the Drill Hall facing south*

› *Fig. 3.3 - (bottom right) Photograph taken from behind the Drill Hall facing south west towards the commercial inner city*

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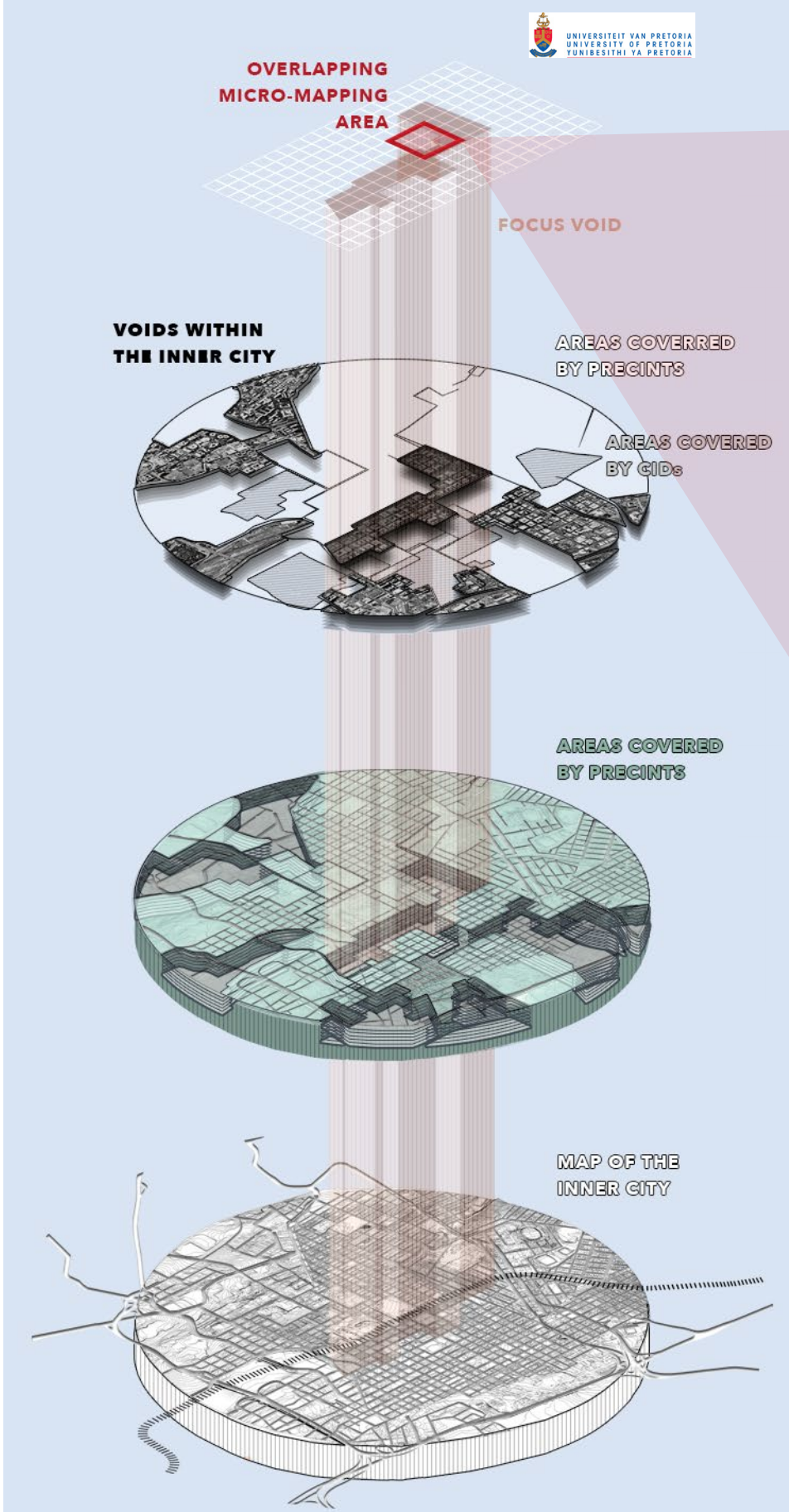


Fig. 3.4 - Locating the site within the void

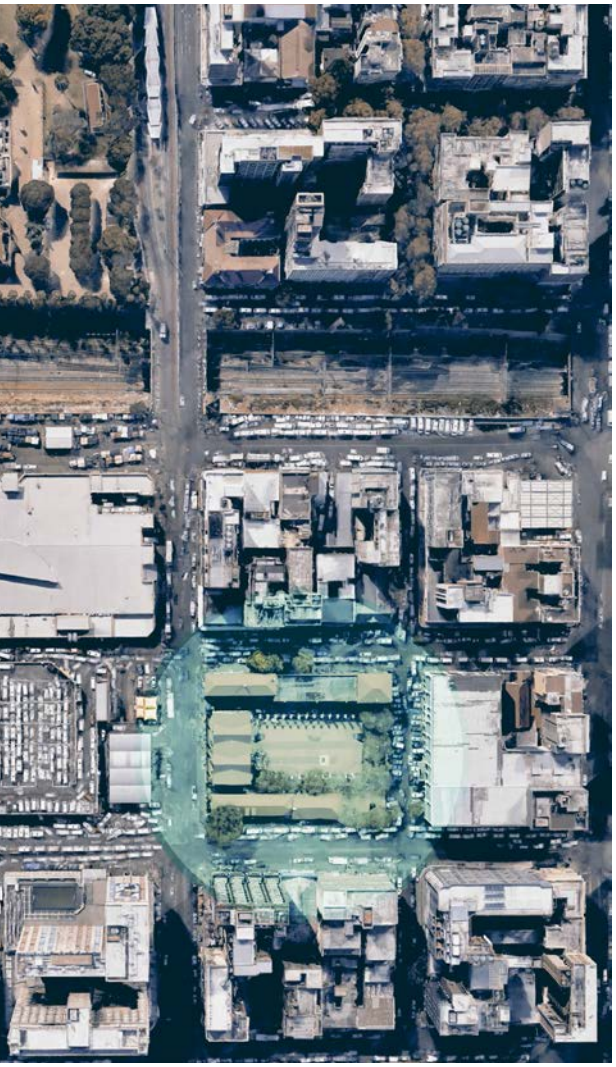


Fig. 3.5 - Aerial photograph of micro-mapping area

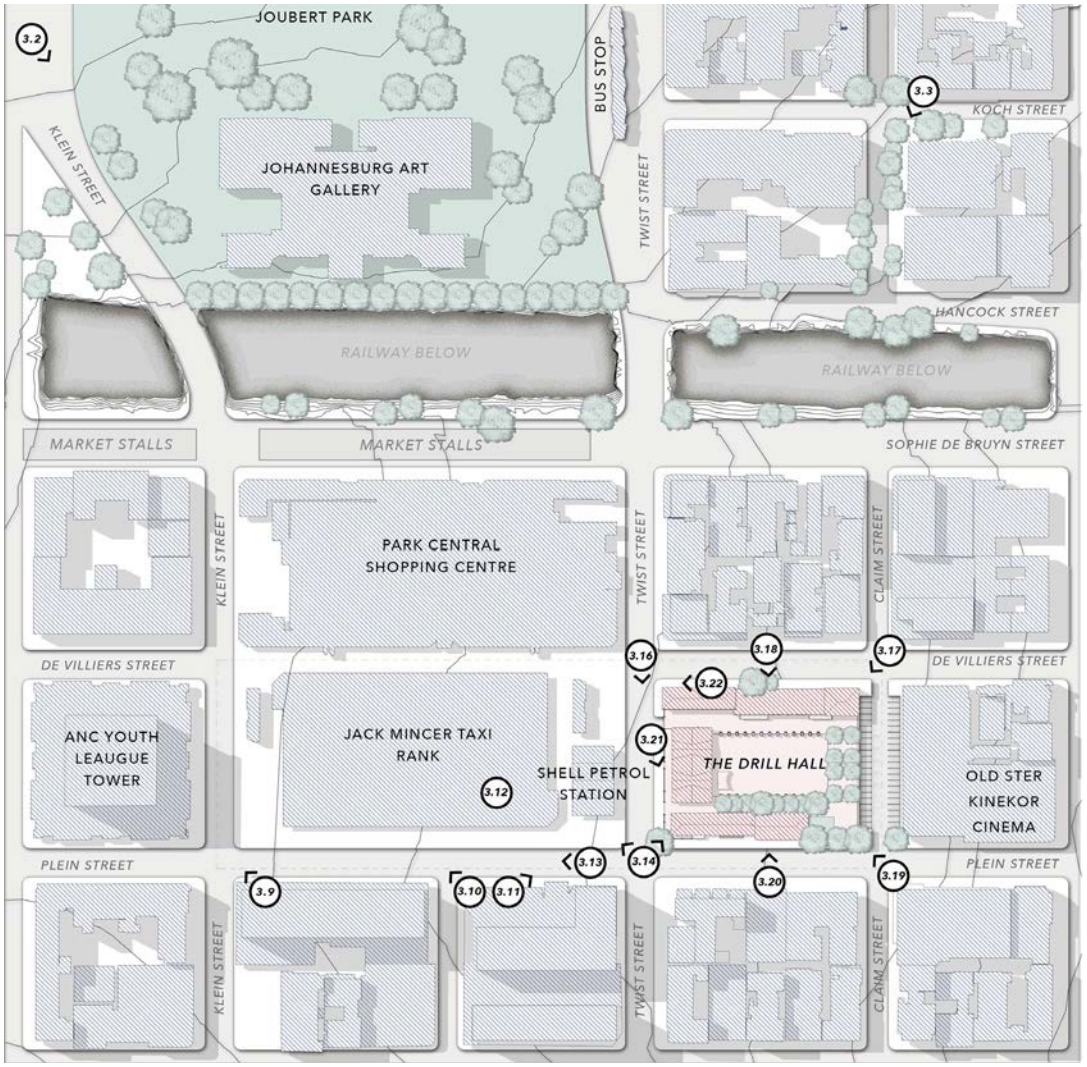


Fig. 3.6 - Photo reference map of micro-mapping area

3.2 MICRO-MAPPING

The above area was observed and recorded according to its relationship with both the greater urban context and the conditions within implicating directly onto the Drill Hall. Prominent points of focus include the Johannesburg Art Gallery; Joubert Park; the ANC Youth League tower; the Jack Mincer Taxi Rank; the Park Central Shopping Centre; and the Old Ster Kinekor Action Cinema which is now an informal market.

The findings which have the most prominent implications on the Drill Hall have been mapped and recorded as follows.

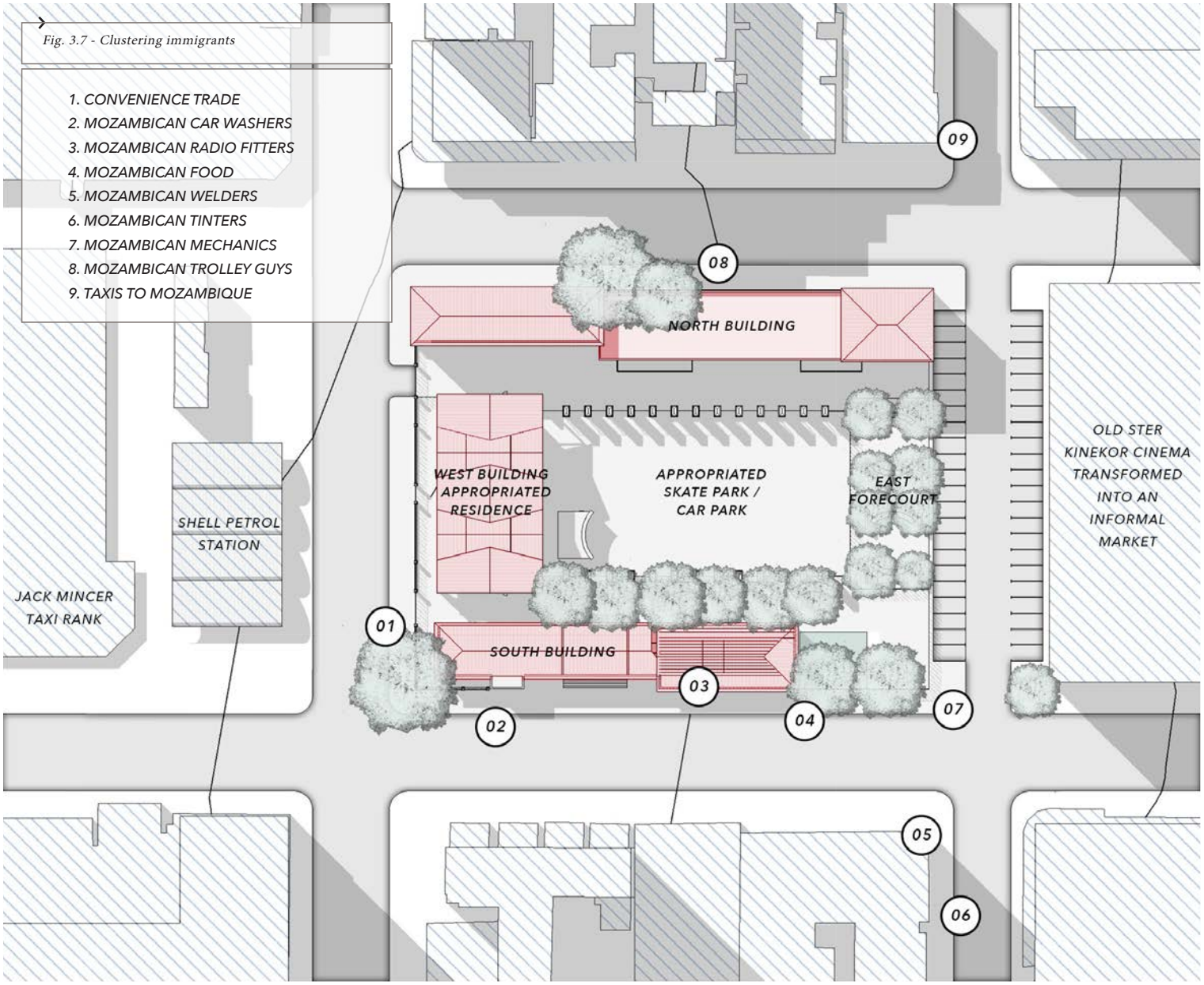


Fig. 3.7 - Clustering immigrants

3.2.1 CLUSTERING IMMIGRANTS

The local context and activity beyond the boundary wall of the site (which so clearly isolates the Hall from its context) shows the raw reality of life within an urban void. The encircling edge of the Drill Hall, as revealed in a fascinating study conducted by Farouk (2010), showed a collection of Mozambican immigrants working as mechanics, welders, sellers of goods and food and Mozambican trolley pushers who have tended to collect in this area in line with the city trend as found by Murray, (2011:145) who states that "immigrant groups who make up one quarter of the inner-city population have tended to cluster together in distinct residential pockets." (see figure 3.7).

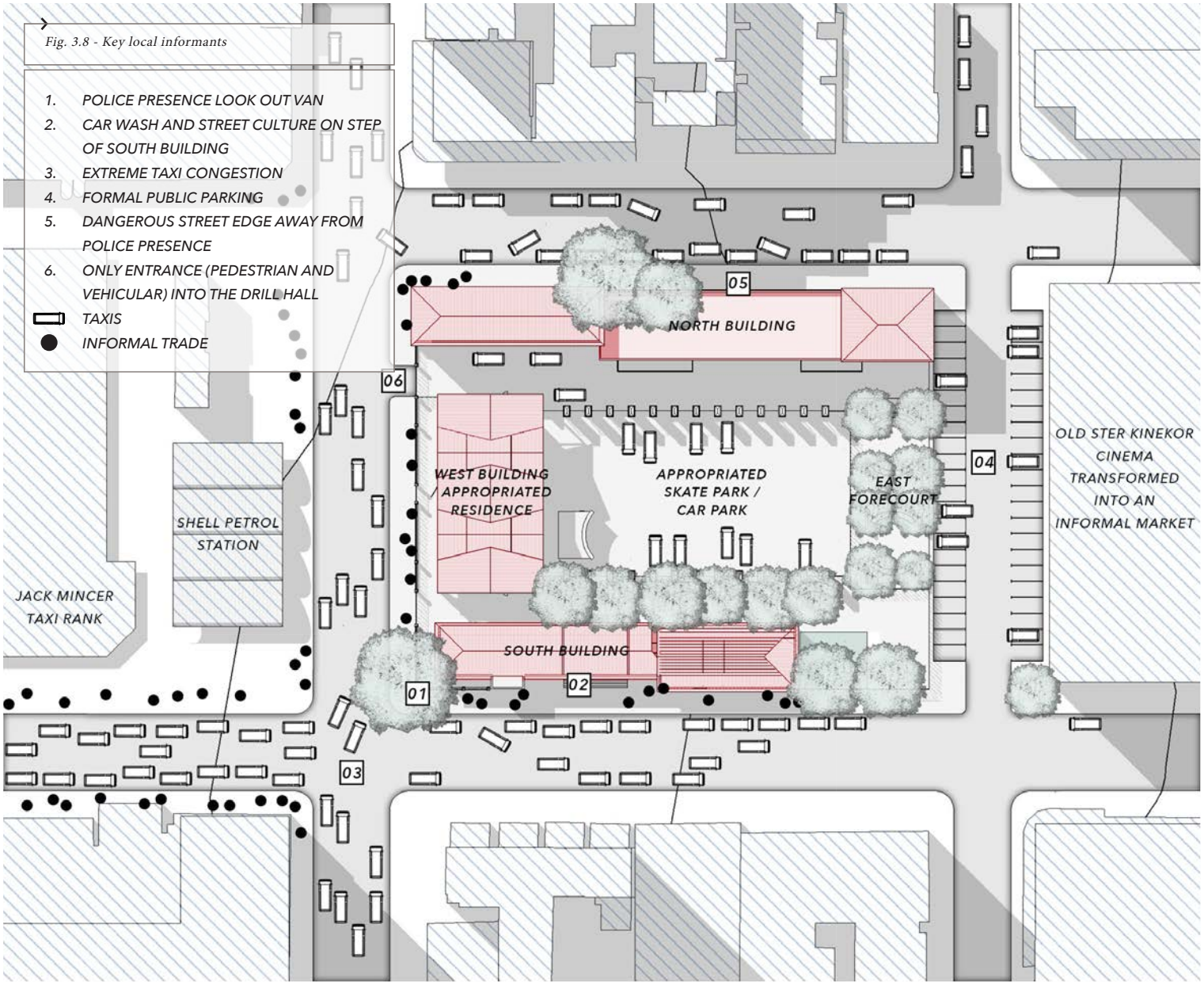


Fig. 3.8 - Key local informants

3.2.2 INFORMAL TRADE

Across Quartz street to the east is the Old Ster Kinekor 'Action Cinema' which is currently a market, separated from the site by a pedestrian strip/car park. An immense amount of informal activity is concentrated at Jack Mincer transport interchange (ICUDIP 2009:5) including vegetable stalls, barbers, kebab stands and clothing stalls which leave pavements congested and thus the roads become the movement channels for both people and vehicles. These are some of the estimated 10 000 informal street traders (ICUDIP 2009) who conduct business of the sidewalks and built edges of the inner city according to an economy of their own (see figures 3.8; 3.15; 3.21 & 3.22).

Fig. 3.10 - View of the Jack Mincer Taxi Rank facing north west

Fig. 3.9 - View of Plein Street facing west

Fig. 3.11 - View of the Jack Mincer Taxi Rank facing north east

3.2.3 THE JACK MINCER TAXI RANK

To the left site sits the Jack Mincer Taxi Rank which sees 6000 taxis in and out per day (Darroll 2005) and the Park Central Retail Mall, which together were the military parade ground from the early 1990s until the 1970s (Darroll 2005). Murray (2008:166) states that within the urban voids, "overstretched local authorities have been unable to cope with the constant breakdown of overtaxed infrastructure, like burst sewerage and water pipes, electricity blackouts and mounting piles of rubbish". Such a condition is severely faced by the taxi rank. In October 2017, SABC Digital News reported the failing infrastructure of the taxi rank. The lower level of the taxi rank is often flooded with leaking sewerage and congested with petrol fumes due to broken air-conditioning (SABC Digital News 2017). They further reported that the management body of the taxi rank has called to city authorities for assistance, however, they have heard

Fig. 3.12 a - Internal photograph of the Jack Mincer Taxi Rank

Fig. 3.12 c - Internal photograph of the Jack Mincer Taxi Rank

Fig. 3.12 b - Internal photograph of the Jack Mincer Taxi Rank

Fig. 3.12 d - Internal photograph of the Jack Mincer Taxi Rank

no response in the past 5 years and thus the condition continues to worsen.

This is the largest taxi rank in Central Johannesburg and receives taxis not only from surrounding suburbs, but also from other provinces and African countries (Peberdy et. al 2017). For such a prominent portal into the city, it is shocking that it is in such poor condition (see figures 12a-d). This finding supports the suggestion that regeneration within the inner city has been conducted according to a biased list of requirements and thus presents a viable and complex condition to later revisit when designing and incorporating an appropriate, contextual regenerative form of decentralised infrastructure into the new proposal. The taxis from the rank are not contained to the site but are a dominating presence on the roads, along the street edges and in fact within the Drill Hall square which some have adopted as parking determining a noisy, fast paced constant hustle bustle around the Drill Hall that never seems to quieten (see figures 3.9-11).

Fig. 3.13 - Street view of Plein and Twist Street facing north west

Fig. 3.15 - Street view of the pedestrian edge along Plein Street

Fig. 3.14 - Street view of Plein and Twist Street facing north east

Edge conditions around the drill hall

Fig. 3.16 - (top left) Street view of the north western corner of the site

Fig. 3.17 - (middle left) Street view of the north eastern corner of the site

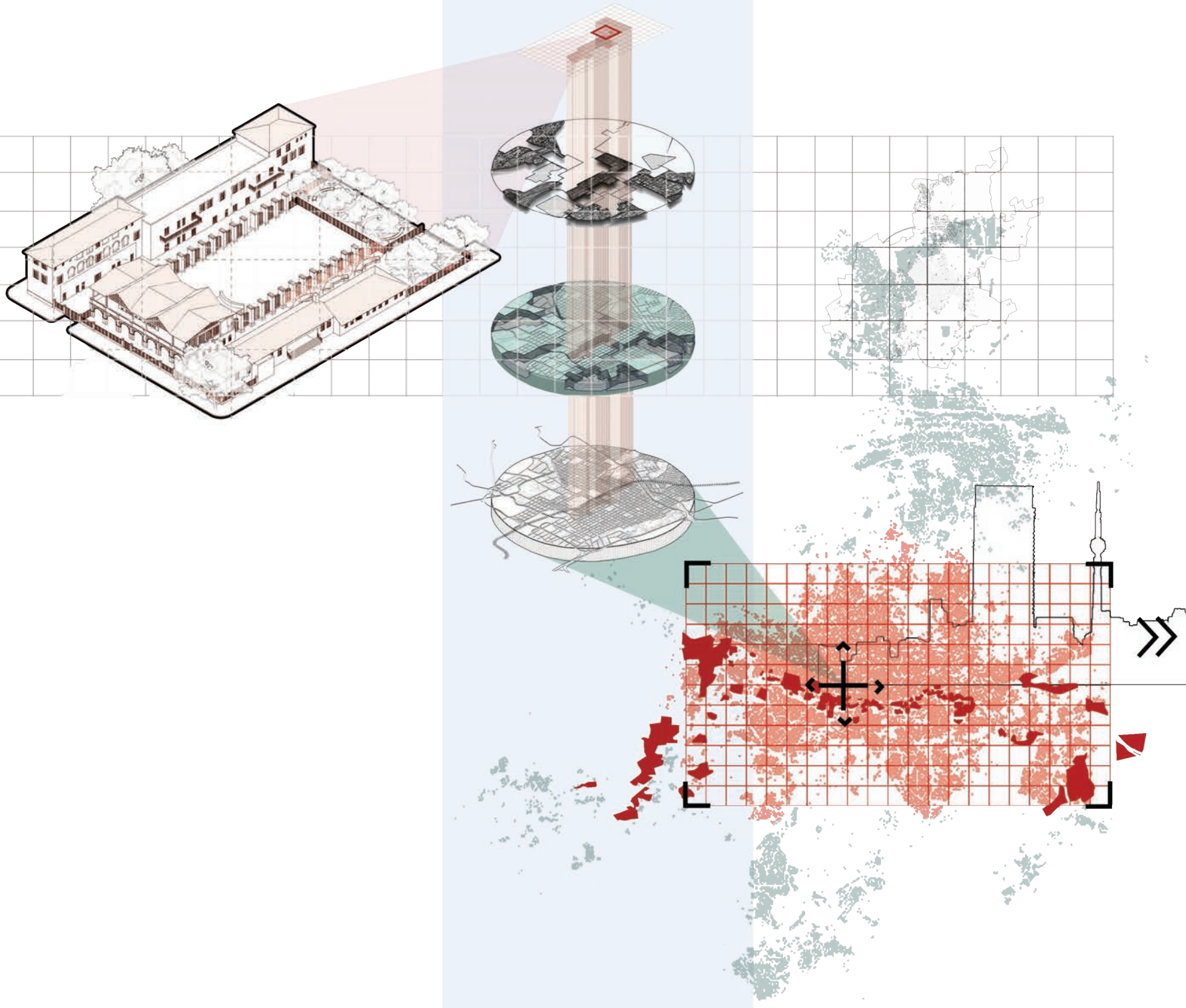
Fig. 3.18 - (bottom left) Street view of the hard north edge of the site

Fig. 3.19 - (top right) Street view of the south eastern edge of the site

Fig. 3.20 - (bottom right) Street view of the street culture on the southern edge of the site

Fig. 3.21 - Informal trade on the western edge of the site

Fig. 3.22 - Informal trade on the north western corner of the site



.04

Addressing space within the void: the story of the Drill Hall...

CONTEXT PART III

4.1 A BRIEF HISTORY

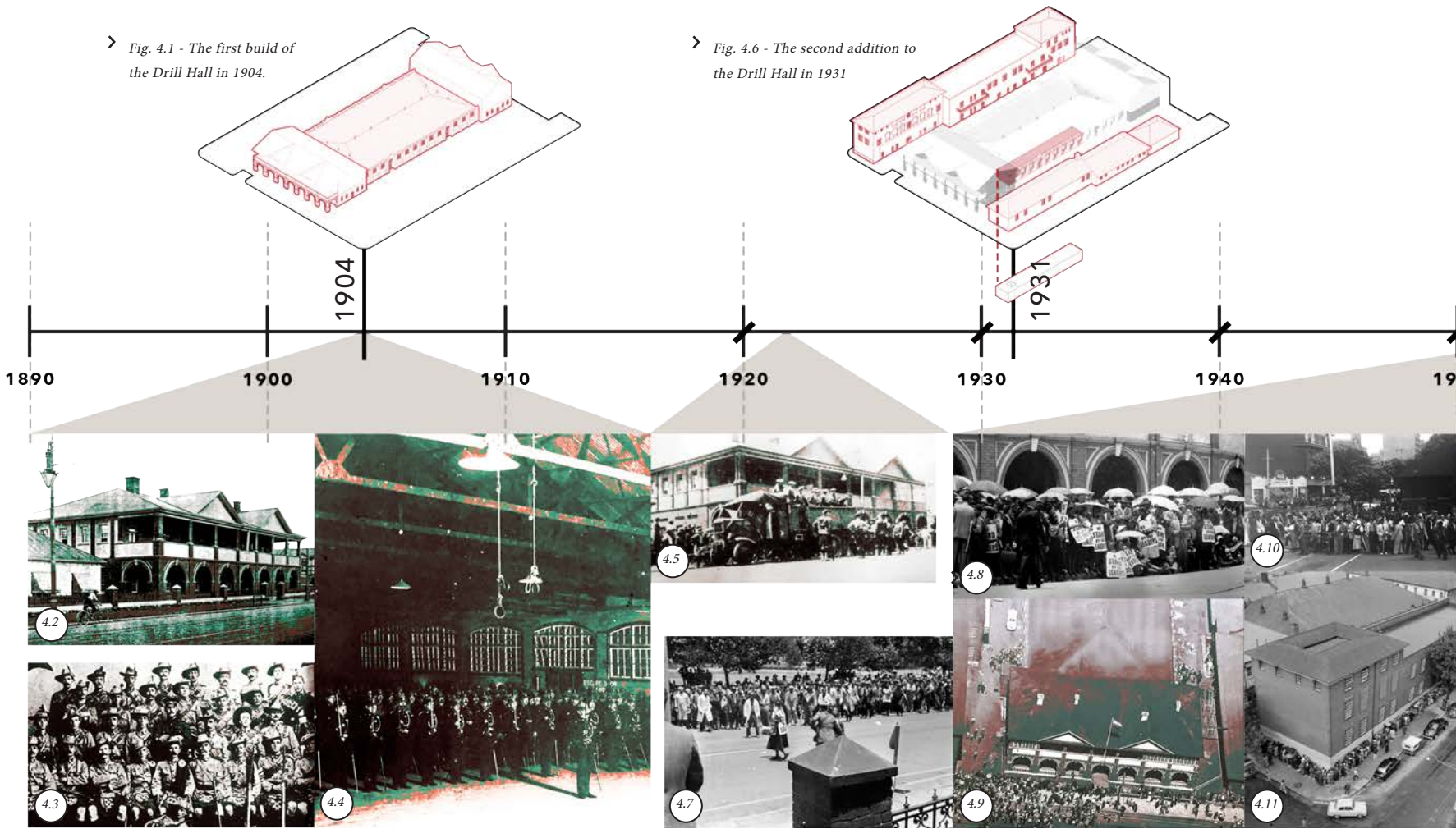
In 1904 the Drill Hall was built as the military headquarters for the Transvaal Volunteers while Johannesburg was still under British Rule (see figures 4.1; 4.2; 4.3 & 4.4), on what was originally a non-white prison during the Boer War (Darroll 2005). The original building comprised a central hall and an east and west wing to either side (Darroll 2005). In 1931 additional blocks were added to the northern and southern portions of the site to house the South African Defense Force and a prosthetic limb factory respectively. An underground rifle range was also later added to the main hall (see figure 4.6).

The Drill Hall was the military stronghold of Johannesburg from 1904 well into the early 1990s. It was the discharger of the troops used to "quell the riots" (Darroll 2005:26) in the major Rand Rebellion Strike of 1922, the gathering base of South African soldiers before they departed to fight in both of the world wars (figure 4.5) and during the years of Apartheid it became strongly associated as a powerhouse of militarily oppression. In 1956-7 the Drill Hall held the infamous preliminary examinations of the Treason Trial of Nelson Mandela and 156 other leaders of the African National Congress. On the days of the trial, the Hall was swallowed by seas of ANC supporters supporting their leaders (see figures 4.7-4.13).

In 1992, repelled by the metastasized decline of the inner city, the military

Fig. 4.1 - The first build of the Drill Hall in 1904.

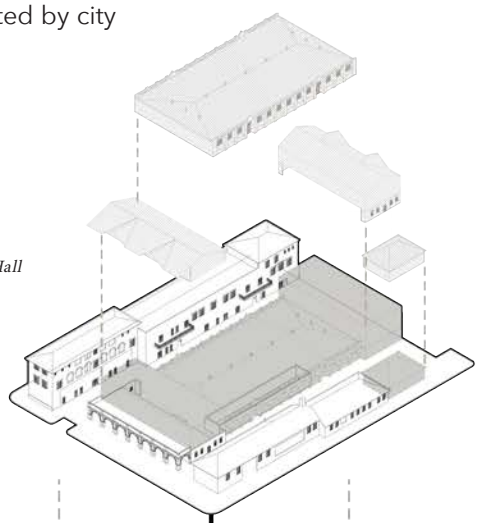
Fig. 4.6 - The second addition to the Drill Hall in 1931



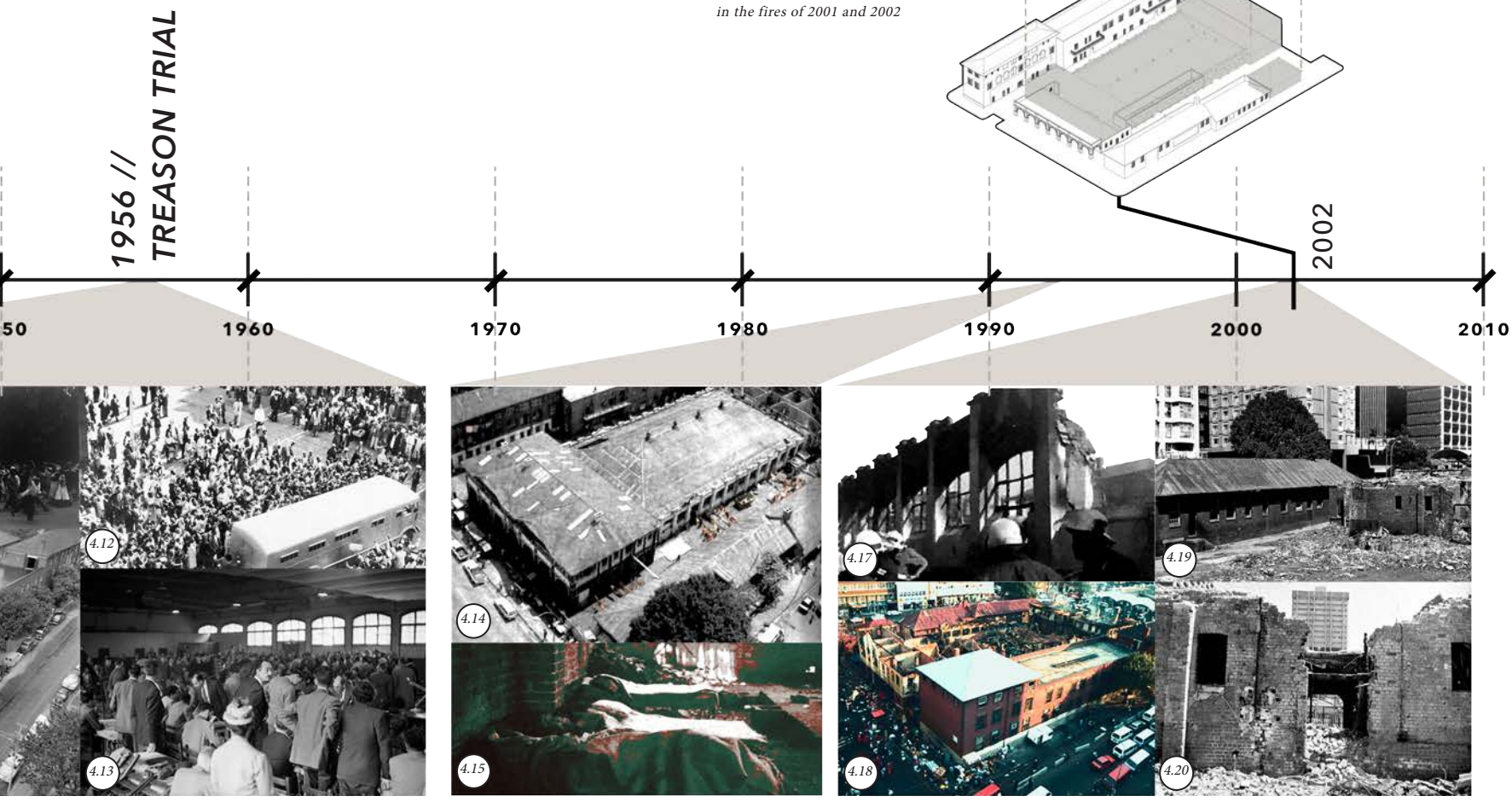
vacated the Drill Hall. The buildings were almost immediately taken over by 1200 homeless city dwellers who illegally lived on the grounds without water or electricity (Maurtin et al. 2004) (see figures 4.14 & 4.15). Owned by the Department of Public Works - who had no governing maintenance strategy in place - the Drill Hall quickly fell victim to urban blight which manifested over the following decade. In its overpopulated and dilapidated state, it experienced two devastating fires; the first in 2001, which saw the end of the east block and nine lives were lost. Regardless of this consequence, the conditions were not addressed and the site remained occupied. The second fire in 2002 saw the death of another five and the hall, the upper story of the west block and a portion of the southern block were destroyed (see figure 4.16 - 4.20), after which all dwellers were relocated by city officials (Maurtin et al. 2004).

The threat of demolition

arose for the half-ruin by the Department of Public Works but the site was defended by the South African Heritage Resources Agency (SAHRA) who fought for a restoration of the site. As a result, the Johannesburg Development Agency endorsed a R10 million adaptive restoration to recreate "a heritage asset for the city" (Darroll 2005:27).



› *Fig. 4.16 - Lost parts of the Drill Hall in the fires of 2001 and 2002*



> *Our first day in court was one day of my life I shall not easily forget. There were thousands and thousands of people who had come to see the trial … the truck we were traveling in was completely closed … newspapers called it a 'singing box', because as we went through Johannesburg we were singing revolutionary songs at top volume - all 156 of us....*

ARCHIE SIBEKO, TREASON TRIALIST
quoted in JPP & CoJ 2005

> *In sealed police vans, escorted by half a dozen troop carriers filled with armed soldiers … a massive crowd of our supporters blocked traffic on twist street, we could hear them cheering and singing, and they could hear us answering from inside the van. The trip became like a triumphal procession as the slow-moving van was rocked by the crowd...*

NELSON MANDELA, TREASON TRIALIST
quoted in Darroll 2005:26.

Fig. 4.21 - (top right) Untitled historical photograph of ANC supporters from the Treason Trial of 1956

Fig. 4.22 - (middle right) Untitled historical photograph of the accused ANC trialists being transported to the Drill Hall

Fig. 4.23 - (bottom right) Untitled historical photograph of ANC supporters marching to the Drill Hall

4.2 A NEW LIFE FOR THE DRILL HALL

REINTERPRETING THE SITE WITHIN THE MEGA-NARRATIVE OF THE STRUGGLE

Under the guidelines provided by the Burra Charter [2] and a Conservation Management Plan [3], a strong preservationist approach was adopted in addressing the site.

4.2.1 GUIDELINES FOR PHYSICAL ALTERATIONS/INTERVENTION

In addressing the original built fabric of the site, the charter encouraged restraint, stating that it should be left "to tell its own story" and that "keeping change to a minimum protects the evidence of history and that assessments will determine which elements will/may be retained or enhanced" (Maurtin 2004: 54). The specified assessments value the physical elements of the building(s) within the contextual continuum of the materials and construction methods of its time to establish their importance.

4.2.2 RESULTANT RESPONSE: ARCHITECTURE AS ANTIQUE

As a result, the remaining original built fabric of the north block, south block, lower portion of the west block and the rifle range (now adequate for re-use) were reconstructed (where possible) and/or restored to match their original states. Prominent elements with strong visual ties to the past were given specific attention, such as the restoration of the unique west façade and the original concrete gable of the northern façade, remembering its date of construction. The burnt remains of the main hall, east block and the upper portion of the west block were removed as they could not be salvaged, leaving behind room for architectural intervention (see fig. 4.24).

4.2.3 GUIDELINES FOR THE INTANGIBLE

The significance of place, which arises from its inherent spatial qualities and the attachment to past memories and events are important. As a result, the site needs to embody the past, enrich past or present understanding of the site and thus through changes must hold value for future generations (Walker 2013).

4.2.4 RESULTANT RESPONSE: ARCHITECTURE AND ADORNMENT

As a result, the adaptive restoration hoped to transform the site into a "living museum" (Hart 2004:8). This concept supported the preservation/restoration of that which could be salvaged in order to still maintain the physical attachment to the past, telling stories of both its militarily history and its significant role in the meta-narrative of the struggle against apartheid whilst making the place useful. New additions to the site included:

1. The void of the main hall was transformed into an open square intended for public use. The memory of the original structure of the hall was preserved through isles of columns along either side of the square, which replicate their exact height and dimensions. The columns symbolically carry the names of the 156 accused during the treason trial. Fences were erected between the columns with the intention to be removed soon after practical completion to open up the square (Darroll 2005).

2. A new upper floor was added onto the lower west block in place of the old. The space was reimagined into an open gallery/exhibition space with a glass façade supported by a new steel structure. The architecture embodies a "lightness of touch" (Darroll 2005:28) blending into the consistent language of the existing buildings on the site. The new western façade is adorned with the ever-significant words "We Stand by Our Leaders" looking onto the street. Other adornments added to the western building include a timeline of events in the mosaic work of the patios and signage/artwork within the building

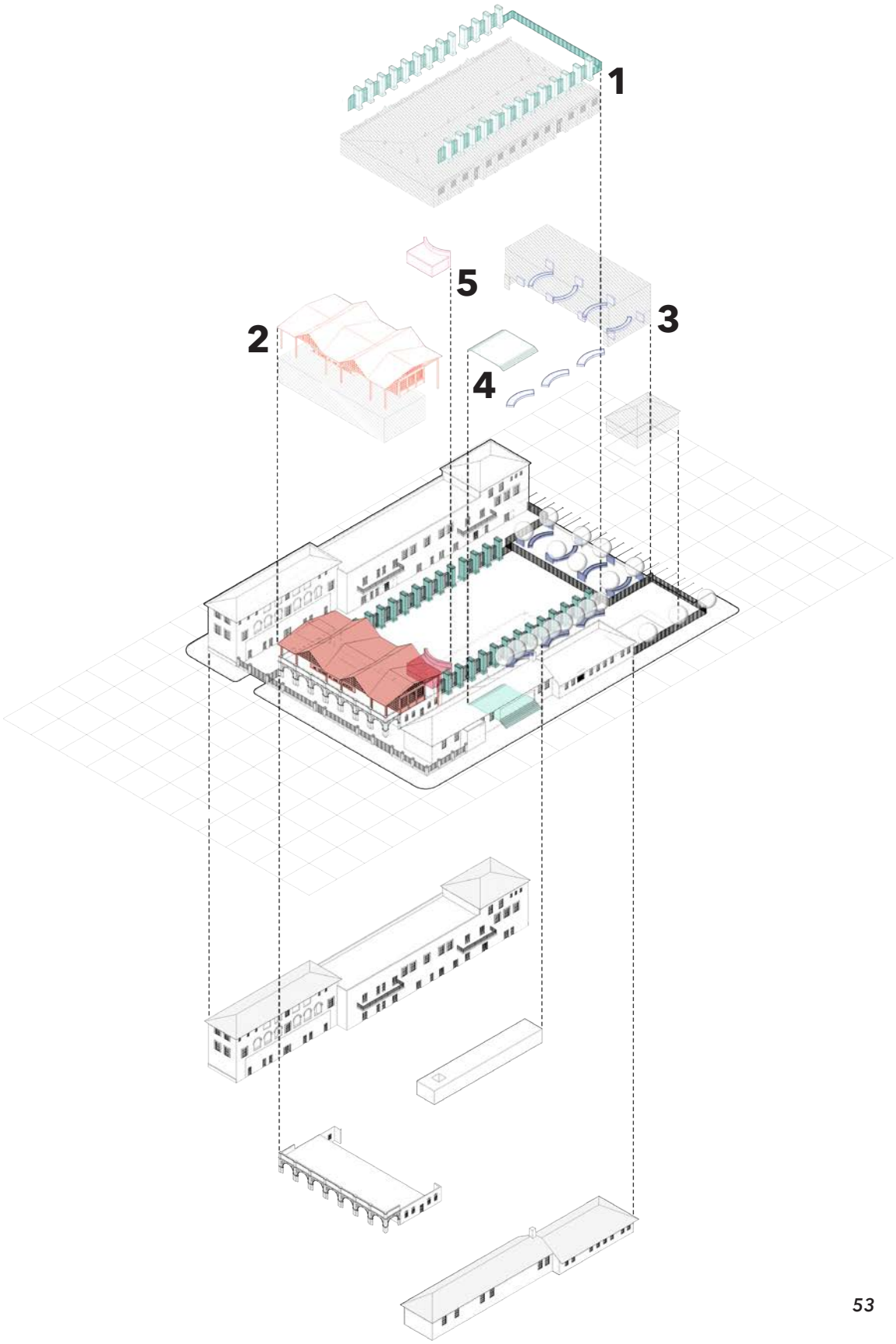


Fig. 4.24 - Axonometric diagram showing the changes made to the Drill Hall in the 2004 renovation/adaptation

telling stories of the treason trial.

3. The void of the lost east building was "reconceived as a forecourt to the main square" whose "footprint … matches that of the old building" (Darroll 2005:29). In situ concrete benches and Celtis Africana trees were added as urban elements to create an accessible and comfortable public rest space. The space is symbolically adorned with concrete panels which tell some old military tales and some of the treason trial. For example, guns and ammunition dating back to the Boer War which were found during excavation have been cast into these panels (Hart 2004).

4. A new entrance cutting through the southern building to give additional pedestrian access to the new public square was added.

5. The trapdoor which grants access to the subsurface rifle range was enclosed by a brick structure, intended to be a podium for the use of public address in future military events. The extents of the rifle range below ground are also marked in the paving (Hart 2004).

4.2.5 PROGRAMMATIC INFILL

In order to give the site contextual relevance, community servings programs were allocated to the site which included:

- The Community Chest (an association offering occupational training to the disadvantaged, such as cooking and barber skills),
- The Johannesburg Parks Project (a collective of artists particularly involved in the city centre offering a contextual and participative art),
- Johannesburg Child Welfare,
- The Rand Light Infantry (a reserve unit of the South African Army),

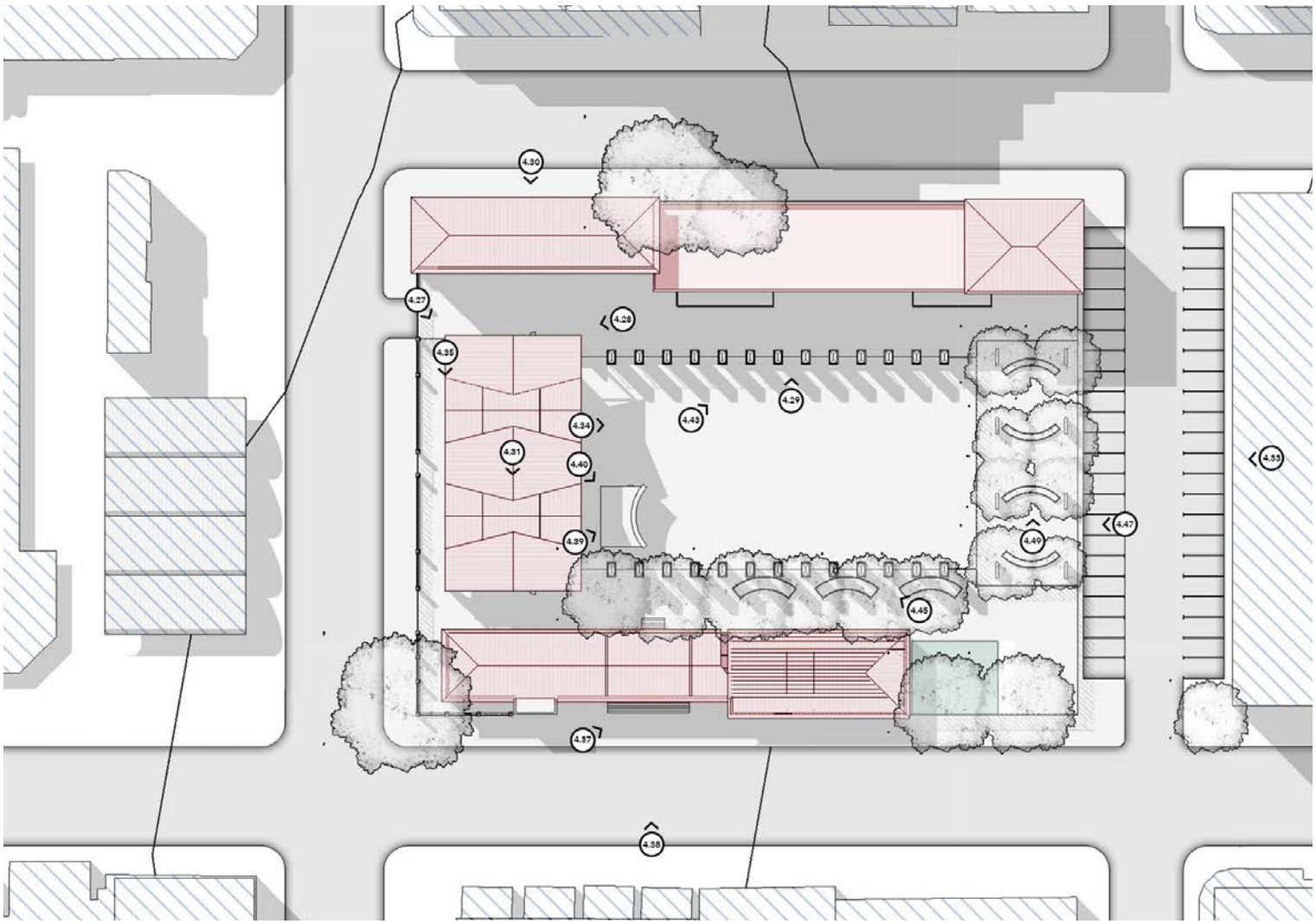
for the site to maintain a military function (Guinard & Morovich, 2017).

4.3 LOCALISED URBAN CONDITION

ABANDONED, ADOPTED AND APPROPRIATED

Despite the new site's symbolic weight and spatial potential, frustrated tenants of the block abandoned it soon after occupation due to safety concerns and ill-management, the southern new entrance to the square was never opened and the egalitarian-galleria life of the western block was short-lived (Guinard & Morovich 2017). Alas, left to the jurisdiction of local forces, 14 years post renovation the site has been re-appropriated once again to suit a direct need. The whole western building has been illegally appropriated into residential accommodation by struggling artists who have decorated the building with their art and converted the external podium into a vegetable garden (Guinard & Morovich 2017). The northern building hosts a few small private businesses and remains locked. The rest space on the eastern portion of the block - which is now beautifully shaded by the matured Celtis Africana trees - is unusable by pedestrians, dominated by the dangerous presence of nyaope teens and other homeless vagabonds[4]. Finally, the square (whose intermediary fences remain erect) is not a public space at all, but has been semi-converted into a skate park for children by the appropriators who live on site, and semi-adopted as a parking lot by taxis and other cars in search for parking space. The concrete peripheral barrier which should have been removed in order to open up the site remains standing, containing unused dead spaces within the site and cutting its internal activities off from its context. The physical unraveling of the site is well underway as paint peels, roofs leak, windows are left broken and the majority of the symbolic ornaments intended to enhance its historical significance cease to remain.

Fig. 4.25 - Photo reference plan locating the comparative photographs taken of the Drill Hall (to follow)



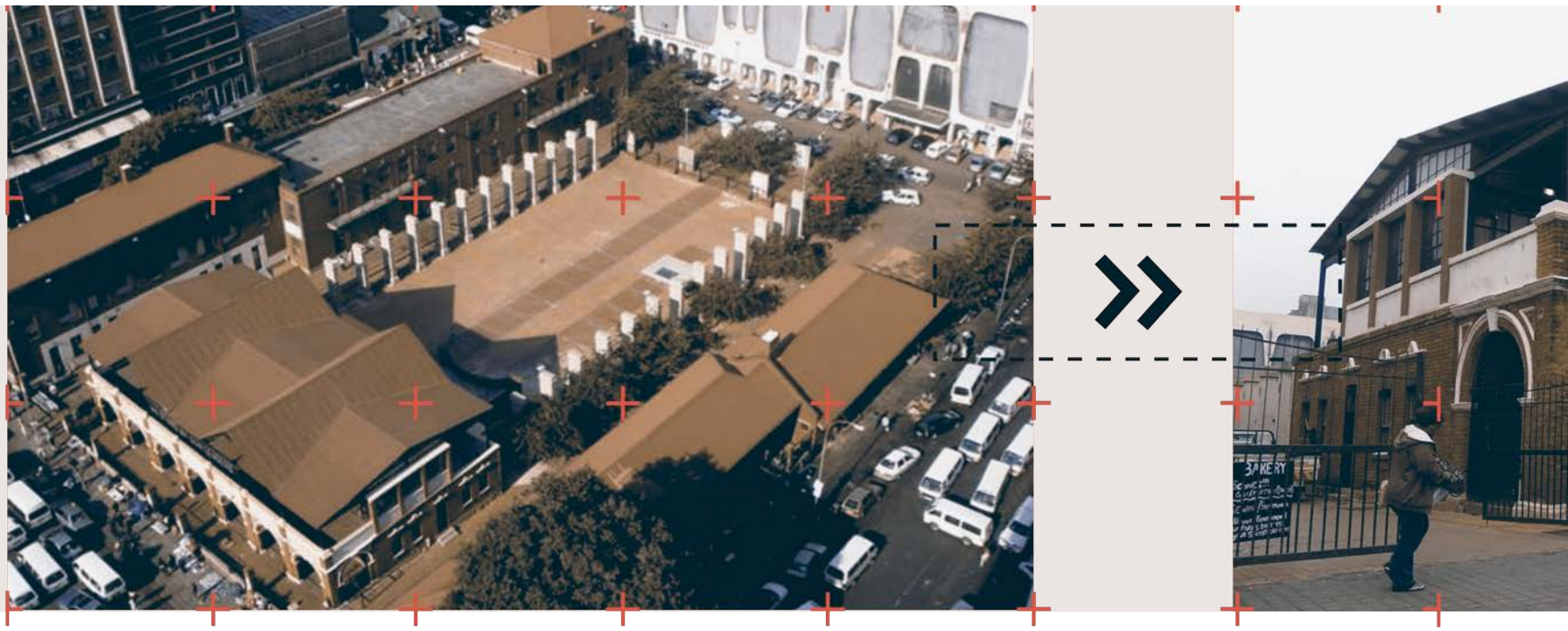


Fig. 4.26 - Aerial photograph of the newly renovated Drill Hall in 2004

Fig. 4.27 - Current external condition of the west building

Fig 4.29 - Before and after of the south facade of the north building

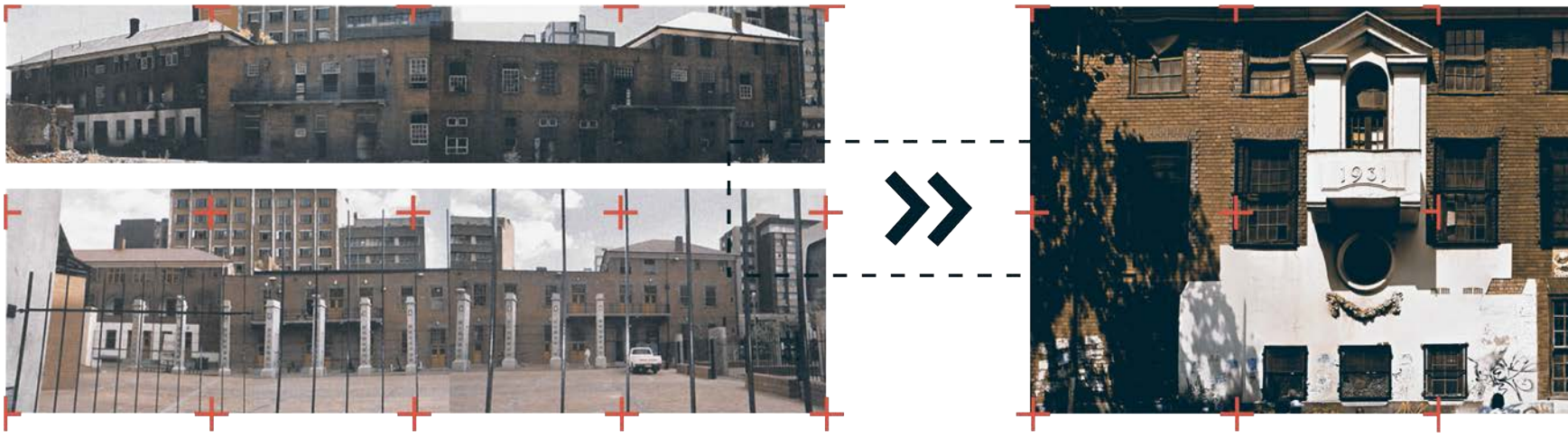


Fig 4.30 - Restored detail on the north facade of the North building

Fig. 4.28 - Current external condition of the west building

Fig. 4.31 - Photograph of first exhibition in new gallery in 2004

Fig. 4.32 - Current photograph of abandoned gallery

Fig. 4.33 - View of the new square and forecourt from the Old Ster Kinekor Theatre in 2004

Fig 4.34 - Current photograph of the public square from the upper floor of the west building.

Fig 4.35 - Photograph of the newly restored west facing colonnade of the west building

Fig. 4.36 - Current photograph of the west facing colonnade of the west building in its appropriated state

Fig. 4.37 - Photograph of the newly added entrance through the south building

Fig 4.38 - Current photograph of the locked up entrance through the south building and resultant street edge condition

Fig. 4.39 - Photograph of the newly added podium

Fig. 4.40 - Current photograph of the podium converted into a mini vegetable garden.

Fig. 4.41 - Example of a door restored to its original state in 2004 renovation

Fig. 4.42 - Current photograph of door with stickers and locked up to show new ownership of space

Figures on the following page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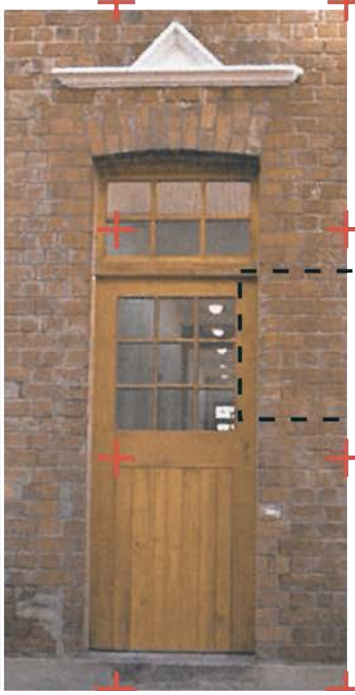

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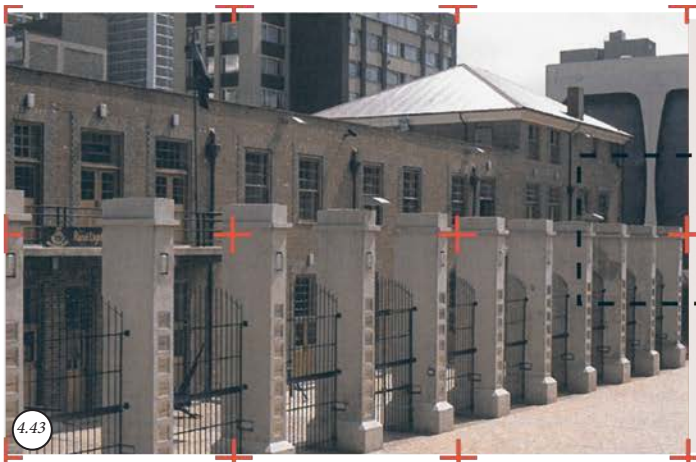
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Fig. 4.43 - photograph of the newly added columns and new public square

Fig. 4.44 - current condition of the columns and current use of the public square

Fig. 4.45 - photograph of the newly added furniture and trees adjacent to the south building

Fig. 4.46 - Current condition of the signage on the columns

Fig. 4.47 - Photograph of the newly added concrete panels with poster art

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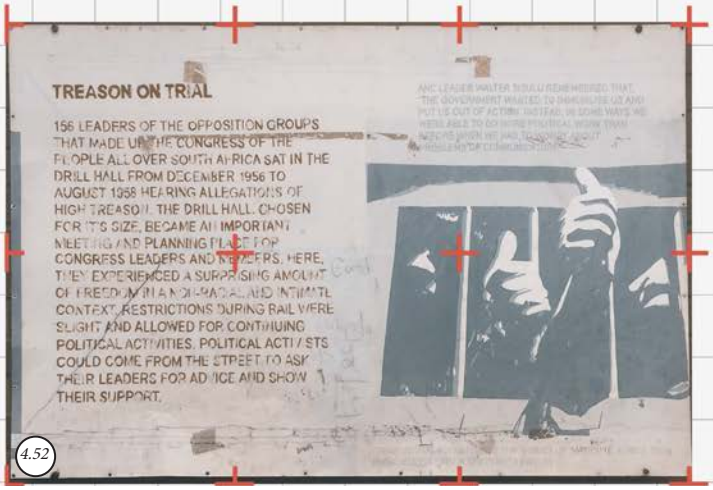

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Fig. 4.48 - Current photograph showing current condition of panels and forecourt

Fig. 4.49 - photograph of the newly added forecourt

Fig. 4.50 - Current photograph showing current condition of panels and forecourt

Fig. 4.51 - Current photograph showing the condition of floor mosaic work on the edge of the public square

Fig. 4.52 - Signage at the Drill Hall telling the story of its history

THE SAFE HAVEN WITHIN THE VOID...

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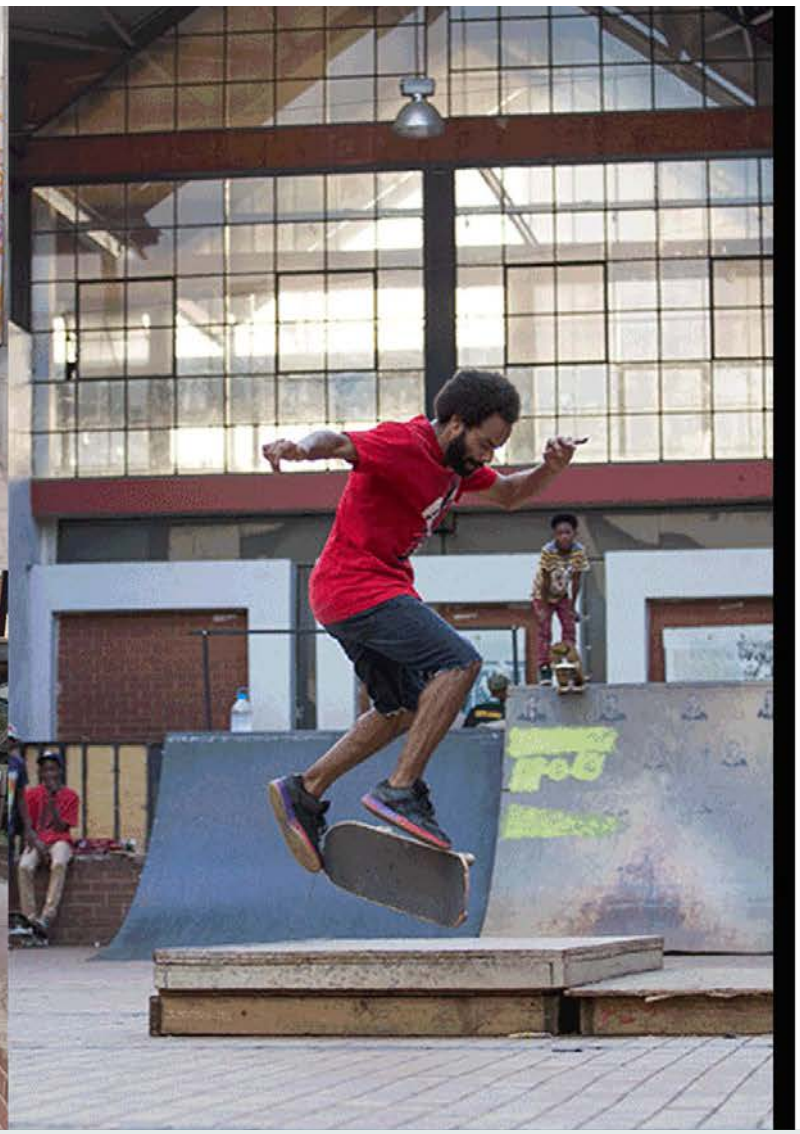

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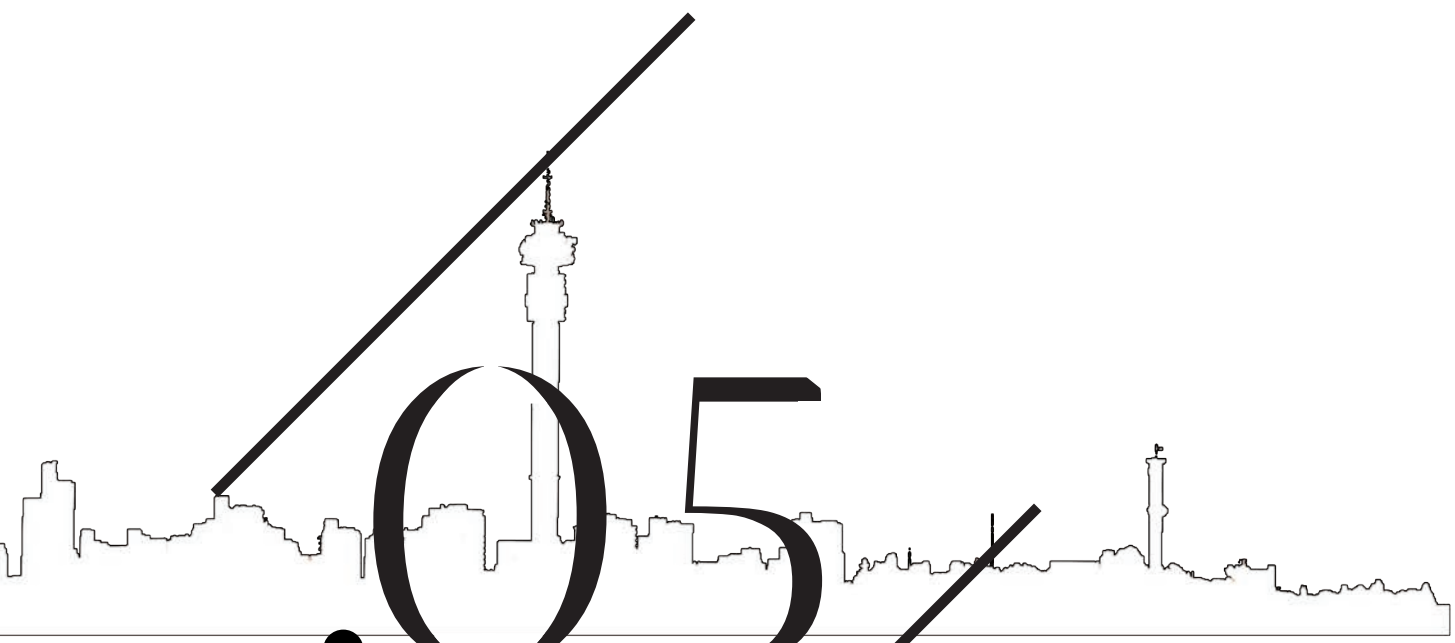
Figs. 53-59 - Photographs of the 'One Love' skate park



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Towards a theoretical and conceptual response...

THEORY & HERITAGE


Fig. 5.1 - Home

5.1 THEORETICAL PREMISE

5.1.1 A CRITIQUE OF THE APPROACH TAKEN TO THE DRILL HALL

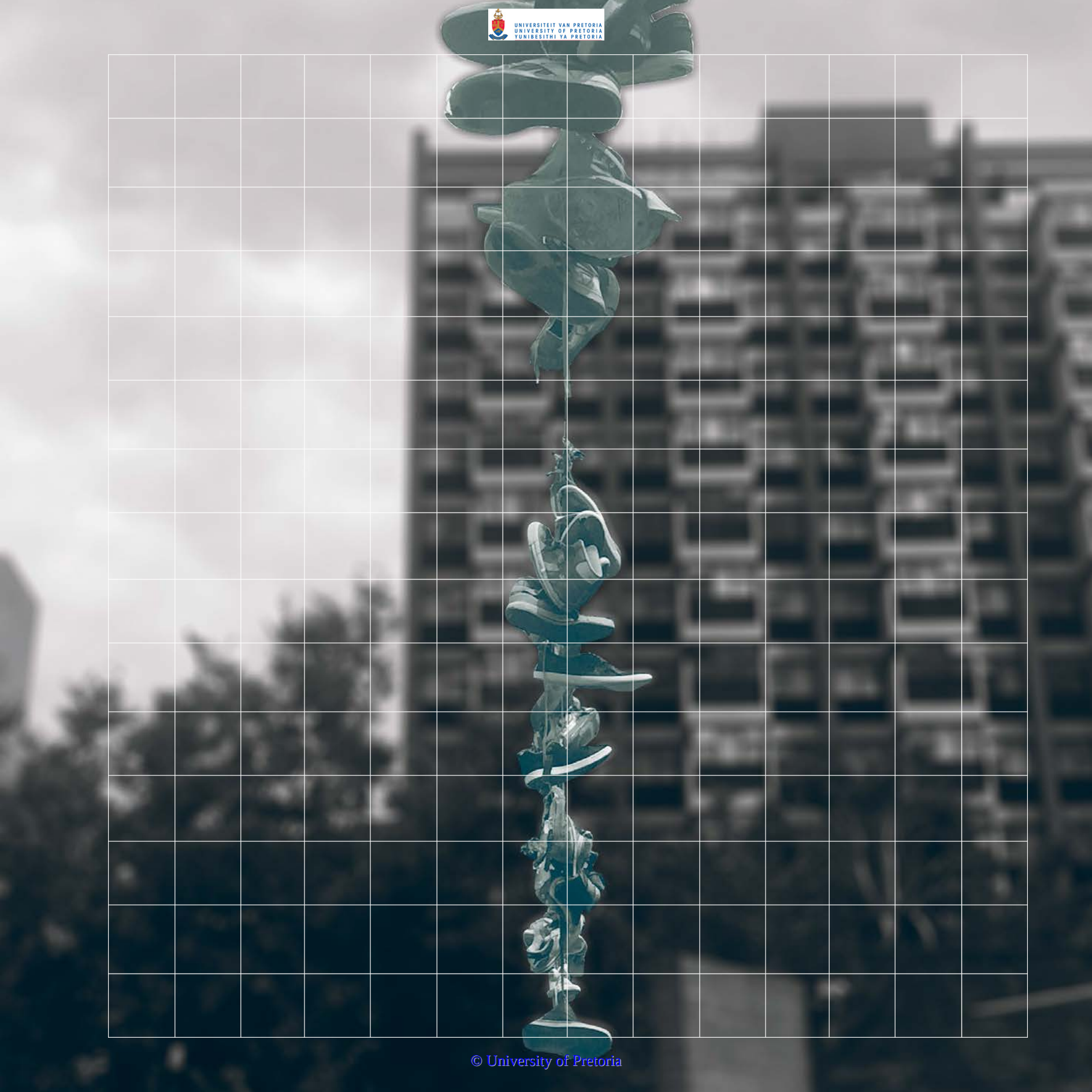
Guinard & Morovich (2017) critique that instead of being contextually informed, the site in fact conforms to the 'precinct typology' of its neighbouring areas which, in a destitute area, without full time management and security, cannot survive. They further critique that like so many other sites in Johannesburg which fall under the umbrella of the 'meta-narrative' of the struggle, it was treated as a "tradable commodity" and a possible "consumable experience" (Orbaşli 2017:158), tapping into the realm of gentrified destination architecture which governed many of the decisions made, including the notion of memory through ornament. Freschi (2007:27) states that when ornament is applied in the built environment it can range between being a shallow notion of decoration through to being "a central way in which a building can carry social meaning" which provides "fixed points of reference for connecting a building with notions of place". The interpretation of ornament in the case of the Drill Hall was so lightly applied, it was irrelevant in the context.

This philosophy is reinforced by the condition for the case of the sister site to the Drill Hall - Constitution Hill has been well managed, well maintained as a sustained symbol of change embellished in its ornament (see Garson 2004 and Freschi 2007;), but not without intense management of the watchful eye of the City of Johannesburg. If left to its own devices, it may too have faced a different fate.

5.1.2 THE SPACE/TIME DICHOTOMY: THE LIMITS OF LOCKING BUILDINGS IN TIME

A clear tug of war exists between the preservation of the existing fabric (for fear of losing the tangible connection to the past), and the conservation of the site to meet the needs of its context allowing it to evolve with time. Subsequently, the built fabric has been treated as an antiquity according to its archaeological value separate from the intangible value it has gained over time, which was physically rendered down to a few elements of ornamentation. This has resulted in the stunted spatial growth of the site, whose footprints, orientations and contextual engagement have remained locked in time through preservation and as a result have not been able to adapt, interact and negotiate with its context. Furthermore, the introduction of new relevant programs alone were not enough for the building and its new public space to become meaningful in context, resulting in an unsuccessful gesture of compensation and a failed act of architectural conservation.

The disparity that exists between these two notions requires theoretical and contextual resolution, which prompts an investigation into the continuum of global and local preservation and conservation respectively.



5.2 UNDERSTANDING THE ORIGINS

THE THEORETICAL DISCOURSE OF PRESERVATION, RESTORATION + CONSERVATION THEORY OVER TIME

The first major documented practices in preservation occurred in the Renaissance (1400s-1600s) in the form of 'Romantic Restoration', which was prompted by the nostalgic longing for the lost ideals of the Roman Empire (Rouhi 2016). This included the restoration of paintings, ancient sculptures, triumphal arches, memorial columns and other monuments throughout Rome. Over the course of the 1700s, these learned principles of 'antiquarianism' (Rouhi 2016) triggered a preservationist consciousness throughout Europe and became the founding principles of the Restoration Movement. This movement was formally established by Sir George Gilbert Scott of England and Eugène Emmanuel Viollet-le-Duc of France (Rouhi 2016) in the early 1800s.

The Restoration Movement, also known as the picturesque movement (Orbaşli 2017), prioritised aesthetics over authenticity, seen in the work of both Scott and Viollet-le-Duc who both reimagined and recreated buildings, often from a few remaining fragments. This approach was appropriately dubbed by Scott as 'faithful restoration' (Rouhi 2016:2). Viollet-le-Duc produced multiple books on the topic which widely influenced the practice of stylistic restoration throughout the rest of Europe for the remainder of the 19th century (Orbaşli 2017).

In a strong response to this way of working, an opposing orthodoxy of thought was developed by John Ruskin, the forefront thinker of the 'anti-restorers' (Rouhi 2016). He stated in his renowned book *The Seven Lamps of Architecture* that restoration is "the most total destruction which a building can suffer" (Ruskin 1849:242) arguing that only what authentically remained ought to be preserved. In 1877, William Morris, an apprentice of Ruskin, established the Society for the Protection of Ancient Buildings (SPAB) which condoned

shallow restorations and promoted the regular maintenance and delicate treatment of original fabric (Rouhi 2016). Where reconstruction was required, he encouraged only 'honest repairs' that were clearly legible and contrasting to the original fabric (Orbaşli 2017). Together, the ideas of Ruskin and Morris have formed the foundations upon which most conservation practices used today are built (Orbaşli 2017).

After over half a century of opposing philosophies concurrently executed in practice, Camillo Boito of Italy consolidated the two approaches in the Italian Charter of Conservation of 1883. He stated that "monument should be consolidated rather than conserved, and conserved rather than restored in order to give them a longer life" (Rouhi 2016:4). Where restoration was appropriate, he devised specific methods which were to be applied with discretion. This philosophy formed the basis for the Critical Restoration Movement in which we still find ourselves today. The principles thereof have developed and manifested globally throughout the 20th century, embedded in various charters. These include the Athens Charter of 1931 which focused on monuments and the Venice Charter of 1964 which evolved from the Athens Charter to include vernacular buildings, industrial buildings and entire cities (Orbaşli 2017). Later charters include the Declaration of Amsterdam of 1975, The Nara Document of 1994 on Authenticity, the Burra Charter of 1999, the Charter of Cracow of 2000 and the ICOMOS 2003 ISCARSAH Charter.

As the various charters have evolved into the 21st century, many have expanded their scopes to encourage the consciousness of self and collective heritage values, landscapes, all in addition to man-made structures (Orbaşli 2017).

5.2 PRESERVATION, RESTORATION AND CONSERVATION IN SOUTH AFRICA

5.2.1 THE RELATIONSHIP BETWEEN LEGISLATION AND HERITAGE

The Burra Charter, born from the principles of critical restoration theory, is considered particularly appropriate in practice in the 21st century. It is inclusive of all places of cultural and historic significance, not limited to man-made landscapes, but also natural landscapes. The charter encourages restraint when intervening, prioritising the "authenticity of cultural heritage" (Rouhi 2016:5) over restoration, whilst allowing for variance at the discretion of the spatial intervenor within the 'values-based' spectrum in order to achieve effective conservation of place. It acknowledges "heritage objects as entities within complex and contextually varying values and narratives" (Orbaşli 2017:161). This basis for intervention is particularly applicable within the South African context where multiple narratives, cultures and histories coincide and has been widely adopted as an appropriate set of guidelines in recent years.

However, the principles of conservation embedded in the various charters of critical restoration theory (such as the Burra Charter) came very late to South Africa as prior to the turn of democracy, heritage was addressed through the bureaucratic lens of its own legislative powers (Herholdt 2014). It began with The Bushman Relics Protection Act of 1911, which evolved into The Natural Historical and Monuments Act of 1923 (amended to include The Relics and Antiques Act in 1934) and later The National Monuments Act of 1969. All of which, according to Herholdt (2014), showed a strong bias towards the narratives of the ruling class. As evidence of this, of the 2 100 monuments declared in 1989, 3% were of natural or scientific interest and only 2% on indigenous history and culture. The other 95% favoured predominantly Dutch icons, British colonial icons and Afrikaner monuments (Herholdt 2014:5).

After Apartheid, The National Heritage Resources Act of 1999 arose, which embodied a more expansive and

all-encompassing view of heritage, narratives and cultural interpretations. The South African Heritage Resources Agency (SAHRA) arose alongside the Act to ensure its fair enforcement and only since their establishment have the values of the Burra Charter been encouraged in practice.

5.2.2 THE IMPACT ON CURRENT HERITAGE PRACTICE

Darroll (2005) explains that within the restorative process of the Drill Hall, the heritage agency demanded restraint and advocated for little to no change to the site. Thus, the team was fundamentally unable to surpass the preservationist premise of the governing legislature which exists above and beyond the guidelines and recommendations of the charters. SAHRA's preservationalist stance can be explained by various reasons. It could be due to a possible 'carry-over' effect of the past legacy of the relationship between heritage, restoration practice and legislation in the country, which we are still learning to evolve from (Munro & Hart in Herholdt 2014). It could also be explained as a possible reaction to the biased way heritage was addressed prior to 1994 as explained by Frescura (1989) in that we are afraid to lose our tangible connections to the past and the stories they have stood for in the complex history of South Africa, especially those meaningful to past minorities. This is well summarised by Jackson who states that "nations who go about destroying their own buildings are in danger of destroying their own heritage" (quoted in Frescura 1989). Another alternate theory is explained by Jokilehto (1986), who suspects that the vast amount of hesitance and ambiguity that exists in the debates of adaptation/reinterpretation stem from the false restoration of multiple buildings in the past which have come to falsely represent people and cultures bringing about the question of authenticity. This was the case for the restoration of the Old Presidency in Bloemfontein of 1979-1985 during which significant components by Herbert Baker were removed and "questionable techniques" (Herholdt 2014:4) were employed, resulting in a product very different from the original building.

5.3 THEORETICAL RESPONSE

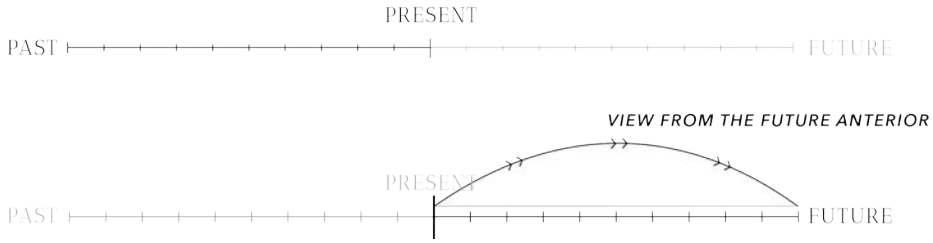


Fig. 5.2 - The basis of historic provocation

5.3.1 TYING BACK TO THE CRITICAL JUNCTURE

Such concerns which limit bold acts of conservation (especially on sites of such importance) in a country with a complex history are valid. However, one could argue that the key lies within these very sites with such ties to the past. They are the necessary platforms to attach new, real transformation due to the symbolic crossroad that they possess at which a highly specific and critical juncture occurs: as established in the introduction of this document, one that addresses the image of the city and to whom it belongs, the transformation of space and who it enables and what that means for the dynamic of the reformed city around it.

It is on sites like this that spatial conflicts need to be challenged and frustrated in order to allow the tensions and contradictions embedded in people and place (specifically such as the Drill Hall) to emerge.

5.3.2 UNLOCKING A BUILDING IN TIME

HISTORIC PROVOCATION: A VIEW FROM THE FUTURE ANTERIOR

As an appropriate response to the space/time dichotomy which has determined the physical evolution of the Drill Hall until now, Otero-Pailos, a renowned Spanish architect/theorist who is constantly challenging the methods, definitions and limitations of preservation and conservation in the built environment (see Otero-Pailos 2005, 2016), whilst acknowledging the value in conventional and careful methods of preservation, presents an alternate way of thinking in response to the "contradictions arising from the modern parceling of space into times and times into spaces" (2005:iii). He states that common preservationist practice tends to "act in response rather than provoke" (2005:iii) by viewing the past though the present and the present though the past, limiting our interrogation of 'what will have been' and subsequent evocation of future possibilities.

This is the case for the Drill Hall in that the legacy of legislation and fear of losing its connection to the past resulted in a solution that it was only considered from the perspective of the present to mediate the present condition with the past legacy of the site. The consideration of how it could evolve with the context past its current state and accumulate new

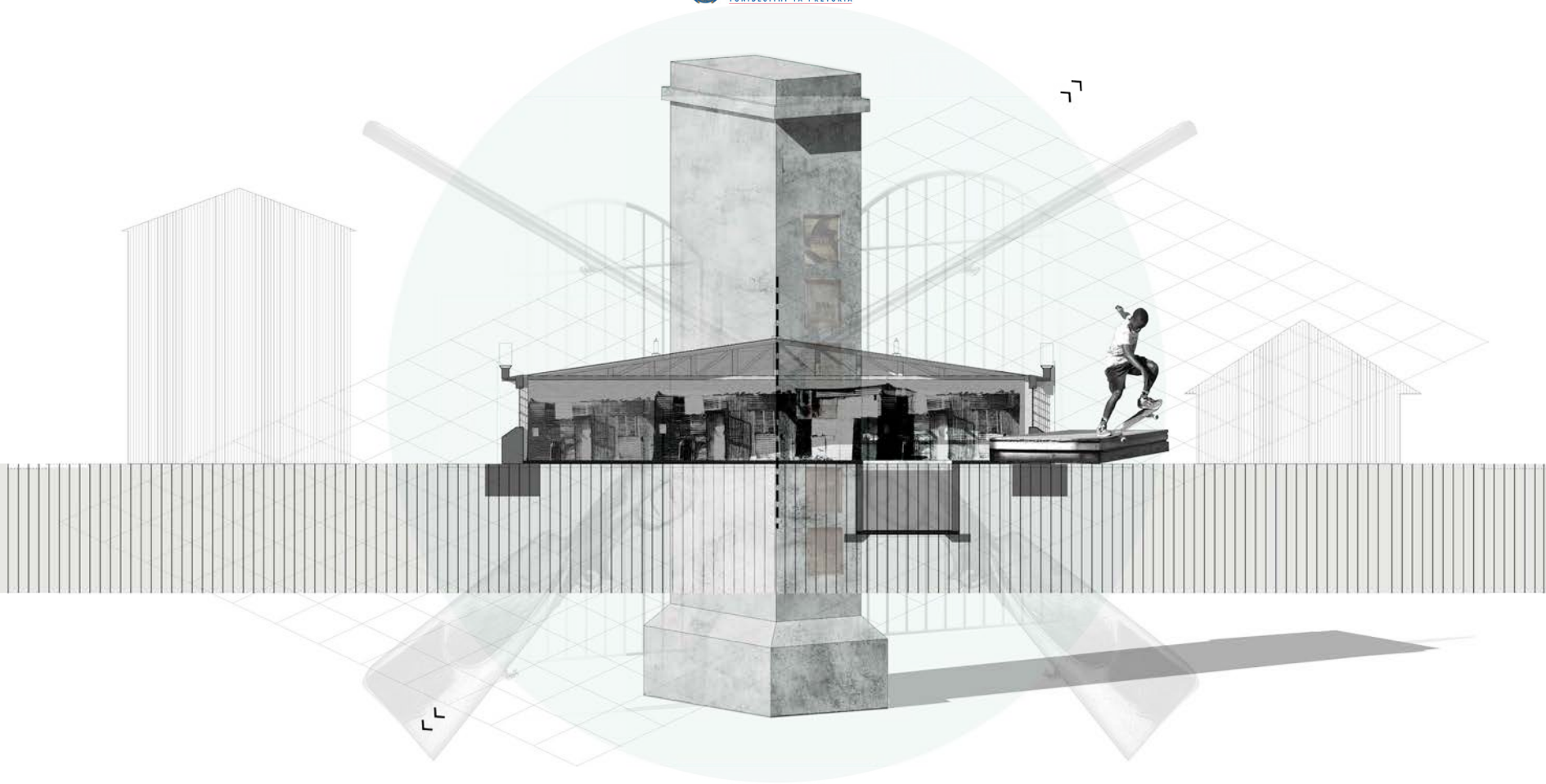


Fig. 5.3 - Clues in appropriation

meaning in the future was insufficiently addressed.

In response to this, historic provocation is a confrontational approach which encourages one to provoke the present use of space from the perspective of a counter-factual temporality: not from the present but from the future anterior (Otero-Pailos 2005). In other words, in order to determine which methods of intervention are appropriate, one cannot solely rely on the past and present conditions of the site as informants. One ought to use these informants whilst critically reflecting on the future of the site and the built environment which surrounds it (see figure 5.2)

As a result, various methods of preservation (which for the most part are viewed as time locked solutions) ought to be critiqued in order to establish which can be used as spatial provokers of the present and how they can in fact contribute towards the context's evolving typologies. By working forwards and backwards simultaneously from the position of a counter-factual temporality, even when preservation is imperative, one is more likely to achieve successful and critical conservation of place.

Fig. 5.4 - Fifth-floor bedroom in Donald Judd's SoHo residence

5.4.1 HISTORIC PROVOCATION: CASE STUDY 1

In 1969, Donald Judd made a purchase of an old multi-storey garment factory in order to save it from demolition. He intended to convert the building into residential accommodation. The traditional method of retrofitting of the time would have been to sub-divide the large open spaces of each floor into smaller units. However, instead he "challenged himself to go beyond the conventions of domesticity" (Otero-Pailos 2005:v) and subsequently collaborated with over 100 artists to reinterpret the notion of domesticity within the spaces. As an unlikely outcome, the result was the invention/initial test experiment of the loft-style typology. This typology was unheard of at the time, but has since become widely adopted as a cost-effective and even desirable retrofitting solution, and by extension, a viable method of conservation.

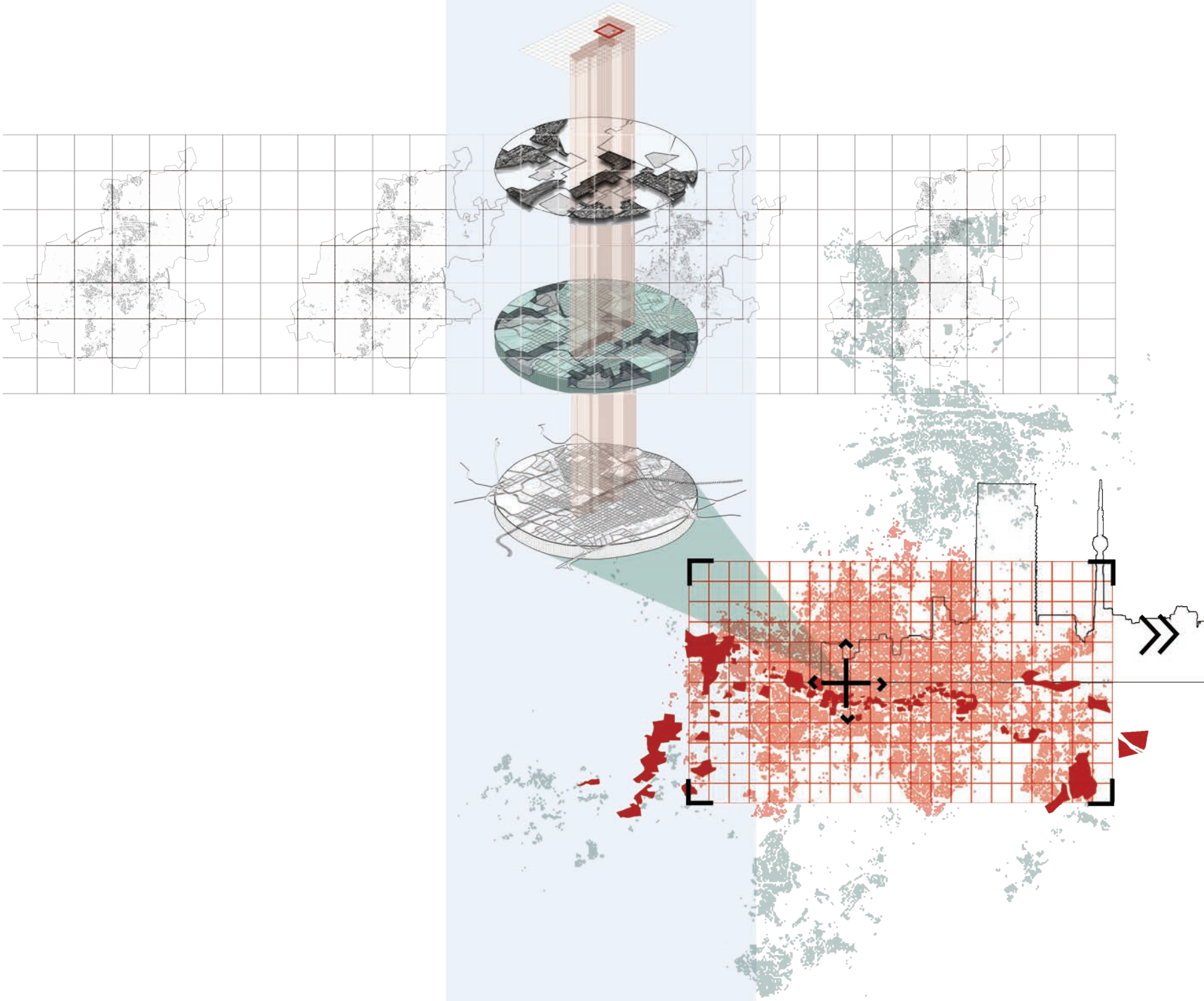
5.4.1 HISTORIC PROVOCATION: CASE STUDY 2

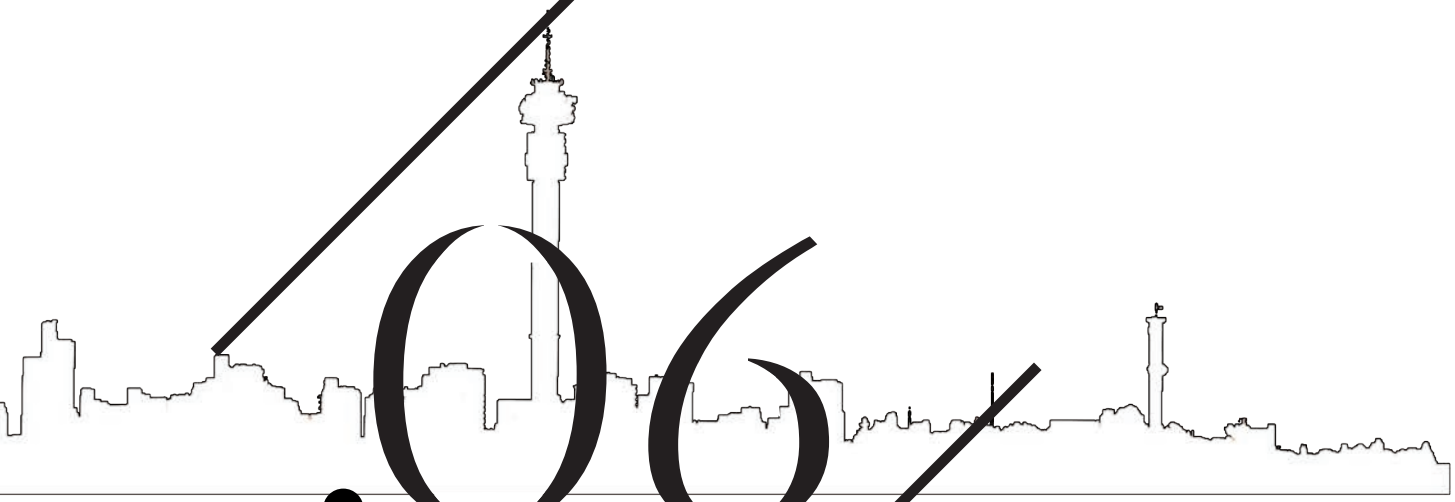
As an example within heritage, the Republic Palace (Palast der Republik) in Berlin, Germany has since the reunification of Germany in 1990 been unoccupied, and by 2002 was fully stripped of its interiors. In determining what to do with the building, officials called to the public, where there was a definite divide in opinion. It was an important icon for those of the former East Germany, but those of the former West Germany wanted the Communist icon demolished and replaced by a

Fig. 5.5 - Photograph of Ramberg's 'Zweiffel

replica of the Baroque Castle which stood there before it. Von Buttler (quoted in Otero-Pailos, 2016) stated that "every day Germans are told by our leading politicians to 'look forward' – which essentially means backward. It seems we need a proper past for our future, but which past?". The tensions between icon, power and the divided histories attached to the building set a complex stage on which to allow tensions to spatially play out, facilitated by hopeful outcomes from the future anterior.

In 2005 Lars Ramberg intervened, erecting a large sign spelling the word "zweiffel" (meaning doubt) on top of the building as a "solicitation of collective thinking about the building" (Otero-Pailos 2016). Otero-Pailos (2016) succinctly explains that the sign is a "hypothesis about collective value and public significance" and "an urgent request for the public to test the hypothesis". The erection of the sign encouraged public engagement as people came to see the sign, interact with it and the building, and as a result it began to become a present object within contemporary culture, which resulted in the subsequent acknowledgment of the building as something more than an icon, but in fact could have a new function within the new socio-political order of contemporary culture. As an outcome, the temporary 'exhibition' uncovered a path towards resolution which would allow for the accepted and successful conservation of the building in the reformed city (Otero-Pailos 2016).





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An accumulation of program, theoretical application and contextual analysis to form a well-rounded and all-encompassing site strategy to address the scheme's:

Place in an the greater urban strategy of gestures of compensation;

As part of city strategy addressing housing within the inner city;

As part of local strategy addressing the site in its localised context

SITE STRATEGY

6.1 ESTABLISHING PRIMARY FUNCTIONS

6.1.1 EVOLVING THE GRAND GESTURE

As per the original intention of this dissertation, in order to investigate the possibilities of transforming the site into an active contextual element of infrastructure, an underlying environmentally oriented micro-infrastructure will be added to function as the new backbone of the site. It is said that by the year 2025, 1 900 000 000 people will face absolute water scarcity (CLSA 2011). This is a shocking global statistic that alludes to the severe water crisis that the world is facing and will be facing for many years to come.

In 2016, South Africa simultaneously witnessed one of its most severe droughts in over a century in the Western Cape and experienced a case of severe flash floods in eastern Johannesburg (edition.cnn.com). This extreme contrast in water crises (a major excess and a major shortfall) alludes to the escalating vulnerability and volatile nature of water as a resource within this country as climate change evolves and the populations increase. Water is a resource that has to be managed with carefully considered future predictions and is to be conserved accordingly. Furthermore, the supply of the majority of Gauteng's fresh water is subject to the jurisdiction of other nations such as Lesotho and Botswana with whom we share major water resources (wwf.org.za). As a result, Gauteng relies heavily on the healthy functioning of water infrastructures which span over hundreds of kilometres to feed its far placed industries and city centres (wwf.org.za).

Therefore, the appropriate infrastructural mechanism to be incorporated into the site is a water recycling micro-infrastructure which will serve not only the needs of the site, but also the needs of the neighbouring taxi rank (whose water needs are as established in chapter 3), in order to become an active contextual participant and an example of a sustainable, decentralised, urban regenerative model that urban centres should be investing in. Dasgupta (2006) supports this approach, stating that the notion of the 'centralized efficient city' is outdated, has lost its futuristic appeal and has constricted the growth and personalities of cities from evolving.

Although this program serves a relevant and meaningful role, its strong industrial nature lacks human quality and scale. Therefore, in order to bring this newfound regenerative tool to the hands of people, a new conservatory will be added to the site to mediate this conversation. The conservatory will not only serve as a protected green public rest space that the exposed and vulnerable forecourt was unable to sustain, but will also house horticulture in order to work hand in hand with the water recycling processes occurring on the site. The inclusion of small-scale urban farming with which people can engage will add place-making value and create the necessary interactive condition for conservation of new cultures of place which will come to evolve between people, infrastructure and new architecture.

6.2 PROVOKING THE POSSIBILITIES

6.2.1 LEARNING FROM THE PAST

Remembering the 2004 reinterpretation of the site where new spaces and symbols were not meaningful and relevant enough to context and users hindering the successful conservation of place, this iteration subsequently requires a more complex strategy in implementing change to ensure the successful conservation of place that goes beyond the mere addition of functions and buildings to the site.

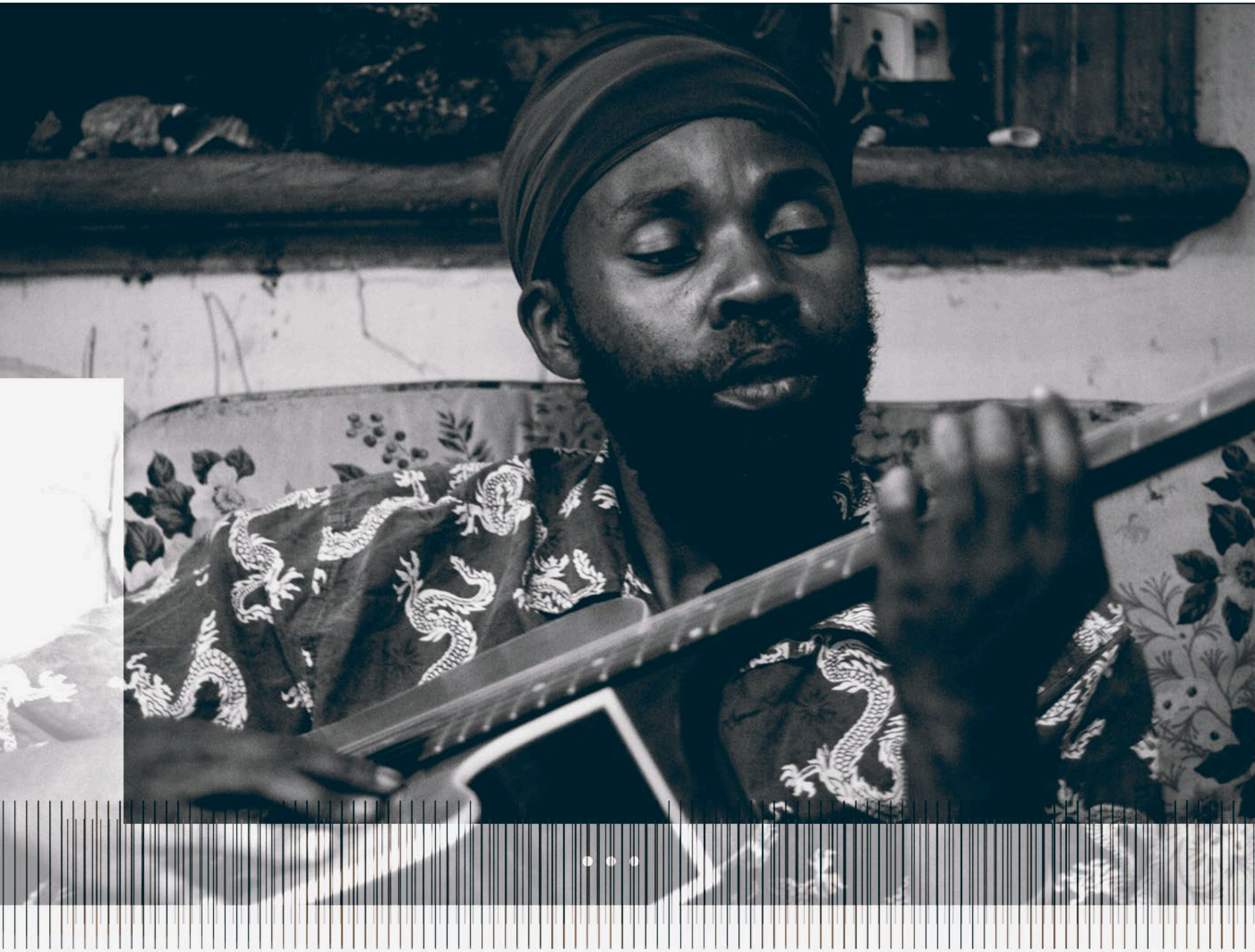
6.2.2 CLUES IN RECURRING TALES OF APPROPRIATION

The natural unfolding of appropriation occurring twice on the site (in conjunction with the disregard of its symbols) has alluded to the true extents of the site's contextual relevance as a symbol of the struggle. However, as a clue into the power of appropriation, Guinard and Morovich (2017:131) suspect that the permanence of the appropriators on the site who have transformed it in their own way has caused an "indirect preservation of the memory through the weaving in of new stories and traditions … which in turn allowed a deep attachment to place to form" and by extension, a contextual attachment to place and those around them (see figures 6.1 & 6.2).

6.2.3 APPLYING HISTORIC PROVOCATION

Therefore, using the recurring tales of informal dwelling on the site and the supporting contextual need for transitional housing as a point of departure, the program of transitional housing will be investigated as an explorative and experimental tool to provoke the possibilities of the site through the notions of flexible dwelling, user appropriation and temporal place-making as a means of evoking new narratives of place.

This program as a permanent solution on such a site is too heavy an intervention given the site's physical and symbolic significance and thus, in order to evoke place from the future anterior (i.e. as part of a strategy used to achieve a certain outcome), the scheme will be introduced as a temporary intervention as part of a phased solution. The inclusion of this additional 'layer' will greatly contribute towards the goal of evolving the narrative of the site whilst attaching new meaning to place and 'catch up' to bring the site out of the past and into the present to retrace the relevance that the site could possess for those around it that a blind intervention on its own would not be able to achieve.



The commitment of these social and cultural actors contributes to making this place live every day, to maintain its heritage dimension, while making it a space of creation in the midst of the urban tumult that characterizes this part of the city center. In this tension between a weak institutional patrimonialization of the site and the vivacity of the memories of the populations attached to this place, memories which are moreover maintained or even reactivated by the artistic and cultural associations that occupy the site, the Drill Hall appears as an interstitial space, a place of the in-between, waiting for its institutional destiny...

Fig. 5.3 - The artists

GUINARD AND MOROVICH
2017: 132

6.3 THEORETICAL SUBSTANTIATION

6.3.1 NOTION OF PLACE-MAKING AND PERSONAL APPROPRIATION

Otero-Pailos (2016) encourages us not to speak for culture but rather to solicit a cultural response through social engagement. Similarly, Freschi (2007:30) states that in order to evoke a contextual response that has the potential to evolve into a sense of community (especially in a distressed and overwhelming context of despair such as this where little sense of community or belonging exists), one needs to move away from "staid notions of civic decorum and conventionalized grandeur towards open-endedness, inclusivity, and a sense of a deliberate playing with the elements and expectations of public space in relation to notions of individualized and personal place". Furthermore, Orbaşli (2017) states that in order to reignite relevance of place, those who have significant associations and meanings with the place should be included in the process, suggesting that transitional housing for those most in need is all the more appropriate.

6.3.2 SUPPORTING THEORY

Within the continuum of architectural thinking, personal appropriation as a means of place-making has been explored and written about extensively. Henri Lefebvre, in his book The Production of Space (2007), explores the belonging that develops through one's own processes of spatial appropriation; Michel de Certeau, in his book The Practice of Everyday Life (1980), stipulates that the production of urban space is the resultant product of both institutional strategies and the processes of collective users who "reclaim public space through techniques of socio-cultural production" (Leveratto 2016:6); Jan Gehl who has since 1971 concluded through various studies that public space and architecture should allow for personal appropriation; and by Kevin Lynch who advises that the inclusion of users in both the design and management phases will create 'responsive environments" (1981:164) which allows for adaptive urban spaces. As a result, by including aspects of personal appropriation within the theory of place-making, these ideas attempt to "build deeper connections between spaces' form, use and meaning" (Leveratto 2016:8).

6.4 ARCHITECTURAL CONTRIBUTION: *THE NOTION OF THE TEMPORARY*

6.4.1 VALUE IN THE REALM OF HERITAGE

Bearing in mind the implicit care that is required in addressing a heritage site, allowing people to freely appropriate it may seem like a rash and ill-suited solution. However, preservation's restraint in spatial invention allows it to freely investigate time (Otero-Pailos 2005:iv). Therefore, bringing in temporary structures and other appropriable tools provides the breathing room required to achieve self-legitimisation and personal ownership over place through place-making processes without being detrimental to the existing fabric.

Furthermore, Otero-Pailos (2016) states that through the traditional practice of preservation, practitioners 'cut short' the process of spatial experimentation and fail to participate in the larger social reality which needs to embrace change. Temporary architecture is thus a highly appropriate introductory tool in the continuum of South Africa's approaches to heritage as it has the ability to create an illusion of an alternate state of use and test it for a certain period of time, without permanently deciding the fate of a building or place. Legislatively speaking, this way of intervening has the potential to create "rifts in the established disciplinary conventions and openings for alternative ways of interpreting and intervening in the built environment" (Otero-Pailos 2005:vi) without posing an antagonistic question to institutional heritage.

6.4.2 VALUE IN THE EVOLVING THE GRAND GESTURE

As in multiple grand gestures that have been established throughout Johannesburg and the country, "architectural history can be appropriated to suit shifting ideologies" (Freschi 2007:37) embedded in architectural language, symbolism, placement and program. Temporary interventions which are open for use and appropriation have a non-prescriptive quality and flexibility which have the potential to develop with people and place into permanent solutions that evolve according to narrative and not according to prescribed ideologies of place.

6.5 RELATIONSHIP BETWEEN PRIMARY FUNCTIONS

As the two new primary functions (the temporary and the permanent) host very different functions, a synergetic relationship between programs will be ensured through a work-live principle.

As the housing scheme will be catering for the lowest income bracket, a work-to-live function will be offered to a percentage of the people residing within the scheme. In addition to the therapeutic benefits which arise from working with plants, this cross-programming will give the people living on the site the opportunity to:

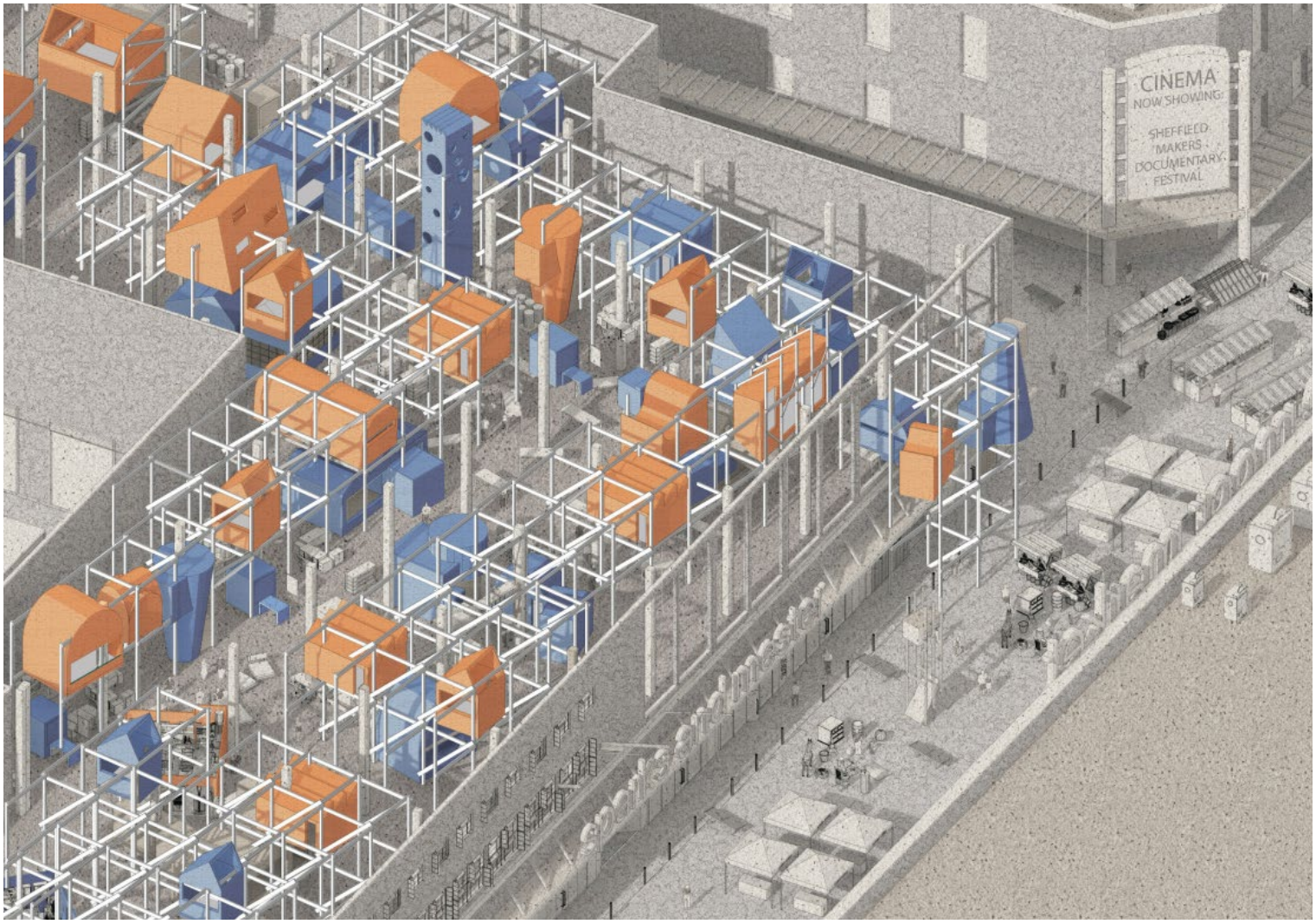
- contribute to new narratives of place making on the site;
- contribute to the development of new infrastructures;
- become educated about such processes;
- and most importantly, understand the contextual relevance of such micro-infrastructures within the dense urban fabric through hands-on participation.

Van Timmerman (2013:76) supports this notion, stating that in order to incorporate decentralised infrastructure into our future cities, "personal responsibility, environmental awareness, critical thinking, co-creation and communal well-being will be integral to the participation of users in this developmental process".

By running the concurrent processes of facilitated place-making alongside the introduction of new permanent architecture which programmatically feed off one another, the contextual relevance of the new architecture (by allowing contextual meaning to develop through the natural processes of daily use and negotiation) will be ensured. A strategy such as this will allow tangible and intangible meaning to develop alongside one another, achieving both architectural and intangible conservation, which the previous attempt at the site was unable to consolidate, in order to achieve an overall conservation of place.

This is supported by Ehad (2015:74) who states that "heritage is not just a thing or a place, but rather cultural processes of social activities that include remembering, memory-making, as well as a continuous meaning-making and re-making through certain socio-cultural patterns" and thus "heritage conservation is a process to manage the changes occurring in place, rather than just a technique of freezing the image of place at some time in the past in a picturesque, emotional way" which through historic provocation is what the scheme intends to do. Therefore, through the incorporation of the temporary and the permanent which, through informal means, work together in evoking place, both discussion and negotiation have become fundamental aspects of addressing conservation, beyond the physical site itself.

Fig. 6.2 - Exploring temporality and heritage part 1



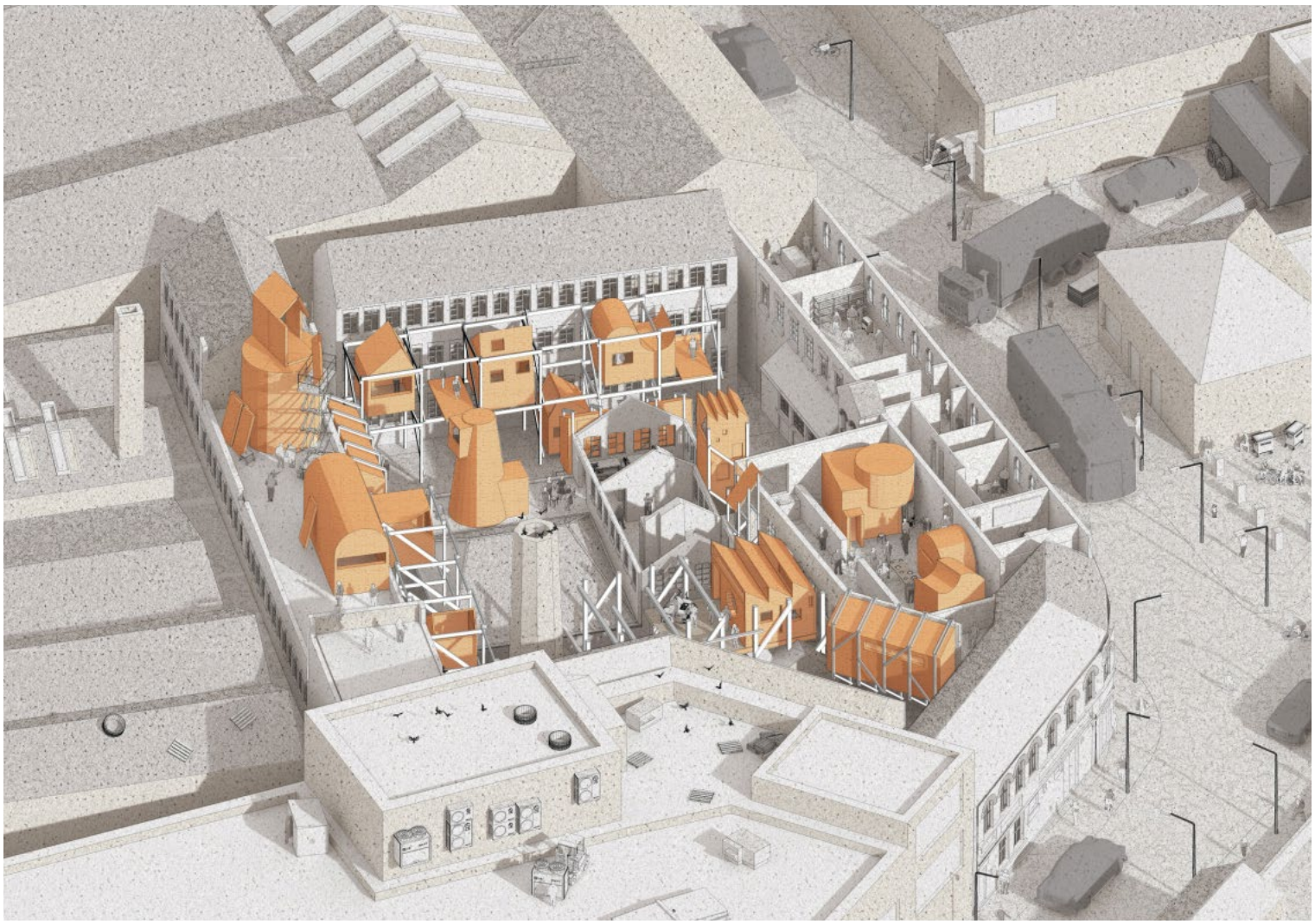
6.6 ENSURING THE LONGEVITY OF THE SITE

KEEPING THE SITE 'UNLOCKED'

Once the temporary scheme has reached completion, the infrastructural anchor as a continually active contextual participant supported by its contextual serving functions will remain as the residual gesture of compensation.

The hope that through the catalytic 'catching up' phased process as a means of evoking place on the site and hopefully reigniting the contextual relevance of the site, the new architecture will have value to those around it as a gesture of compensation should, which still serves a relevant function that surpasses the pseudo face of gentrification and as an outcome addresses the image of the city to become a sustainable, resilient and worthy act of restitution of memory within the mega-narrative of the struggle.

Fig. 6.3 - Exploring temporality and heritage part 2



6.7 ESTABLISHING SECONDARY FUNCTIONS

6.7.1 COMMUNITY SERVING FUNCTIONS

In an interview concerning the 2004 renovation of the site, the team and client were asked "why not housing?" given the great contextual demand. The team responded that:

> *"there is a strong drive, in the council and other city agencies for transformation in the inner city and economic development including the development of residential buildings. But, wherever people live, you need the support systems and structures that make living there practical, and even a pleasure – provided the economic opportunities and social and recreational amenities are in place. … Cities need to take account of every aspect of people's lives, not just accommodation. And residential accommodation, as much as any other aspect of the city is still threatened by our dysfunctional society. We need to address these social dimensions before we can make real progress. There is a lot of talk about transforming the city, but we need a holistic plan and a holistic approach to make it work."*

(Hart quoted in Darroll 2005:31)

Therefore, the existing community serving functions that the site was originally intended to house will be maintained. Permanent supporting programs which include legal aid and youth support will be accommodated on the site and will work hand in hand with transitional housing.

6.7.2 INFRASTRUCTURE FOR INFORMAL TRADE

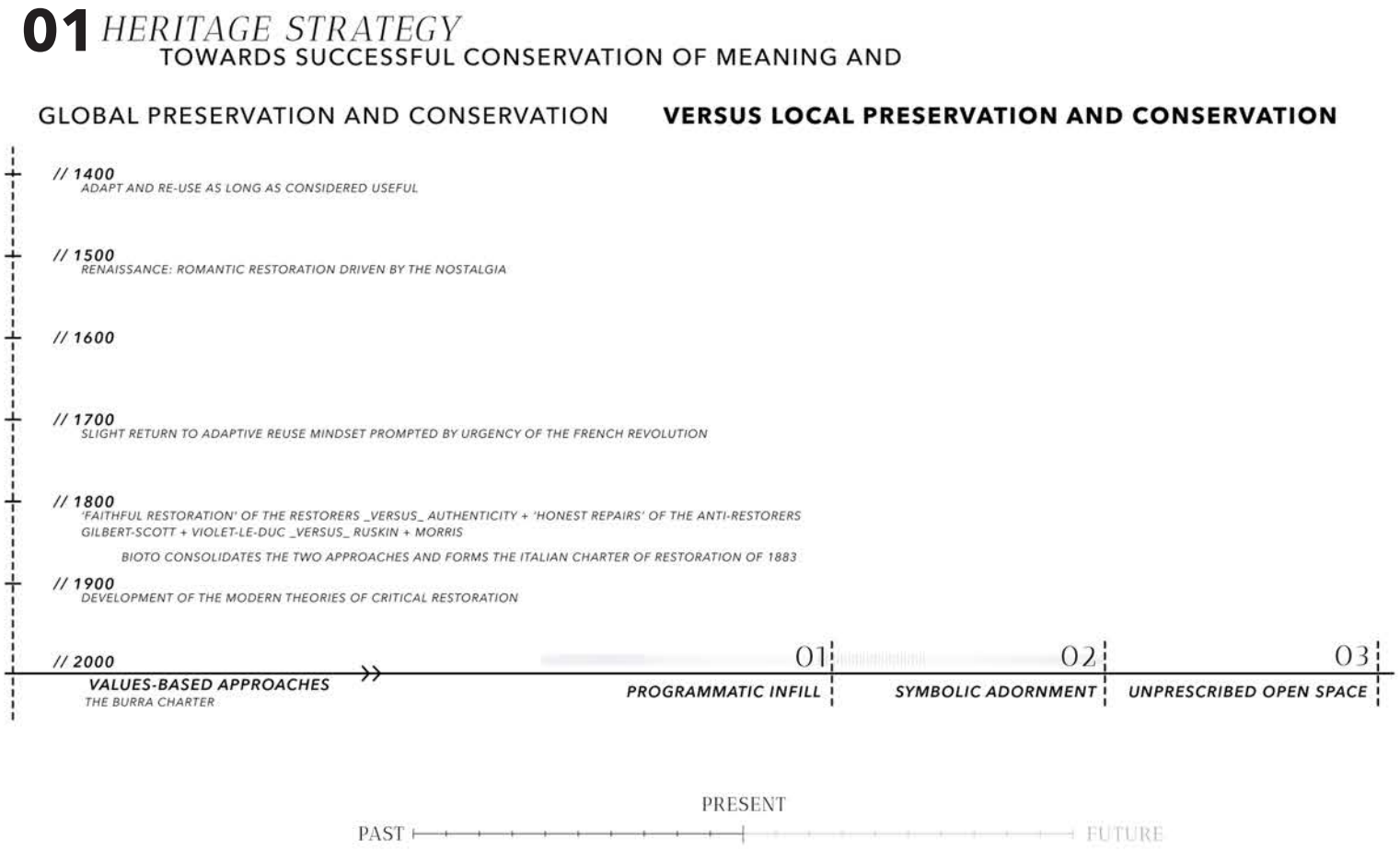
Regarding the overwhelming nature of informal trade which occurs on the pavements around the Drill Hall and the Jack Mincer taxi rank, another supporting function will include infrastructure for informal trade. This will, simultaneously with the Commuter Links Project(1), attempt to bring a slight formality and infrastructural advantage to the microbusinesses of the inner city.

6.7.3 PUBLIC SPACE

Given the shortage of public space within the inner city, specifically in the dense residential areas, maintaining and enhancing the opportunity for productive and meaningful public space on the site will be priority within the scheme and secondarily serve as a binder between buildings and functions.

Fig. 6.4 - Exploring temporality and heritage part 3

6.8 DIAGRAMATIC SUMMARY OF COLLECTIVE STRATEGIES



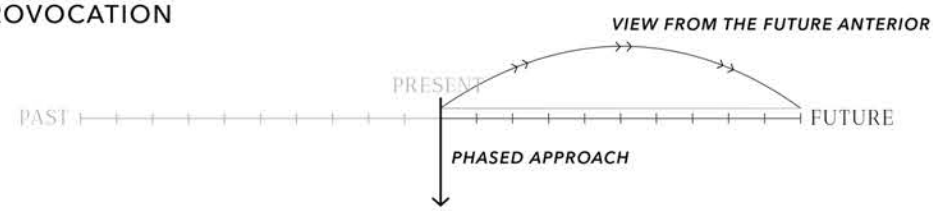
02 *HOUSING STRATEGY*

EMBRACING THE EPHEMERAL AND INFORMAL CITY
DYNAMIC TO INVESTIGATE NEW HOUSING TYPOLOGIES

TEMPORAL DWELLING *TRANSITIONAL DWELLING* *PLACE-MAKING* *UNPREDICTABILITY AND SPONTANEITY OF INFORMAL CITIES*

03 *ARCHITECTURAL STRATEGY*

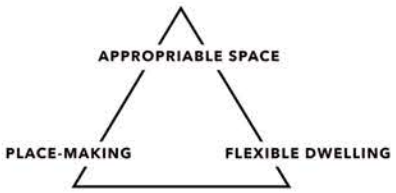
USING PERMANENT TEMPORALITIES AND
HISTORIC PROVOCATION

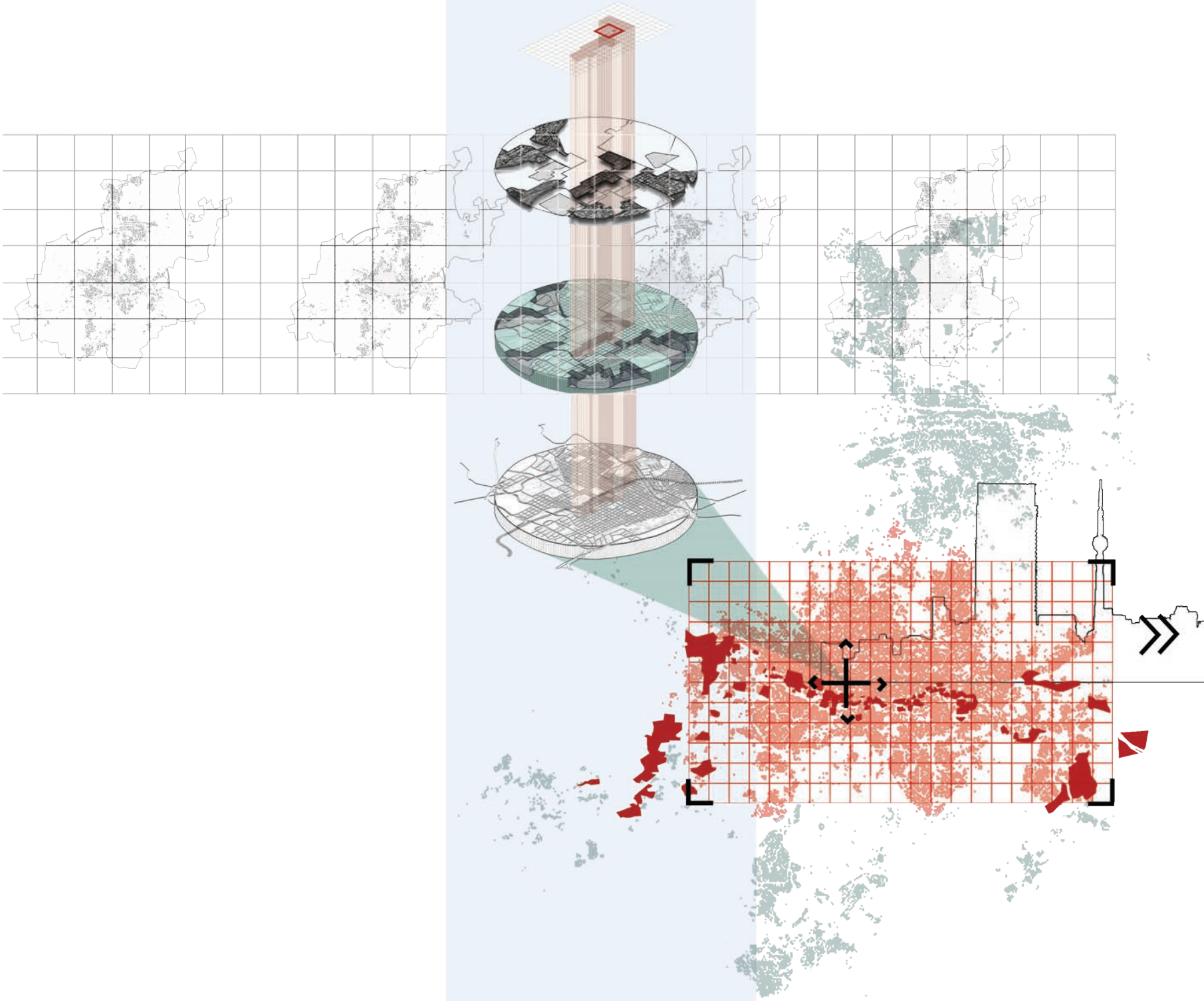


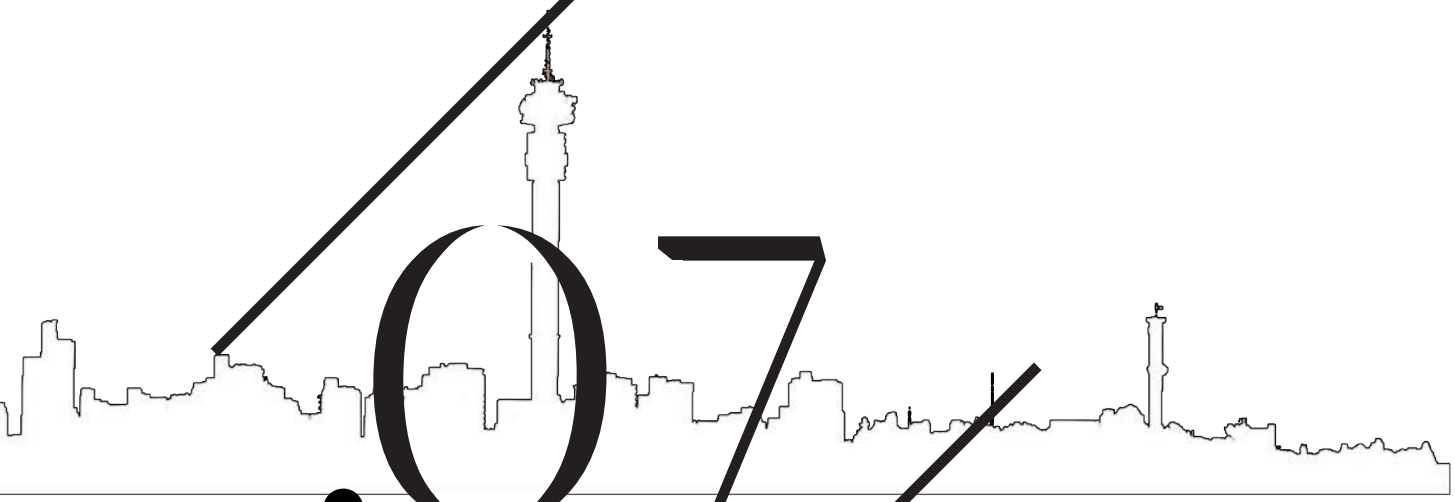
01 *NEW PERMANENT ARCHITECTURE*
REGENERATIVE INFRASTRUCTURE AS GESTURE OF COMPENSATION
WATER RECYCLING AND HORTICULTURE

02 *TEMPORALITY*
CONSERVATION CATALYST
TRANSITIONAL HOUSING

03 *CONTEXTUALLY RELEVANT REGENERATIVE TOOL*
RESIDUE
SUPPORTED BY INFORMAL TRADE; COMMUNITY SERVING FUNCTIONS AND PUBLIC SQUARE SKATE PARK







07

The previous chapter divulged in depth the site strategy under the umbrella of historic provocation. The following chapter will investigate the appropriate tectonic/architectural concept/typology within the oeuvre of dwelling in the inner city which will together with the site strategy add value and strengthen the act of historic provocation on the site....

URBAN STRATEGY

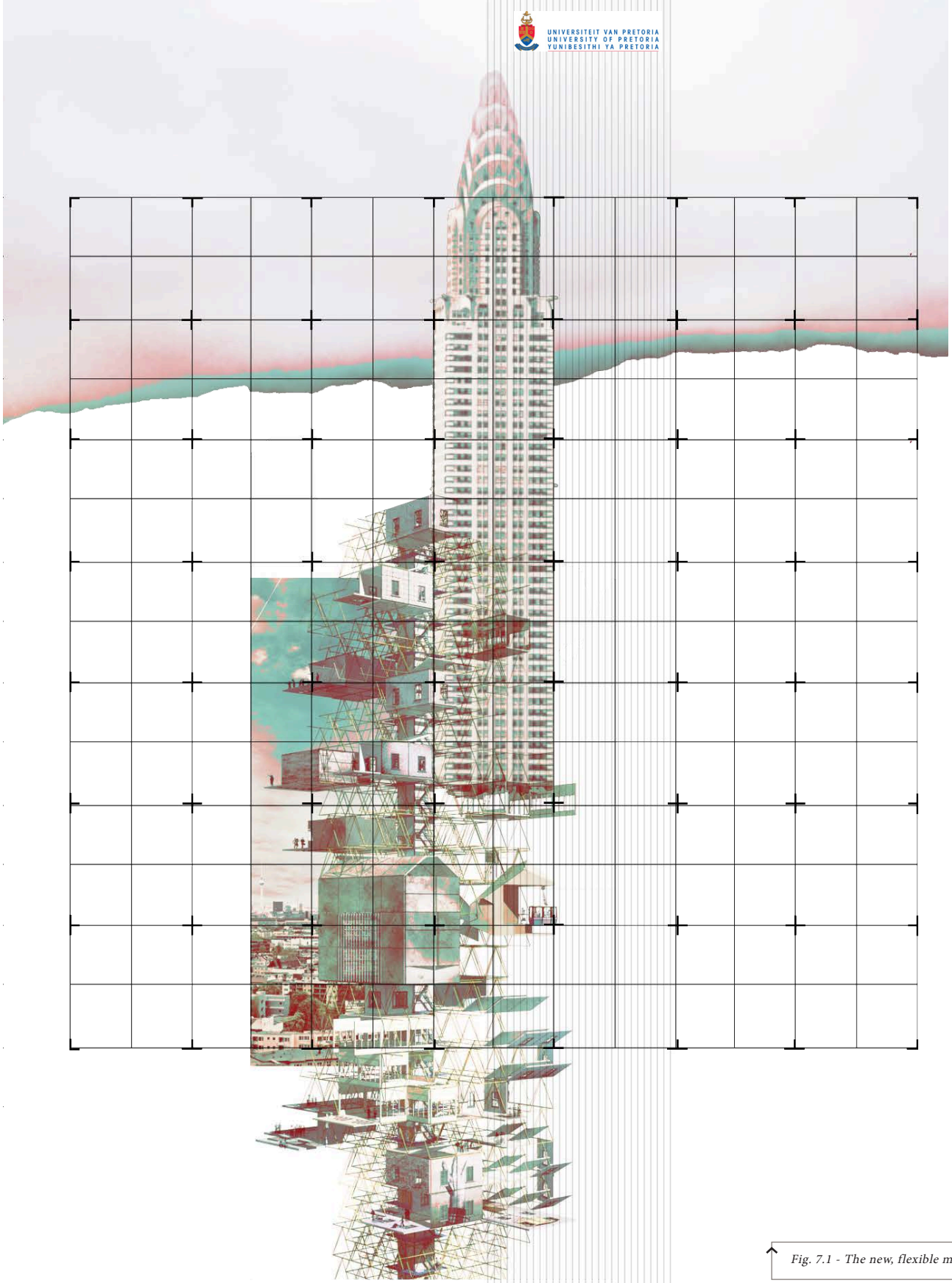


Fig. 7.1 - The new, flexible metropolis

ROOM FOR ARCHITECTURE

HISTORIC PROVOCATION WITHIN THE OEUVRE OF DWELLING IN THE INNER CITY

7.1 CONTEXTUAL NECESSITY OF THE VOIDS

The seas between the gentrified islands present a complex and interesting urban dynamic that is constantly evolving and changing in its informality according to necessity, just like the Drill Hall and its legacy of appropriation. This unpredictability plays out daily in the lives of the thousands of informal traders who unpack and hold space for the day before departing; by the vagabonds who are the infill to any nook and cranny; by the waves of taxis who traverse between the concrete mega-jungle transporting over 60% of the 800 000 commuters in and out of the inner city daily; and in the tensions for spatial holding between locals, migrants, the nyoape youth and others who all try and root themselves within these grey areas in achieving a validated existence.

7.2 EMBRACING A NEW, INFORMAL CITY DYNAMIC

In the same way that the Drill Hall cannot be viewed as a present condition with a present solution, the complexity of the inner city overwhelms the practice of conventional urban regeneration that may be applicable elsewhere and calls for a counter-factual perspective which acknowledges the informality and unpredictability that its future may hold (Bauman 2012). City authorities have to adapt to these conditions of uncertainty, but are limited by budgets, legislation and knowledge of the urban future.

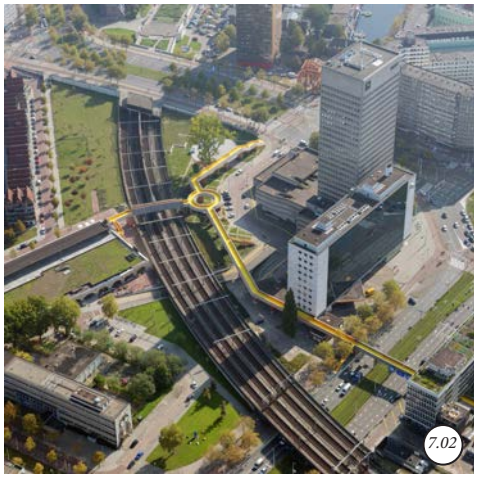
Dasgupta (2006) opportunistically theorises that the perception of the third world metropolis is changing and becoming the image of the 'new', speculating that the limelight no longer glistens on the shimmering skyscrapers of the iconic global centres, but lives within the impromptu-cities which are able to better adapt to change and unexpected fluctuations and which demonstrate a more "fecund ecology". Lundie (2014:60) contributes towards this theory, stating that "although the idea of the third-world metropolis as an image of the future might be unsettling, the concept of the third-world [could become] that of the ultra-modern: more capable and better equipped than the first-world city to sustain radical diversity, cope with growing population rates, globalisation and other third-world problems" which are the salient issues that Johannesburg needs to engage with.

7.3 A PLACE FOR PERMANENT TEMPORALITIES WITHIN

ZUS Architects based in Rotterdam, Holland, are the creators of an urban approach entitled 'permanent temporality'. The Luchtsingel, designed by ZUS Architects is an element of temporary urban infrastructure designed to reconnect three parts of the city which have become divided by the railway. It is mainly comprised of a pedestrian bridge, but also includes urban furniture and other connections between buildings. It is a crowd-funded project and was designed as a temporary solution in order to test the idea to see if the connections would work and be used by pedestrians over the course of 15 years. After this time, the intervention would be assessed and either removed or made permanent. Sieswerda, the project architect of the Luchtsingel, (in Drie 2015) states that the concept of permanent temporality is born from the 'waiting condition' where instead of overextending resources on permanent projects that stakeholders are often uncertain about, an approach such as this allows for community investment, architectural testing, flexibility in a constantly evolving and changing city, and the possibility to work in the condition of the 'in-between' without imposing permanent solutions onto it.

The idea of creating 'permanent temporalities' is one such way to experiment in the urban fabric that acknowledges the uncertainty and unpredictability of the future dynamic of African cities. It sees place-making as a flexible and adaptive way of intervening, less focused on aesthetics (as the precincts have tended to be) and more focused on landscape as a medium and system (Tyrväinen 2015). Furthermore, it can provide solutions in meeting the real estate and housing needs which the market forces are unable to cater for within the urban voids (Bishop & Williams 2012). Therefore, by extending the provocative strategy on the site to meet the urban condition, there lies the opportunity to challenge the housing typologies within the inner city from which a new flexible architecture can emerge and be tested without the hefty commitment to permanence, with temporary architecture as tool for experimentation and innovation.

Figs. 7.2-7.10 - Images of the Luchtsingel, Rotterdam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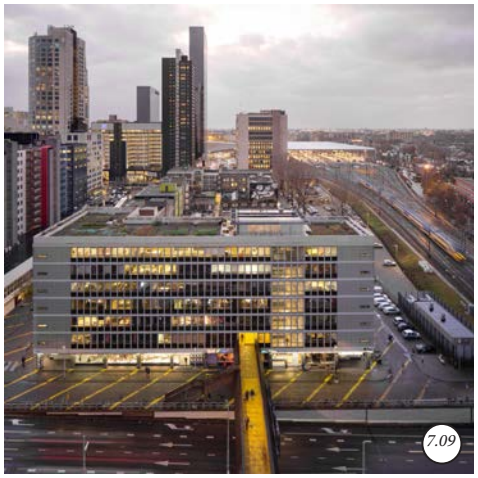
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7.10

7.4 PROVOKING THE CITY THROUGH HOUSING

In the realm of urban dwelling, we have come to call our places of permanent residence 'home' having moved away mobile living according to the prescriptions of modern ritual. Schwartz-Clauss & von Vegesack (2002:22) speculate that static ways of living have "more to do with cultural history than the character of human personality" and as a response to this go on to critically ask what the real dwelling needs of people will be within the foreseeable dynamic future of cities beyond the static entities which we know. Experiments with temporality, mobile living and flexible dwelling based on the premise of permanent temporalities can begin test, explore and answer this question.

7.5 CONTRIBUTION TO THE CHANGING CITY:

AN EXAMPLE SET BY THE GRAND GESTURE

Evolving one's mindset to consider cities as dynamic entities instead of the monumental certainties that we have known them to be does present a challenge as it is through the notion of permanence that we have recorded and celebrated our histories. Beatriz (in Stuhlmacher & Korteknie 2001:105) states that "the house is the best advertisement for architecture". What this can mean for cities and their potential to evolve is well said by Schwartz-Clauss and von Vegesack (2002:23):

> *"the house remains a definitive architectural vehicle, simultaneously a tool and a symbol that can convey new ideas about a vast range of concepts from the pragmatic to the esoteric. Our understanding of what a house is meant to do provides a baseline alongside which innovation can be tested, so everything from new constructional and structural systems to experimental social grouping can be explored. It is an important design exemplar for all architecture, not just dwelling, and a powerful tool in the architect's armory when communicating various new ideas - from construction techniques to urban design to aesthetic form"*

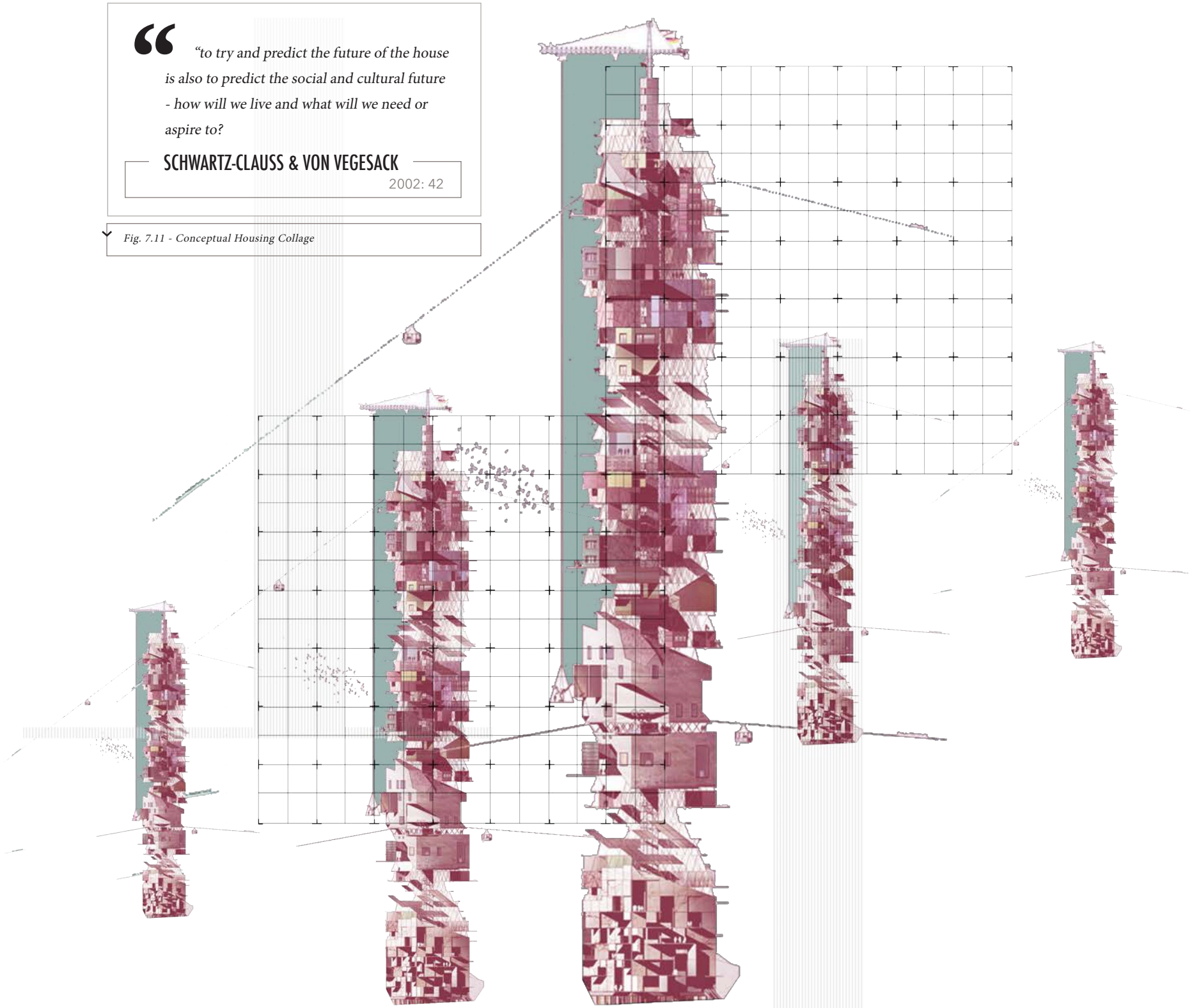
And that

> *"there is no doubt that prototypical housing has an influence on architectural form through the issues that they have explored and communicated to subsequent designers. Experimental design does influence the mainstream and eventually many ideas and concepts once considered stimulating and exciting though impractical suddenly appear realizable".*

Therefore, experimenting with housing through temporary means with the possibility of permanence not only lends itself to the approach to new architecture in the realm of heritage as discussed in the previous chapter, but also presents a sensitive way of introducing new ideas and typologies within the continuum of inner city dwelling as a way to "open up possibilities, test scenarios and subvert preconceptions of what our cities could be like" (St Hill 2016:138). In this sense, experimental transitional housing as opposed to permanent housing is all the more appropriate.

> *"to try and predict the future of the house is also to predict the social and cultural future - how will we live and what will we need or aspire to?*
>
> SCHWARTZ-CLAUSS & VON VEGESACK
> 2002: 42

Fig. 7.11 - Conceptual Housing Collage



7.6 PRECEDENT STUDIES AND TECTONIC INFORMANTS

OEUVRE OF EXPERIMENTAL DWELLING

7.6.1 PROVOCATIVE THINKING: THE FOUNDING PROTOTYPES

EXPLORING EXPERIMENTAL, PREFABRICATED, MOVABLE AND PROVOCATIVE DWELLING IN THE 20TH CENTURY

In the early 20th century after the industrial revolution, the possibilities of prefabrication became a reality and presented an experimental opportunity. An apparent boom emerged amongst architects, designers, artists and others in the fascination in the search for the ideal home which focused on flexibility and adaptability (Schwartz-Clauss & von Vegesack, 2002).

Early Fascination with prefabrication

1927

Fig. 7.12 - House 17, Walter Gropius

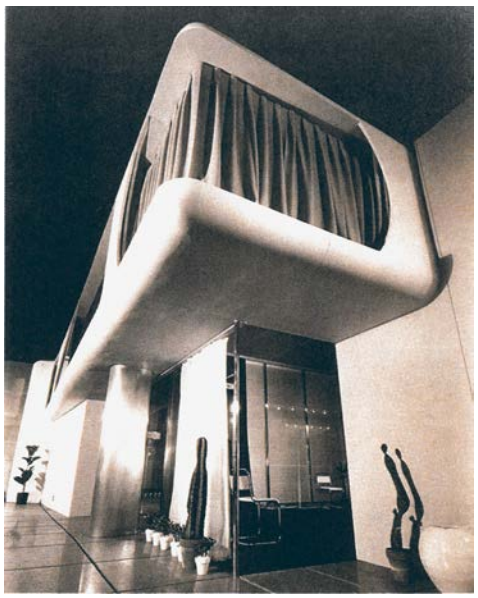
Walter Gropius was among the first who had avidly believed in the potential of modular prefabrication and its social and economic benefits which he explored through his design of prefabricated houses during the Second World War (Topham 2004). His experimental houses utilized dry assembly techniques that he named 'Trockenmontagebau' (Schwartz-Clauss & von Vegesack 2002), such as House 17, which was a small house set on a 1030x1030mm steel grid, with cork and asbestos infill.

Post 1st World War Experiments

1928

A prominent icon in the continuum of transportable prefabricated living is Buckminster Fuller's Dymaxion House, which focused on the mass production of high-quality products at an affordable cost. The experiment was prompted by the lack of US homes due to the five-year period of under-investment as a result of the War (Schwartz-Clauss & von Vegesack 2002). The units were designed in conjunction with others under an urgent government driven strategy, the Temporary Housing Program, to meet the economic necessity, and thus experimental design and construction were encouraged. Although the Dymaxion House itself was never produced, 130 000 homes in total were produced in the five years after the War had ended under this strategy (Schwartz-Clauss & von Vegesack 2002) proving the experiment in its totality, successful.

Fig. 7.13 - Space House, Frederick Kiesler



1933

Space house, by Frederick Kiesler, was designed as a solid exterior shell to allow for a flexible, movable interior with adaptable floors and partitions.

Post Second World War experiments

PAPER HOUSES

1946 The institute of Paper Chemistry were asked by US War Production to develop cheap, portable houses that could be mass produced and used as emergency shelter (Topham 2004). This technique was further developed and refined, resulting in paper dwellings including the Plydom, which was designed for American farm workers in the 60s by Hirsham and van der Ryn, which is described as a "concertina type structural shell" which folded down for easy storage and transportation (Topham 2004:13).

Experiments of the 60s

An experimental boom occurred during the 1960's which has most vigorously explored the potential of flexible dwelling within the rifts of urban uncertainty. This boom was supposedly triggered by the attempts to reach the moon (prompting thinking about mobile and movable dwelling) and consumer culture (prompting the interrogation of the product) (Topham 2004:16) which drove radical architects to develop flexible, adaptable buildings. They aimed to challenge conventional thinking about architecture in provocative ways through experimenting with new materials, forms and experiences of the home (Schwartz-Clauss & von Vegesack 2002). These experimental ideas, prototypes and realisations were brought to life by the likes of Ant Farm; EAT (Experiments in Art and Architecture); Archizoom; UFO; Superstudio; Coop Himmelblau (Austria); Haus Rucker Co (Austria); Missing Link; Utopie (France); Metabolists (Japan); Archigram (England) and others. The results included plug-in apartments, inflatable capsules, plastic pods and others.

1964

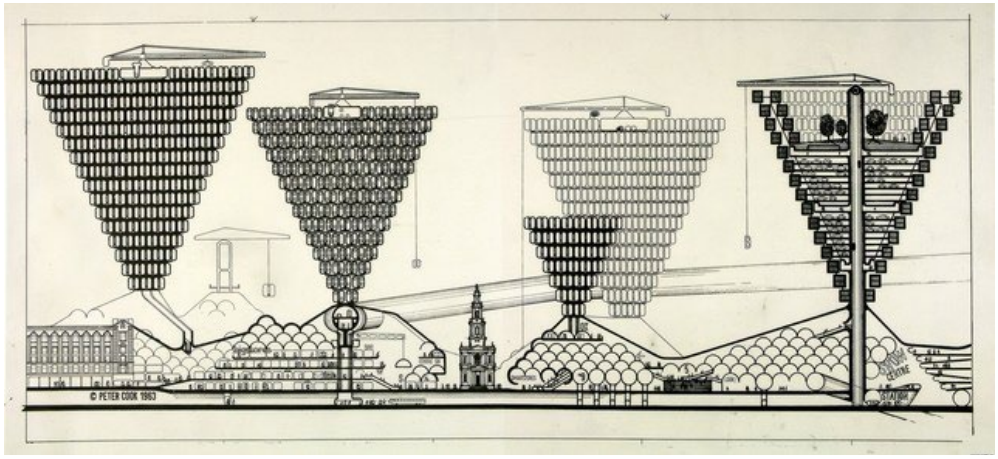
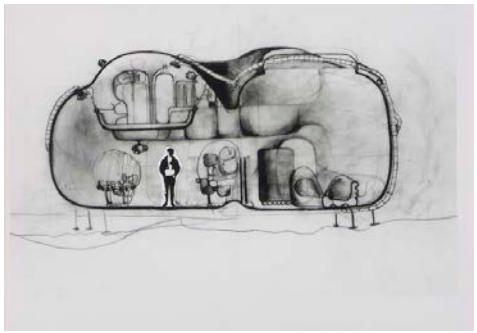


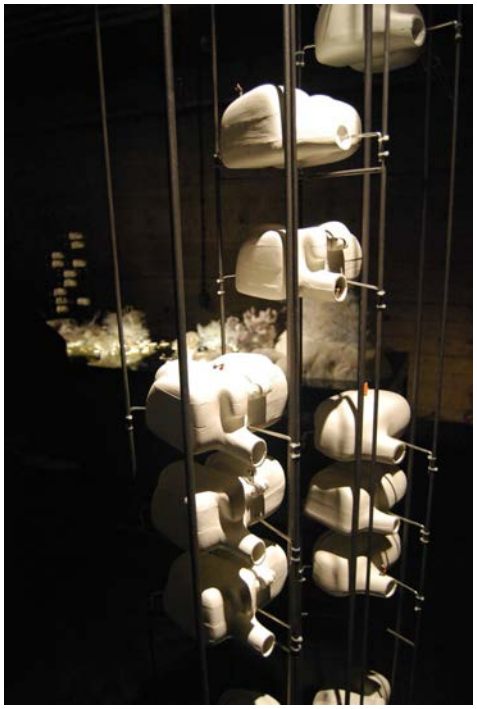
Fig. 7.14 - Plug-in City, Peter Cook

Peter Cook's (Archigram) Plug-In City dealt with the idea of prefabricated homes assembled into dense fluctuating urban patterns, offering "a fascinating new approach to urbanism, reversing traditional perceptions of infrastructure's role in the city" (Merin 2013). The project proposed modular, residential units which plugged into a central infrastructural machine.

1967

David Greene's (Archigram), through this the Living Pod, aimed to challenge the definition of permanence, investigating movable architecture to suit personal mobility in the dynamic city. The living pod is capable of being plugged into an urban infrastructure, or exist alone in isolation.





Figs. 7.15-7.17 - Living Pod, David Greene

1968

Fig. 7.18 - Six Shell Bubble House, Jean Nouvel

Jean Nouvel's Six Shell Bubble House dwelling consisted of six spirit self-supporting shells that were fastened and sealed together with a series of flexible joints (Topham 2004). The outer shell and interior components were all prefabricated, made to be easily assembled and dismantled for easy transportation. The Six Shell Bubble House was in commercial production from 1968-1970. This project shows an interesting take on adaptability and modification through the addition and subtraction of various parts.

1971

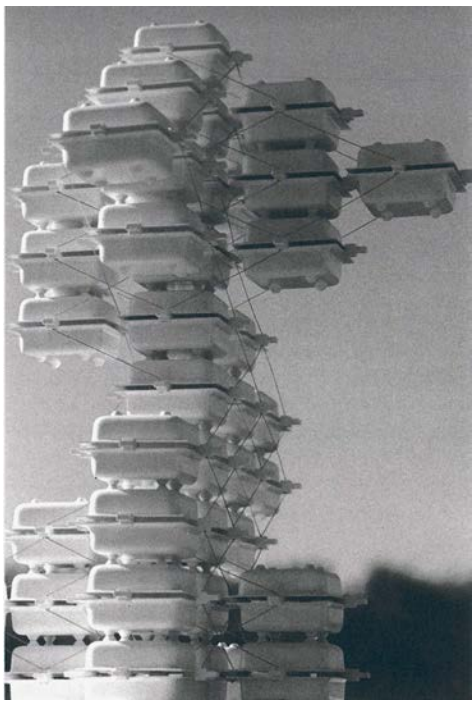


Fig. 7.19 - Wolfgang Döhring, "pre Fab" living container system made of plastic cells (conceptual model)

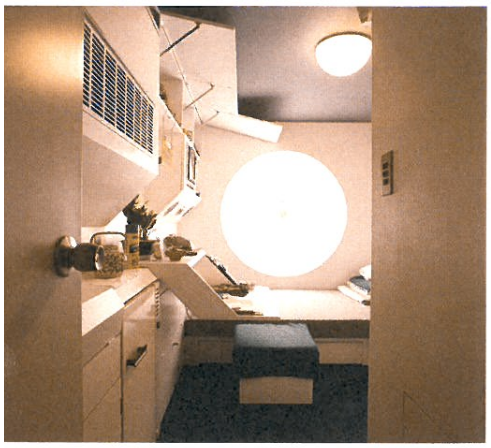
1971

Figs. 7.20-7.21 - The Mutant and Silent Architecture, Santiago Cirugeda Parejo, Seville, Spain

Through this scheme, Parejo interrogated housing within the urban context and challenged the boundaries between public space, private space, and dwelling in the in-between. The majority of his work stems from the premise that "the departments which administer, plan and draw up the rules and regulations governing architecture and construction in cities are basically incapable of encompassing the complexity of human reality, which is the very condition of inhabiting" (Archilab 2001). As a result, he attempted to fill the situation of the in-between in the pockets of 'non-law' between public and private to push the laws to their limits.

1972





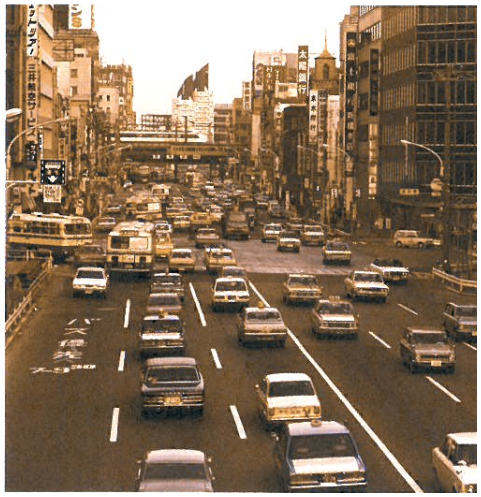



Fig. 7.22 - Nagakin Capsule Tower, Kisho Kurokawa Tokyo, Japan

This residential development in the heart of Tokyo embodies a multitude of individual capsules which plug into a core structure that supplies the pods with energy, water and sanitation. Topham (2004) speculates that this idea of Cook's 'Plug-In City' was simplified and realized in this project.

1975

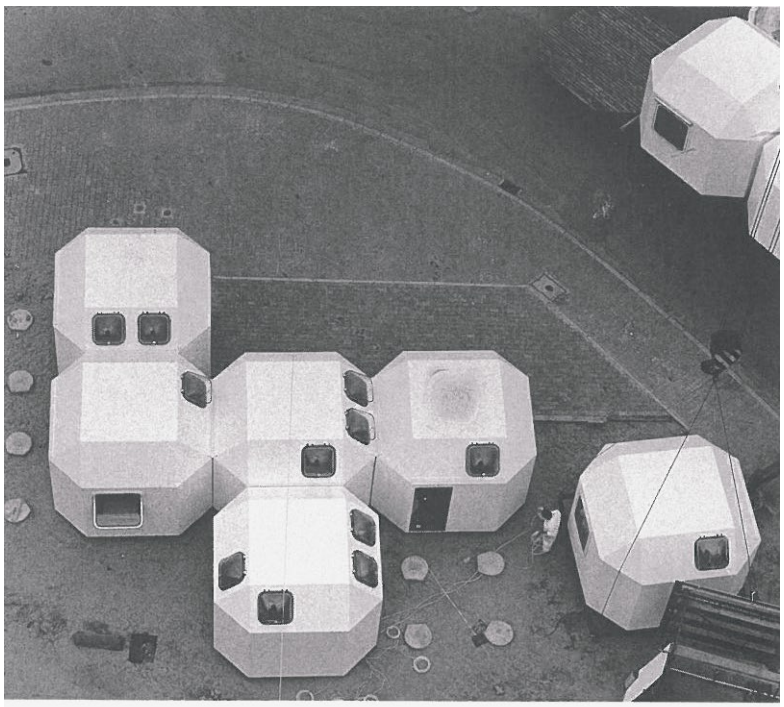
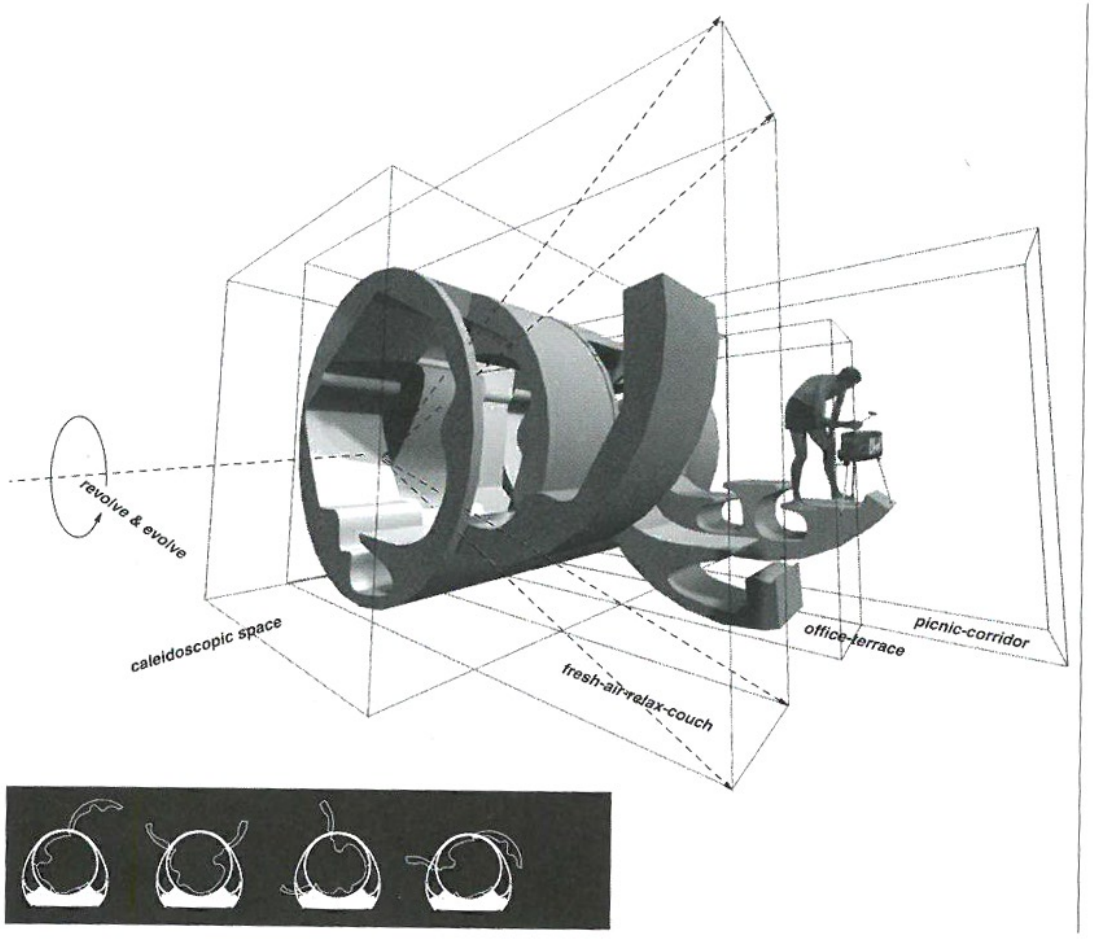
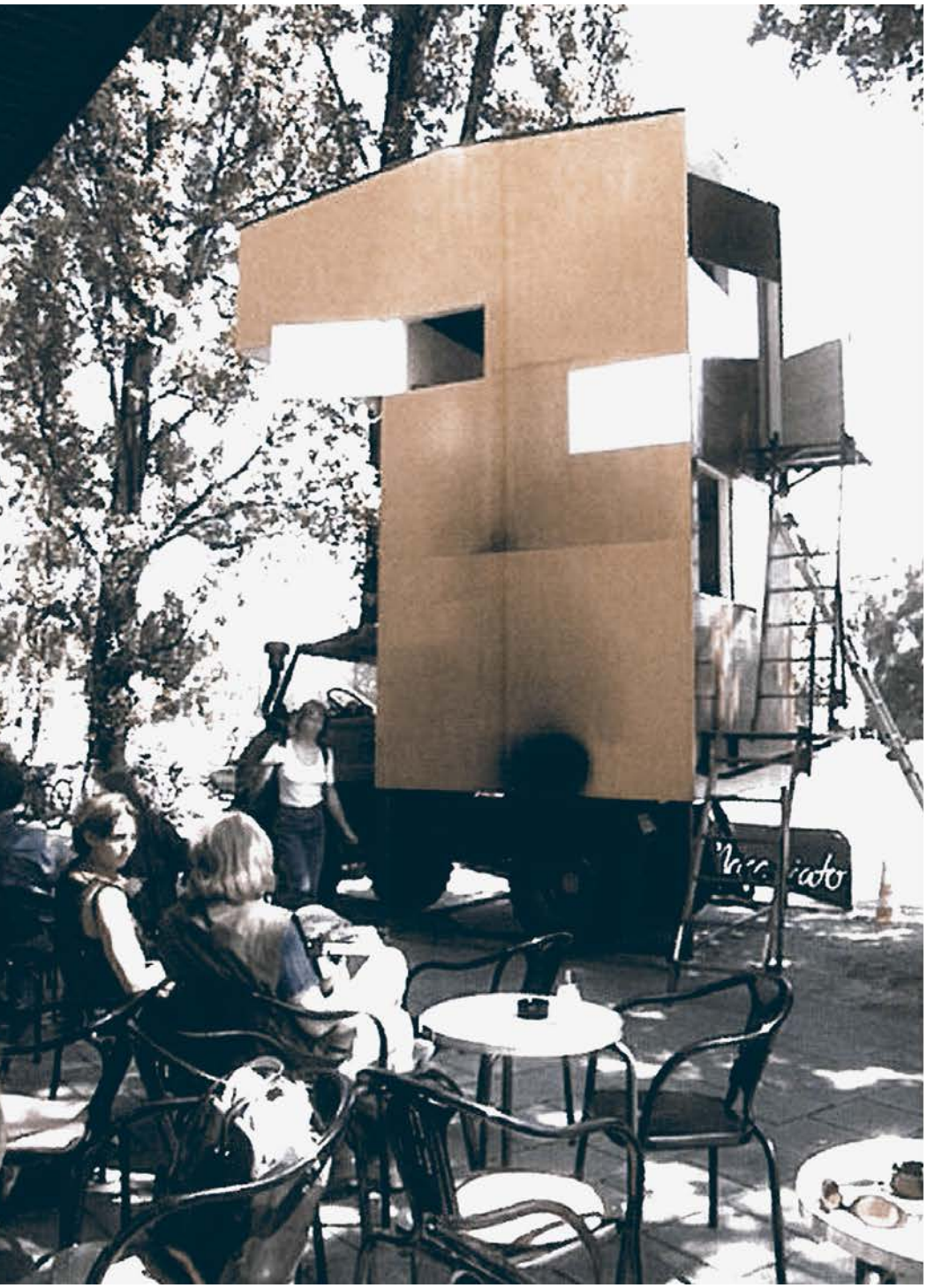


Fig. 7.23 - Produktbau Huster and Hübner, Casanova 2400 stackable building units, Neckartenzlingen, Germany

2000 AWG. TurnOn - urban.sushi consists of a range of interior segments that fit together in any combination to form a cylinder of any length with endless combinations. This modular system can cater for short- or long-term occupation and is easily clipped together for assembly and dismantling.

Fig. 7.24 'Urban Sushi' Clip Units, AWG Turn.On





7.5 Appropriate Client and Strategy for Implementation

As opposed to a localised urban vision which has already been curated and planned for (1), this scheme instead forms part of the housing strategy dealing with the greater urban issue of housing shortages.

7.5.1 The work of the Trust for Urban Housing Finance (TUHF)

The TUHF is a financial institution which plays a leading role in providing funding for the purchase/upgrade of residential property in the inner city (TUHF, 2016), especially for "property purchases and upgrading within decaying urban neighbourhoods where established financial institutions have steadfastly refused to lend money" (Murray, 2008:197), often for entrepreneurs and smaller stakeholders with enthusiastic and passionate initiatives (TUHF, 2016). As an example, they funded a small group of women working as nurses and social workers who now own and rent a fair number of units in an apartment building. They themselves live on the property, "ensuring hands on management and a firm commitment to the long-term wellbeing of the neighbourhood" (Larsen, 2004) and not left in the hands of the city's top curators.

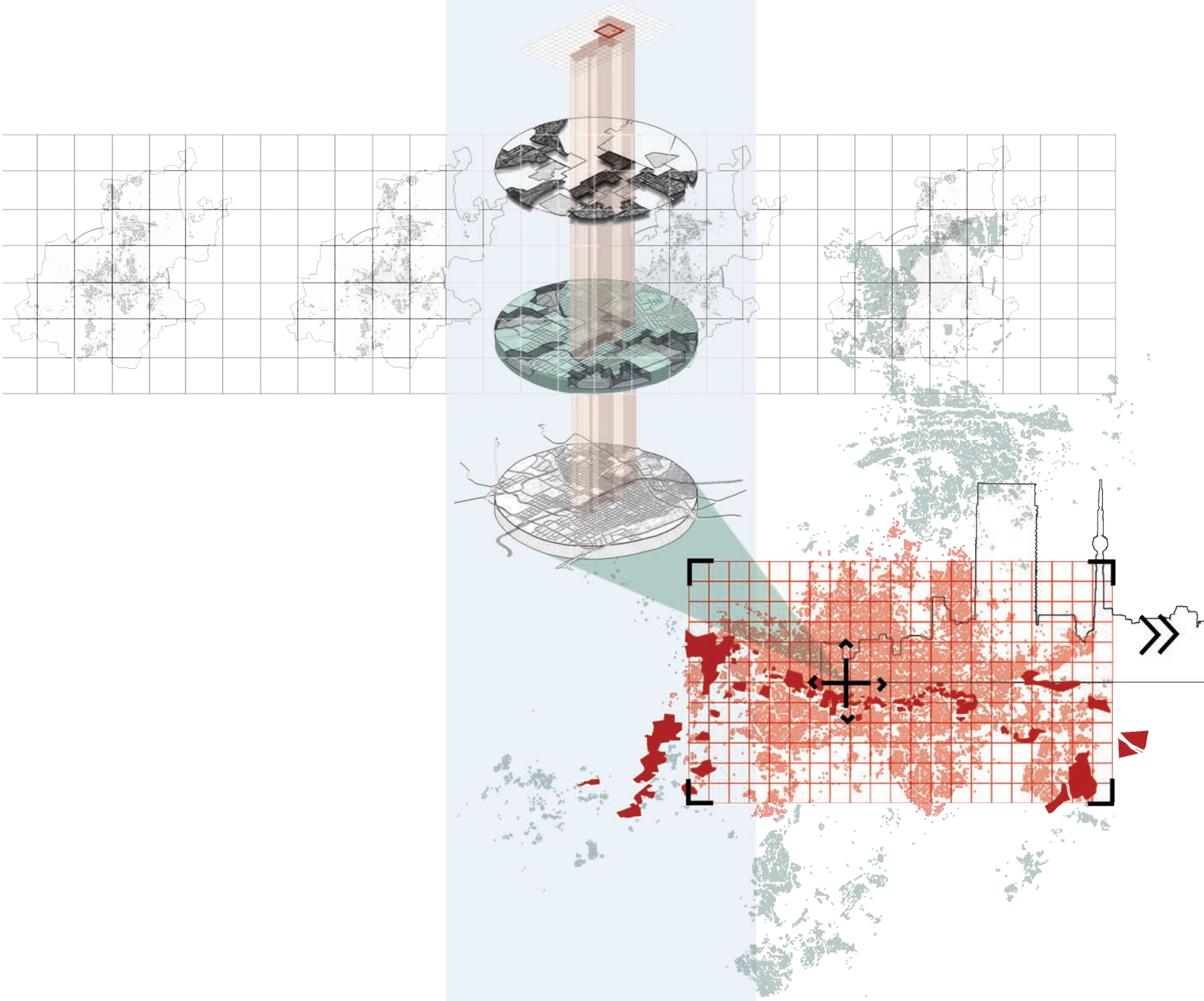
7.5.2 The Madulammoho Housing Association

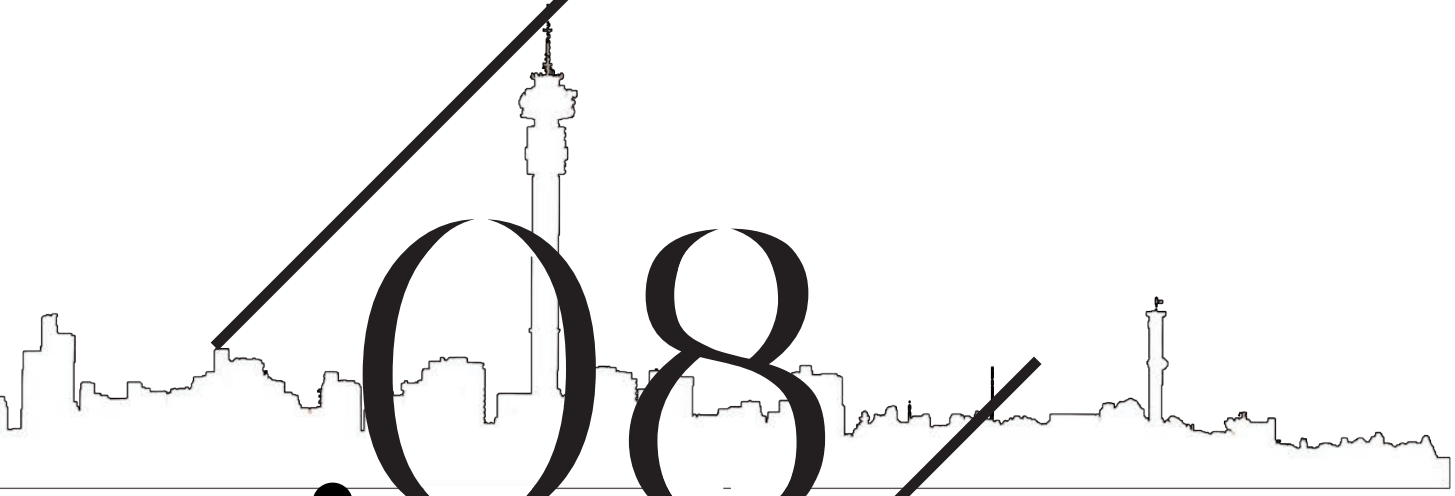
MHA is a non-profit organization which was established in 2005 to provide transitional and communal housing in Hillbrow. It has since developed a complex business mod-el for a multitude of housing schemes for different income levels as part of multiple strategies, however, those earning below R3500 remain their primary target market. As part of their company profile, they consider themselves the pioneers of the lower income housing model.

7.5.3 Client Model

A tripartite relationship between the TUHF, MHA and the Department of Public Works (as the owner of the site), can be utilised to implement the appropriate housing phasing. Furthermore, the nature of the private-public partnership needs to be fostered within the inner city through partnerships such as this when addressing the voids within the inner city in order to facilitate an integrated model of urban regeneration.

Nomad's Tower, Otto Steidle (Germany)
2000
Venice Biennale, Italy

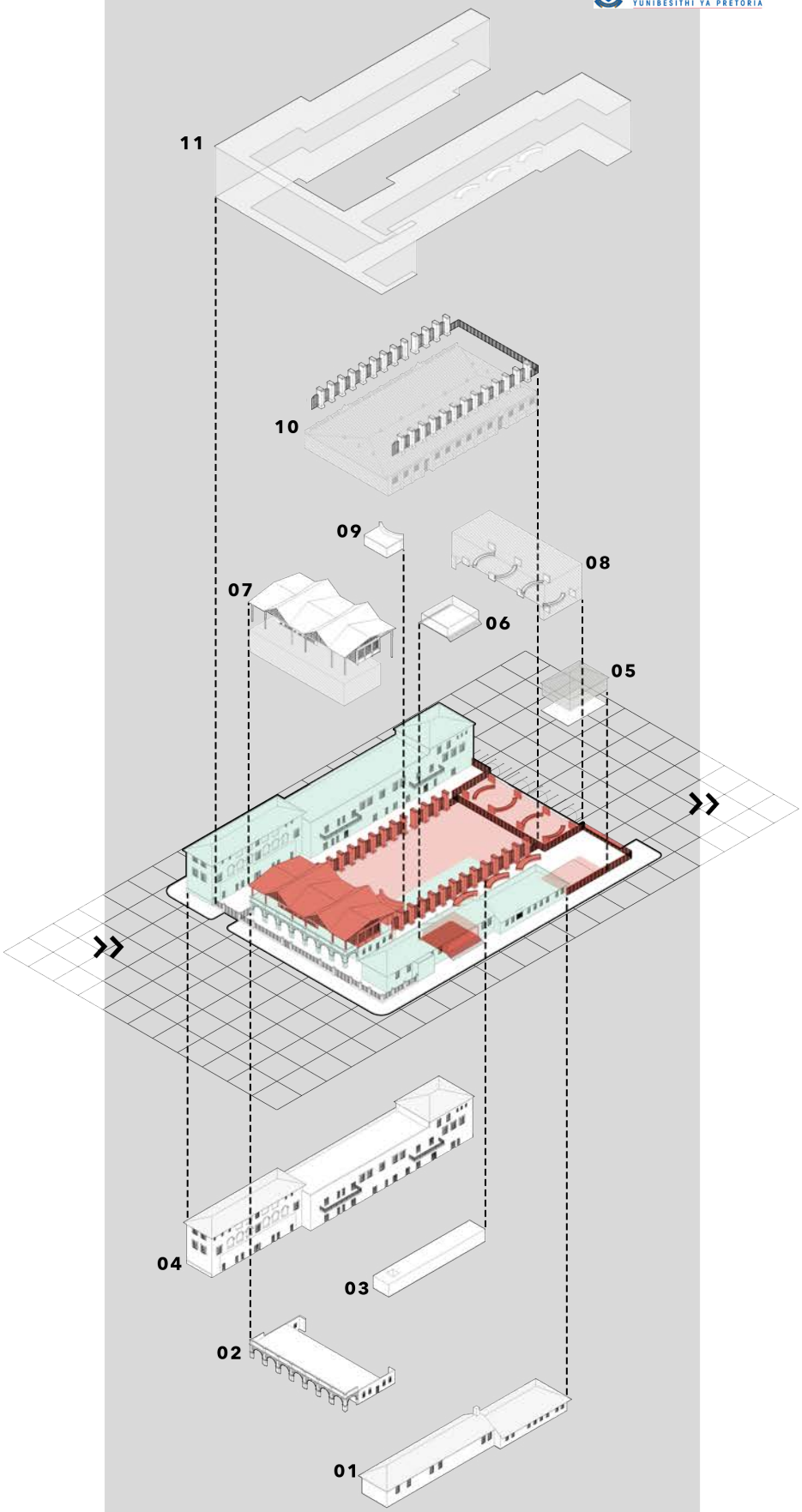




.08

“ the following chapter describes the projects conceptual informants and the accumulation thereof in an architectural concept towards architectural application...

CONCEPT



8.1 STATEMENT OF SIGNIFICANCE

The following statement of significance is a weighed explanation and analysis of the buildings as objects on the site in determining how sensitively or how boldly (and where at all appropriate) to intervene on the site in order to successfully achieve the outcomes as set out in the site specific, local contextual strategies and urban strategies collectively.

Fig. 8.1 - Illustrated statement of significance

PRESERVED FABRIC
CONSERVED INTERPRETATIONS
 # STATEMENT OF SIGNIFICANCE
SUB-CATEGORY REFERENCE

8.1.1 SOUTH BUILDING ONE

Built in 1931, portions were damaged in the fire of 2002, was restored to its original state in 2004, apart from the addition of the new entrance through the building to the internal square and some internal partitions which were reworked.

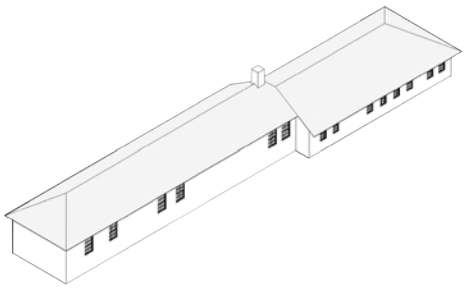


Fig. 8.2 - Icon of the south building

SIGNIFICANCE

The original masonry construction of the south building has material significance. Furthermore, it bares the language of the original construction fabric that is specific to the site and contrasting to its context. The south building has a strong symbolic tie to the past life of the site.

APPLICATION

No changes will be made to the exterior shell in order to maintain the tie that the image of the building has to the past. Internal layouts and functions may however be reworked in order to contribute to the conservation of the site. The building will be treated as its own entity as an individual object of the site in order to hold its own significance.

8.1.2 WEST BUILDING – LOWER PORTION

Built in 1904. Portions were damaged in the fire of 2002, after which in 2004 it was restored to its original state, apart from the eastern façade which was fully destroyed which was re-interpreted.

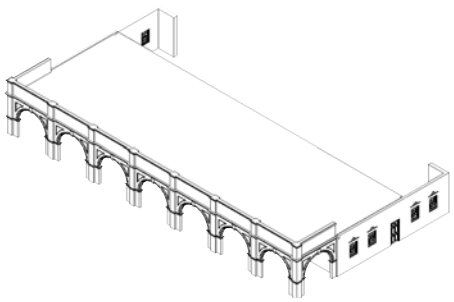


Fig. 8.3 - Icon of the lower portion of the west building

SIGNIFICANCE

The western façade is of the original built fabric and similarly to south building one, presents architectural language of great significance.

APPLICATION

Similarly, to south building one, no changes may be made to the exterior shell in order to maintain the tie that the image of the building has to the past life of the site, however, internal layouts and functions may be reworked in order to contribute to the conservation of the site. Even though the eastern façade is not part of the original building, nor does it bare the same language, the approach to the building taken in 2004 to treat the building as an object in space with little extension must be respected and appropriately responded to.

8.1.3 RIFLE RANGE

Built in 1931, the entire rifle range was damaged in the fire of 2002, after which it was fully reconstructed and restored to its original state, adequate for reuse.

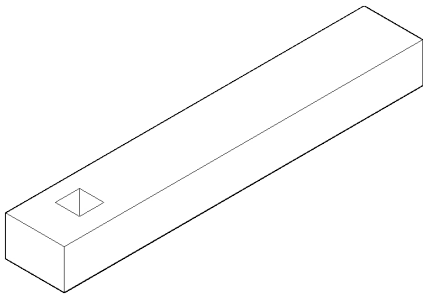


Fig. 8.4 - Icon of the rifle range

SIGNIFICANCE

The rifle range remains dormant and unused due to its redundant function. Due to its subsurface nature it is visually in accessible and thus has no architectural tie to the past.

APPLICATION

Therefore, the entire rifle range may be reinterpreted/ transformed to serve a useful function to the site. The footprint of the rifle range (or some other element thereof) must be maintained or used as a conceptual generator for new form in order to maintain a tie to the memory of its original function.

8.1.4 NORTH BUILDING

Built in 1931, portions of the building were damaged in the fire of 2002, after which its external envelope was restored to its original state in 2004. The internal layouts were reworked to suit the current sub-letting to small businesses.

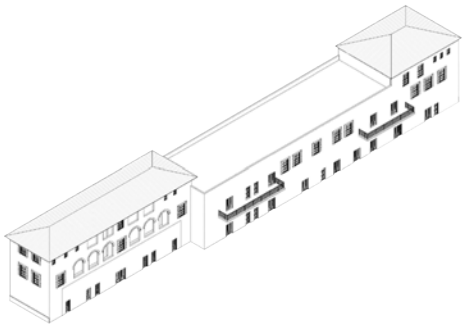


Fig. 8.5 - Icon of the north building

SIGNIFICANCE

Similarly to the west and south buildings, the original masonry construction has material significance, as well as baring the language of the original fabric that is specific to the site and contrasting of its context, thus retaining a strong tie to the past life of the site.

APPLICATION

No changes will be made to the exterior shell in order to maintain the tie the image of the building has to the past. Internal layouts and functions may however be reworked in order to contribute to the conservation of the site. The building will be treated as its own entity as an individual object of the site in order to hold its own significance.

8.1.5 FOOTPRINT OF SOUTH BUILDING TWO

Built in 1931, the building was completely destroyed in the fire of 2002 and replaced with lawn in the footprint of the building.

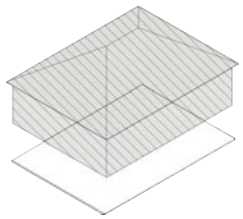


Fig. 8.6 - Icon of the second south building (out house)

SIGNIFICANCE

The original building of 1931 was only a small outhouse/shed and thus unlike the original hall which was also totally lost, bares little importance in the history of the site. The lawn which currently exists in its place is fenced off and unused.

APPLICATION

Therefore, the footprint of the site holds little significance and presents a possibility for architectural intervention and reinterpretation.

8.1.6 VOID/ ENTRANCE WITHIN THE SOUTH BUILDING

Added to the south building in the 2004 renovation to grant additional access to the square.

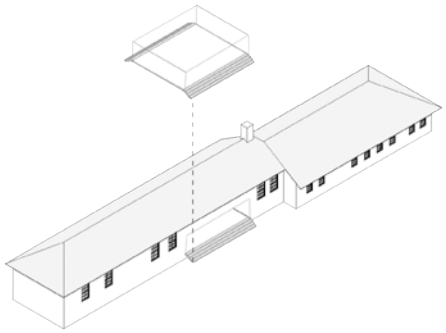


Fig. 8.7 - Icon of the new entrance through the south building

SIGNIFICANCE

Although the new entrance was a valid and smart addition in order to open up square, as it has never been used there is a possibility for reinterpretation.

APPLICATION

The space may be reinterpreted/ intervened in provided that it does not detract from the presence, language and character of the south building.

8.1.7 UPPER PORTION OF THE WEST BUILDING

Built in 1931, the entire rifle range was damaged in the fire of 2002, after which it was fully reconstructed and restored to its original state, adequate for reuse.

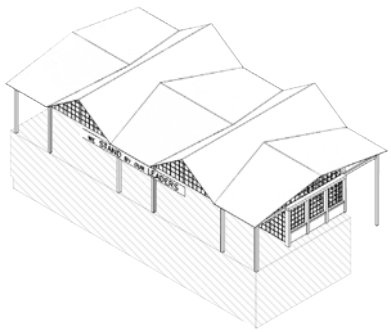


Fig. 8.8 - Icon of the upper portion of the west building

SIGNIFICANCE

The new upper portion, although is not a replica of the original form, it speaks of the same scale and typology of its former architecture. The new glazed facades and timber cladding are extremely subtle respecting the original fabric of the site and roof, although slightly different, maintains the same profiles, shapes and scales as its former counterpart. Although the architecture is subtle, in conjunction with its lower portion, the building as an object has a dominating presence over the square largely contributing to the balance and hierarchy of the site.

APPLICATION

This relationship is a prominent one and may be challenged or accepted in the proposal, provided that the balance and hierarchy of the site is adequately assessed and responded to.

8.1.8 FOOTPRINT OF THE EAST BUILDING

Originally built in 1904, the majority of the building was damaged beyond repair in the fire of 2002 and it was subsequently demolished. As of 2004 the footprint now serves as the 'forecourt' to than main square as an external public rest space.

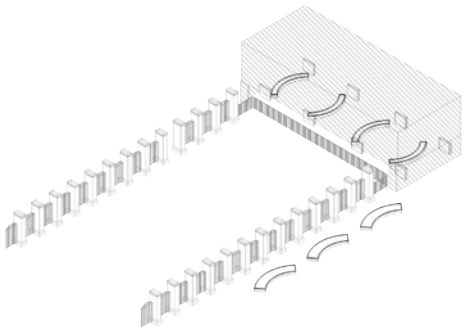


Fig. 8.9 - Icon of the lost east building

SIGNIFICANCE

The footprint of the original building was maintained through a step detail of the forecourt paving. The space is separate from the square. They currently do not work together to make a cohesive public space.

APPLICATION

The same principle as of south building two in respecting the footprint of the former building must be applied, and as the new open space (although has potential) contributes little to the zealous and meaningful conservation of the site, it thus holds a possibility for architectural intervention.

8.1.9 PODIUM

Built in 2004 to enclose the entrance to the rifle range.

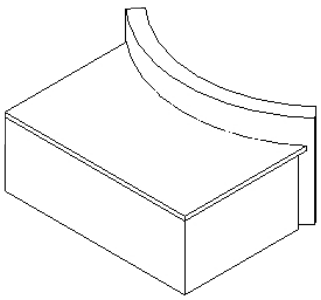


Fig. 8.10 - Icon of the podium

SIGNIFICANCE

The podium was intended for military and public address to activity in the square, however, it has never been used as such, and has been subsequently converted into a vegetable garden by those living on the site. The podium thus as a new build holds no historical significance nor current significance other than a functional elevated platform.

APPLICATION

Provided that a new and better architectural space for the horticultural functions which it currently holds, the podium may be demolished, retained or reinterpreted accordingly.

8.1.10 PUBLIC SQUARE (FOOTPRINT OF THE OLD DRILL HALL)

Originally built in 1904, the majority of the building was damaged beyond repair in the fire of 2002 and it was subsequently demolished. As of 2004 the footprint now serves as a public square.

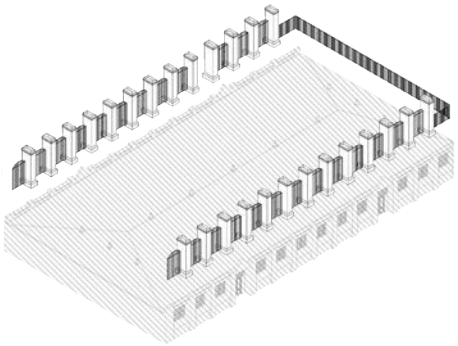


Fig. 8.11 - Icon of the lost hall

SIGNIFICANCE

The original hall has immense historic significance, whose memory is preserved through the columns which define its original edge. Furthermore, it has grown contextual relevance as a 'safe haven' skate park for those who use it.

APPLICATION

Thus, the strong edges of the original square memorializing its memory must be maintained or enhanced and the public function that has grown within it must be maintained or enhanced.

8.1.11 OPEN SPACE BETWEEN BUILDINGS (LOST SPACE)

Built in 2004 to enclose the entrance to the rifle range.

Fig. 8.12 - Icon of the open space between buildings

SIGNIFICANCE

The uninhibited open voids allow the buildings on the site to be read independently as objects and in conjunction with the fencing around them protects their exterior skins to a fair extent. However, their isolating nature does not facilitate interactive edges or lively interstitial spaces but instead confines activities to the interiors of the buildings.

APPLICATION

The intermediate spaces should be used to facilitate relationships between the buildings towards cross-spatial and cross-programmatic engagement where appropriate towards a more cohesive site.

8.2 SYNTHESIS

CONFLUENCE OF CONDITIONS:

DRAWING FROM THE STATEMENT OF SIGNIFICANCE, CONTEXTUAL INFORMANTS AND ANALYSES, CONCEPTUAL AND PRACTICAL CONSIDERATIONS IN APPROPRIATE WAYS OF APPLYING THEORY, THE FOLLOWING APPROPRIATE CONFLUENCE OF CONDITIONS HAS BEEN IDENTIFIED:

The south eastern corner of the site presents a particular confluence of opportunities with which to engage:

- The majority of the greenery exists on this portion of the site. Provided that the scheme intends to engage with vegetation and formalize the unsuccessful green space, engaging on this south east portion is inevitable.
- The footprints of both the lost east building and lost south outhouse too exist on this portion, and as established in the statement of significance both of these components are opportune for re-invention.
- As established in the localised site analysis, the south edge presents a lively street culture. This energy has the potential to grow, foster and contribute to the renewed life and sense of place within the square and buildings that the scheme hopes to achieve, and thus engaging with this social condition is paramount.
- The 'new entrance' to the south building is also situated along this edge, and thus has the ability host a conversation between activity on the south street edge and the internal activity in the site, based along the south edge of the open square, addressing one of the voids between objects that exists on the site, as the statement of significance had hoped to address.

Therefore, the cluster of the south building, south street edge, footprint of the south outhouse, footprint of the east building, and the space between the south building and the central square is where this scheme will focus in order to wholesomely address a complex range of conditions to achieve successful conservation of the site. Furthermore, three of the above relate directly to the square, with the ability to contribute to its nature without directly imposing onto it or changing its nature, which as per the statement of significance is successful, further supporting the decision to focus on these portions.

Although the north and west buildings are not where the focus will be, they will still be engaged with secondarily in order to achieve a wholesome response addressing the site in its entirety towards architectural conservation.

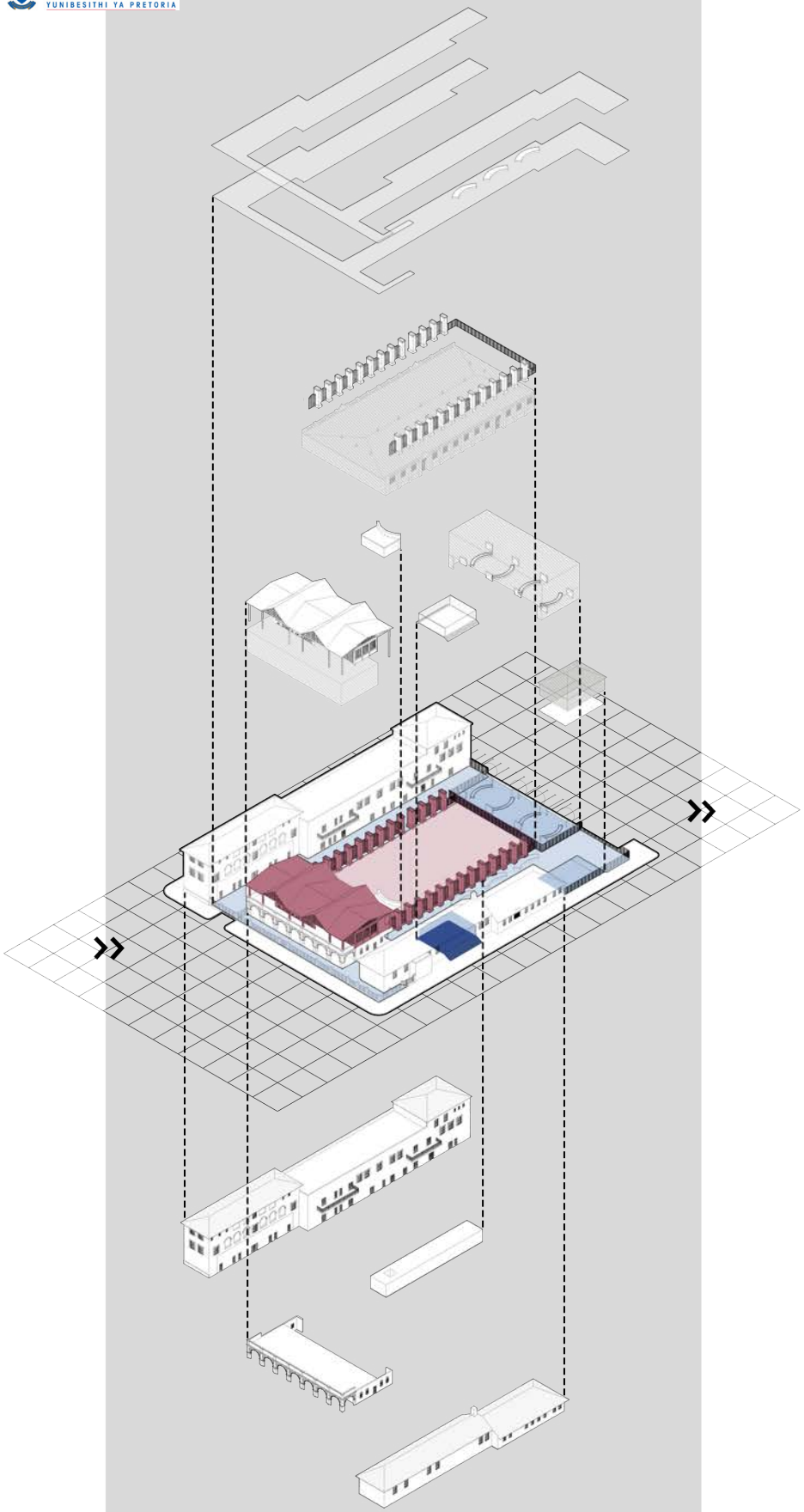
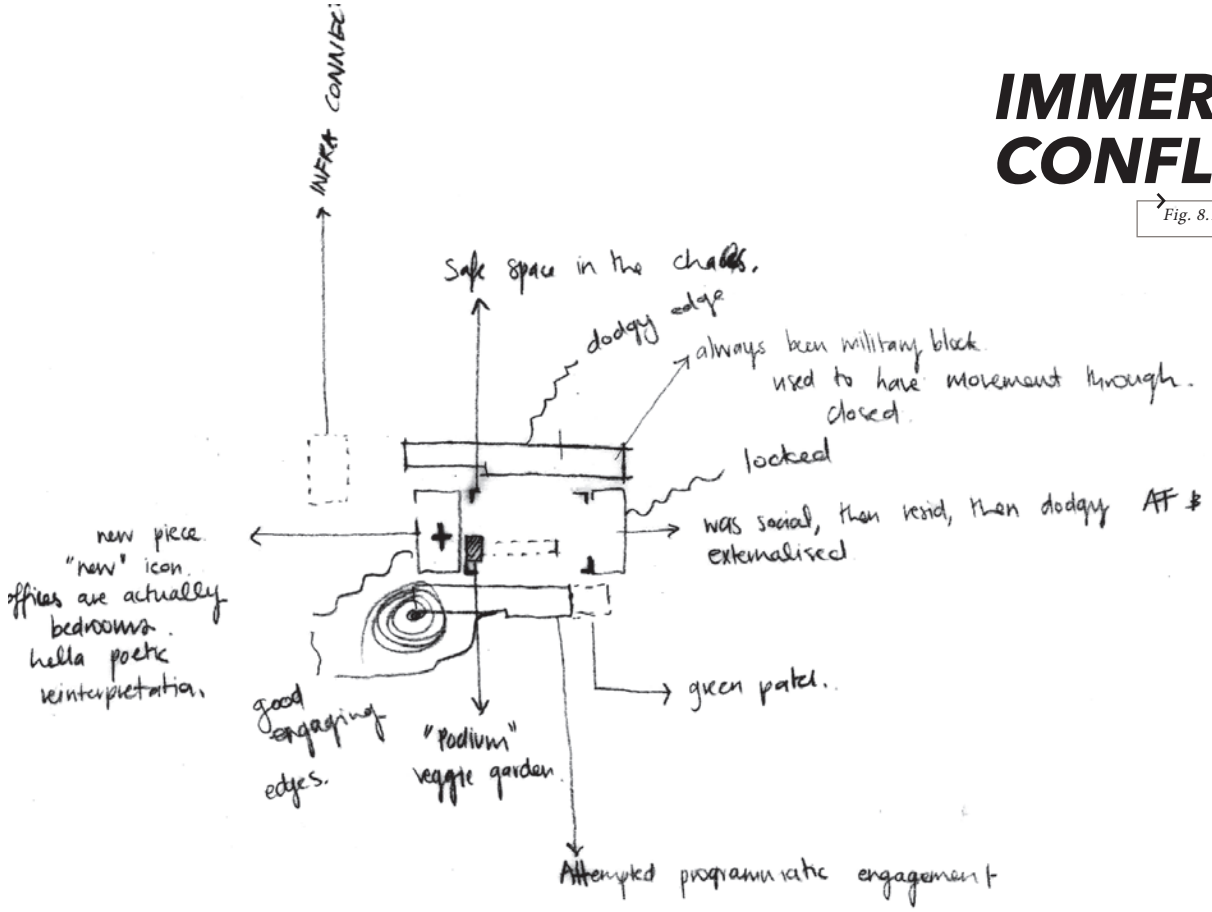


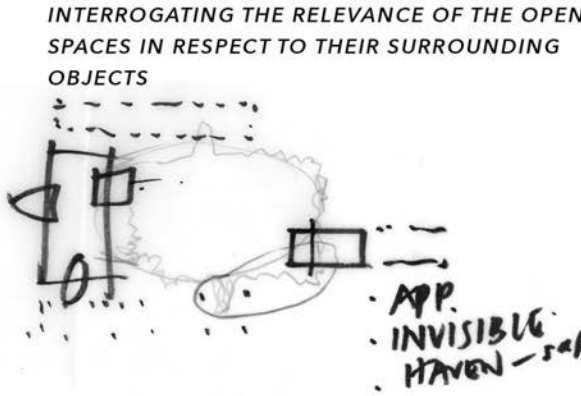
Fig. 8.13 - Synthesis of statement of significance

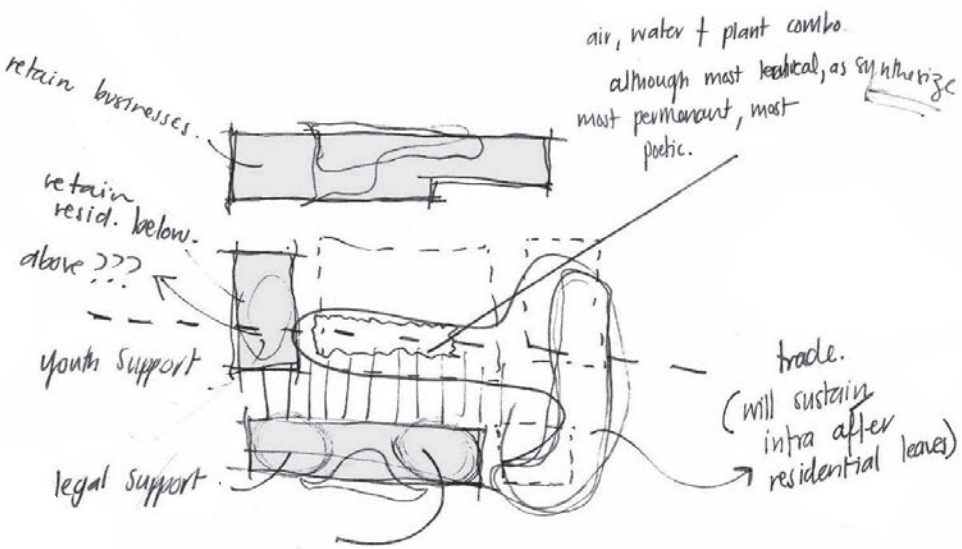
- *DOMINATING BUILT SPATIAL INFORMANTS*
- *DOMINATING HISTORICAL/UNBUILT SPATIAL INFORMANTS*
- *BUILT FABRIC WITH GREATEST POTENTIAL*
- *HISTORICAL/UNBUILT SPACE WITH GREATEST POTENTIAL*
- *SECONDARY SPATIAL CONTRIBUTORS*

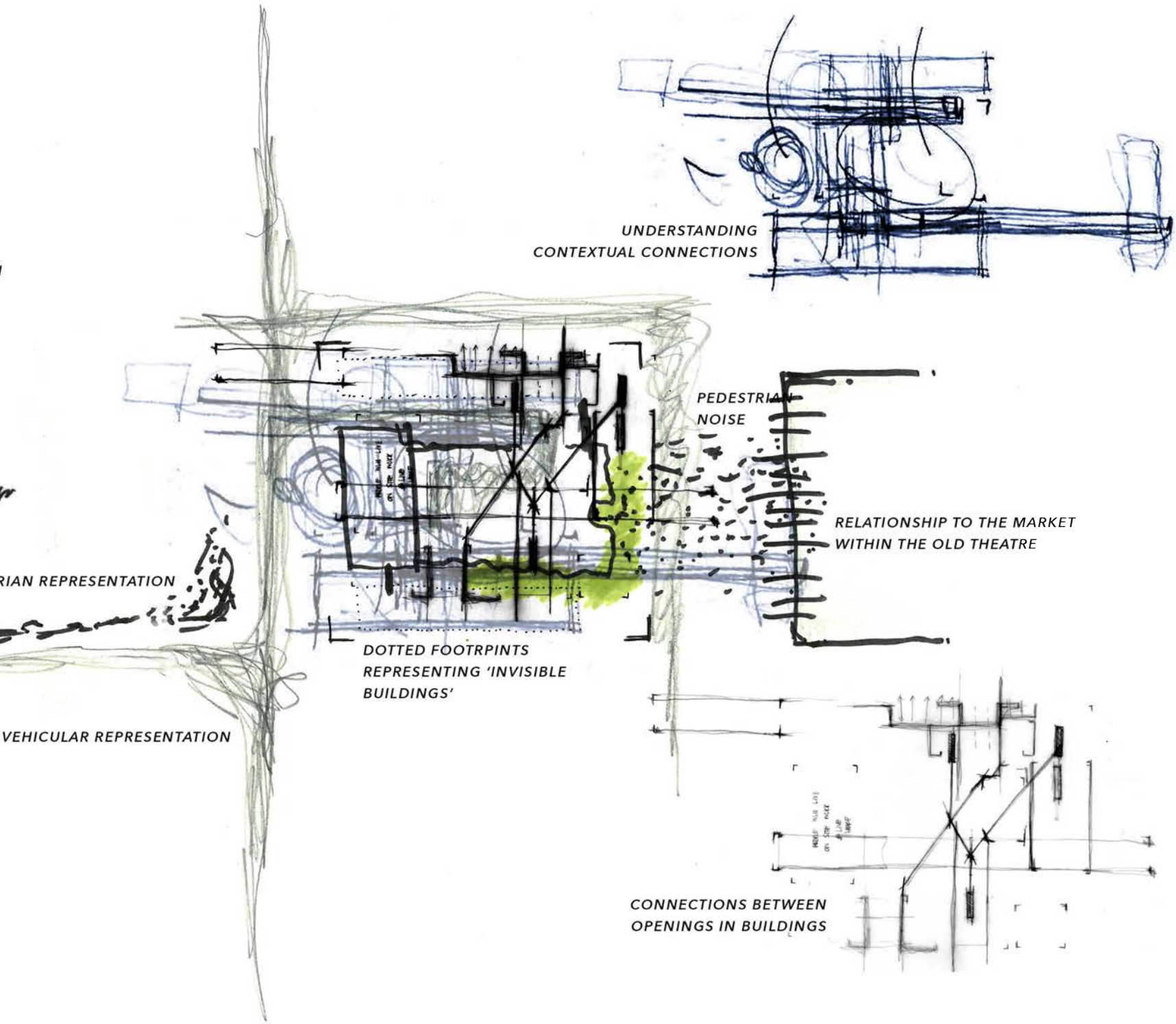
IMMERSED IN THE CONFLUENCE...

Fig. 8.14









8.5 KEY VISUAL GENERATORS OF FORM

MANIPULATION OF THE FIFTH FACADE

THE DECISION TO FOCUS ON THE ROOFS OF THE SITE AS GENERATORS OF FORM ARE BORN FROM A COLLECTIVE RESPONSE TO VARIOUS INFORMANTS.

8.5.1 THE LANGUAGE OF THE SITE IN CONTEXT

The verticality and block typology of the dense CBD which dominates the area strongly contrasts to the double pitch and comparatively small-scale language of the masonry buildings on the site. This language that is specific to the site needs to be used, responded to and manipulated where appropriate whilst considering its contrasting context in order to achieve not only programmatic provocation, but also architectural.

8.5.2 VIEWED FROM ABOVE

As the surrounding context for the most part towers above the site looking down on to the site, considering the experience of the new architecture from above is equally important as the spatial experience within and around. Thus, the manipulation of roofs, their relation to walls, the ground and how they talk to the programs within is of paramount importance.

8.5.3 THE SOUTH AFRICAN HOME TYPOLOGY

As housing is the primary provocative strategy for the site, responding to the typical housing typology of the country is important, which the site in fact embodies. Considering this association and how the new type of housing on the site needs to appropriately conform or respond to this typology needs to be a well-considered informant.

8.5.4 OPPORTUNITY FOR GEOMETRY

The double pitch and its associated shapes open up the possibility for interesting architectural forms and geometries to be experimented with on the site.

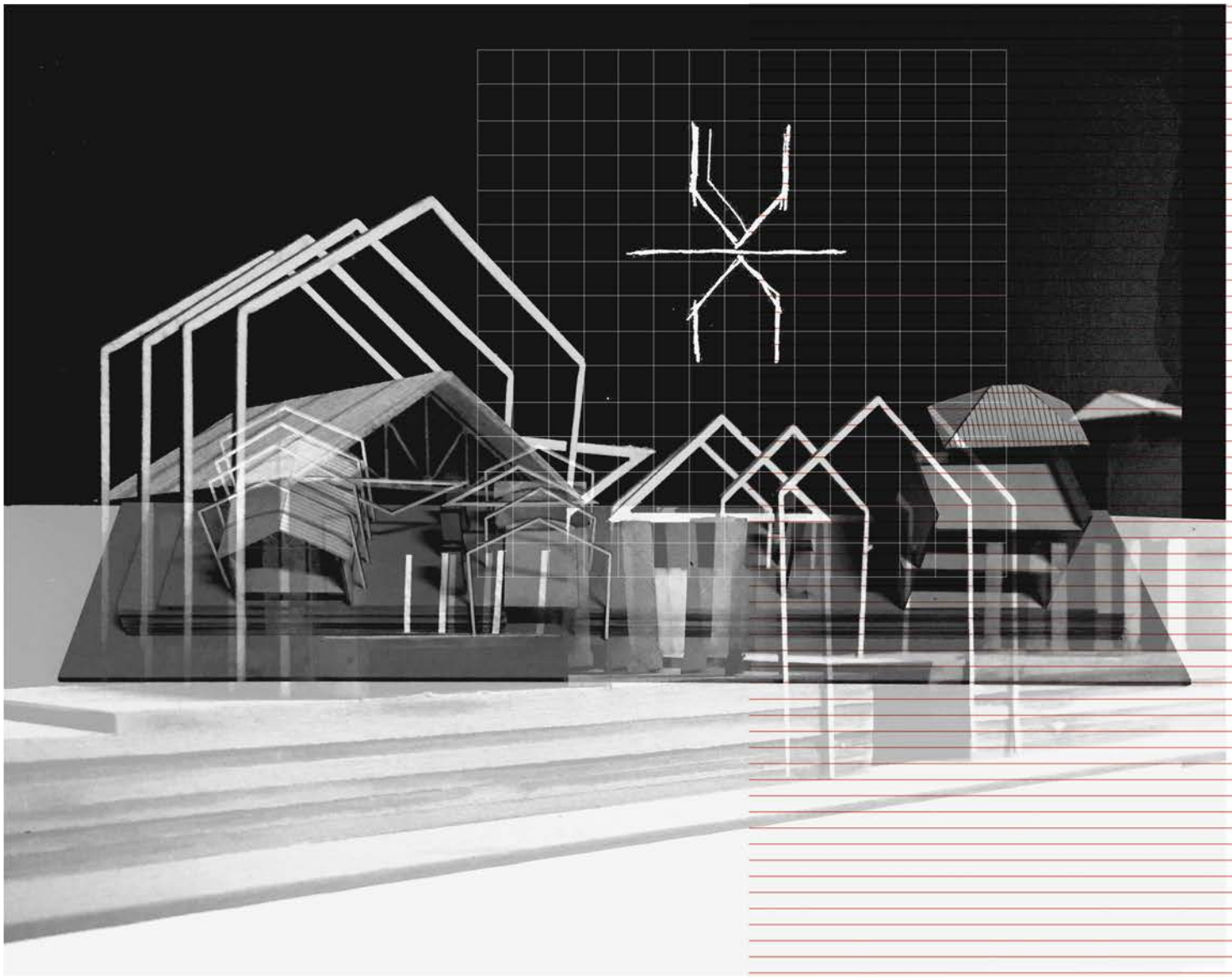
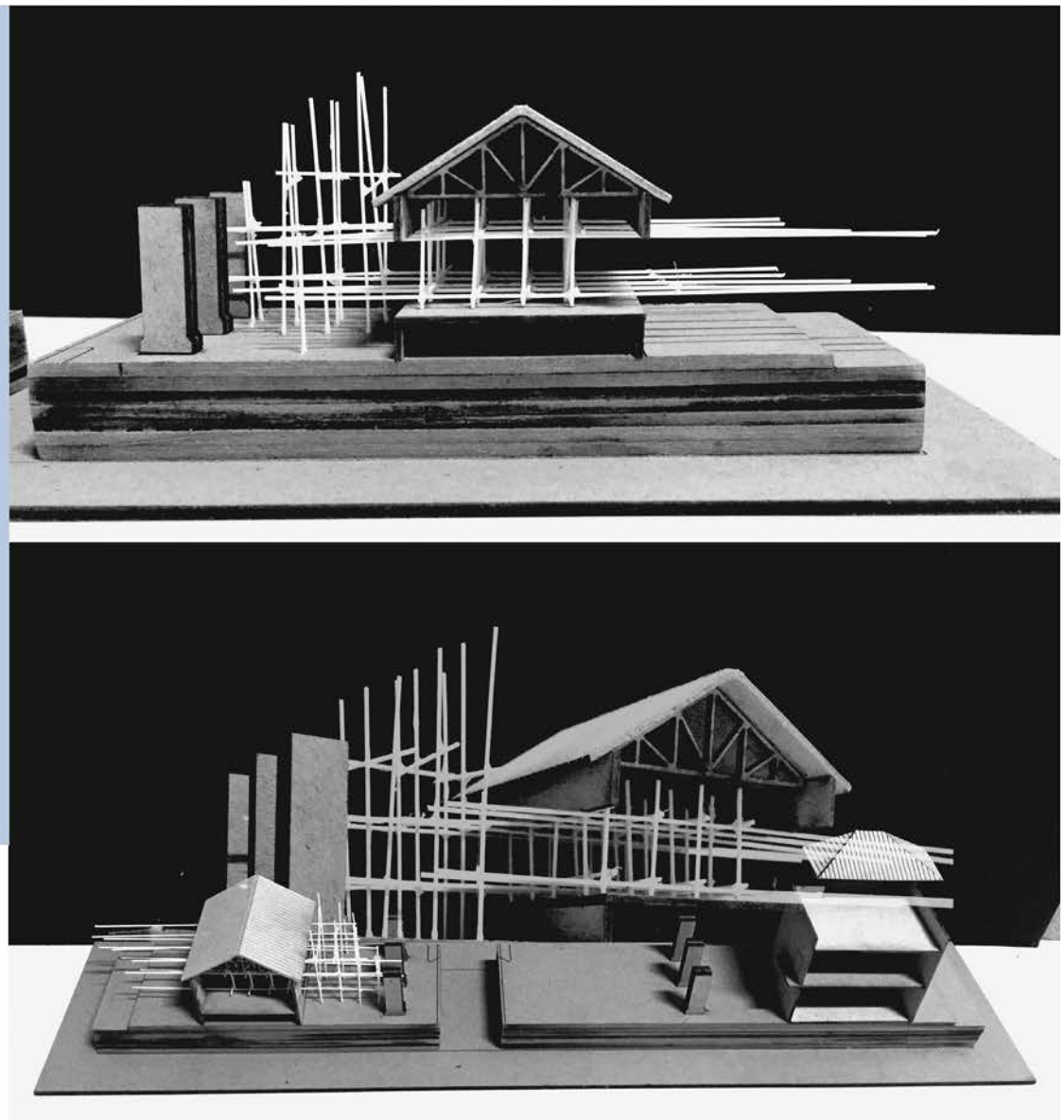


Fig. 8.15 - The possibilities of provocation P1: Inverting the fifth facade



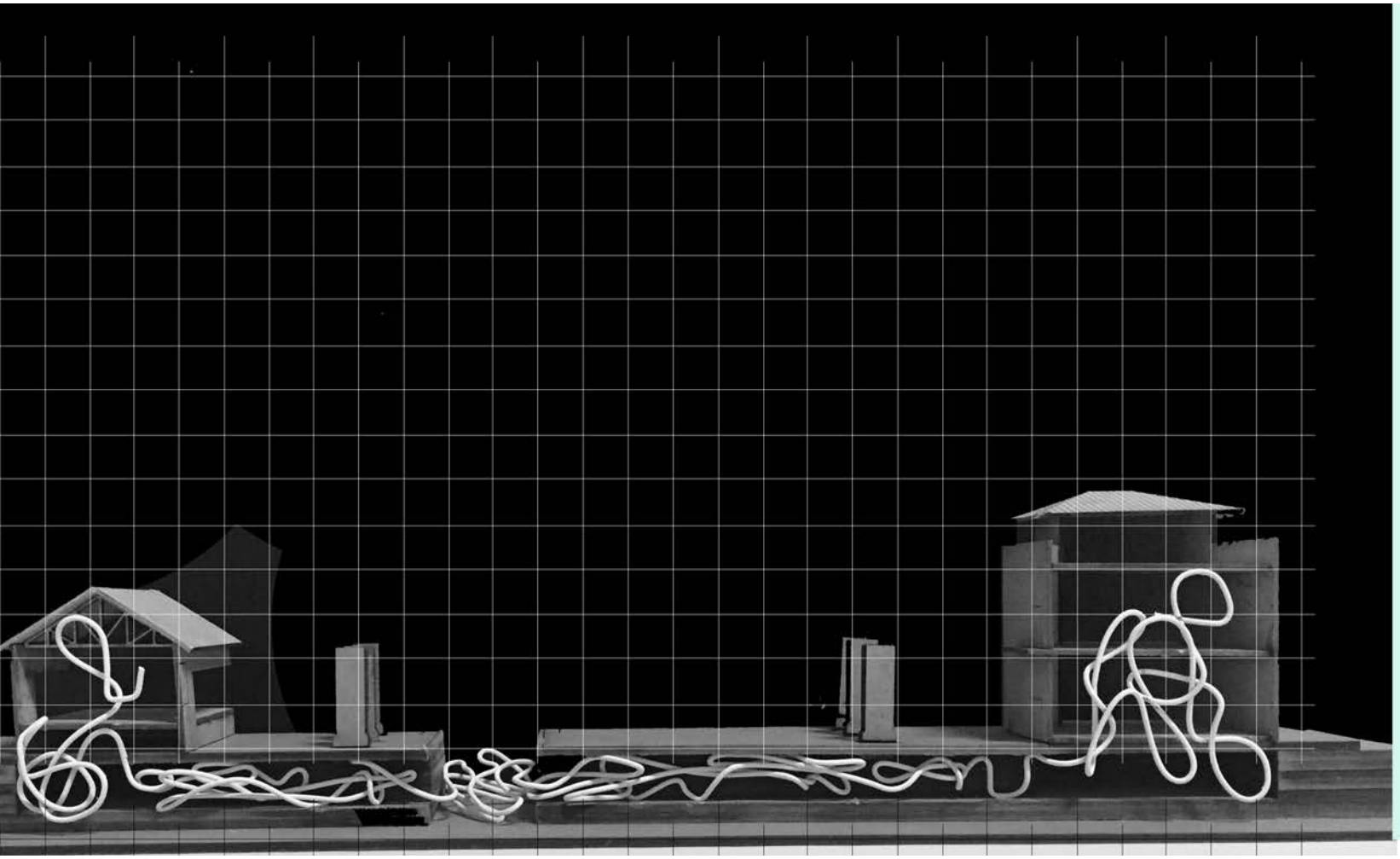
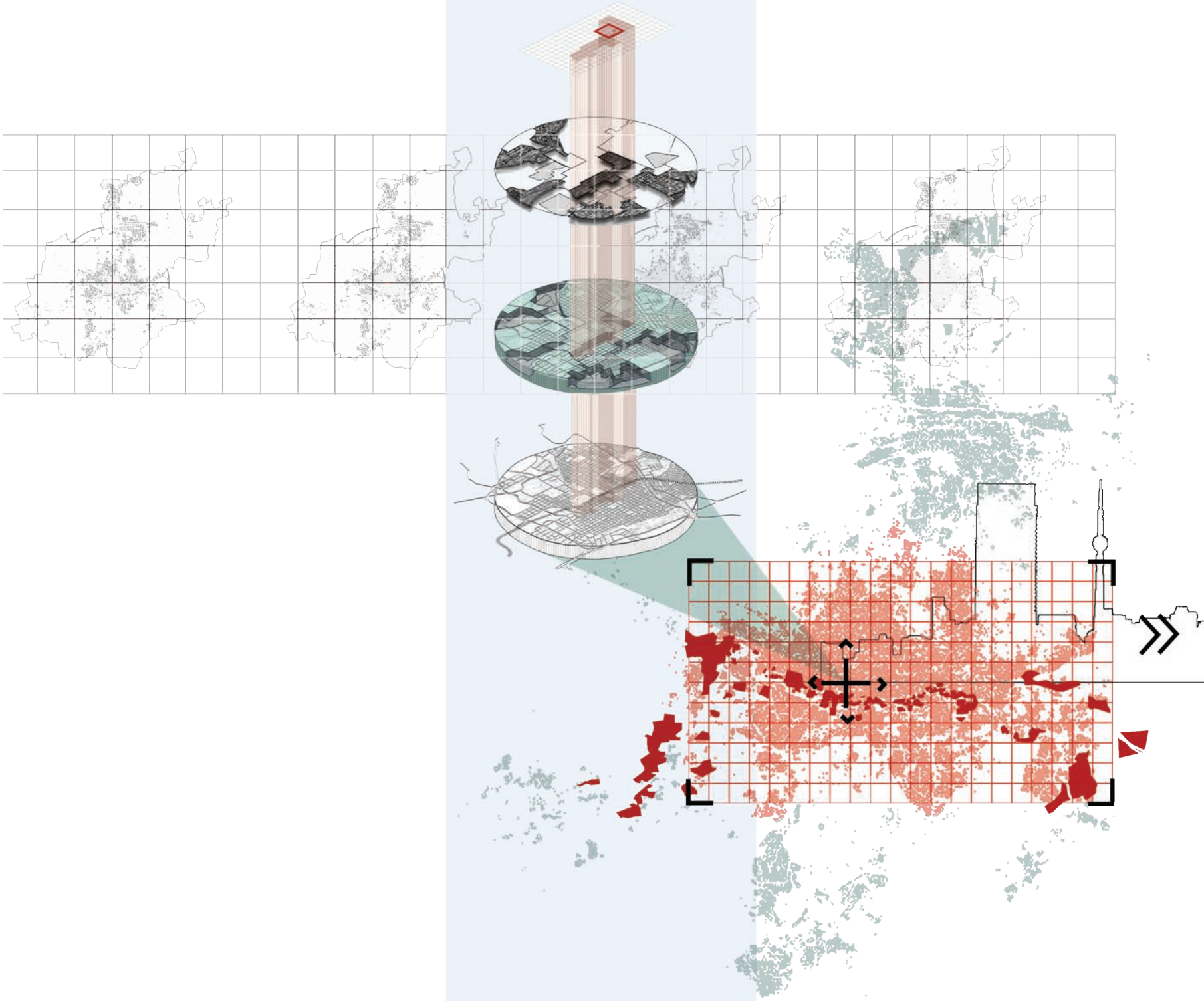


Fig. 8.16 - The possibilities of provocation P2: the situation of infill

Fig. 8.17 - The possibilities of provocation P3: The machine within



09

the following chapter describes the design process and the various iterations towards a final design...

DESIGN PROCESS

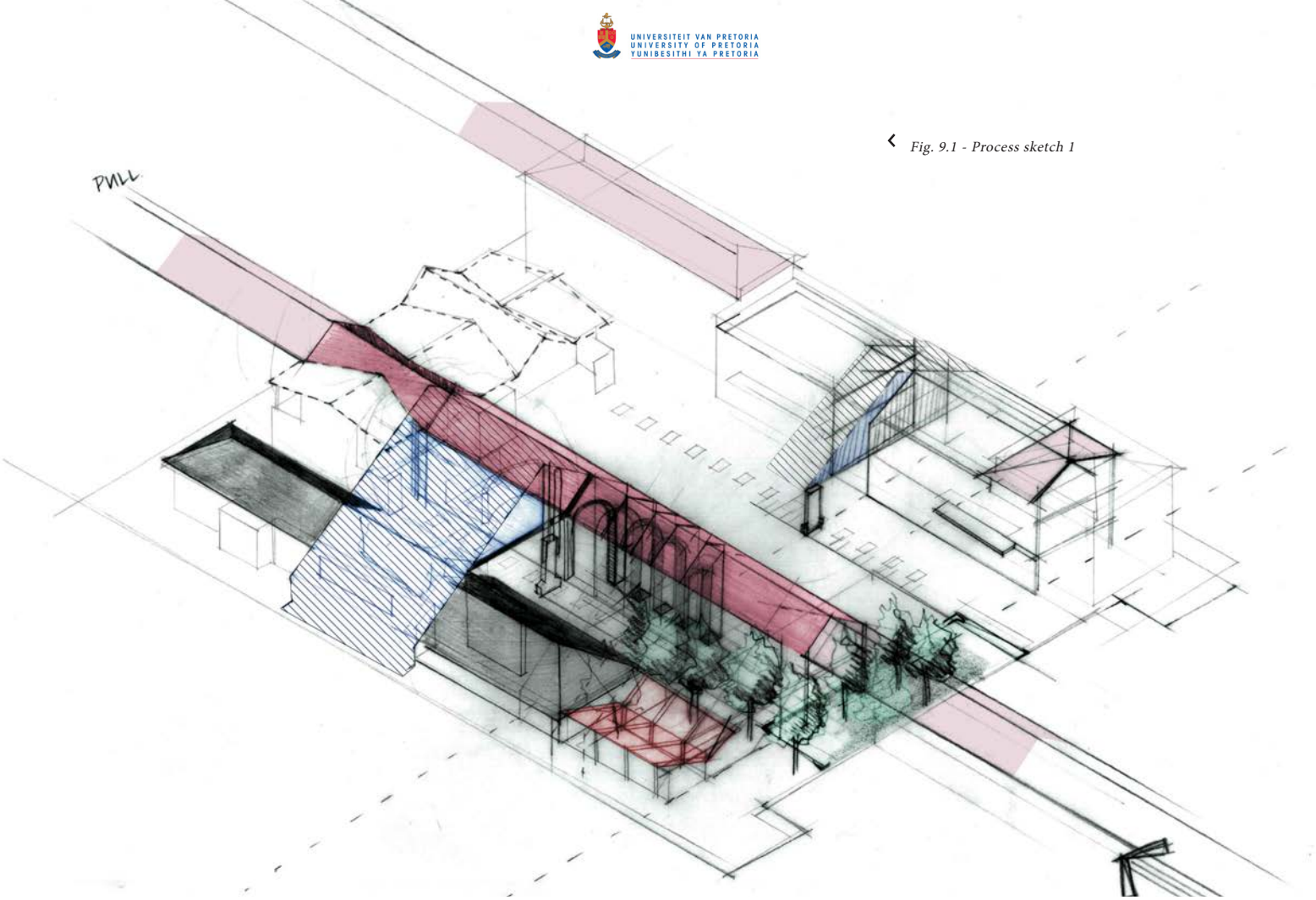


Fig. 9.1 - Process sketch 1

9.1 FIRST ITERATION

In the first iteration of the design, the roof shape of the west building was drawn from as a strong push/pull mechanism to generate scale, form and house the infrastructural/permanent condition between the south building and the square on the site. The intentions of working along the southern colonnade along the edge of the square was to facilitate a better junction between the 'south edge void' and south building and between the activity contained within the square. The existing columns pose an interesting opportunity for architectural conservation and adaption of components to carry through the concept and could be used as interrupters of space and used to create pockets or could be kept open and used individual as structural members for the spaces above. After reflection, it was found that the permanent architecture which conforms to the existing scale and geometry of the west building, has resulted in a subservient architecture. This approach may have been appropriate for a permanent building had the approach be preservative, however, the outcome needs to be conservative and evolve the nature of the site and therefore the language of the permanent component needs to be bolder and draw from the existing buildings in generating new form as opposed to using the existing language of the site to determine and limit it.

Inverting the notion of the traditional double pitch was briefly represented and explored in creating outward facing space for informal trade on the south east corner of the block as represented in red. This shape begins to explore new interesting geometries through inverted concepts, however, alone on such a small scale as an isolated tectonic addition requires a more powerful approach, and was established as one of the first

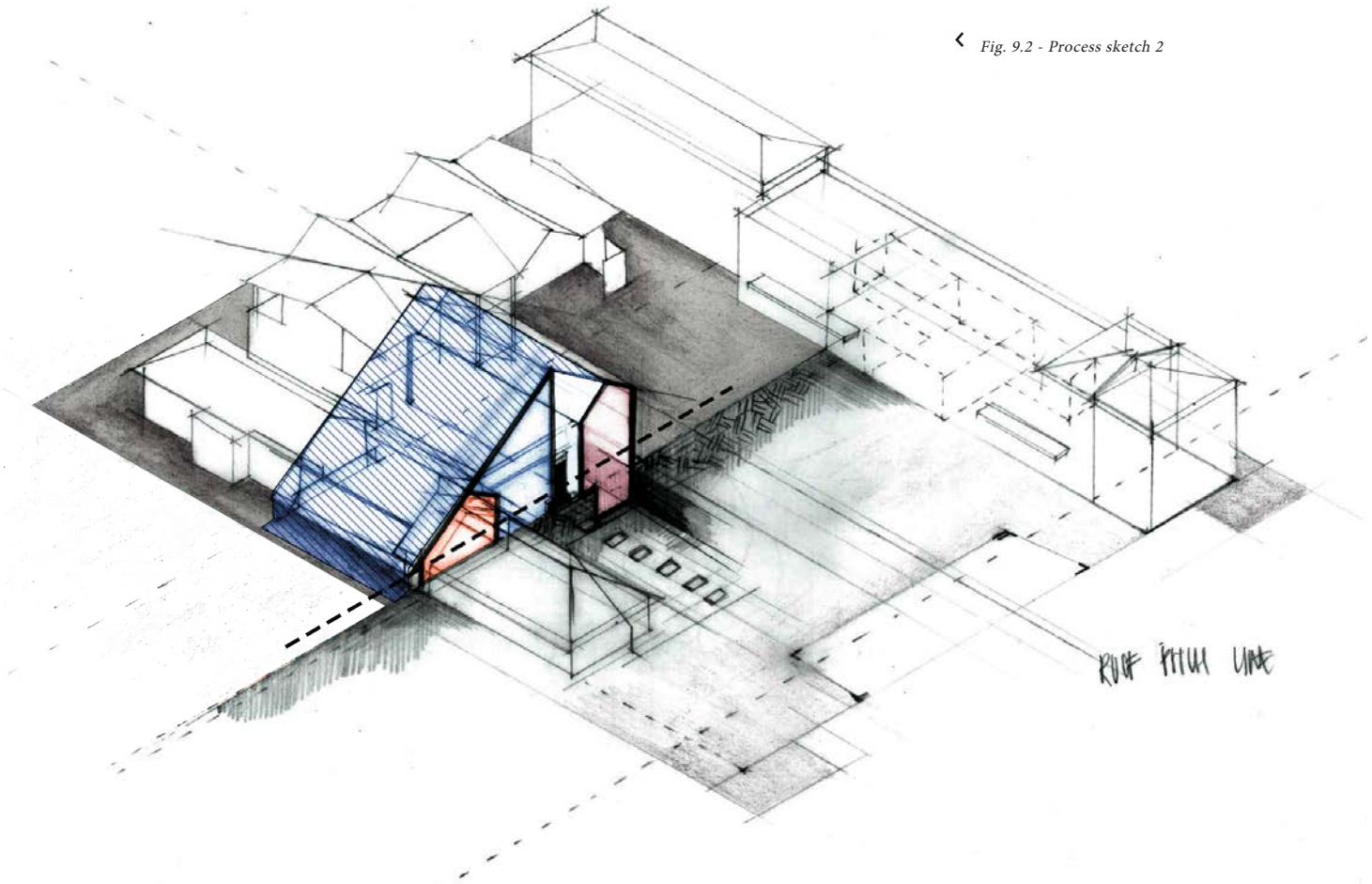


Fig. 9.2 - Process sketch 2

aspects which needed to be more boldly explored in further iterations.

The portion of the east block was in this iteration kept open in order to retain as much of the original greenery on the site as possible which the new conservatory would connect with and spill out onto. By creating such a junction between hard architecture and landscape was noted here as an important component to readdress, as the site stands with hard and soft space kept separate from one another has not resulted in a cohesive site. Therefore, it was here established that resolving all junctions between hard and soft architecture is important.

The void in between the southern colonnade and the south building was established as an exciting junction between old and new which could temporarily house people and created an interesting set of constraints for new architecture to respond to. This was the most prominent finding of the first iteration as it revealed endless possibilities of how architecture can sit on top of the existing; between the existing; how it could go over the existing; impose on or pull away from the existing etc., all of which imply something different. Therefore, how architecture is tailored in the 'in-between' could reinforce/enhance or detract from the architectural intension. This exciting transitionary space as the placeholder for the transitionary and temporary is not only appropriate in that the original fabric would not be jeopardized, but is according to the statement of significance in the hope that the activities implemented within the empty spaces around the buildings will facilitate new relationships.

9.2 EVOLVING THE SPACE OF THE 'IN-BETWEEN'

A SERIES OF SECTIONS

In order to thoroughly explore the possibilities and relationships between the south building, the square and the open space between them, a section through this space was established as the most appropriate tool. Further investigating the possibility of incorporating 'the column' into this new architecture within this space will also here be explored.

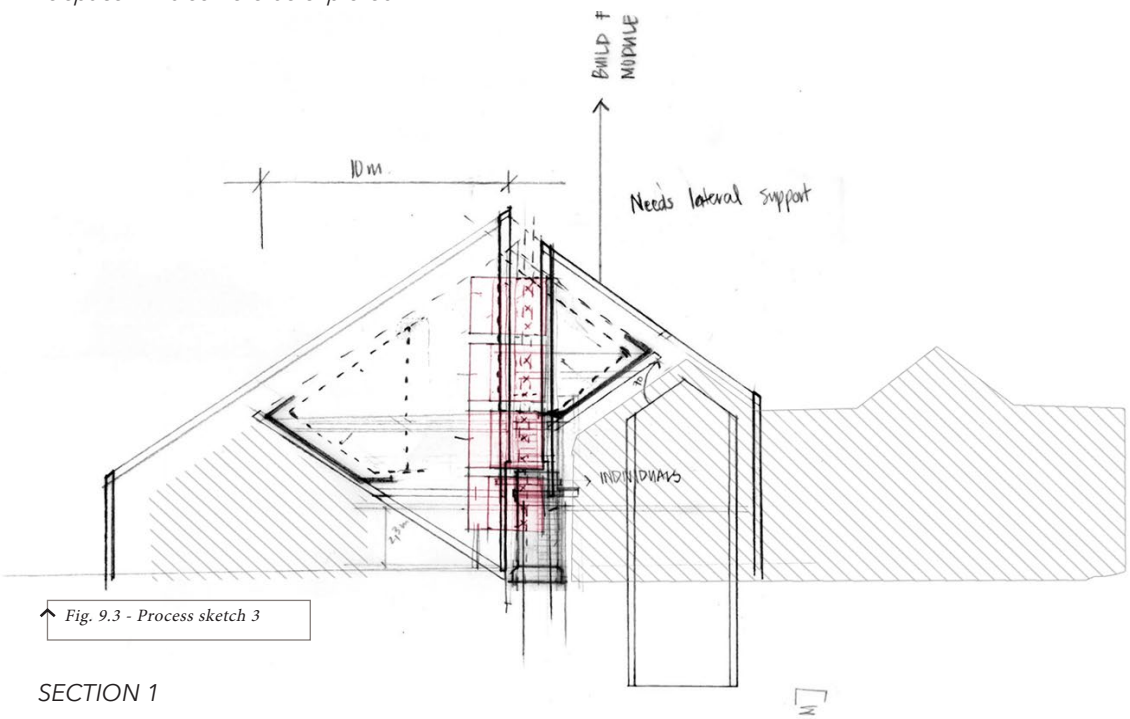


Fig. 9.3 - Process sketch 3

SECTION 1

OVER AND UNDER

Exploration

This section explored structure which would and stand over the existing fabric - but separate from it - with the housing as infill 'hung from the structure' within this. The bracing would be attached to the existing concrete columns as secondary structure. Space and architecture would thus be made and explored in the triangulated spaces created by the infill units, the roofs of the existing below, and the structure overhead.

Findings

Creating a structure that extends over the existing fabric is a good approach in the sense that it extends into the public realm and can begin to address the street edge condition, however only using the columns as secondary structure with the units sitting between and above hinders the public space on ground level both in the east-west movement and north-south movement feeding into the square which needs to be readdressed. Safety is also in this sense a problematic issue.

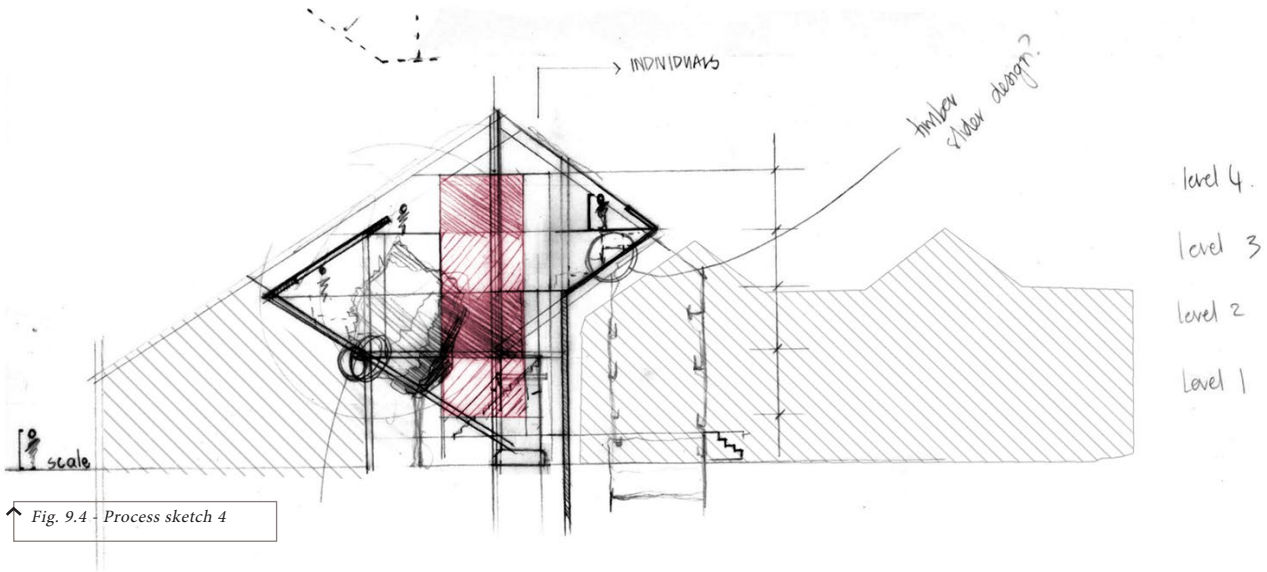


Fig. 9.4 - Process sketch 4

SECTION 2

STACKING

Exploration

This section explored the possibility of stacking units which contain their own structural integrity requiring little additional structure. This opens up possibilities for the longevity of the units in that they could be reused very easily elsewhere. Structure for the supporting spaces was brought from the outside 'over' approach to the inside of the existing buildings to limit spans and potential damage to the existing buildings.

Findings

Constraining the structure to the internal portions of the site opens up the possibilities for vertical exploration of form, which can still respond to the existing without being limited to it, whilst ensuring less superfluous structure. In this iteration, the existing concrete columns are integral structural members

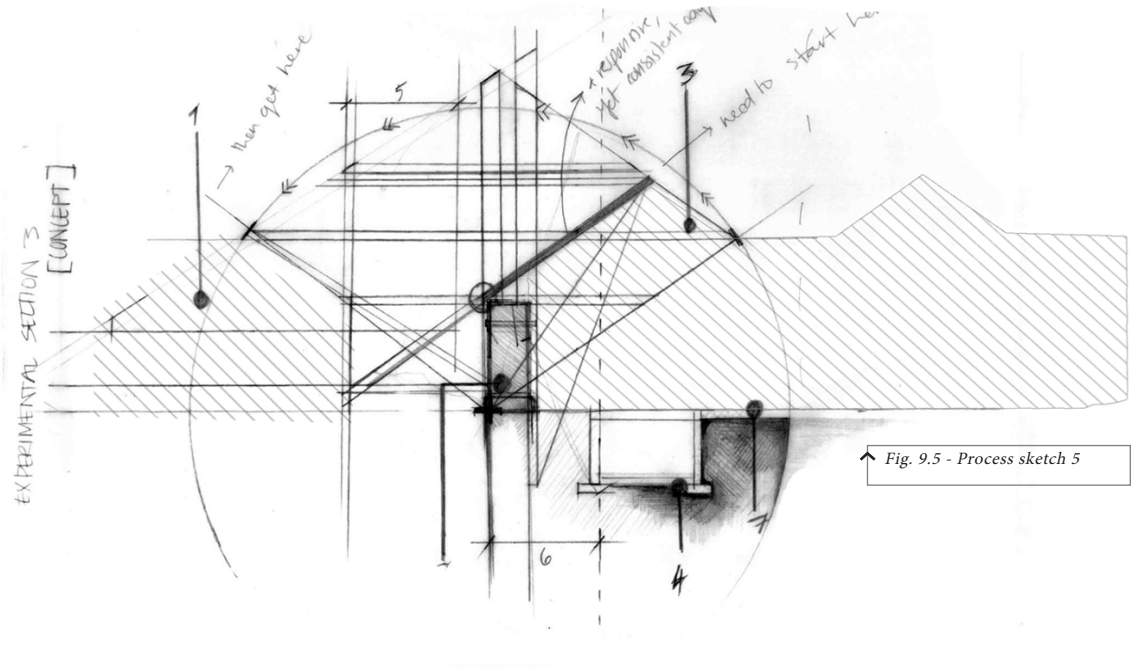


Fig. 9.5 - Process sketch 5

SECTION 3

SYMMETRY AND GEOMETRY

Exploration

This sketch illustrates the exploration of geometry – showing the informing diagonals of the existing, while exploring the possible structural relationships between horizontals and diagonals.

Findings

A satisfying triangulating relationship between existing buildings, conserved structure and new architecture has emerged according to a hierarchy of relationship of the new architecture to the structure with which it directly interacts, and then the other buildings secondarily.

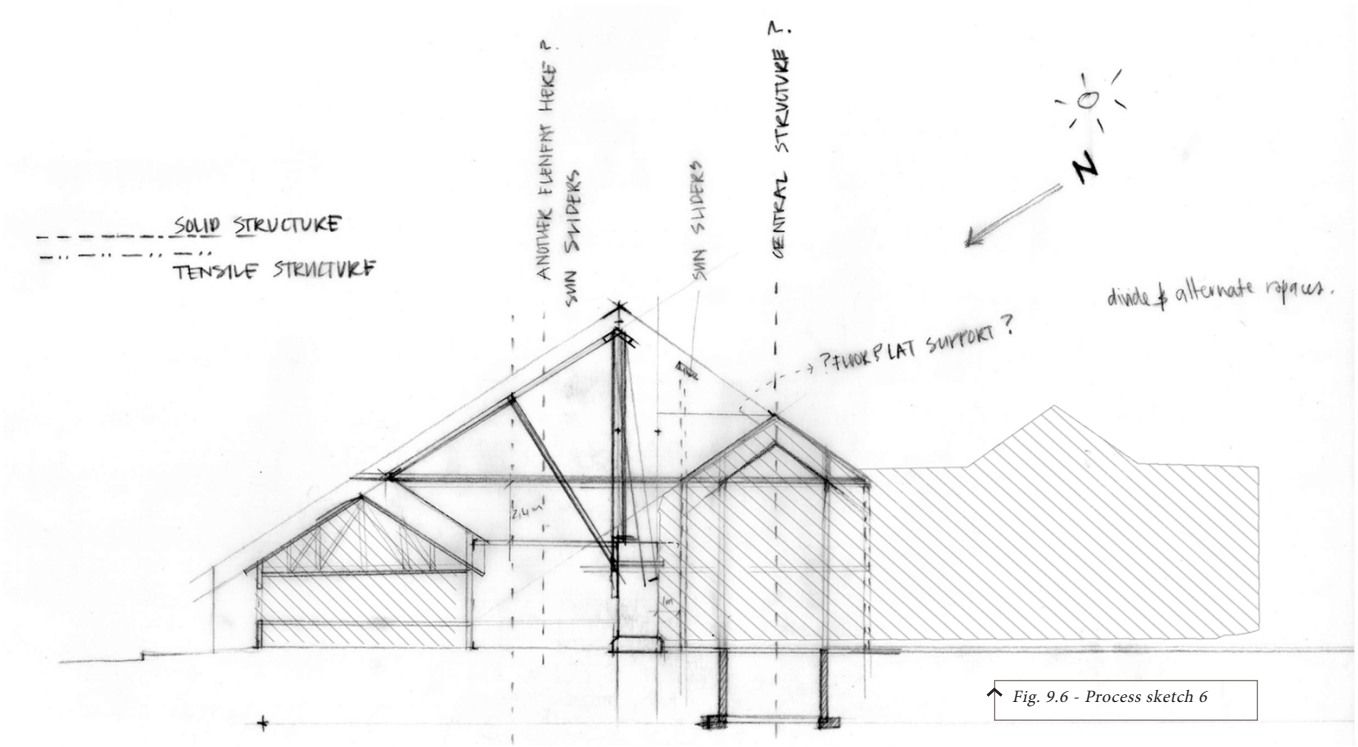


Fig. 9.6 - Process sketch 6

SECTION 4

RELATION TO THE SUBSURFACE

Exploration

This section builds on the previous geometric principle through exploring the possible relationship between primary structure and the subsurface rifle range as an additional anchor in achieving conservation of the rifle range and the space making below ground level and possible connections to the south building from below as not to alter its external shell.

Findings

Incorporating tensile cables on ground level was found to perhaps not be the most spatially enhancing form of structure, and will thus be reviewed.

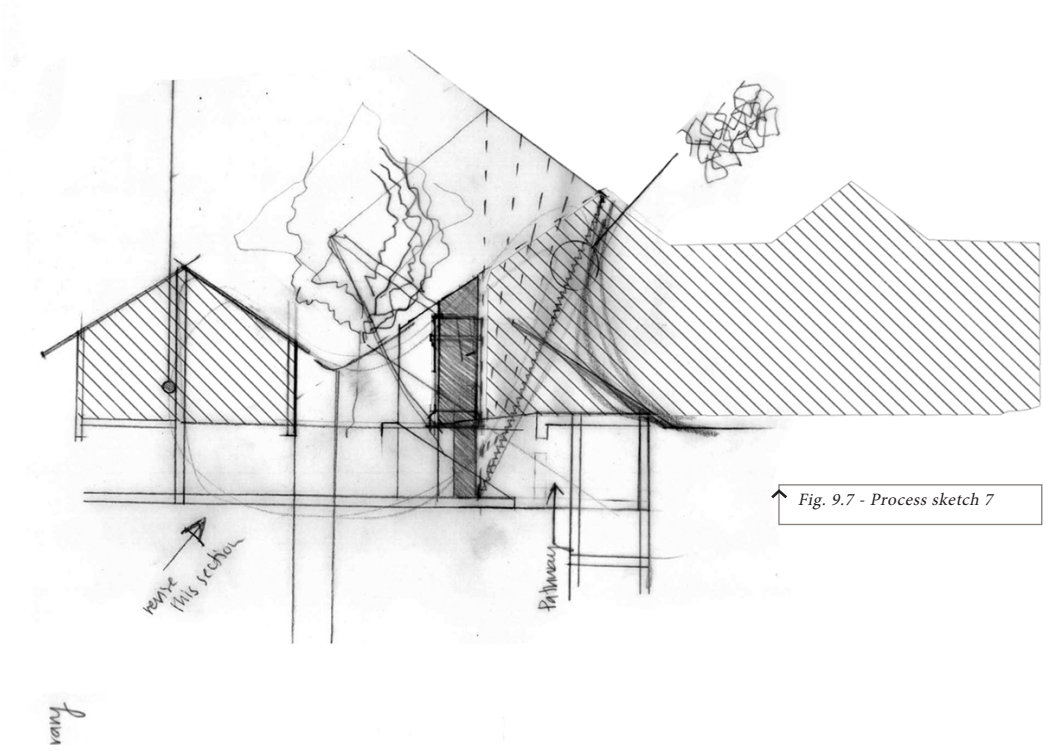


Fig. 9.7 - Process sketch 7

SECTION 5

ANCHORED IN THE NEW

Exploration

This section explores another structural possibility of anchoring the new intervention to the structure, on the inner edge of the square finding a balance between solid and tensile components whilst opening up the ground floor level according to the findings above through a 'truss-like' iteration.

Findings

Keeping the ground floor open supports better movement between spaces and supports the safety and privacy of keeping the units about first floor level.

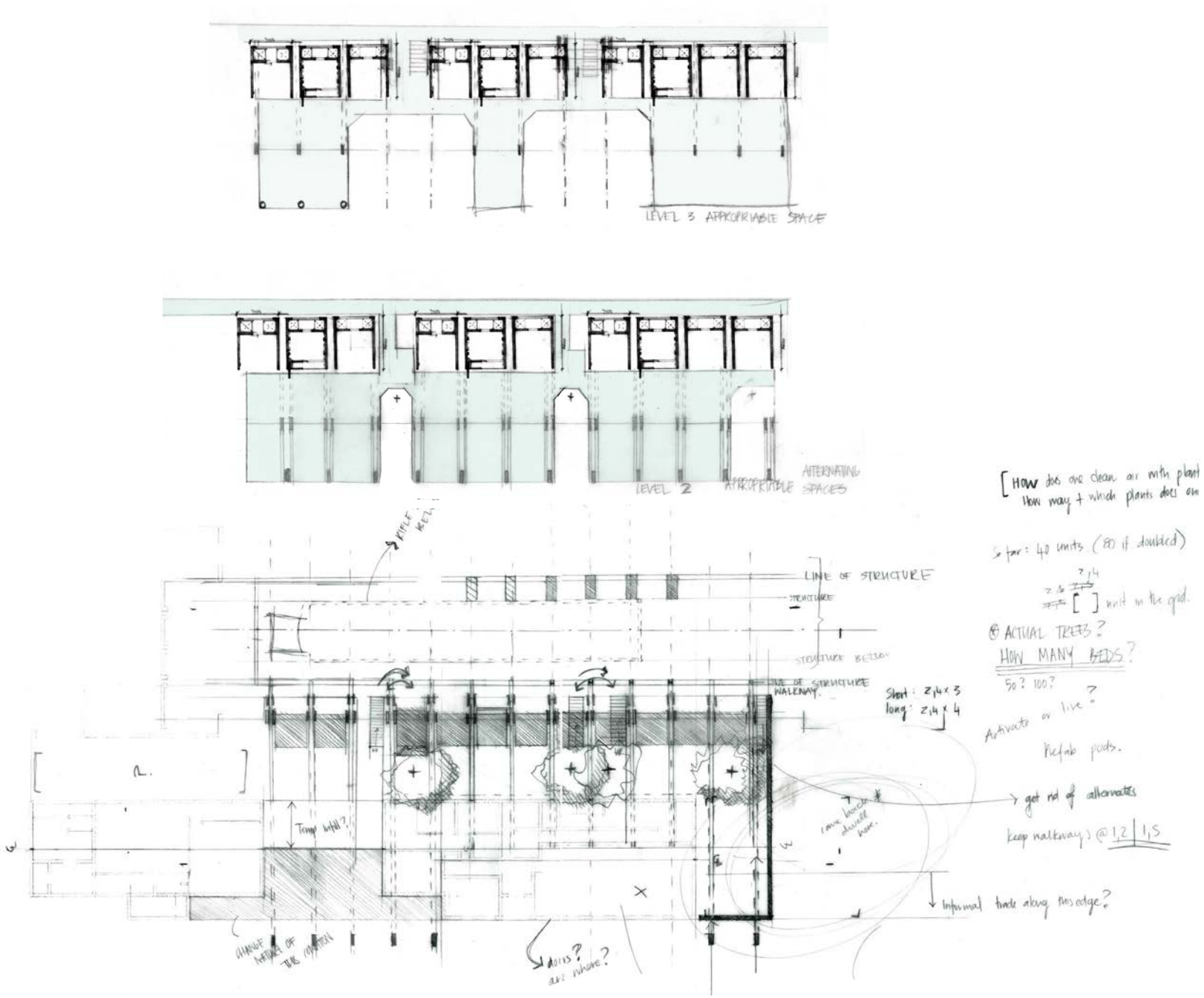
9.3 SYNTHESIS OF SECTIONS

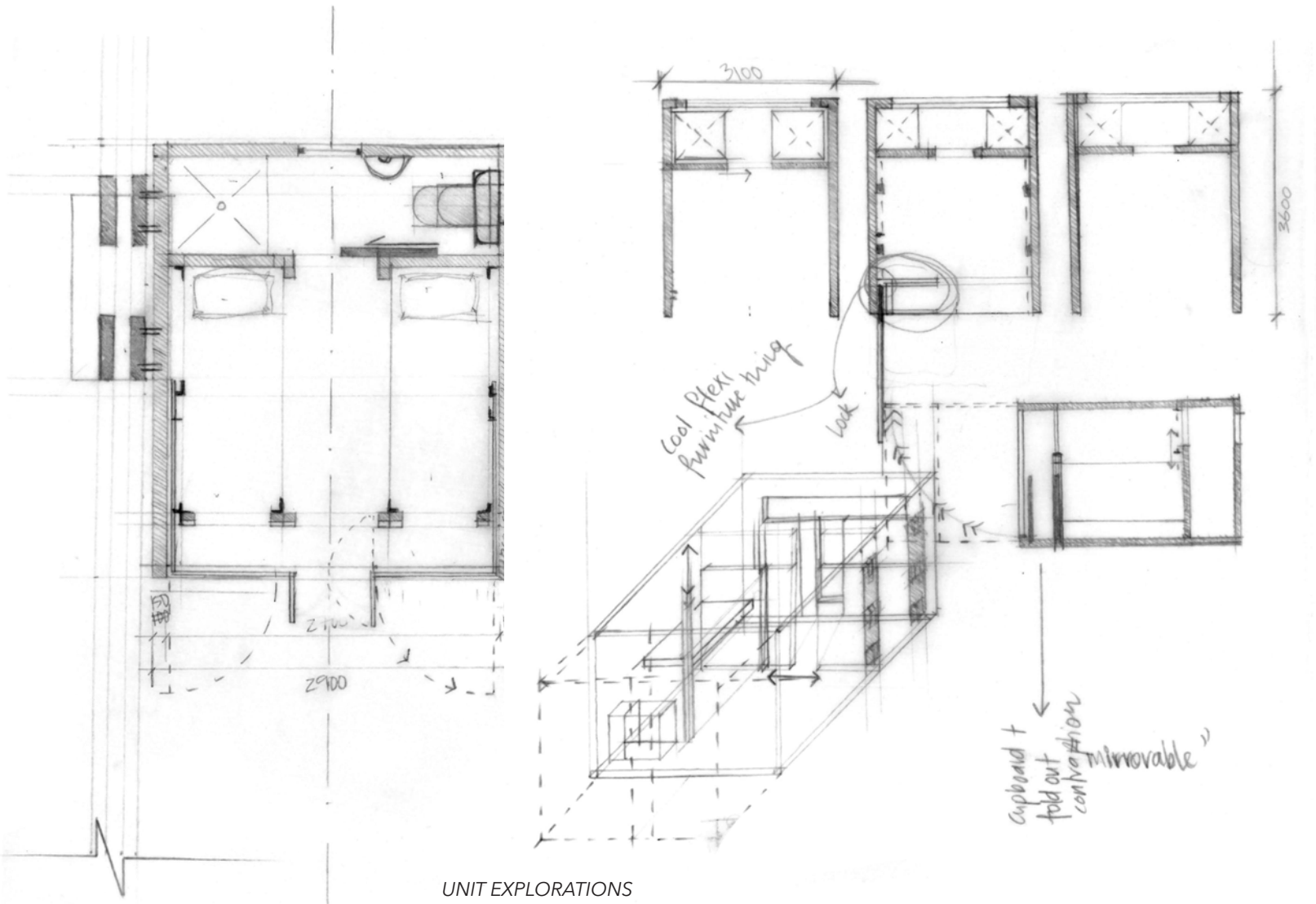
Using the diagonals drawn from the pitches of the existing buildings to either side allows the architecture to subtly and sensitively sit within the 'condition of the in-between'. The nature of the form - without harshly imposing on the presence of the existing buildings - asserts presence through scale and makes contact only with the existing concrete columns. The sketches which have explored structure going over the existing buildings demonstrates a dominance over the existing in a less sensitive manner and therefore this principle will not be carried through in the next iteration. The architecture will where possible also be kept to first floor and above (out of the public realm) to support a healthy and interactive ground floor culture, whilst keeping the privacy and safety of the housing units as a primary consideration.

9.4 SPACE PLANNING AND LAYOUTS

THE ADAPTIVE RE-USE OF THE EXISTING; THE INSERTIONS OF THE PERMANENT AND THE BINDING THROUGH THE TEMPORARY

INITIAL SKETCHES





UNIT EXPLORATIONS

Fig. 9.8 - Process sketch 8 showing exploratory ground, first and second floor plans

Fig. 9.9 - Process sketch 9 showing first iteration of the unit design

9.4 SECOND ITERATION

EVOLVING THE PERMANENT

INITIAL SKETCHES

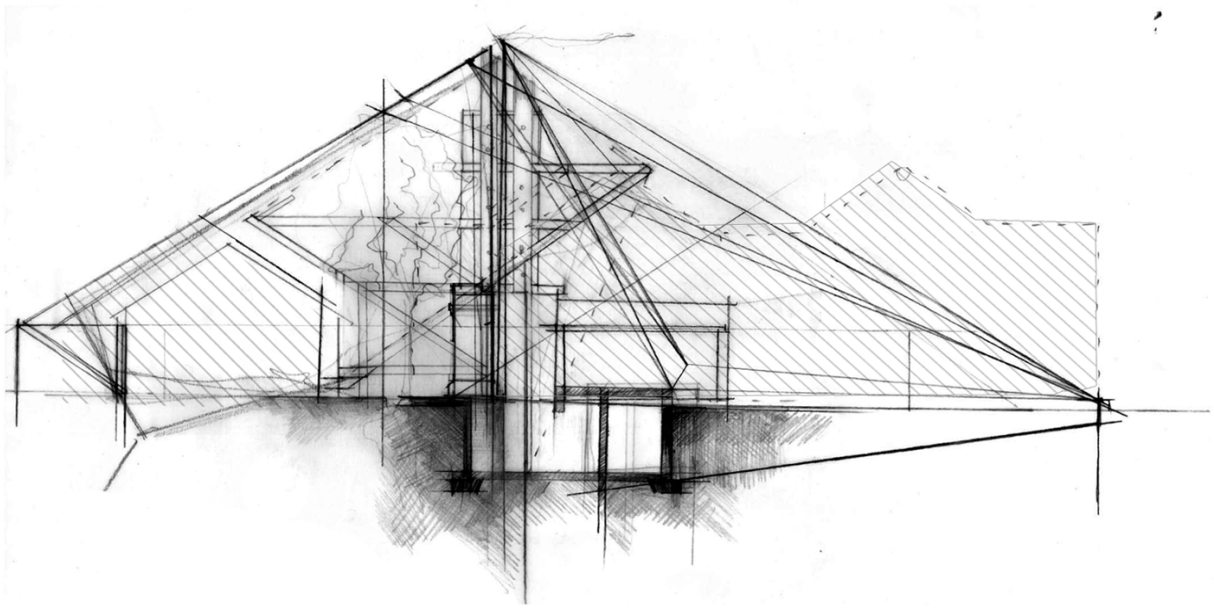


Fig. 9.10 - Process sketch 10

The following two sketches illustrate the derivation of form which is a response not only to the existing architecture on the site, but also the new temporary architecture situated within the 'in-between'. The principle behind the form is simple, clear and responsive to the existing in that it doesn't conform to the language of the site, but draws from it resulting in an elegant asymmetry with clear conservative intentions and grows just beyond the scale of the existing buildings and can begin to start connecting with the scale of the context.

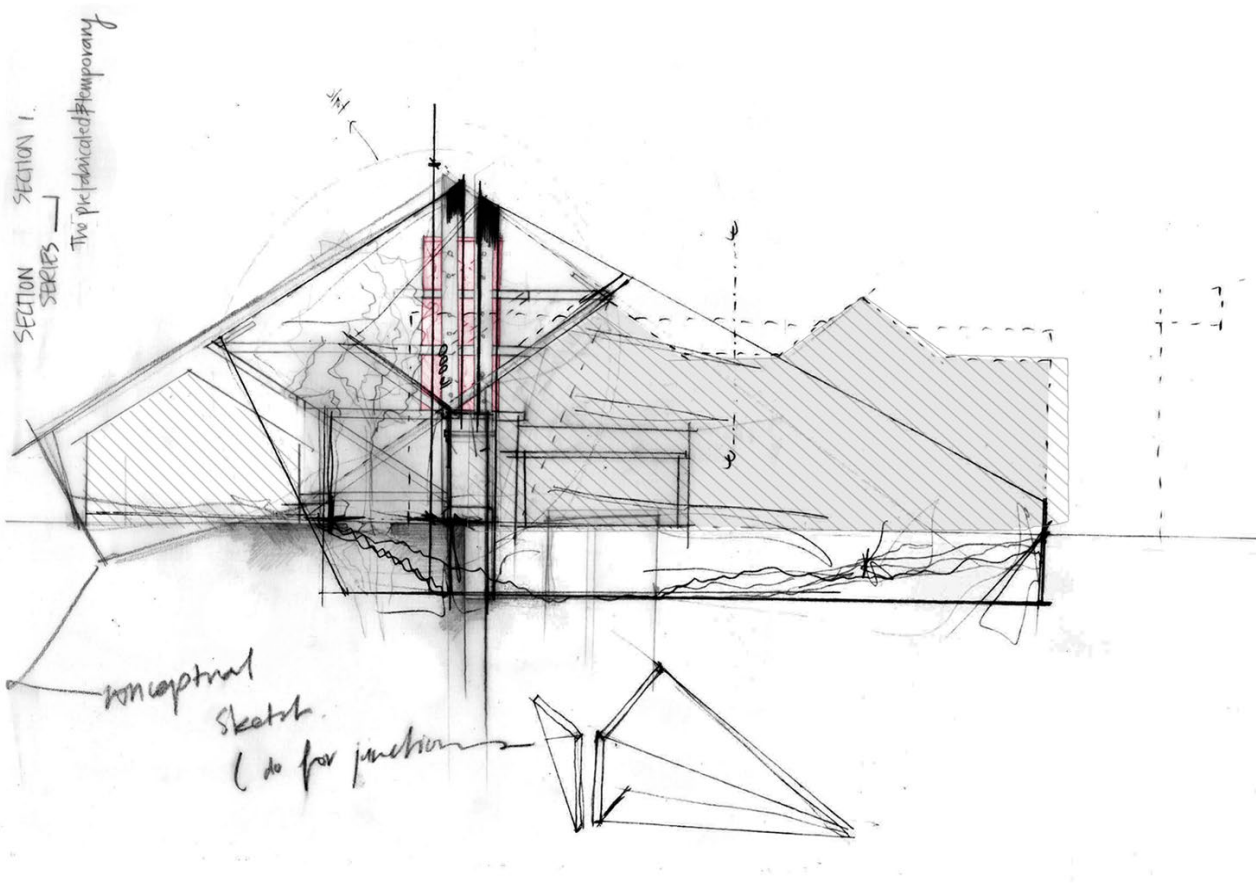


Fig. 9.11 - Process sketch 11

Furthermore, even in its simplicity, as demonstrated in the sketches it creates strong ground conditions and edges: whether the form meets with the ground prioritising the building as an object which meets the ground or at first floor level prioritising the human scale and activity at the buildings edge. These different (yet strong) ground conditions can be potently manipulated to suit the argument of the architecture especially in contrast the rest of the buildings on the site comprised solely of vertical walls interfaces. Therefore, this form demonstrates a sensitivity and possibility for provocation which will be explored.

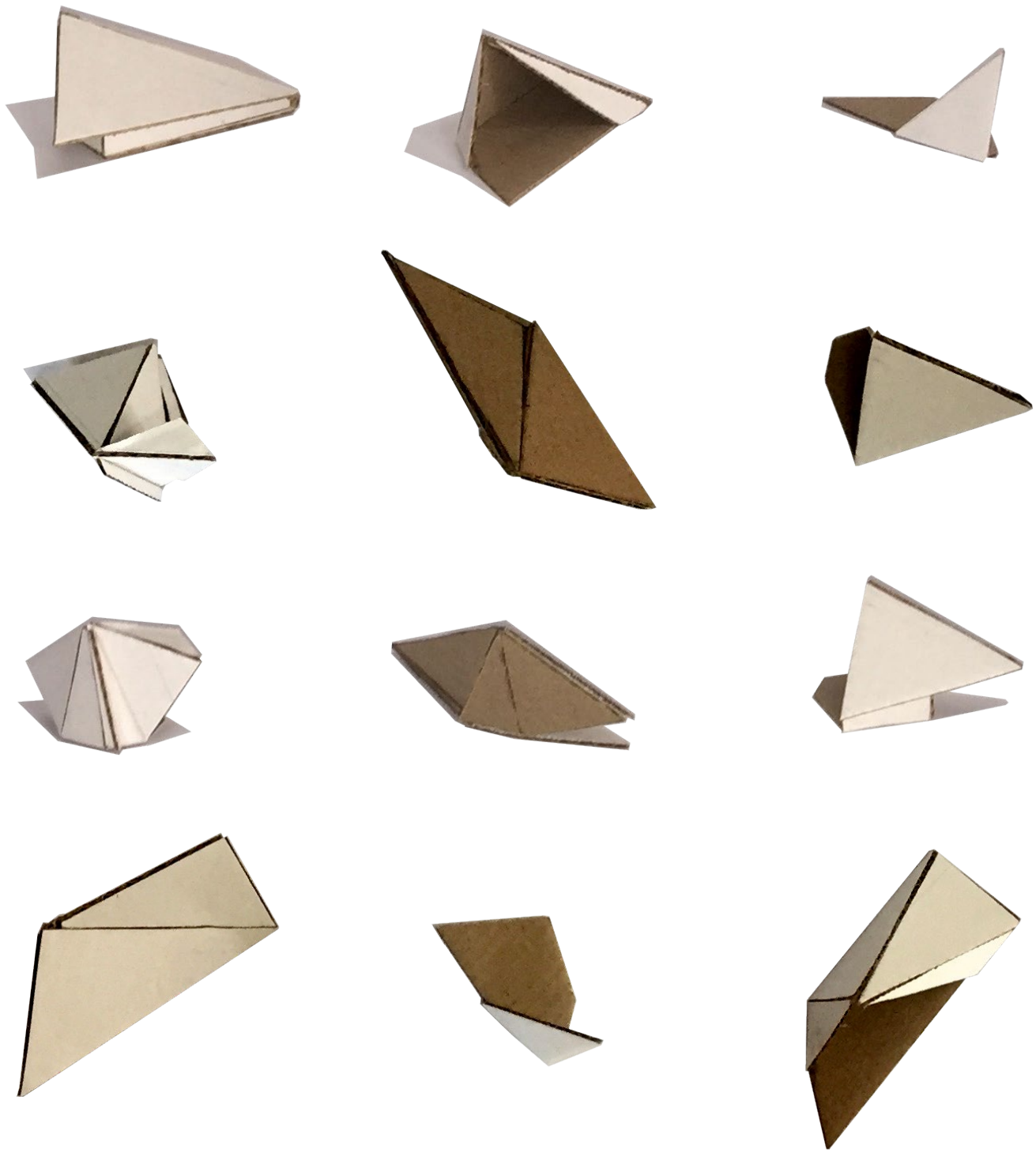


Fig. 9.12 - Photograph of a series of maquettes exploring form

The following maquettes and plans illustrate the explorations in creating form from the 2D sketch principle:

Some key considerations in determining footprints and edge conditions included:

- the facilitating of public culture and informal trade along the external edge of the square
- the importance of maintaining a strong line against the edge of the public square in respecting its significance
- evolving the footprint of the old eastern portion and old south building outhouse in achieving architectural conservation
- the legibility of the architecture creating a new entrance from the street edge to the internal public square within.

1. Maintaining a solid edge along the interface of the internal square whilst pulling back along the public interface in order to maintain some of the external greenery which exists. The two buildings meet at the corner of the internal square to contribute to its edge, whilst opening up to the eternal corner as a new entrance into the site.
2. Enclosing the full eastern portion and maintaining parallel solid edges
3. Exploring one form as opposed to two split forms utilizing the full south eastern corner

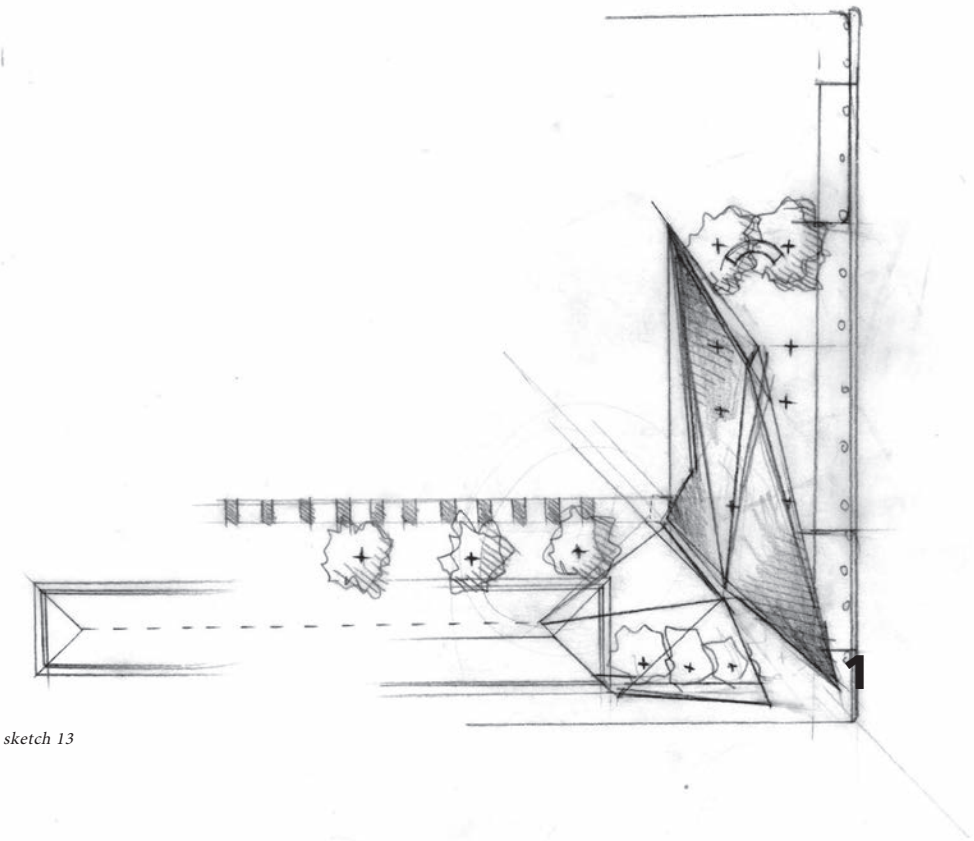


Fig. 9.13 - Process sketch 13

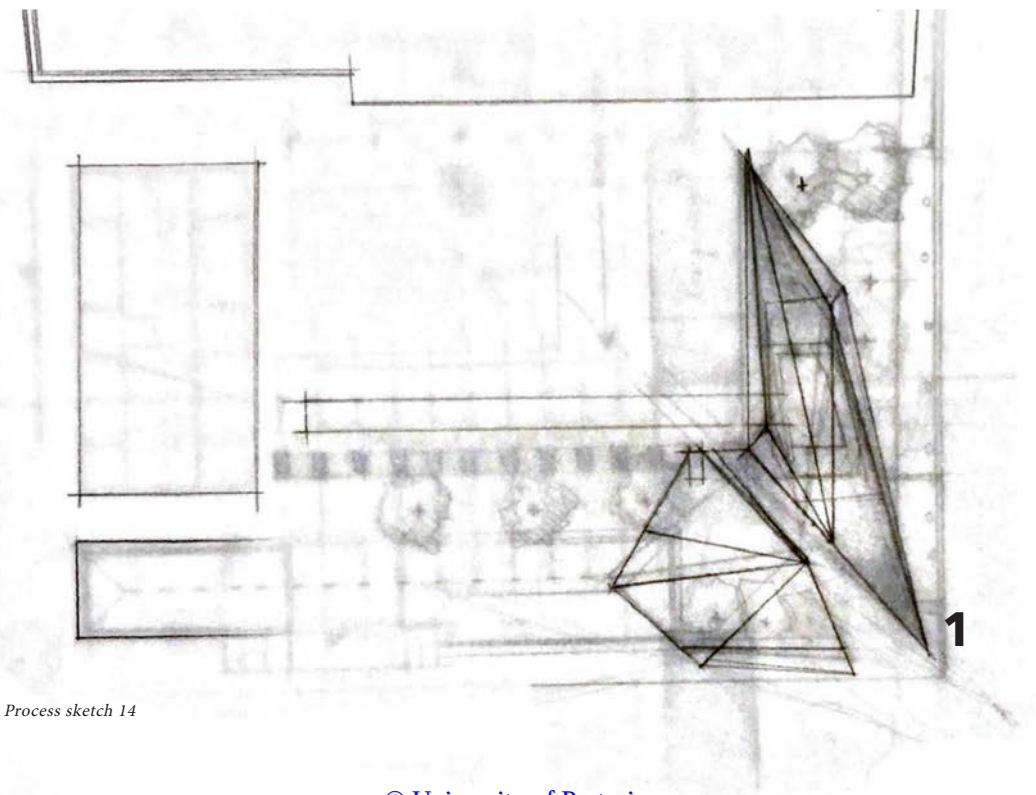


Fig. 9.14 - Process sketch 14

1. Maintaining a solid edge along the interface of the internal square whilst pulling back along the public interface in order to maintain some of the external greenery which exists. The two buildings meet at the corner of the internal square to contribute to its edge, whilst opening up to the eternal corner as a new entrance into the site.

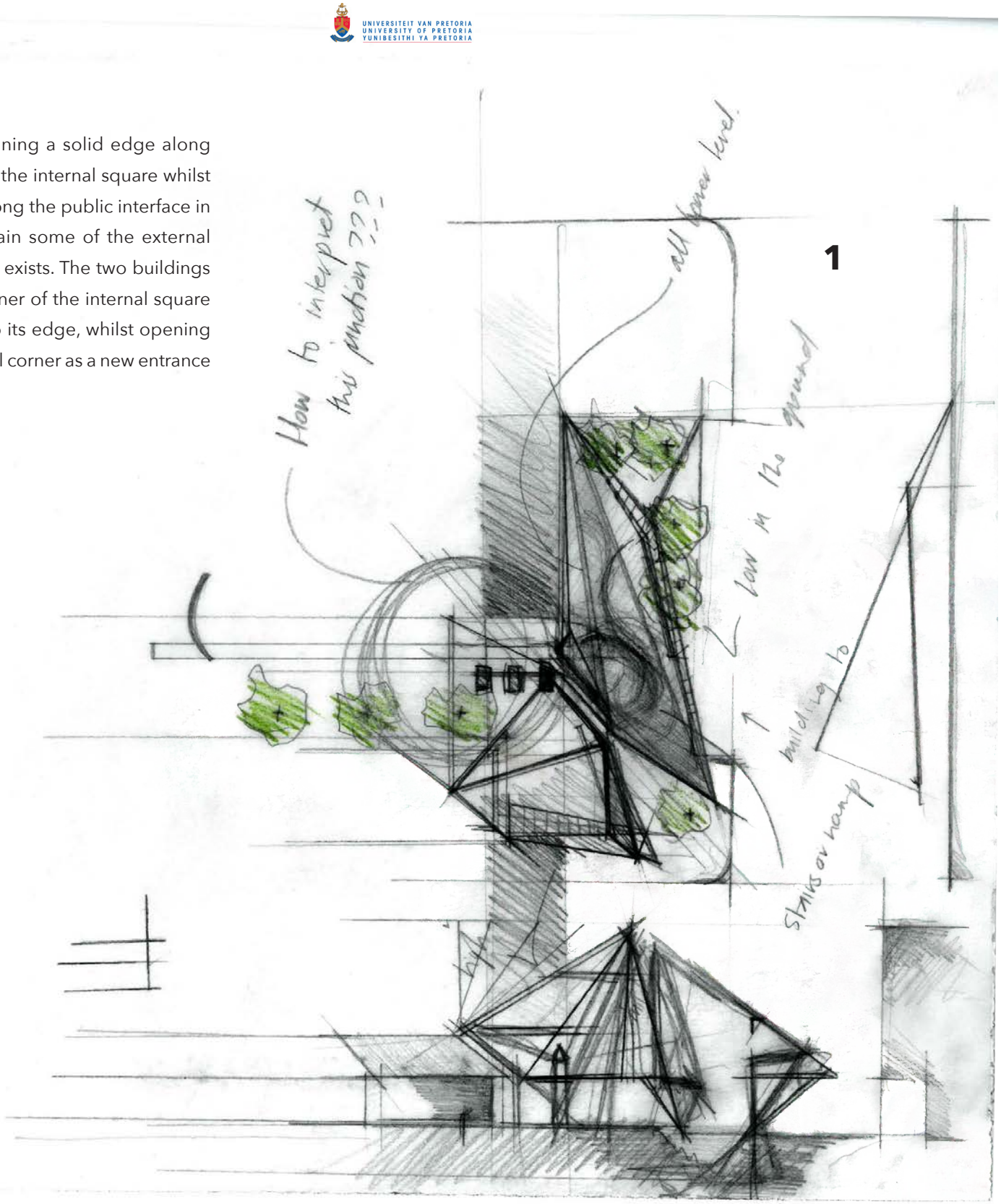
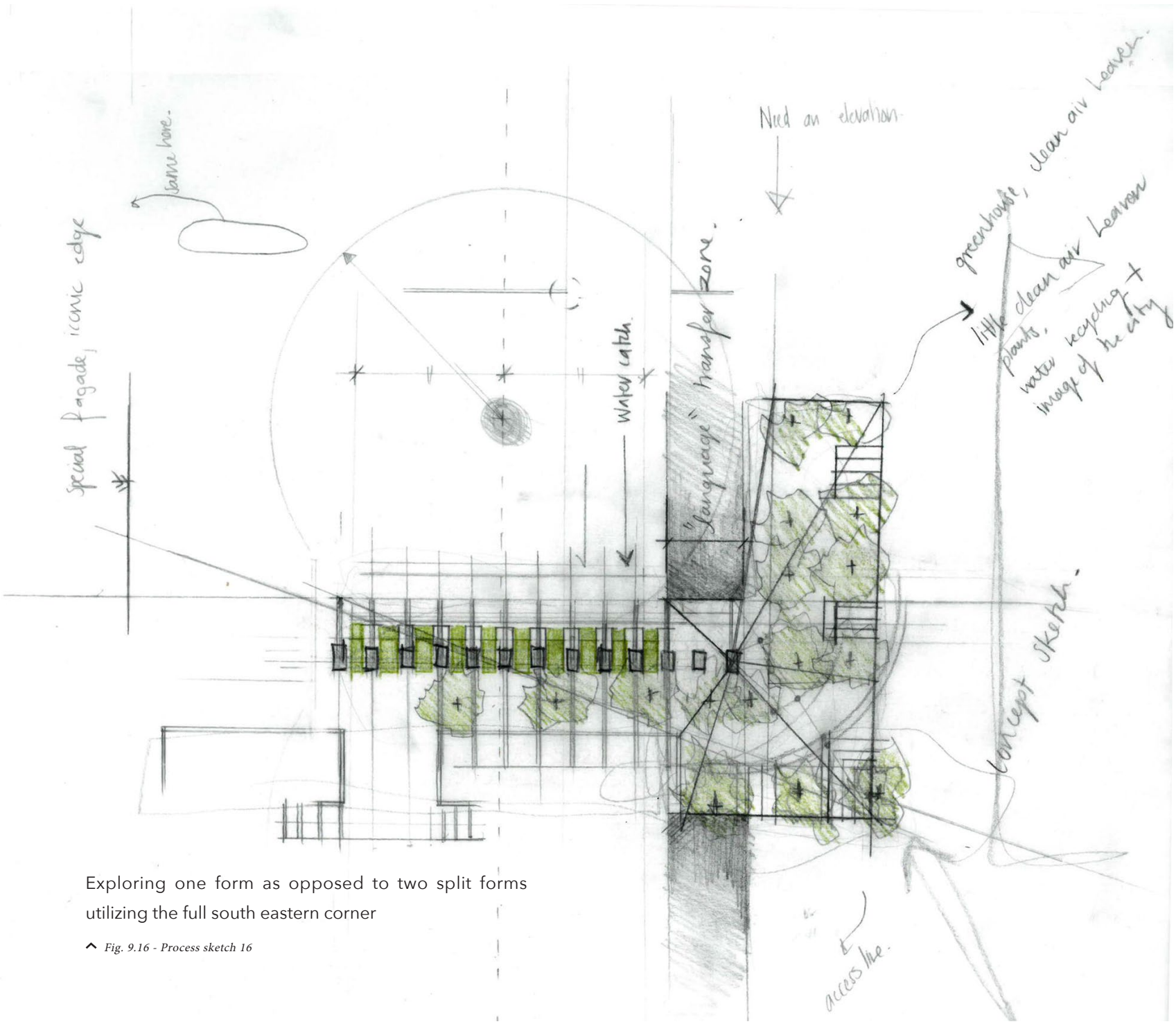
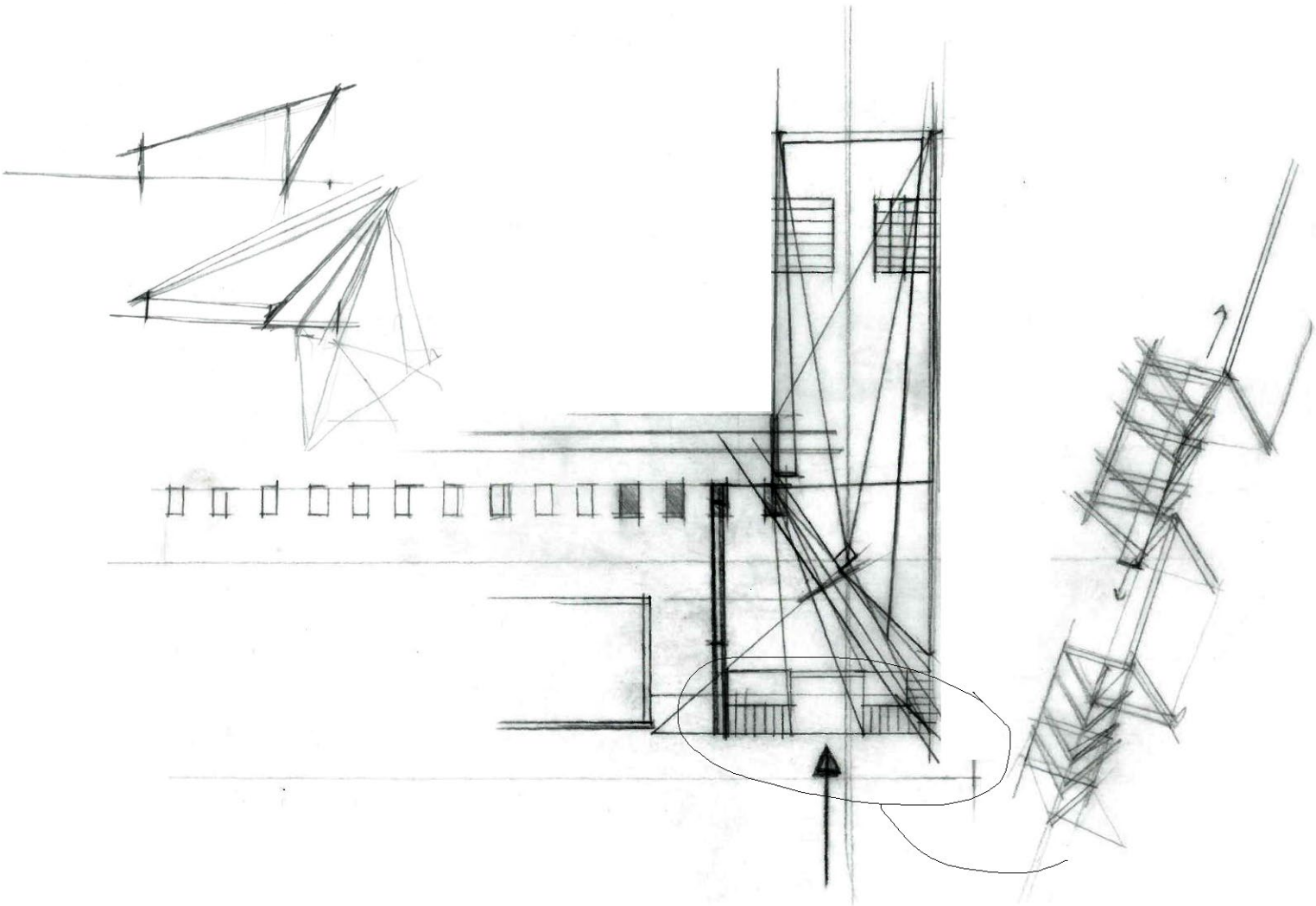


Fig. 9.15 - Process sketch 15



Exploring one form as opposed to two split forms utilizing the full south eastern corner

^ *Fig. 9.16 - Process sketch 16*



Enclosing the full eastern portion and maintaining parallel solid edges

Fig. 9.17 - Process sketch 17

JUNE PROGRESS
INITIAL SKETCH PLANS

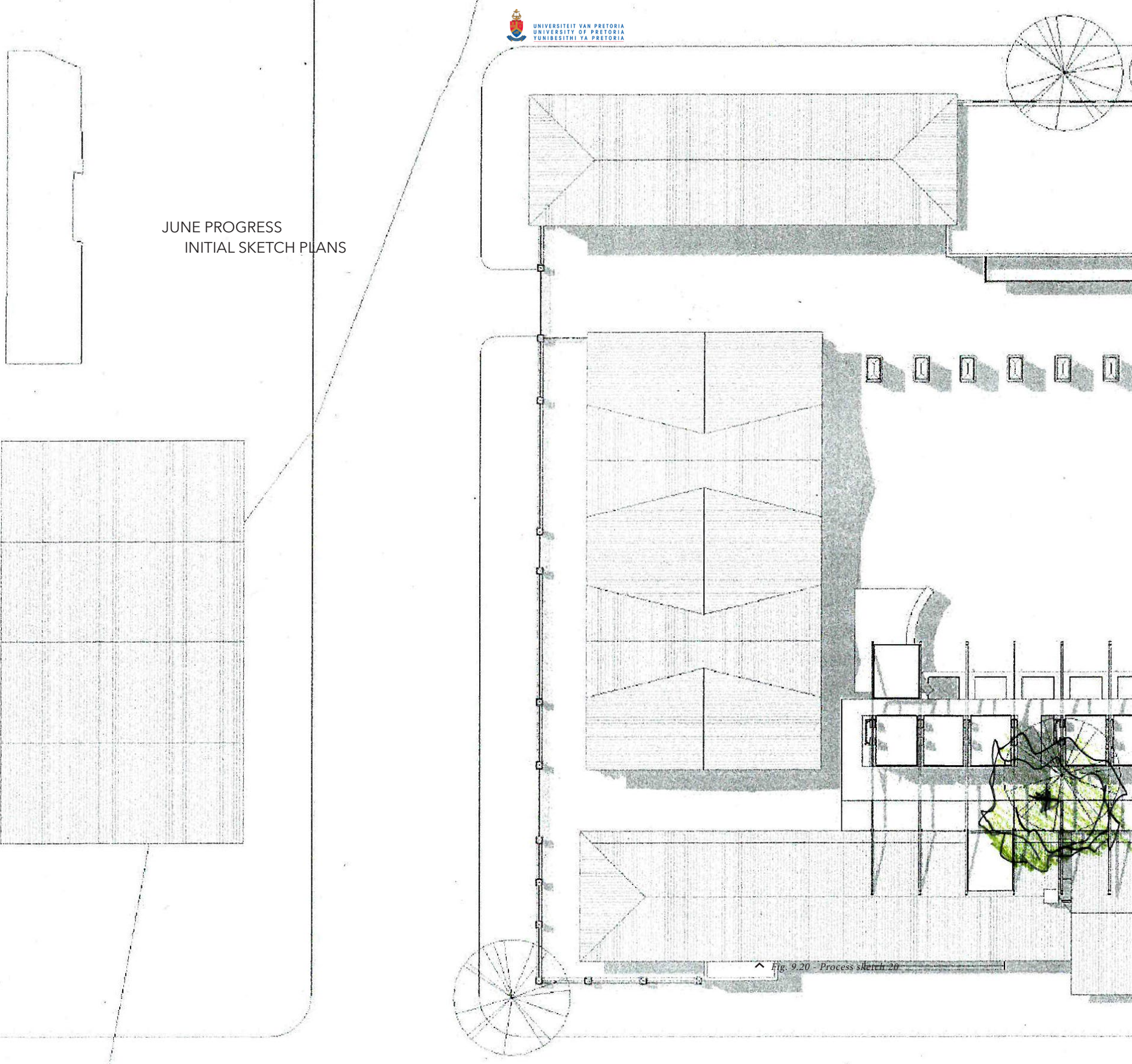
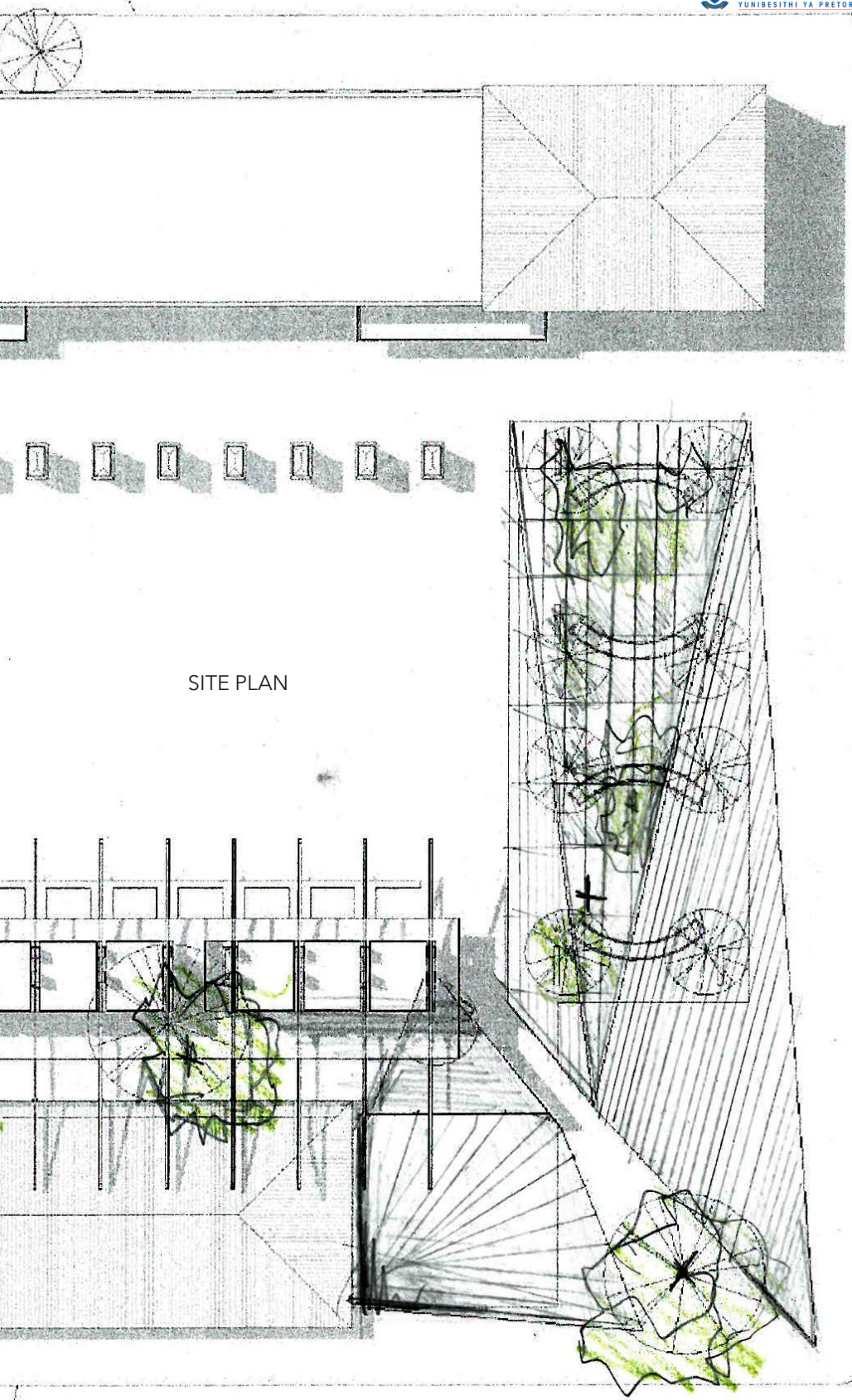
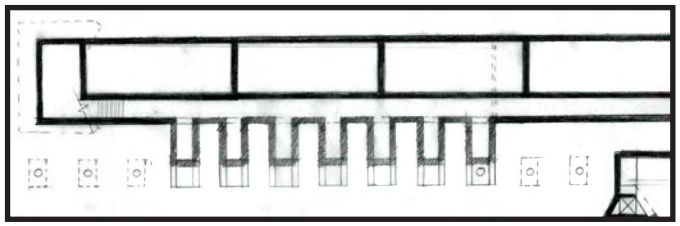


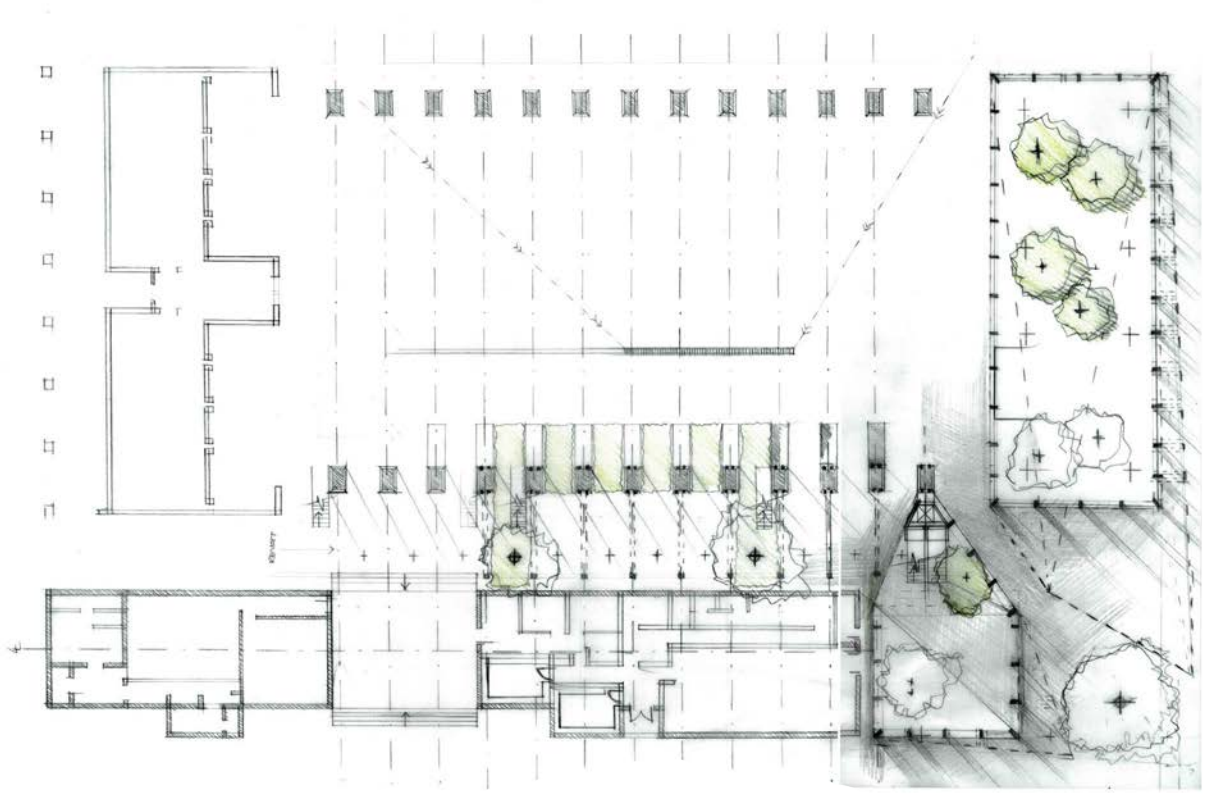
Fig. 9.20 - Process sketch 20



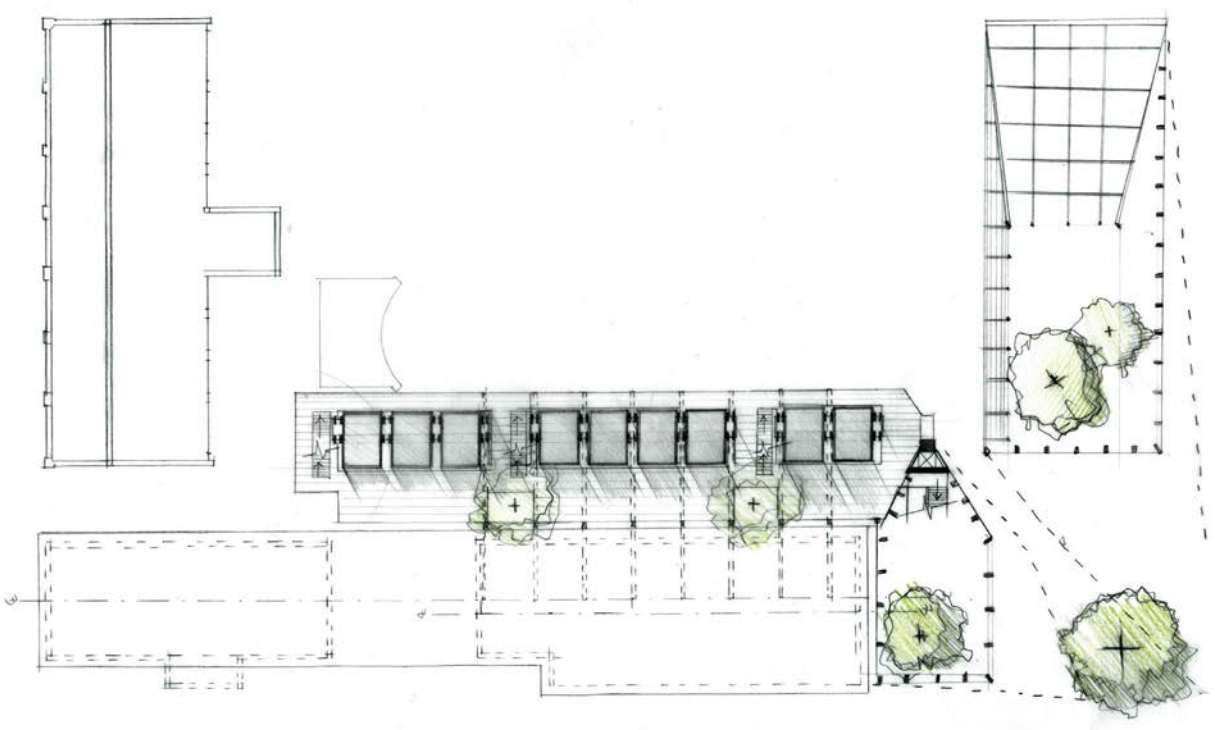
SITE PLAN



BASEMENT PLAN

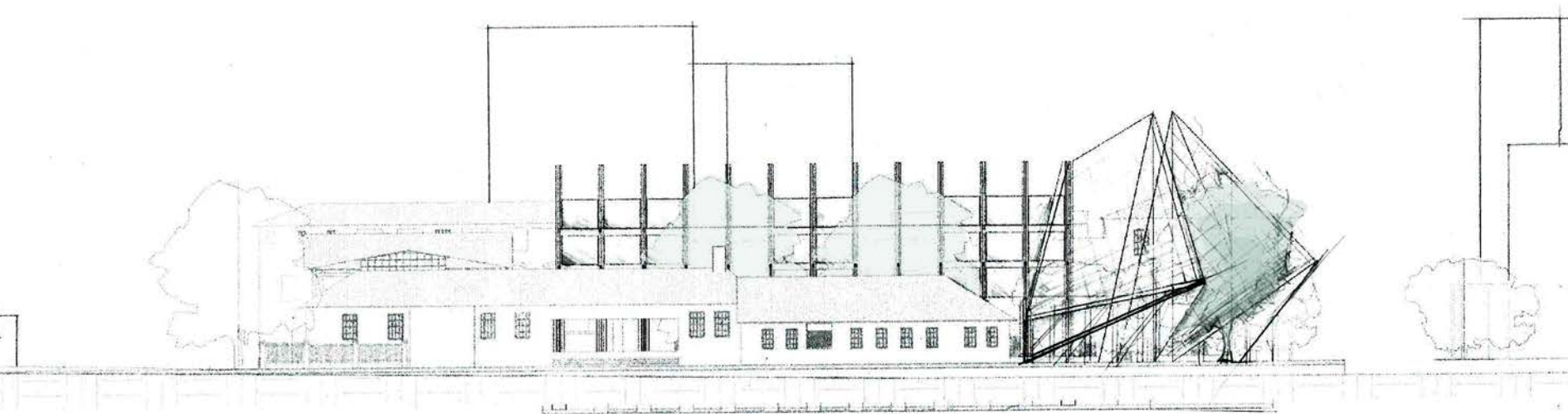


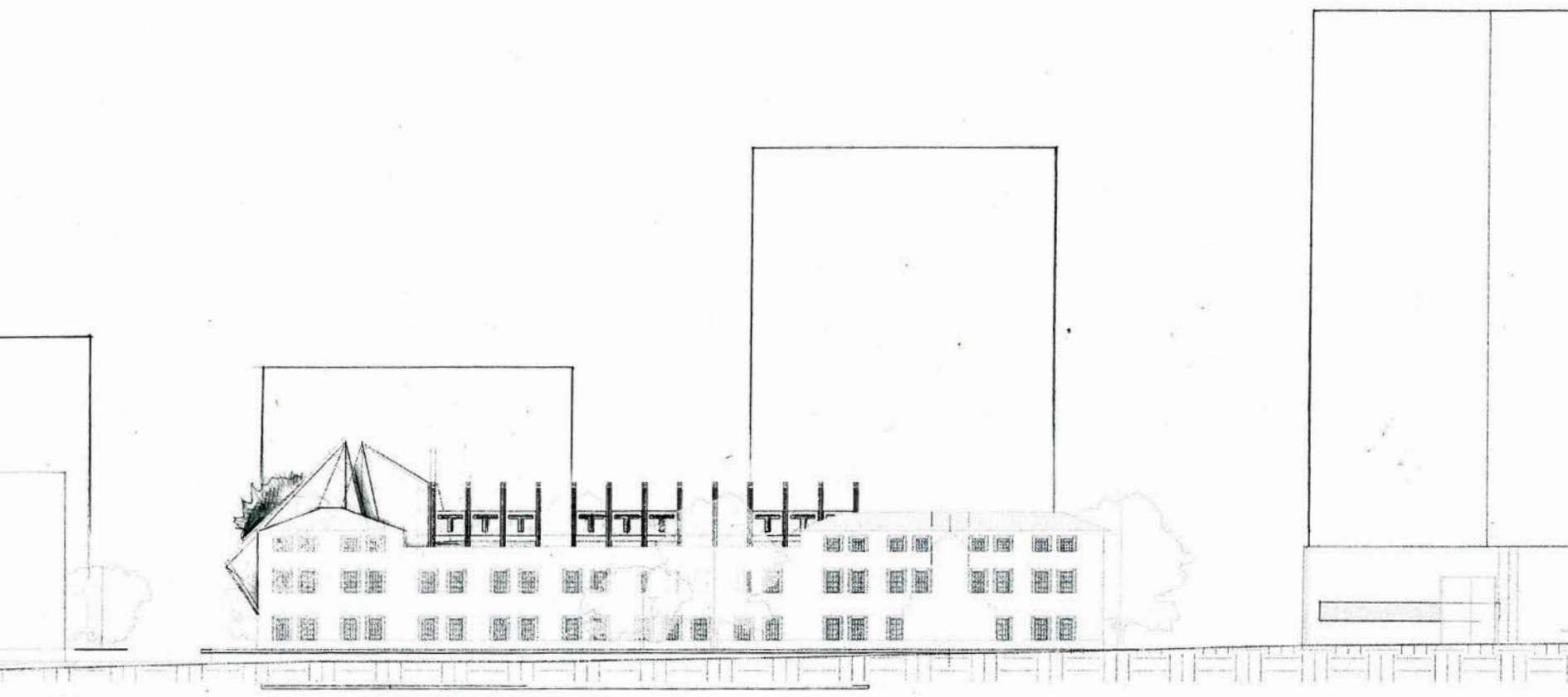
GROUND FLOOR PLAN

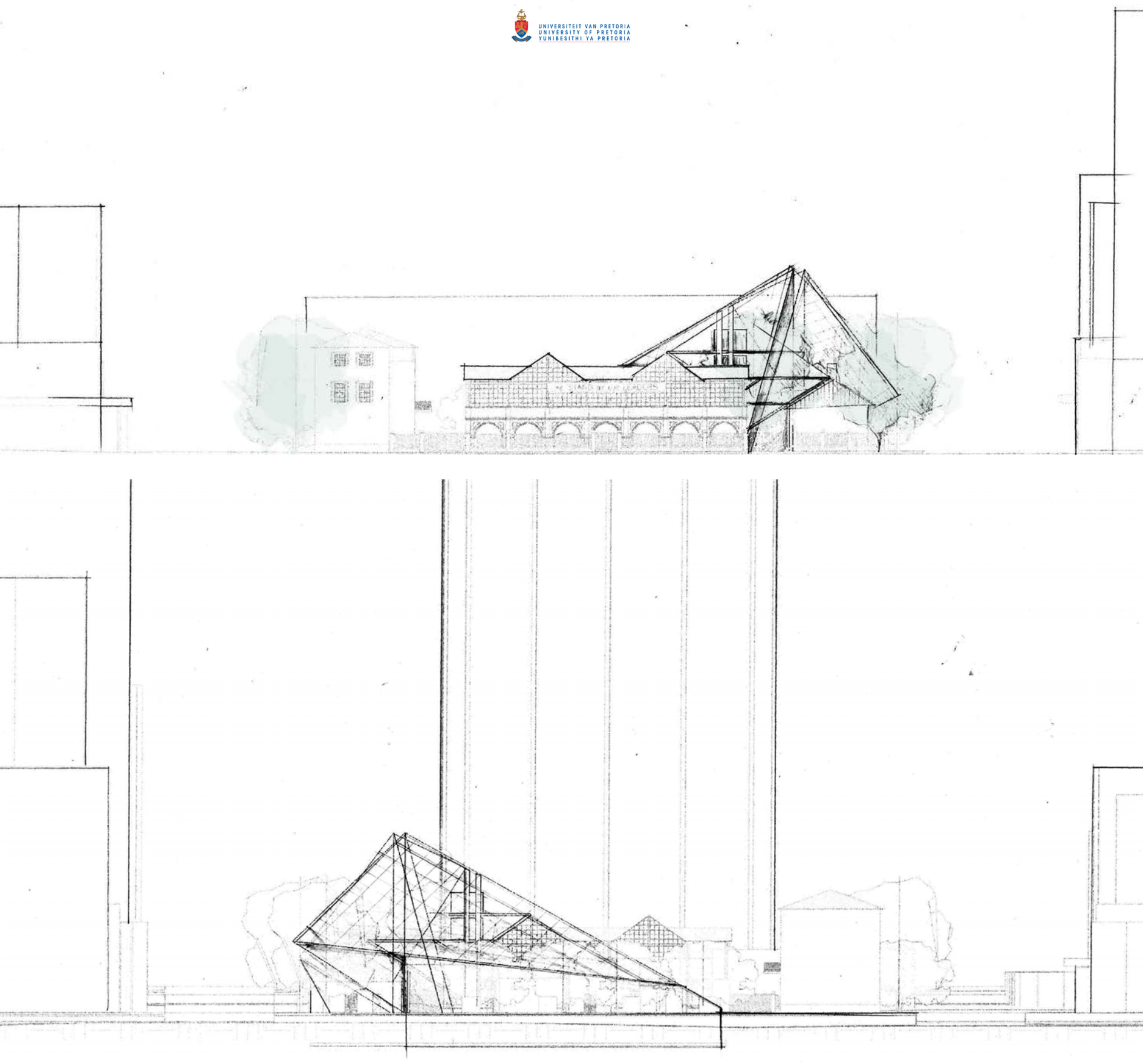


FIRST FLOOR PLAN

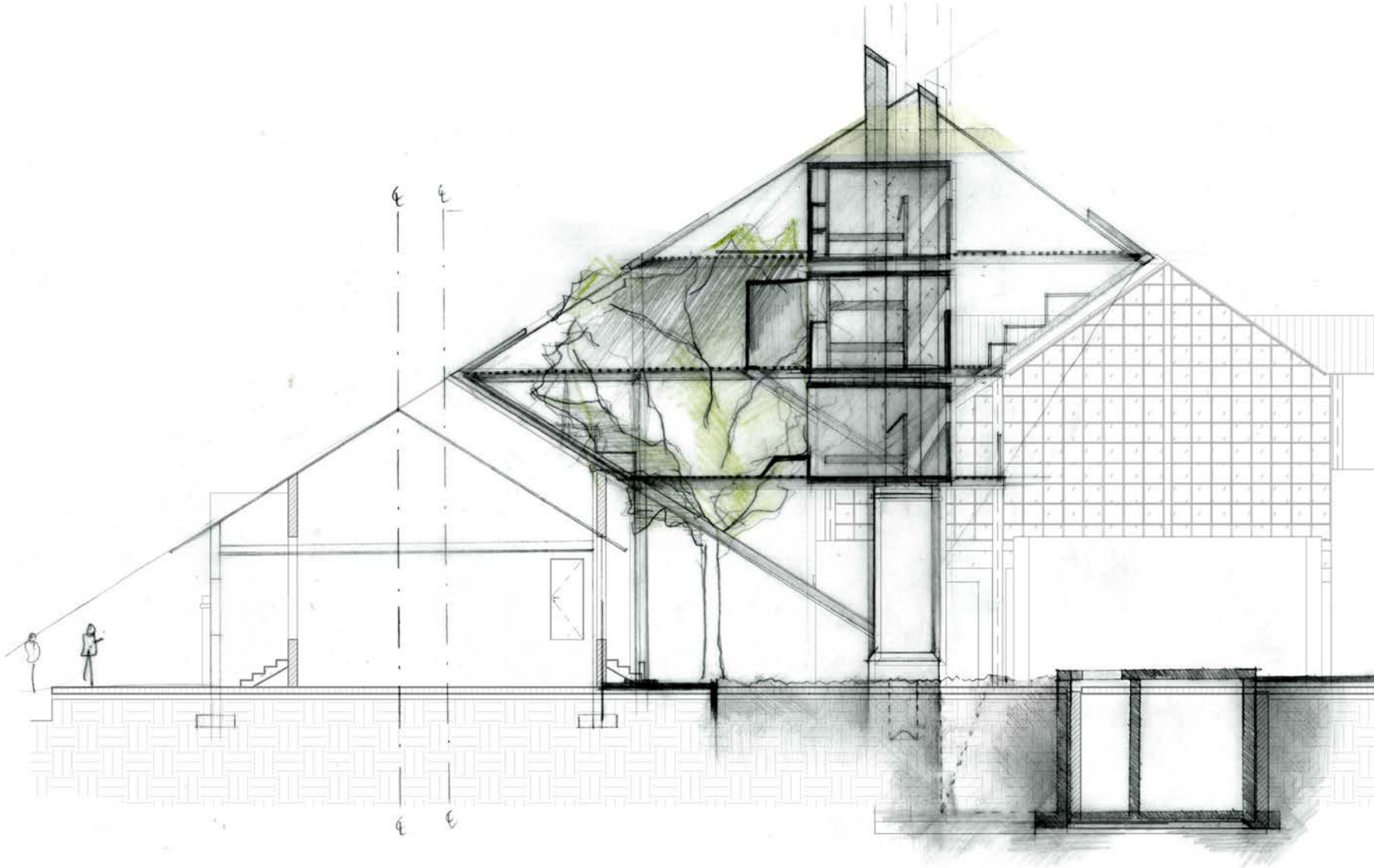
SKETCH ELEVATIONS

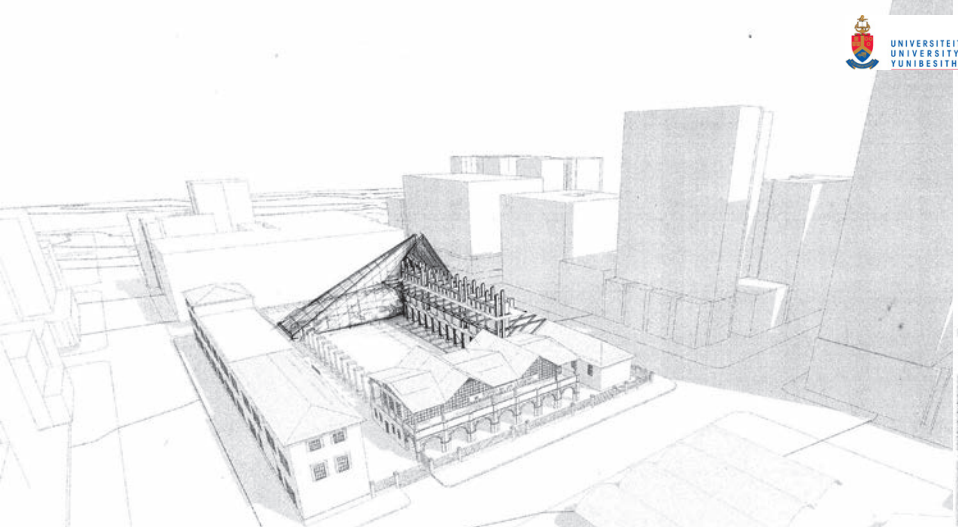


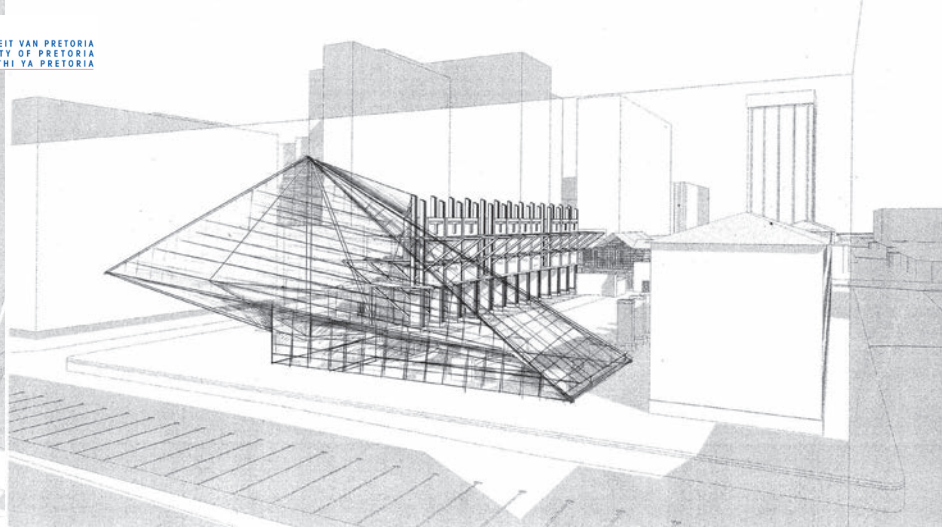


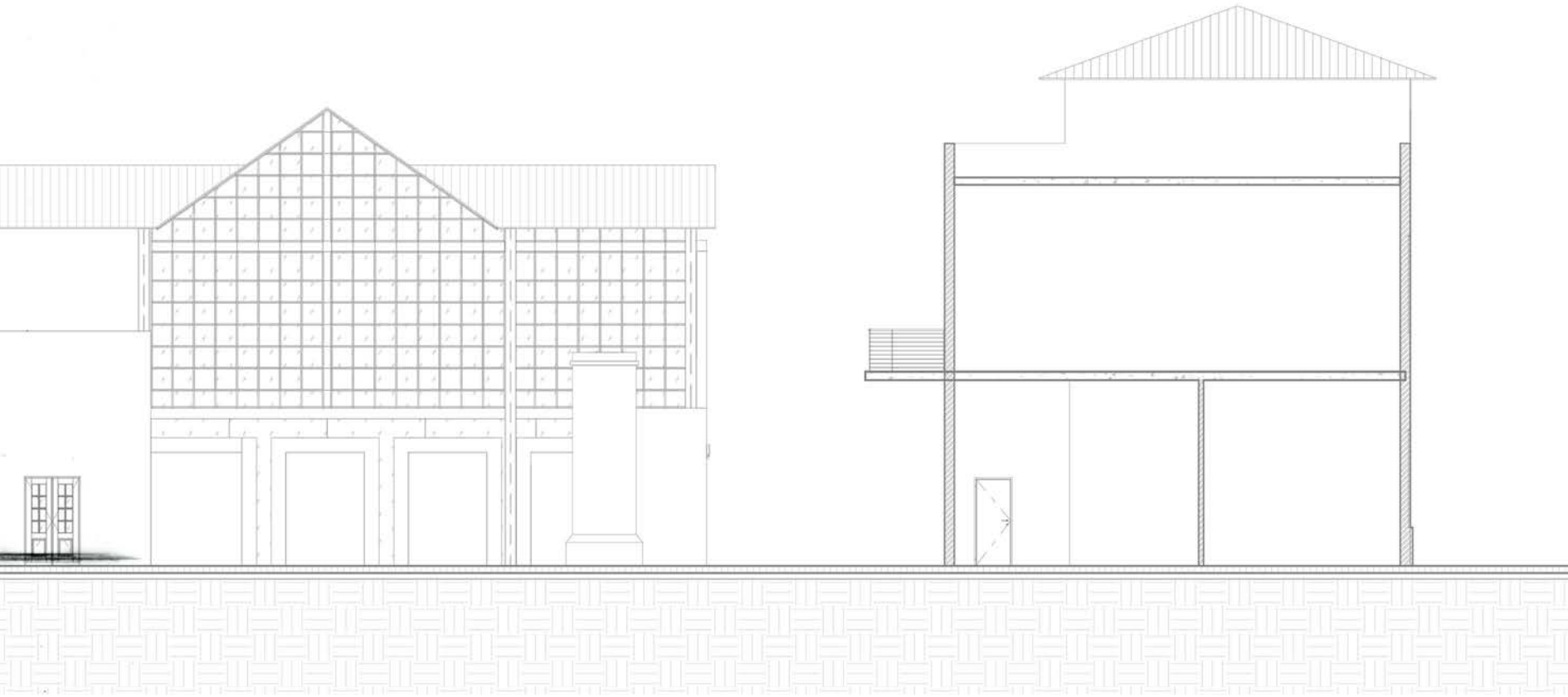


SKETCH SECTION AND SKETCH PERSPECTIVES

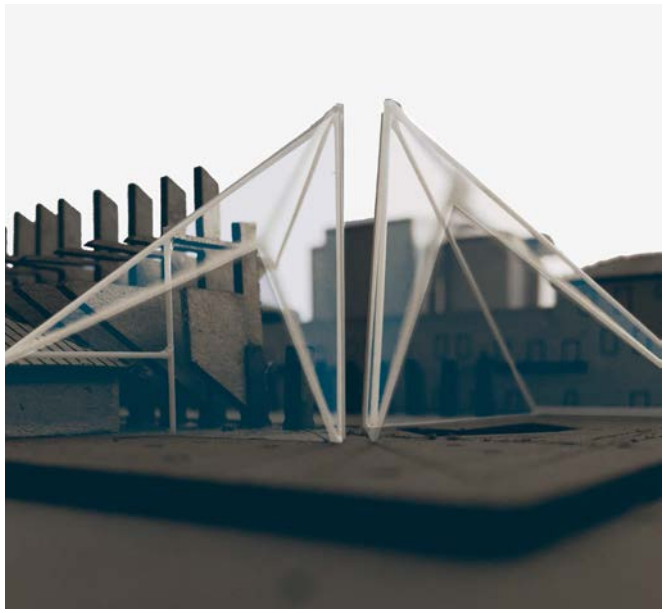


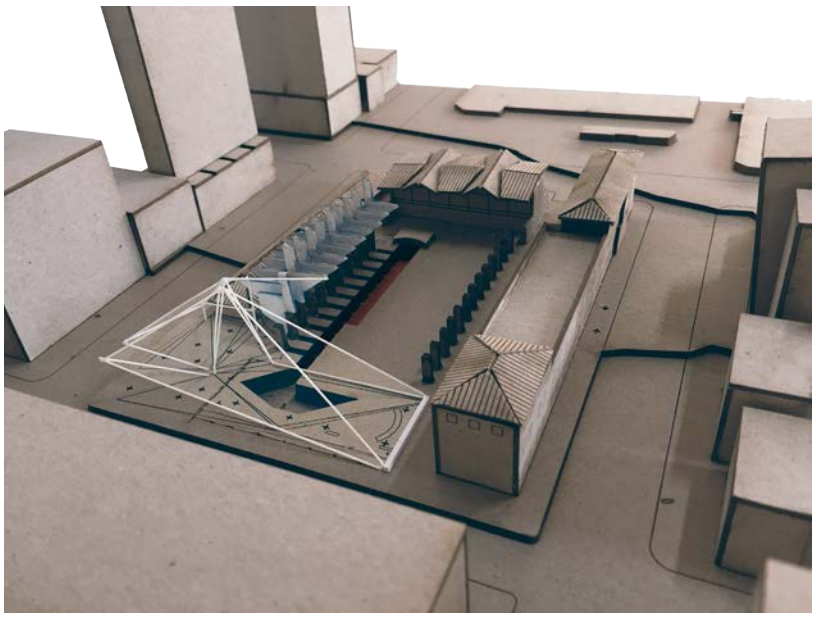


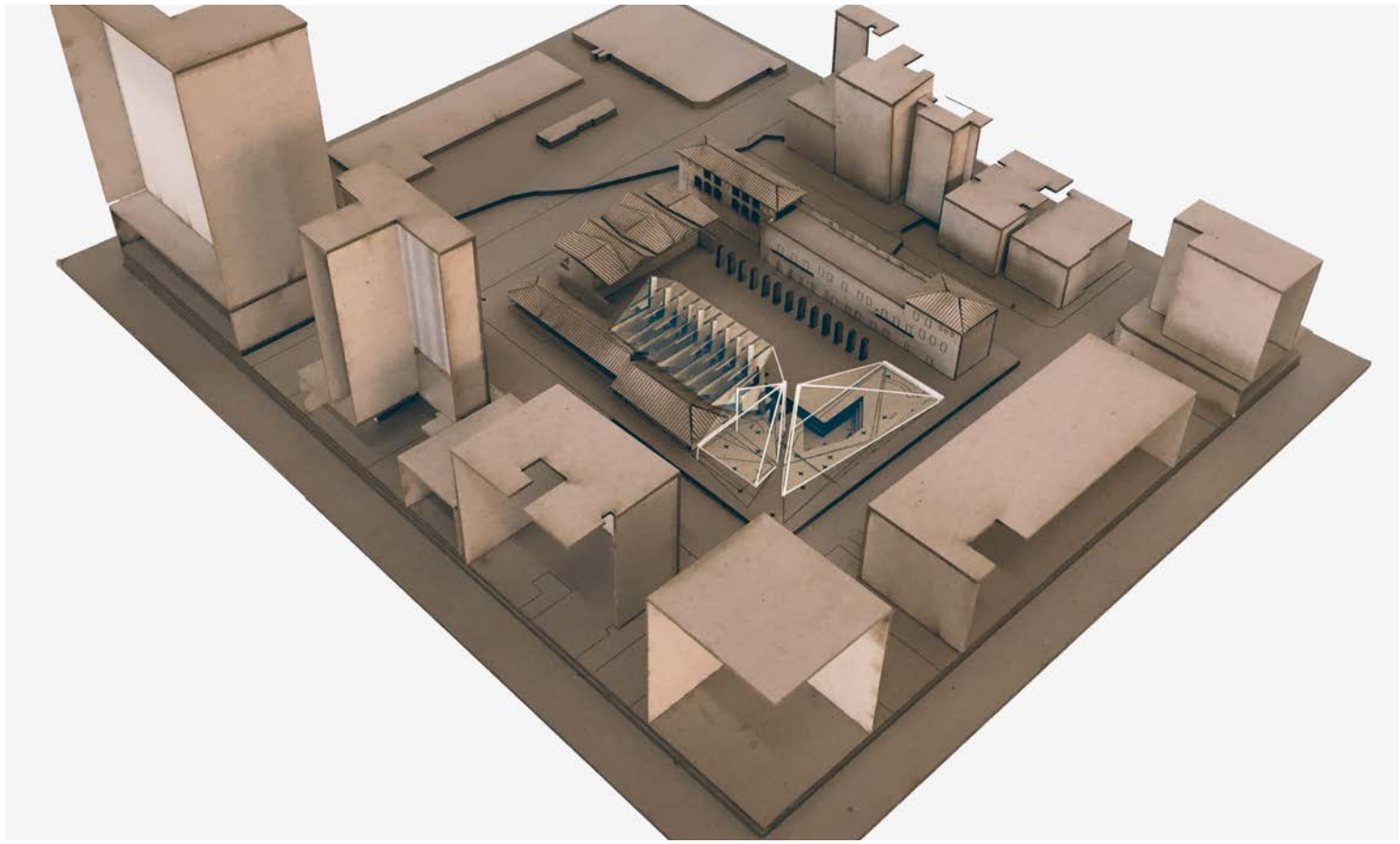


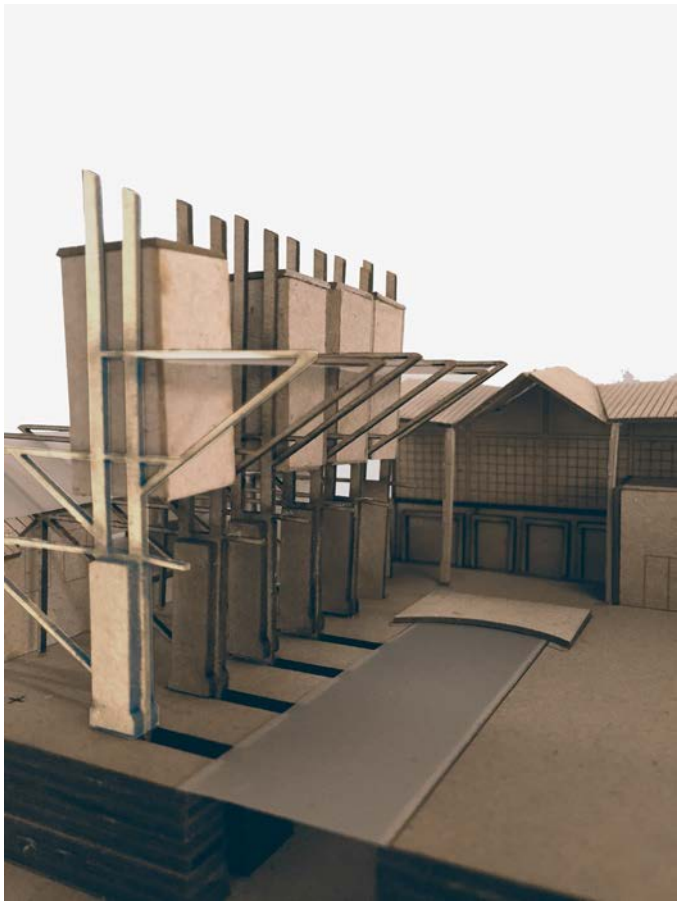


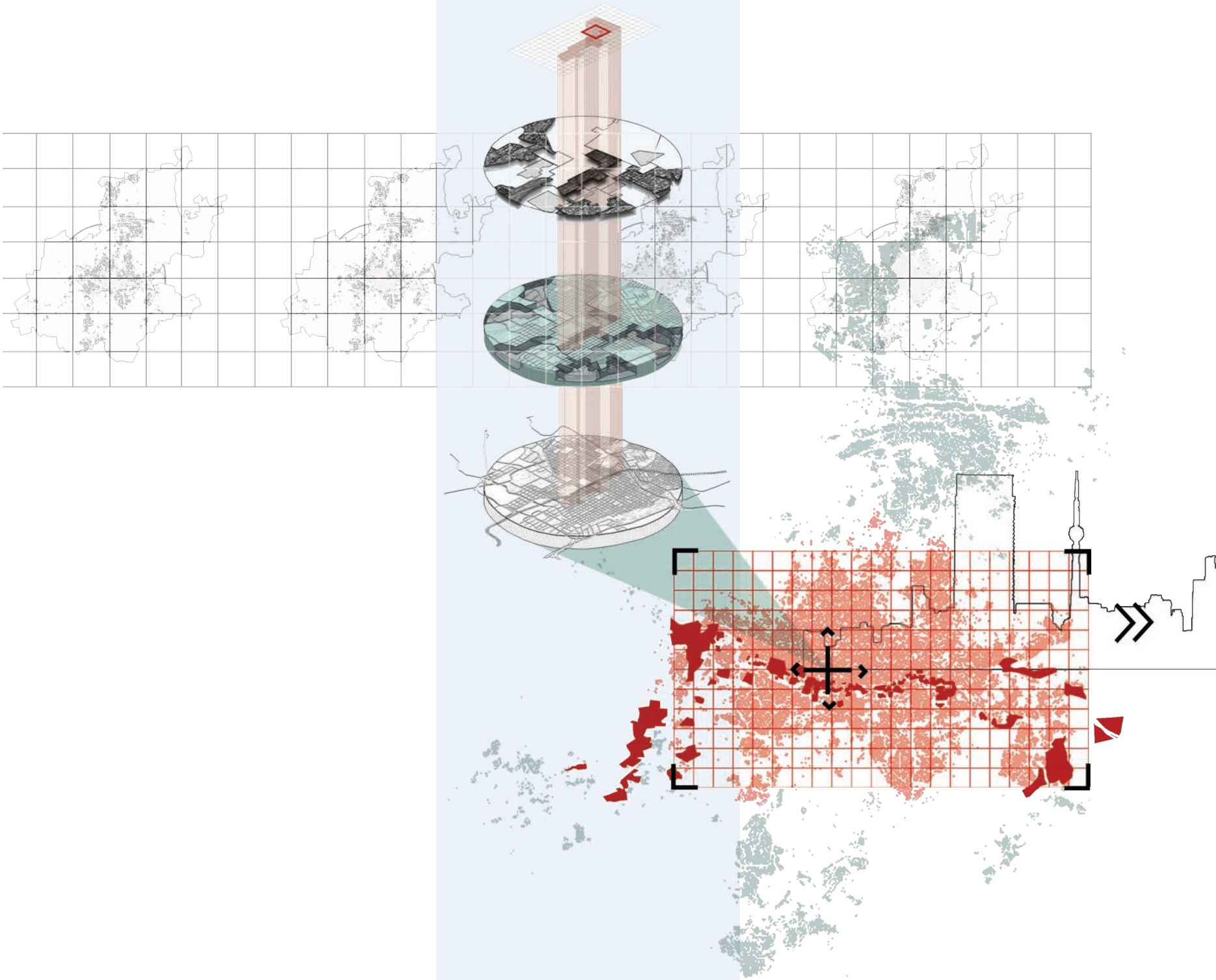
EXPLORATORY MODELS

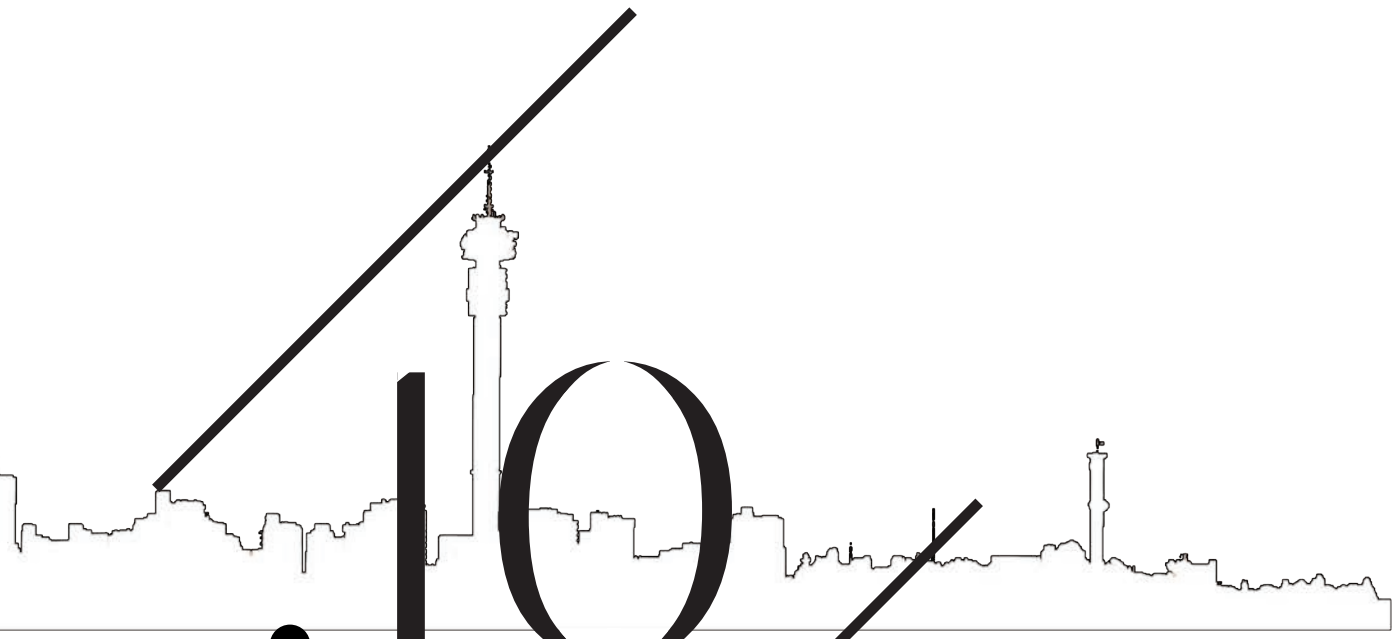








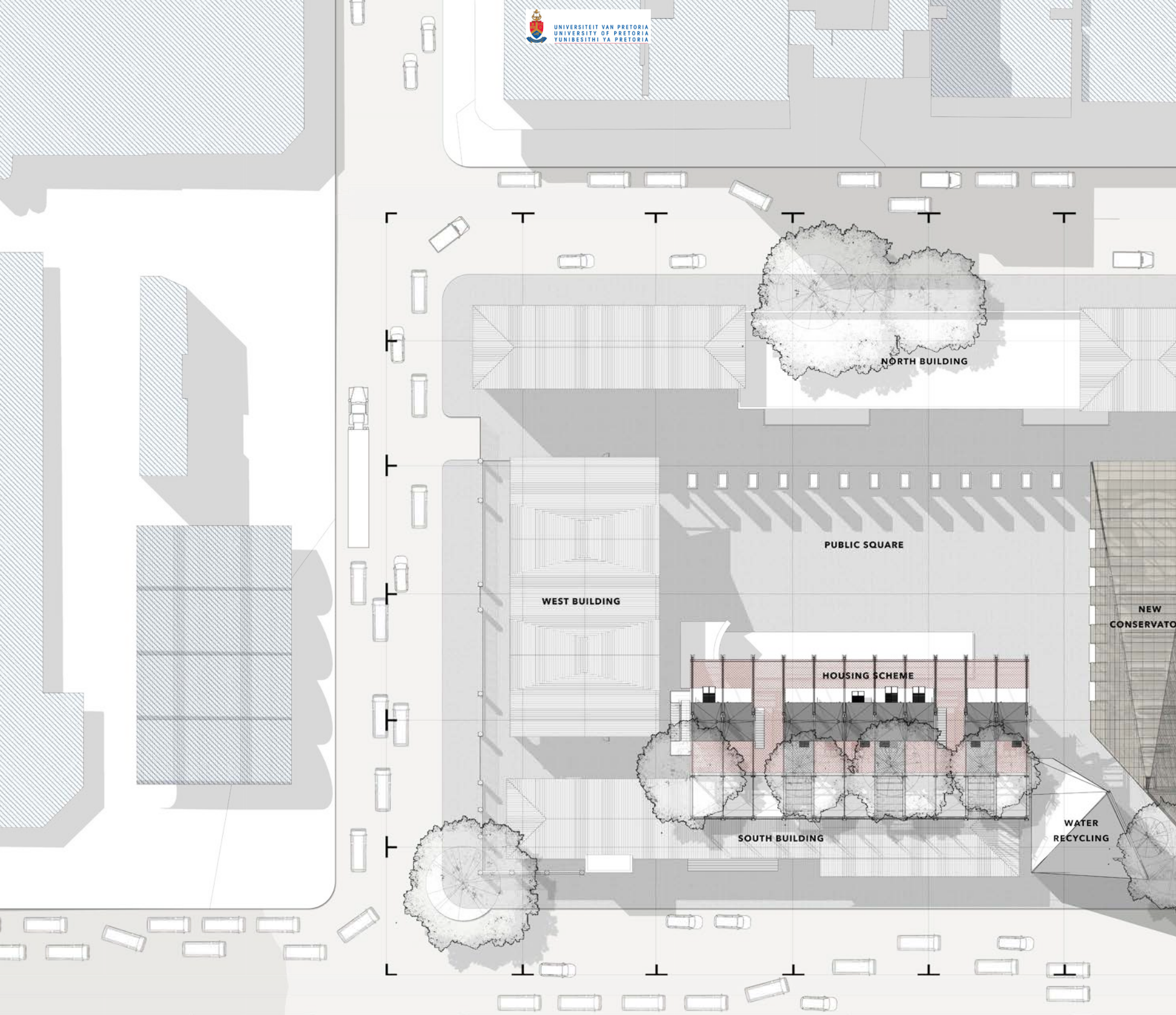




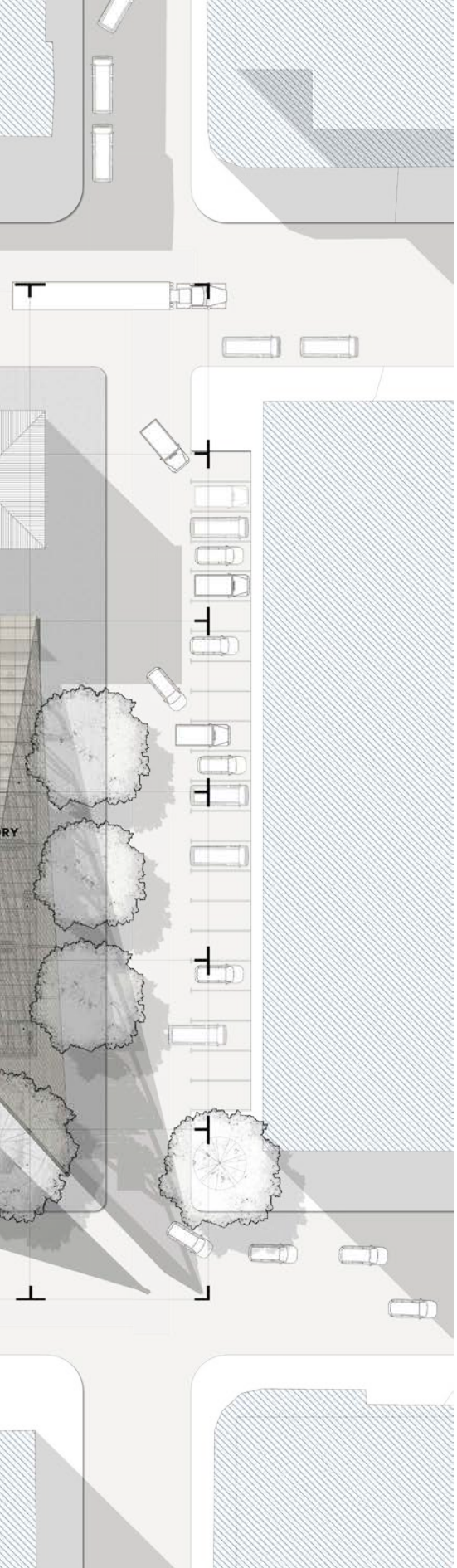
10

the following chapter describes the final design and the technical resolution of the design...

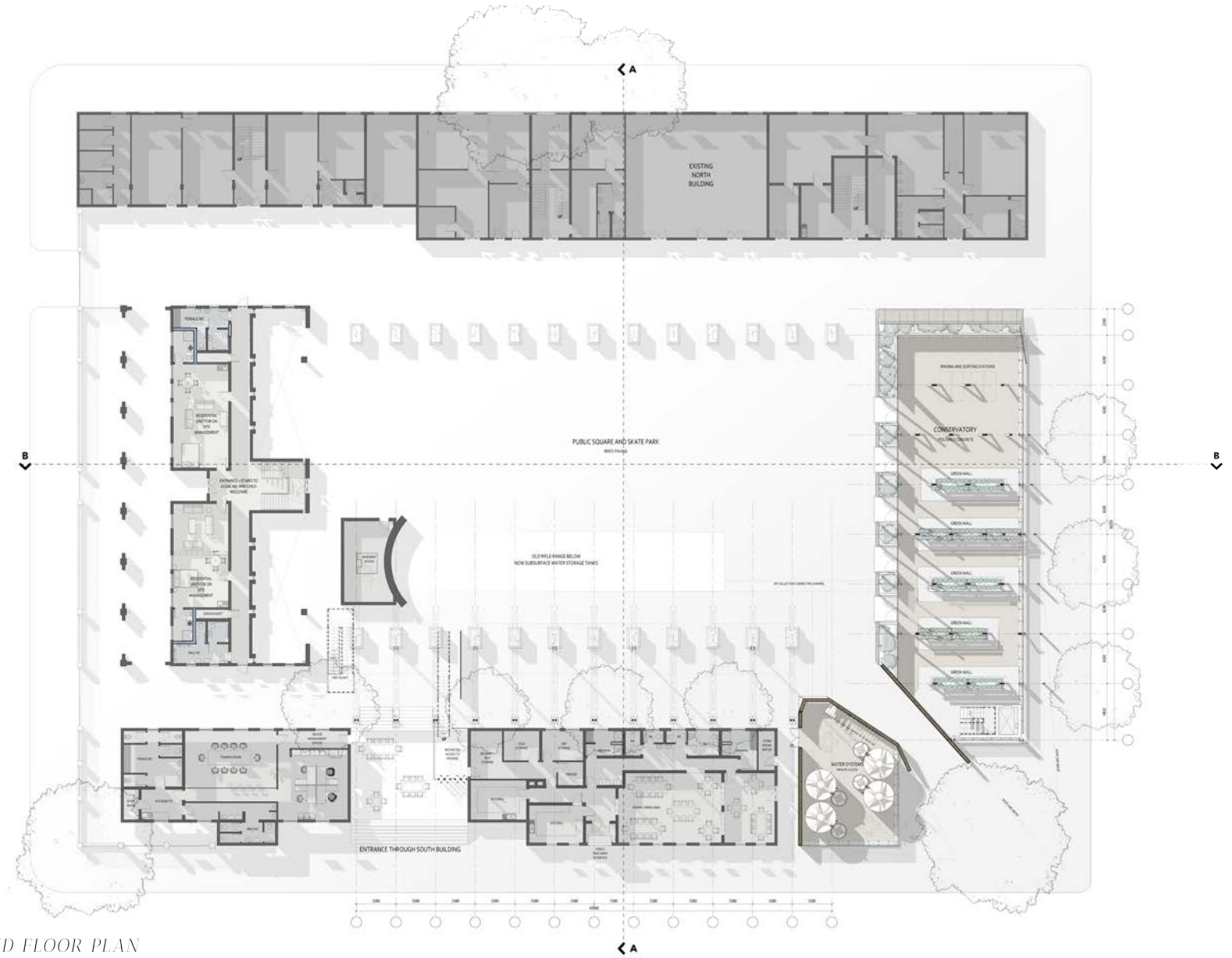
TECHNE



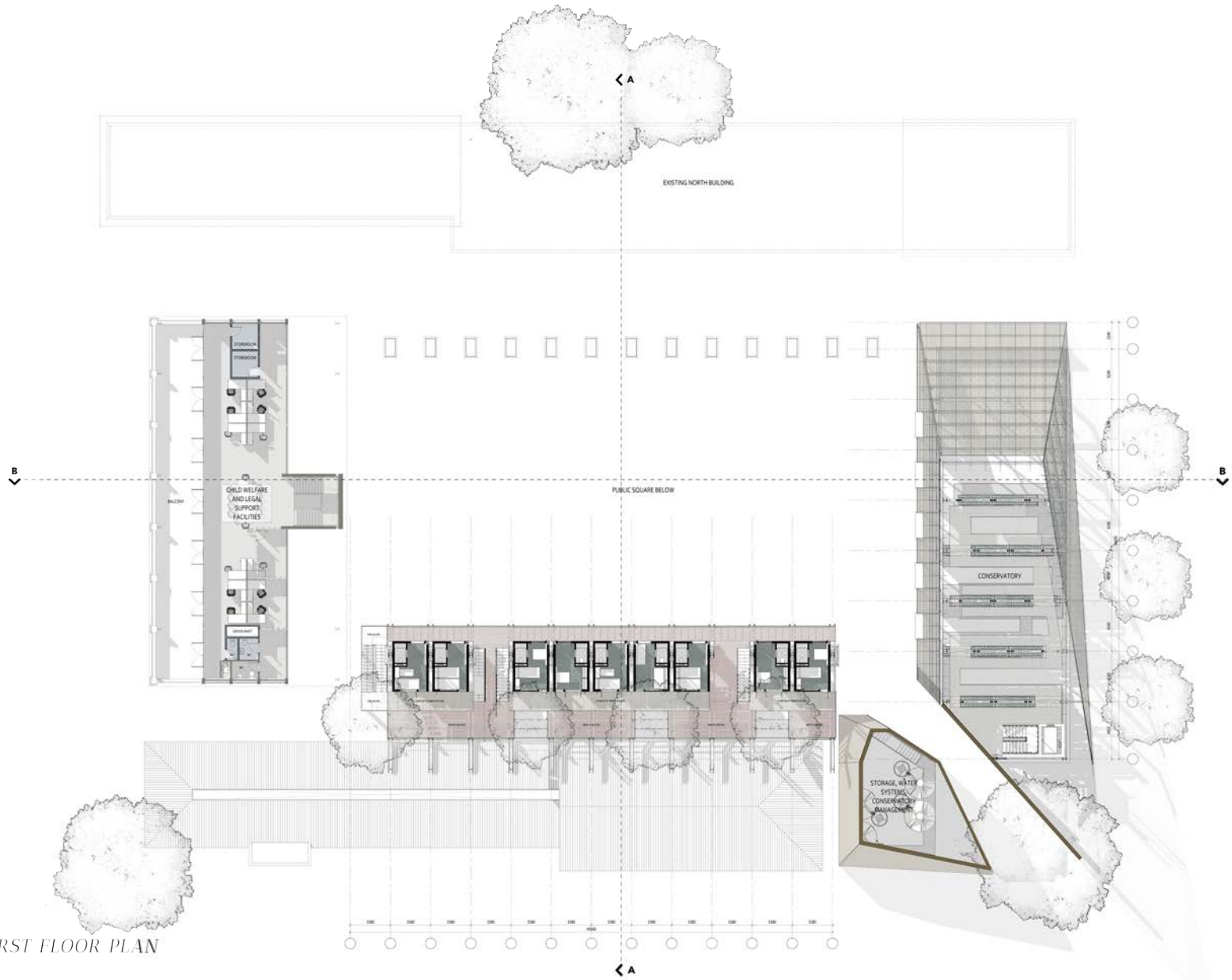
SITE PLAN
SCALE 1:200



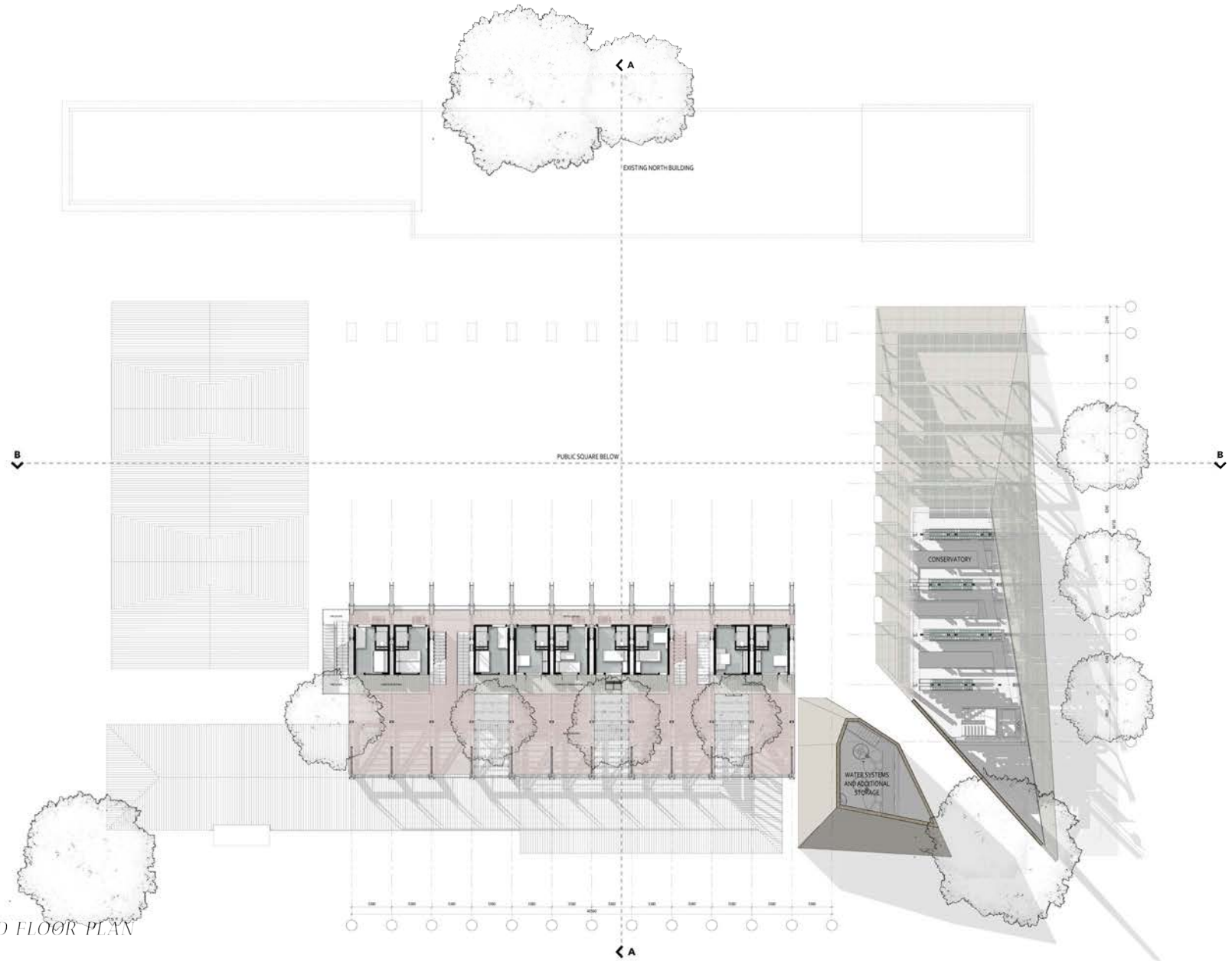
Figs. 10.1-10.5 - Site Plan and General Layout Plans



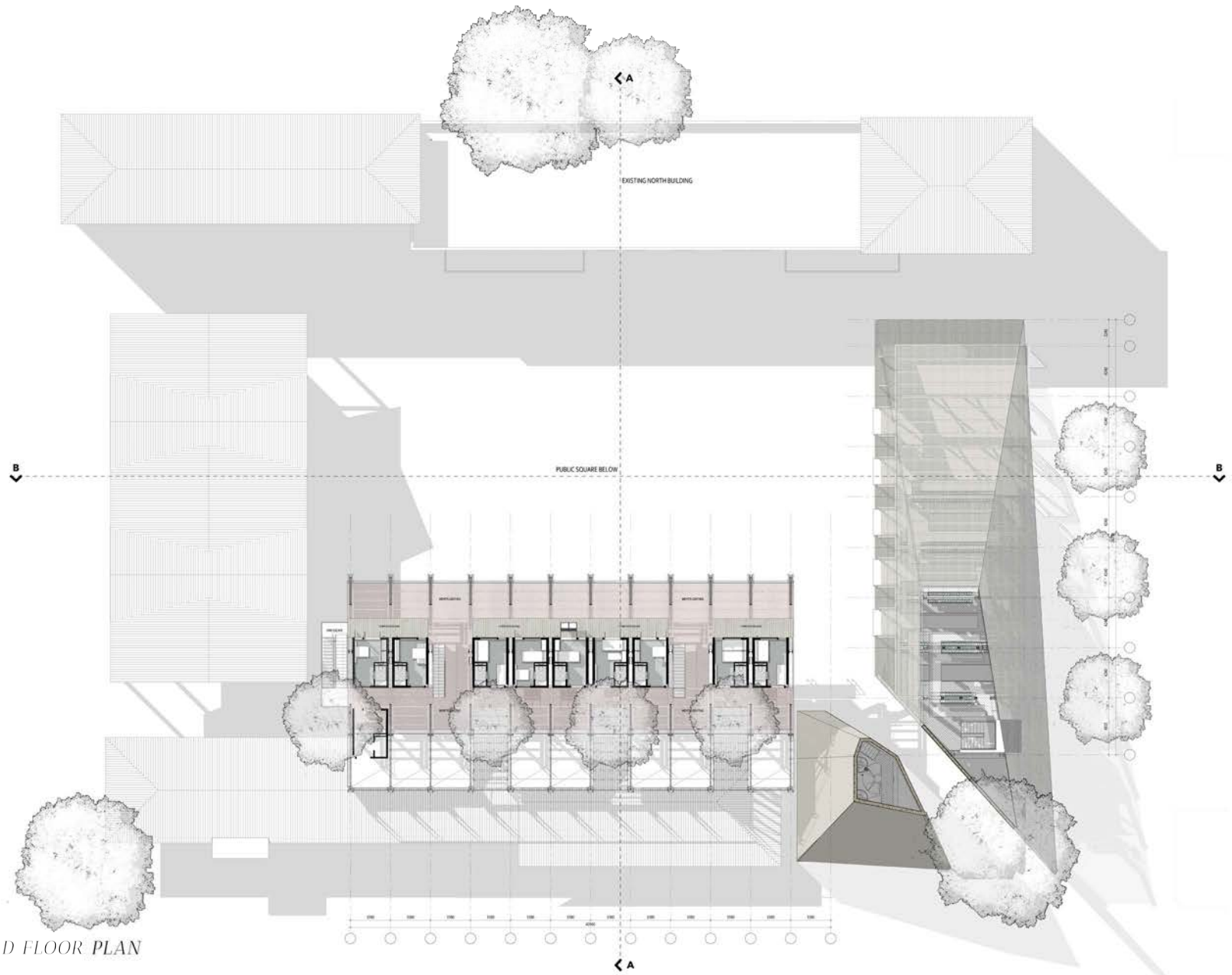
GROUND FLOOR PLAN



FIRST FLOOR PLAN



SECOND FLOOR PLAN



THIRD FLOOR PLAN

INTRODUCTION TO LEVELS OF TECHNICAL RESOLUTION

Although both the housing development and the new conservatory occupy equally sized portions on the site and are equally important in the successful implementation of the scheme, the focus of this dissertation (theoretically and programmatically) has been on:

- the development of the housing strategy;
- the provocation of the site and the city through housing;
- the possibilities of flexible dwelling, place-making and appropriation;

and thus, the focus of this technical chapter will stem from this premise to harmonise the living units, whilst resolving the conservatory and the industrial processes on the site to a principle-based level. This is essential in order to test the ideas as set out in the theoretical chapters of this dissertation to illustrate and fully explore the possibilities of flexible dwelling.

The conservatory and its industrial processes within have a very different set of technical informants, specifically climatic, which have to be met and will be the primary driver for its level of resolution.

The technical chapter of this dissertation has been divided into four parts – firstly, the accommodation of processes and programs housed within the existing buildings are described; secondly, the temporary architecture is explored and described; thirdly, the new permanent architecture is explored and described, and lastly the water infrastructure and its recycling processes as a system will be addressed.

10.1 PROGRAMS HOUSED WITHIN

10.1.1 MEDIATING THE PHASES

As explored in the 'site strategy' chapter of this dissertation, the project consists of two phases, both of which need to be accommodated and planned for on the site. The first phase consists of the implementation of the new conservatory, water recycling infrastructure, transitional housing and supporting programs; and the second phase, all continues minus the transitional housing.

This has been an important consideration throughout the planning and design process, as, in order to accommodate all the residents beyond the living units, certain living spaces, cooking spaces, washing spaces and eating spaces need to be temporarily provided or permanently added with a plan for those spaces thereafter. As the spatial extents of the existing buildings are already prescribed, it was important to ensure that all spaces met sufficient spatial accommodations for the required programmatic infill.

			POPULATION - TABLE 1B						
	PROGRAM	POPULATION / PROGRAM	POPULATION	MAX POPULATION ACCOMMODATED FOR	SUBSTANTIATION	WEEK DAY / WEEK-END / FULL WEEK	DAYS ON SITE	WEEK DAY POPULATION	WEEK-END POPULATION
BASELINE PROGRAMS	Permanent Housing	Permenant Residents	5 people	5	Partners / Own Estimation	Full week	7	5	5
	Permanent on site management offices	On-site Management							
	Child Welfare and Support	Child Welfare and Support	5-10 people	10	Visitor Flux	Week days	5	10	-
	Legal Aid	Legal Aid	5-10 people	10	Visitor Flux	Week days	5	10	-
	Public (including users of the square, conservatory, small adjacent businesses and general public and informal trade)	Public (including users of the square, conservatory, small adjacent businesses and general public)	1560	500	1 person / m2 (SANS 10400:A - Occupancy Guildeline)	Full Week	5	500	250
PHASE 1	Management of Transitional Housing + Trainees + Supervisors + Runners of semi commercial kitchen	Management of Transitional Housing	5-10 people	10	Own Estimation	Week days	5	10	-
	Transitional Housing	Transitionary Residents		80	(15 x 3 persons/units) + (10 x 2 persons/ unit)	Full week	7	40	80
	Semi-Commercial Kitchen	Kitchen Staff	-	-	-	Week days	5	-	-
	Water Infrastructure (Introductory phase)	Water Recycling	-	-	-	Week days	5	-	-
	Conservatory (Introductory phase)	Horticulture	-	-	-	Week days	5	-	-
PHASE 2	Full Commercial Kitchen	Kitchen Staff	10-15 people	15	Own Estimation	Week days	5	15	-
	Water Infrastructure (Permanent Phase)	Water Infrastructure Staff	10-15 people	15	Own Estimation	Week days	5	15	-
	Conservatory (Permanent Instigation)	Conservatory Staff	10-15 people	15	Own Estimation	Week days	5	15	-
	PHASE 1 TOTAL			**610**				**575**	**335**
	PHASE 2 TOTAL			**565**				**570**	**255**

Fig. 10.6 - Table describing the population and programmatic accommodations

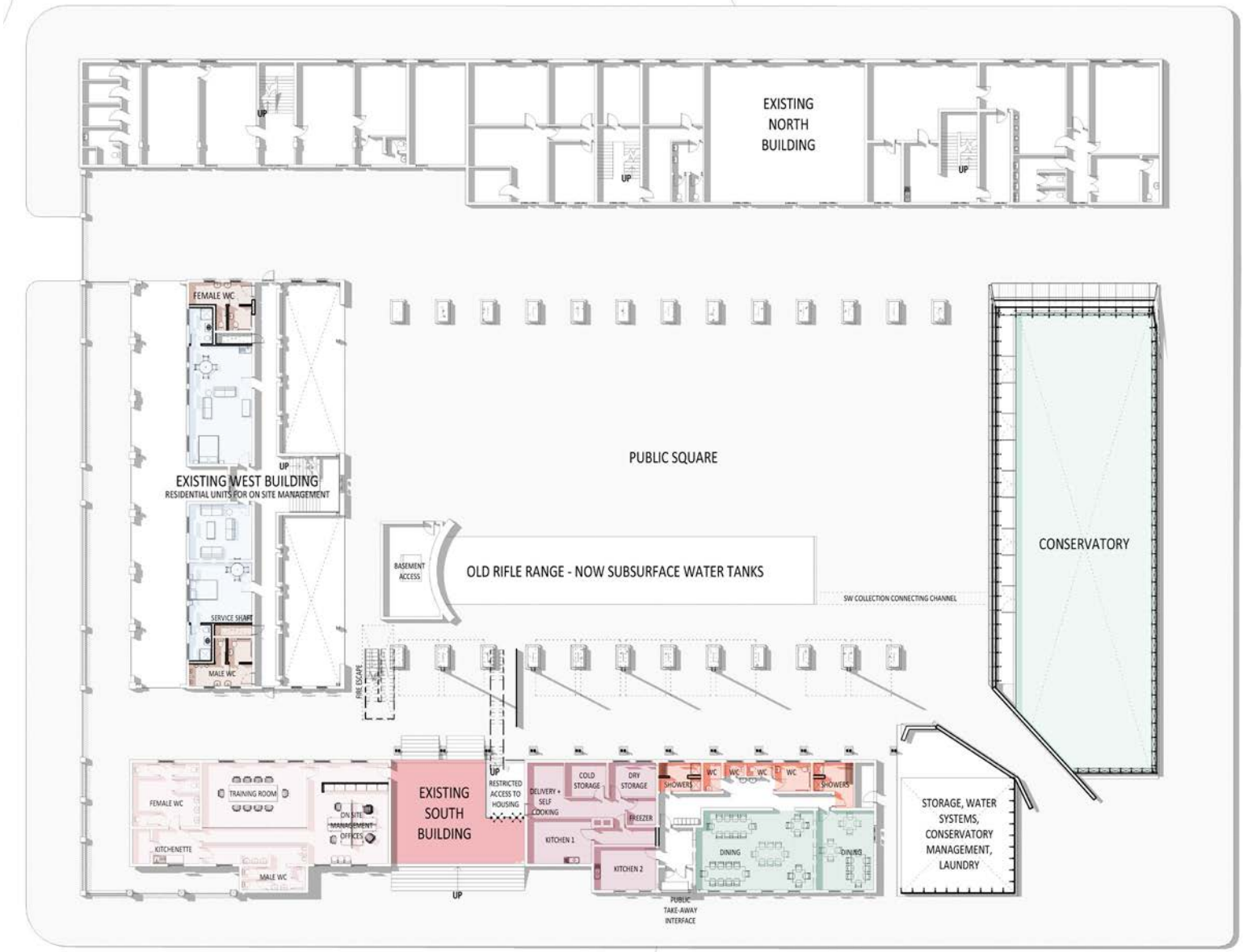


Fig. 10.7 - Ground Floor Plan illustrating programmatic allocation

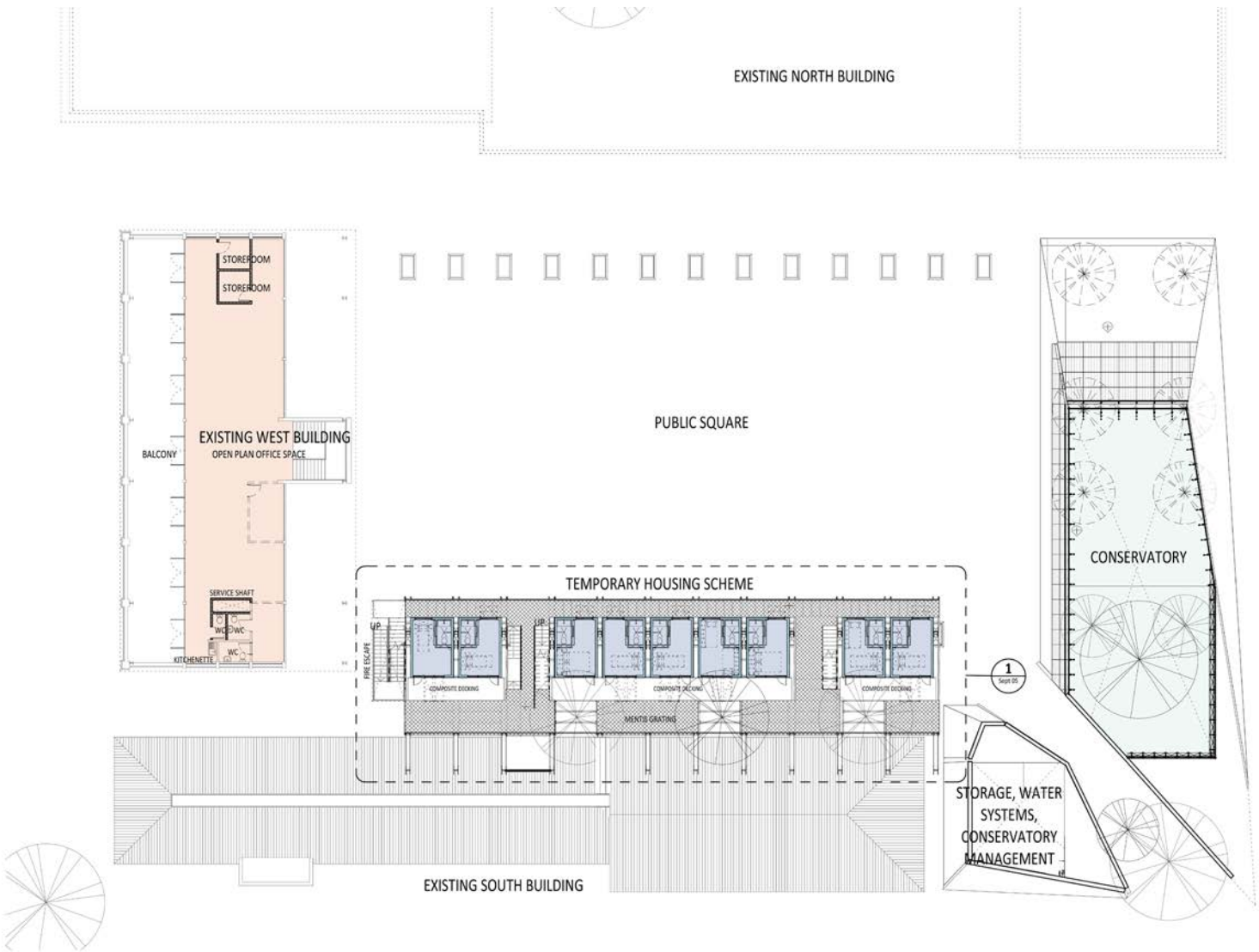


Fig. 10.8 - First Floor Plan illustrating programmatic allocation

Fig. 10.9 - Second Floor Plan illustrating programmatic allocation

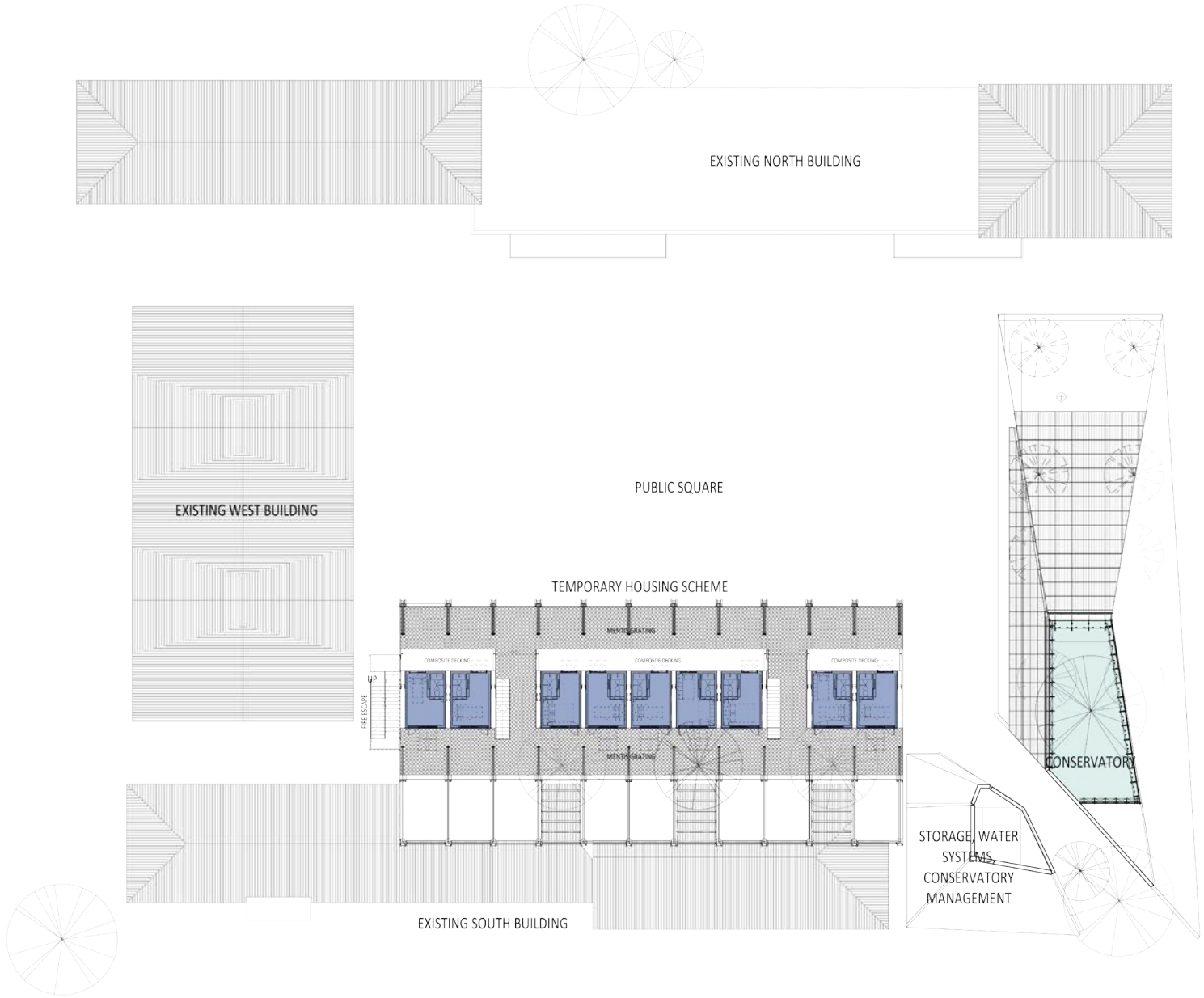


Fig. 10.10 - Third Floor Plan illustrating programmatic allocation

10.1.2 PERMANENT ON-SITE MANAGEMENT

The old offices of the lower portion of the west building have been converted into fully accommodating residential units for permanent on-site management. This has been provided as the water recycling and horticultural processes on the site require daily attention and monitoring.

10.1.3 ADMINISTRATION AND ADMISSION OFFICES

In order for the healthy functioning of transitional housing to occur on the site, admission and administration offices to manage the scheme and its occupants need to be provided for (80 residents have been accommodated for in totality), which is housed in the existing west portion of the southern building.

These offices are located adjacent to the formal and exclusive entrance to the temporary structure which holds the living units. The entrance was so placed to ensure monitored and restricted access which can be difficult to achieve on such a public site

10.1.4 COOKING AND EATING PROCESSES

In order to accommodate the residents, permanent on-site management personnel and visitors, the following spatial provisions have been made according to the estimated meals per day needed to be prepared within the facilities. Spatial allowances as outlined by Littlefield have been based on the maximum meal consumption per day as outlined in figure XX. The internal layout of the kitchen and requirements for equipment is to be finalized and specified by an interior kitchen specialist.

Spatial Provisions according to flow of function (Littlefield, 2008):

Deliveries
Dry food storage
Refrigerated food storage
Frozen food storage
Storage for equipment, dishes and crockery
Goods processing area (namely food preparation and cooking)
Goods serving area (namely the dishing up and food transfer between spaces)
Cleaning and waste disposal

10.1.5 FORMAL DINING

A formal dining area has been provided for those who wish to have meals prepared and ready from the commercial kitchen. These can be people residing within the housing scheme, employees of the legal aid/child welfare departments/ conservatory, visitors or members of the general public. The spatial allowance as outlined by Littlefield (2008) for a canteen equates to roughly 1m² per person, in conjunction with the SANS regulation stipulating 0,5 m² per person but not less than 60 m² (SANS 10400:A:5). Therefore, the total area of 72m² adjacent to the existing kitchens has been allocated.

10.1.6 INFORMAL DINING AND SELF-CATERING

An area for informal dining, where communal cooking and eating can be lived out as part of a community place-making process and cultural manifestation, has been provided for on the site in the transitionary space through the south building. This is a well-ventilated space, is situated immediately alongside the kitchen where food storage is easily accessed and will facilitate a new lively culture of eating, cooking and community between the street and the square. The informal nature of this space is not limited to/prescribed according to regulations. No permanent cooking stations will be set up in this space as it is primarily to support the culture of place hoped to be achieved through the transitionary housing phase, and thus only the formal kitchen will remain thereafter, which can continue to function as a commercial kitchen for employees of the conservatory and supporting programs and for the general public. Furthermore, it is also very close to the small communal/informal vegetable garden on the podium which people can use to create their own culture of place.

10.1.7 LAUNDRY

A temporary installation of ten washing machines and dryers will be installed for the duration of the temporary housing scheme according to the guideline as set out by Littlefield (2008). These have been housed within the southern building to be as close to the units as possible, whilst keeping all the water related processes as close together as possible to easily co-ordinate the grey water systems, to be described later in this chapter.

10.1.8 LEGAL AID AND CHILD WELFARE

The abandoned gallery of the upper western portion has been allocated to these community serving functions. Additional ablutions and storage facilities have been added to support these programs.

10.1.9 PUBLIC AMENITIES

In order to accommodate the public users on the site – specifically the skate park – additional ablutions, changerooms and showers have been added within both the west and south buildings. These will also be available for the use of other employees involved on the site, perhaps working in the kitchen or in the conservatory.

10.2 THE TEMPORARY

10.2.1 THE STRUCTURE: FILL OF THE IN-BETWEEN

In determining the technical approach necessary for bringing this aspect of the scheme to life, the most important factors to consider include:

- ease of construction and deconstruction of the temporary object;
- the method of construction in line with the repeating nature of the existing structural concrete columns according to which the design is arranged by;
- the method of construction, taking into consideration the required tools, materials and machinery and what impact they could have on surrounding buildings in order to minimise damage and successfully be able to erect the structure within the available space;
- the reusability of the system in the changing city.

As a result, a galvanized mild steel structure will be utilized for the following reasons:

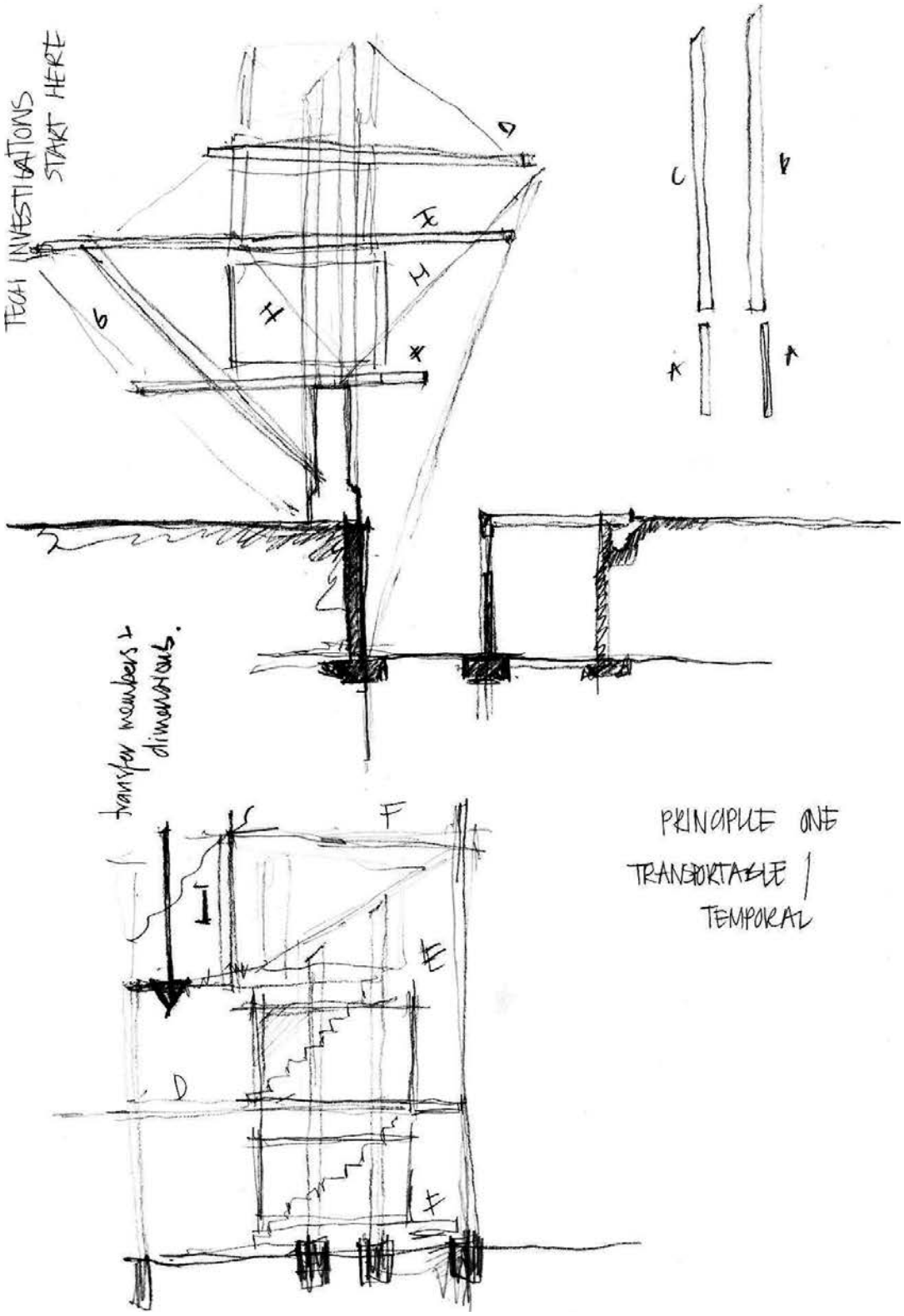
- the accuracy achievable through prefabrication in factory monitored conditions;
- the accuracy achievable through the standardisation and subsequent modular co-ordination of all components;
- for its fast and accurate assembly which will minimise the amount of site work required;
- for its ability to be easily executed and dismantled through bolt joints and thus temporality is achievable;
- for its slender elements and longer spans, minimizing ground connections and site work;
- where ground connections are mandatory, only light foundation work is required (footings);
- for the ability to achieve a discrete and sensitive anchoring to the existing concrete columns through epoxy anchor bolts which can be easily concealed once the structure is removed;
- for its aesthetic contrast to the masonry language of the site as a new material, which will also speak to the new material language of the conservatory.

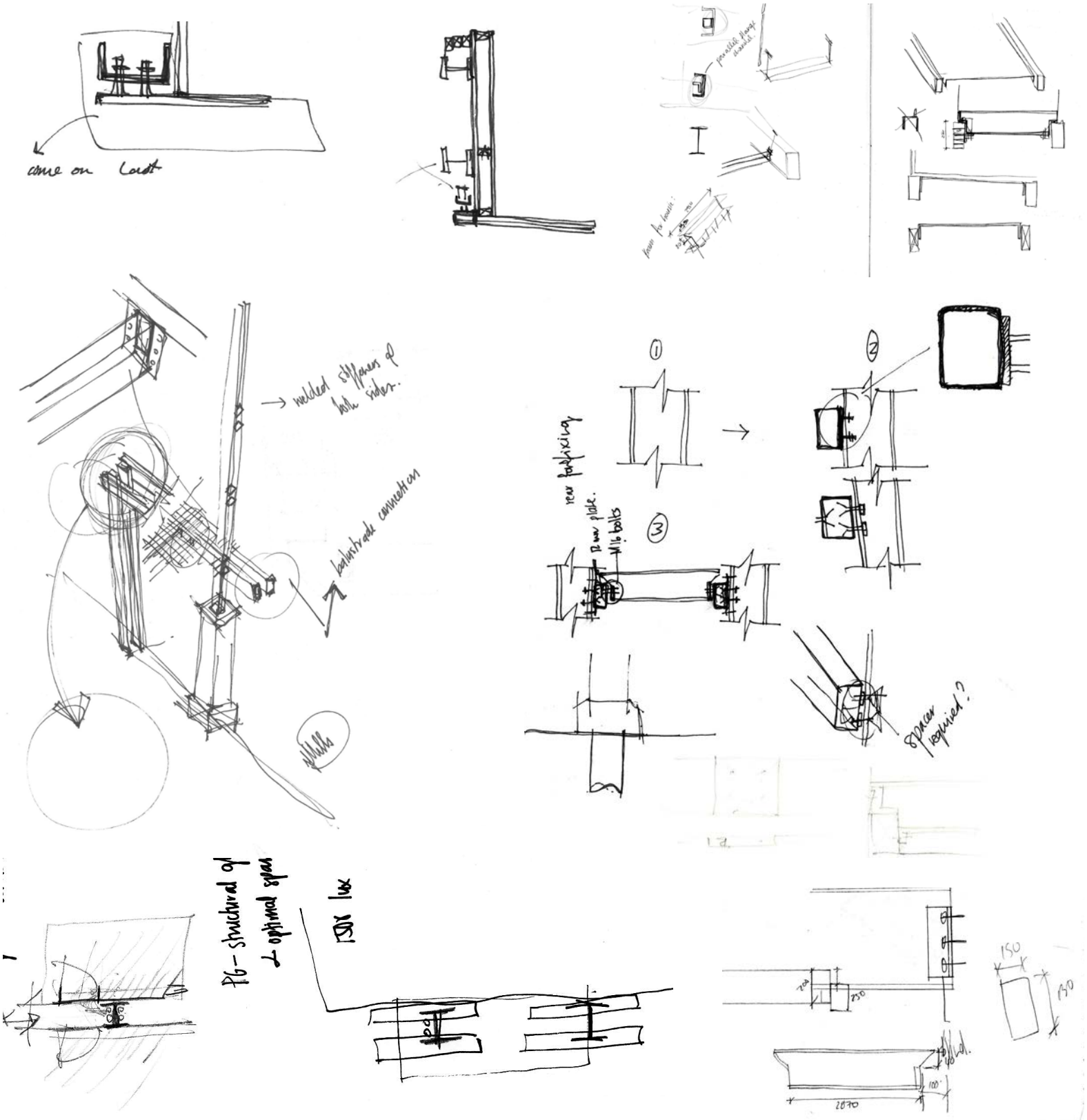
CONSIDERATIONS:

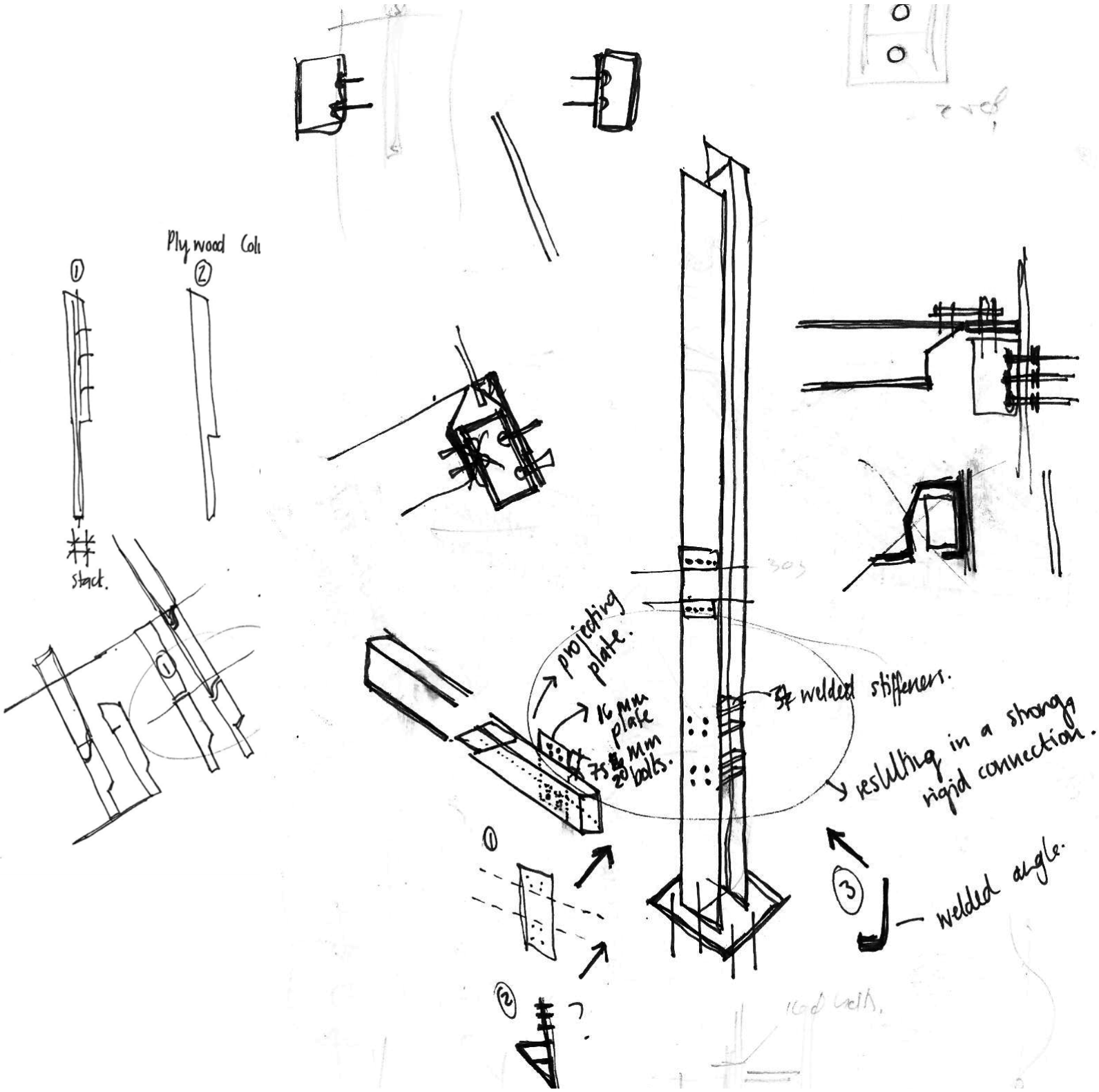
In determining the detailing and appropriate connections of such a steel structure, the repeating columns below and the subsequent limits of working between modules became a primary informant. For example, in a free and open space, it is easy and simple to bolt a secondary rectangular hollow section beam onto a primary rectangular hollow section beam using pre-welded bolts at a 90 degree angle. However, when the perpendicular maneuvering space is limited by two vertical modules, 90 degree connections are impossible to achieve, requiring blind bolt connections. Thus, the construction process step by step became extremely important in developing this structure.

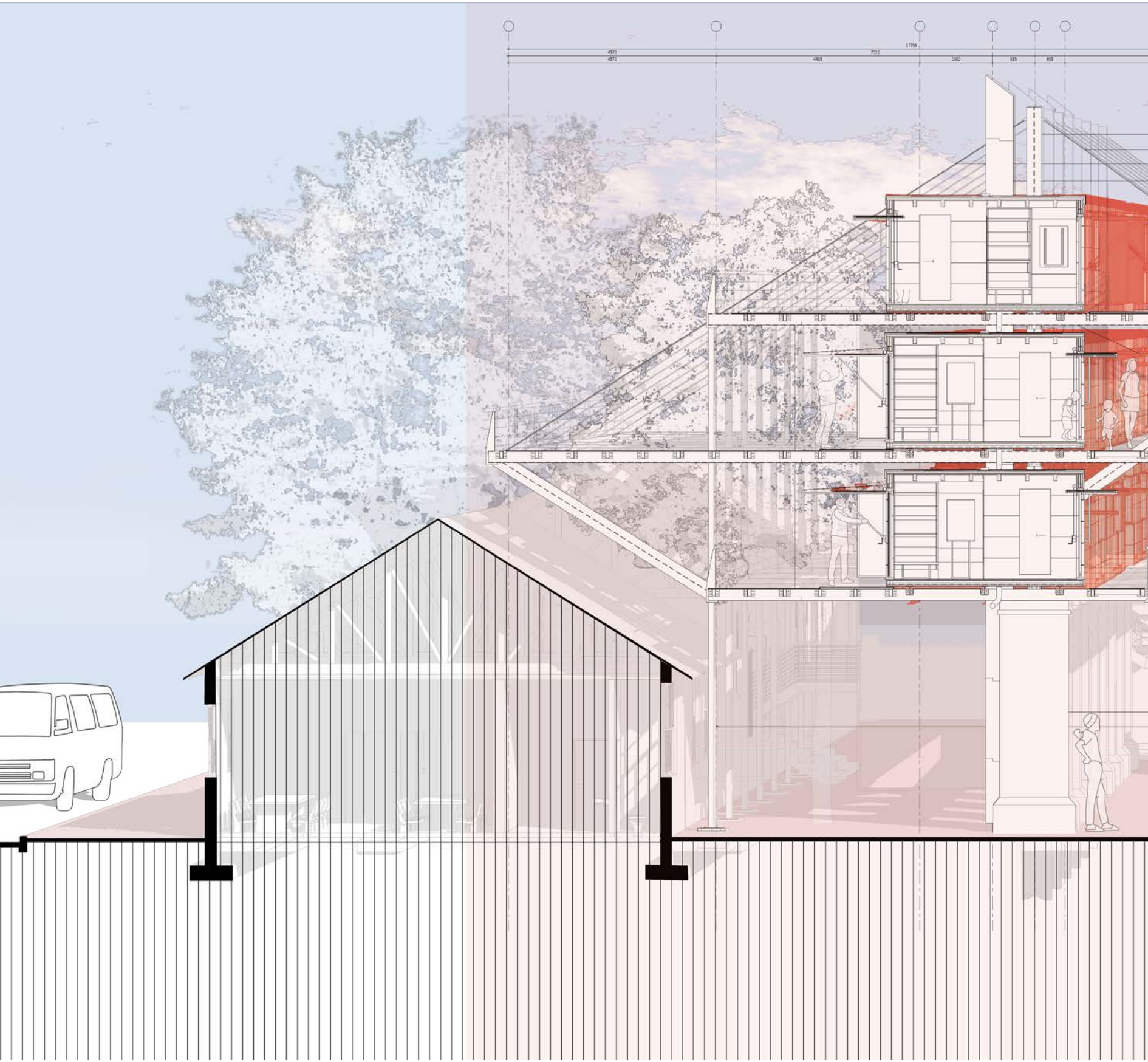
THE FOLLOWING SKETCHES ILLUSTRATE THIS INTERROGATION PROCESS:

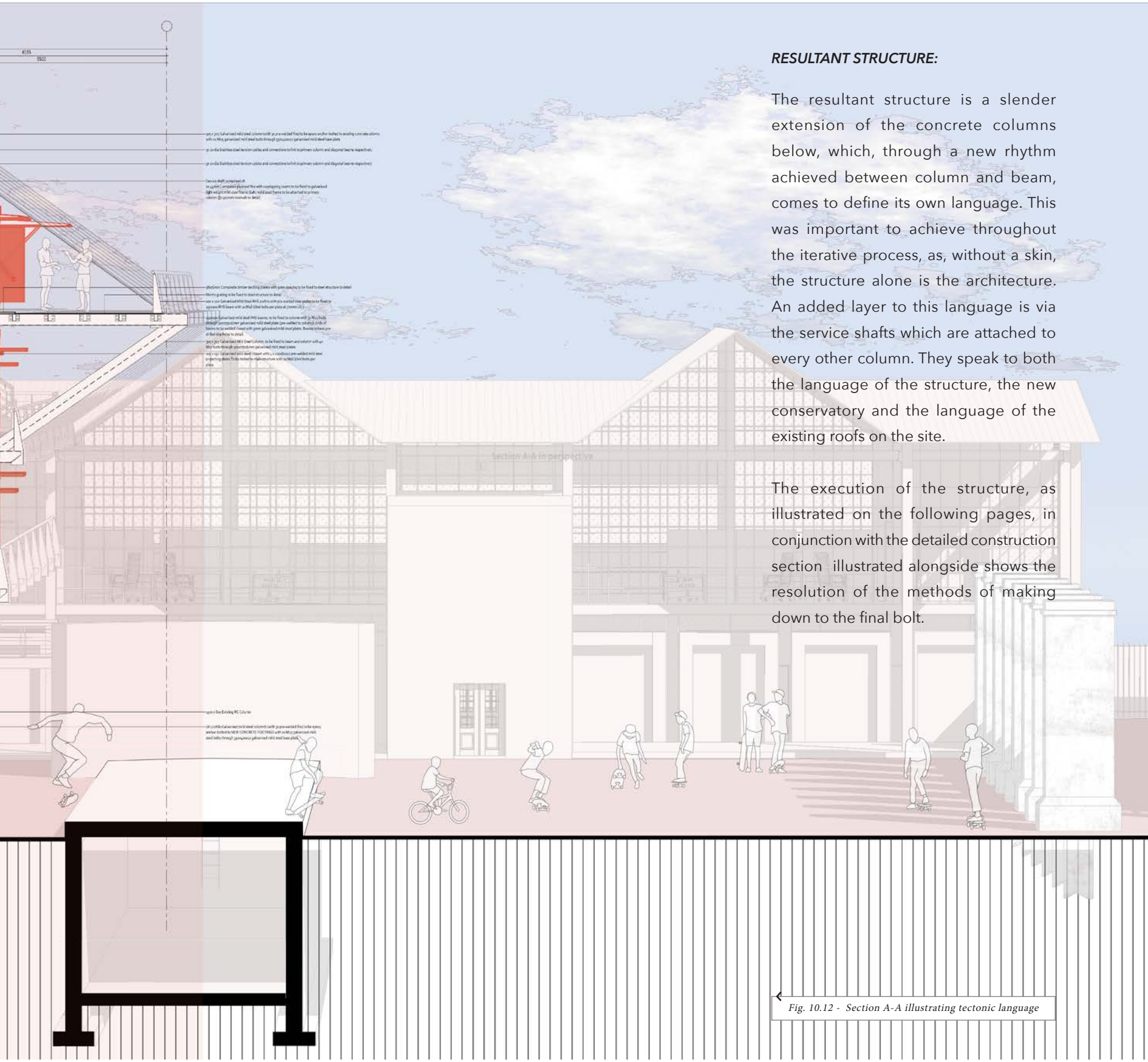
Fig. 10.11 - A Series of explorative sketches interrogating methods of construction and connections











RESULTANT STRUCTURE:

The resultant structure is a slender extension of the concrete columns below, which, through a new rhythm achieved between column and beam, comes to define its own language. This was important to achieve throughout the iterative process, as, without a skin, the structure alone is the architecture. An added layer to this language is via the service shafts which are attached to every other column. They speak to both the language of the structure, the new conservatory and the language of the existing roofs on the site.

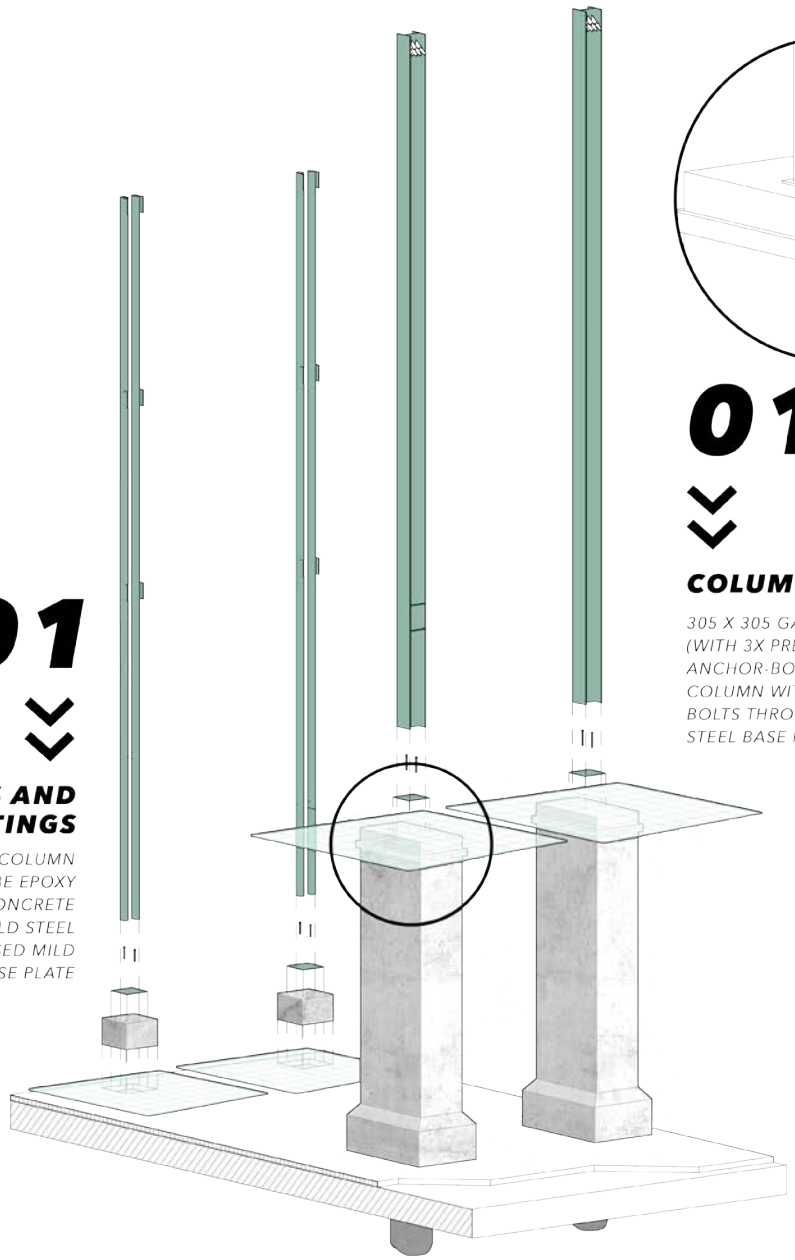
The execution of the structure, as illustrated on the following pages, in conjunction with the detailed construction section illustrated alongside shows the resolution of the methods of making down to the final bolt.

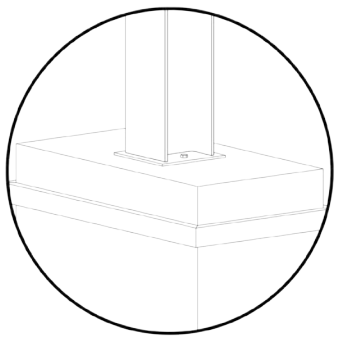
Fig. 10.12 - Section A-A illustrating tectonic language

CONSTRUCTION SERIES

METHODOLOGY OF CONSTRUCTION (AND DECONSTRUCTION) ACCORDING TO PRESCRIBED MODULES OF THE CONCRETE COLUMNS

Fig. 10.13 - Step 1 in construction process





01

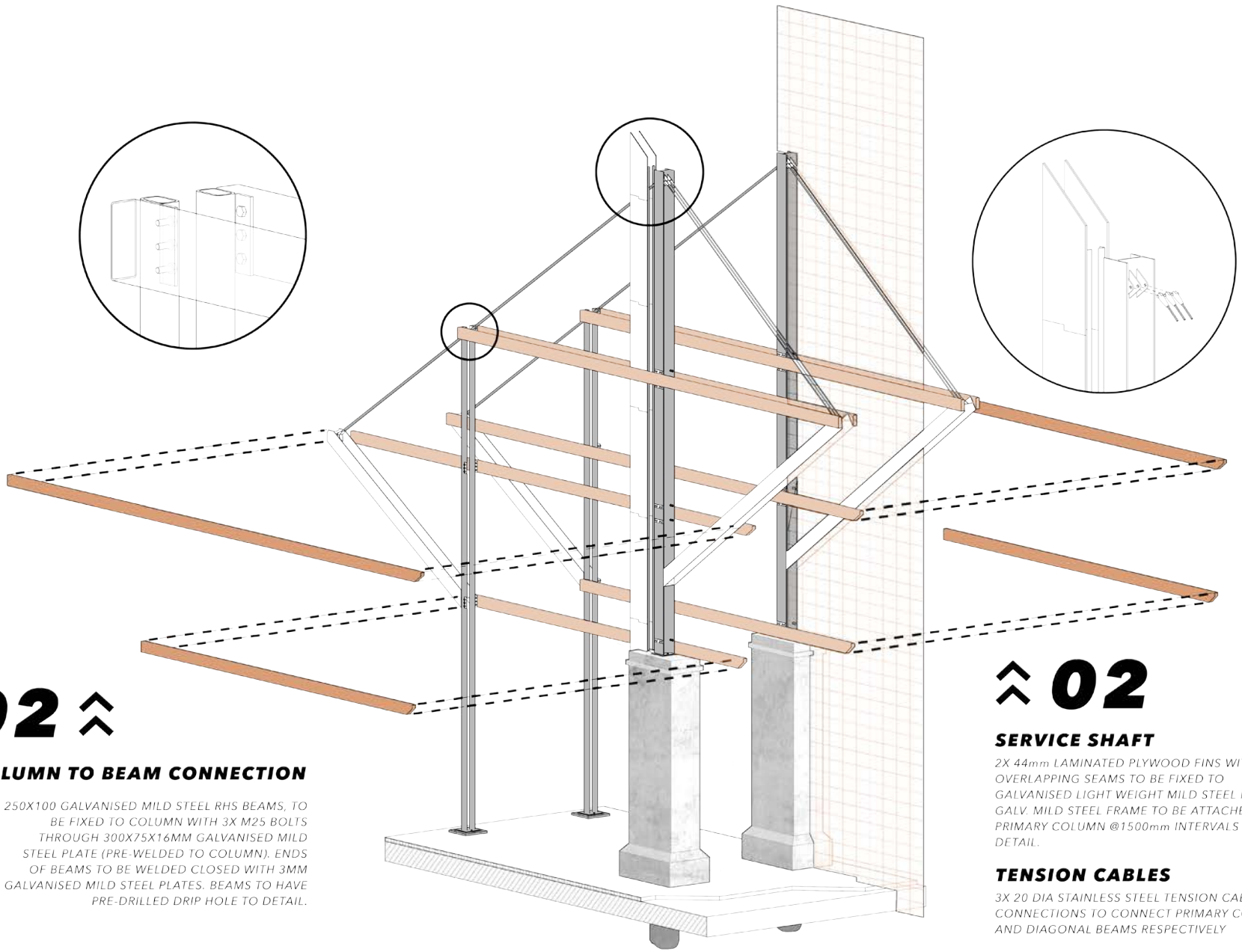
NEW COLUMNS AND NEW FOOTINGS

305 X 305 GALVANISED MILD STEEL COLUMN (WITH 3X PRE-WELDED FINS) TO BE EPOXY ANCHOR-BOLTED TO EXISTING CONCRETE COLUMN WITH 2X M25 GALVANIZED MILD STEEL BOLTS THROUGH 350X400X12 GALVANISED MILD STEEL BASE PLATE

01

COLUMN TO COLUMN CONNECTION

305 X 305 GALVANISED MILD STEEL COLUMN (WITH 3X PRE-WELDED FINS) TO BE EPOXY ANCHOR-BOLTED TO EXISTING CONCRETE COLUMN WITH 2X M25 GALVANIZED MILD STEEL BOLTS THROUGH 350X400X12 GALVANISED MILD STEEL BASE PLATE



02

COLUMN TO BEAM CONNECTION

250X100 GALVANISED MILD STEEL RHS BEAMS, TO BE FIXED TO COLUMN WITH 3X M25 BOLTS THROUGH 300X75X16MM GALVANISED MILD STEEL PLATE (PRE-WELDED TO COLUMN). ENDS OF BEAMS TO BE WELDED CLOSED WITH 3MM GALVANISED MILD STEEL PLATES. BEAMS TO HAVE PRE-DRILLED DRIP HOLE TO DETAIL.

02

SERVICE SHAFT

2X 44mm LAMINATED PLYWOOD FINS WITH OVERLAPPING SEAMS TO BE FIXED TO GALVANISED LIGHT WEIGHT MILD STEEL FRAME. GALV. MILD STEEL FRAME TO BE ATTACHED TO PRIMARY COLUMN @1500mm INTERVALS TO DETAIL.

TENSION CABLES

3X 20 DIA STAINLESS STEEL TENSION CABLES AND CONNECTIONS TO CONNECT PRIMARY COLUMN AND DIAGONAL BEAMS RESPECTIVELY

Fig. 10.14 - Step 2 in construction process

03

SECONDARY BEAM TO PRIMARY BEAM CONNECTION

200 X 100 GALVANISED MILD STEEL RHS PURLINS WITH PRE-WELDED STEEL PLATES TO BE FIXED TO 250X100 RHS BEAM WITH 2X M16 BLIND BOLTS PER PLATE AT 770MM C/C'S

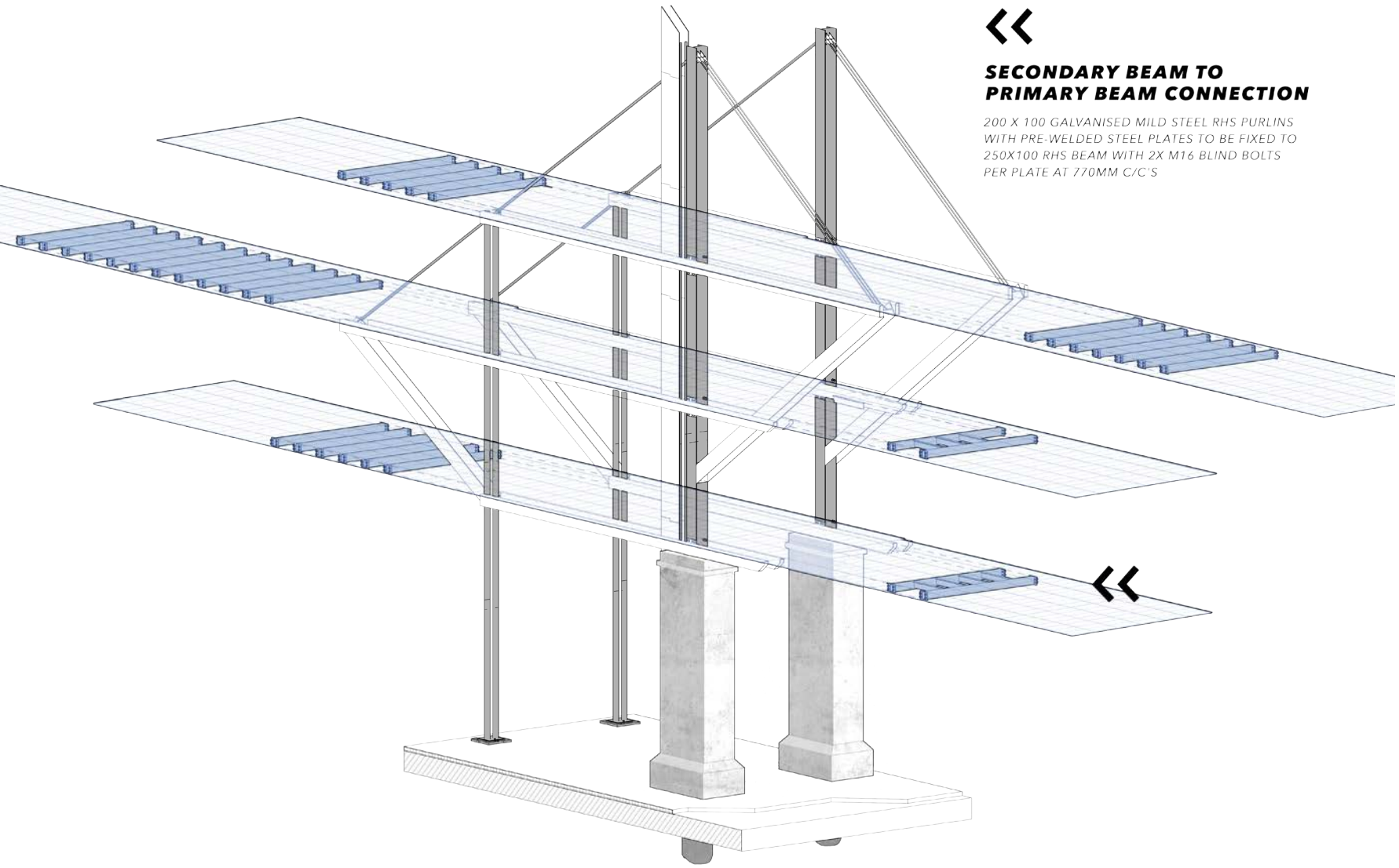
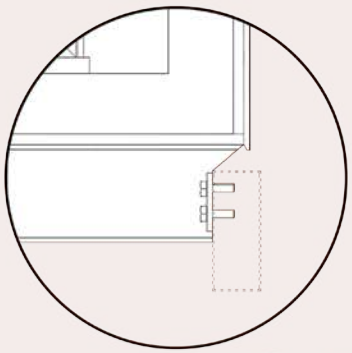


Fig. 10.15 - Step 3 in construction process

UNIT INSERTION



04

UNIT INSERTION

203 X 152 GALVANISED MILD STEEL I-BEAM WITH 4 X 120X80X12 PRE-WELDED MILD STEEL PROJECTING PLATES TO BE BOLTED TO MAIN STRUCTURE WITH 2X M16 BLIND BOLTS PER PLATE.

UNITS TO BE INSERTED FROM TOP TO BOTTOM IN ORDER TO PLUG IN SERVICES FROM BELOW

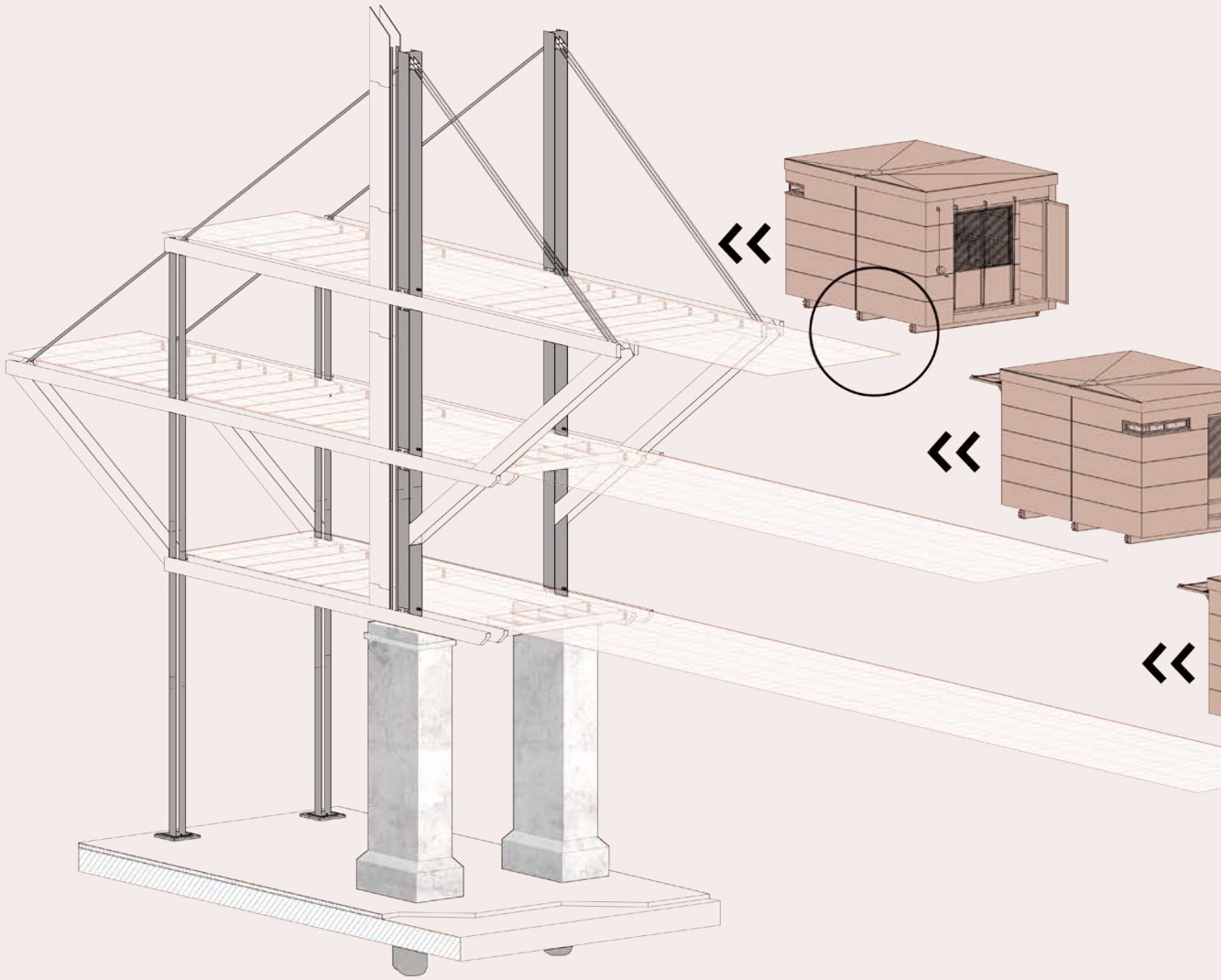
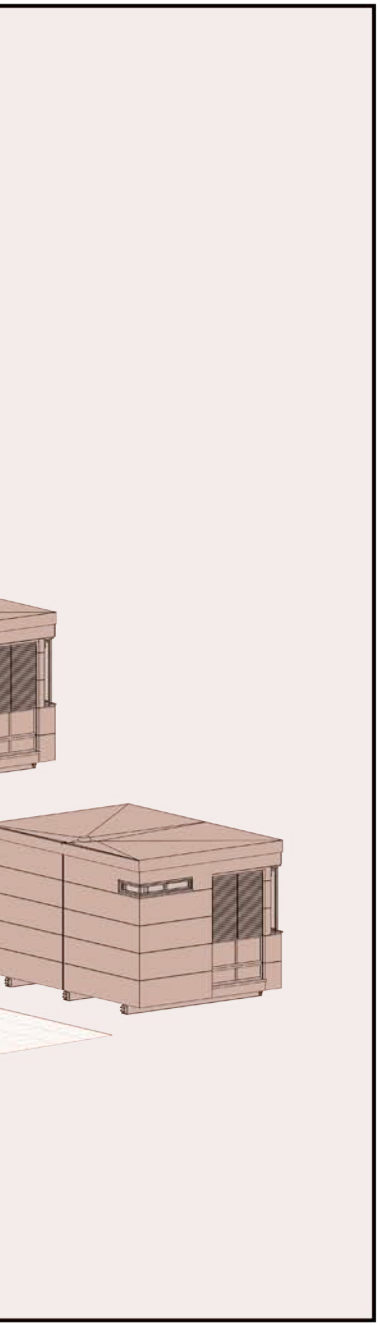


Fig. 10.16 - Step 4 in construction process



« 05

BALUSTRADES

GALVANISED MILD STEEL BALUSTRADE WITH STAINLESS STEEL CABLES TO BE BOLTED TO PRIMARY BEAMS TO DETAIL.

EXTERIOR FLOOR FINISHES

DIRECTLY AT FOOT OF UNITS: 38X76MM COMPOSITE TIMBER DECKING PLANKS WITH 5MM SPACING TO BE FIXED TO STEEL STRUCTURE TO DETAIL.

GENERAL: MENTIS GRATING TO BE FIXED TO STEEL STRUCTURE TO DETAIL

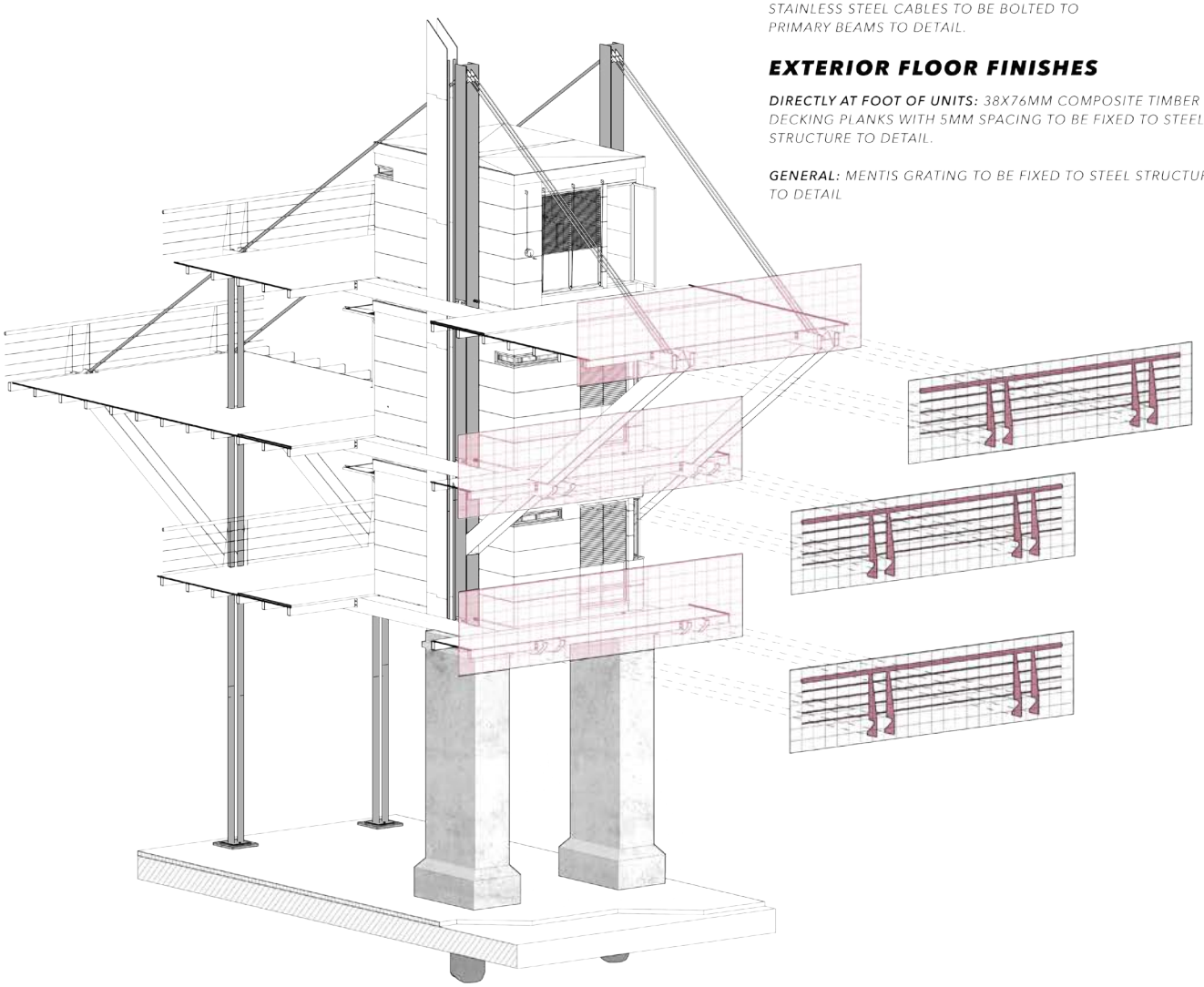


Fig. 10.17 - Step 5 in construction process

10.2.3 THE PODS (LIVING UNITS AND LIVING SPACES)

THE NOTION OF FLEXIBLE AND TEMPORAL DWELLING

Similarly to the host structure, methods of making in terms of assembly, erection and dismantling (and equipment required) were a primary consideration. Furthermore, methods of making to achieve flexible, adaptable spaces with opportunities for appropriation to allow for flexibility according to users (individuals, couples, families, friends and others) was important to consider, as well as the reusability of the system after project completion in the changing city.

POSSIBILITIES OF MODULARITY AND PREFABRICATION

Temporal construction to accommodate flexible and mobile dwelling, which, in methods of making, has existed from the very beginning in the form of nomadic huts such as yurts and teepees, embodying 'skin-on-frame' construction for easy erection, dismantling and transportation (Topham 2004), and in modern day terms, the many iterations of the mobile home and pavilions of the 1900s as explored in chapter 7, has contributed to the refinement of ephemeral construction, transportability and moving parts.

In determining an appropriate technical approach, Schwartz-Clauss and von Vegesack (2002:59) state that "prefabricated building methods provide a practical opportunity to build houses that are not only flexible, but also cost as little as possible to build - less resources, less waste and accurate and quick construction". Therefore, prefabrication and modular construction will be investigated in order to realise these informants to allow for flexible dwelling and ephemeral environments. Furthermore, they state that prefabrication and modular means of making encourage experimentation, which, according to the urban strategy of this dissertation, is one aspect the final products need to have addressed to test an alternate, flexible way of living within the inner city. As an example of such experimentation, Schwartz-Clauss and von Vegesack state that "one scenario could be a cheap house that can be recycled after a few years' use when a newer, more efficient and perhaps even cheaper one becomes available" (2002:59). Therefore, another aspect to be considered is how to make temporary architecture reusable as opposed to being disposable.

SCALES OF TEMPORALITY

To say that a unit is adaptable, appropriable and flexible is one thing - however, there are varying degrees to flexibility and adaptability which need to be established (both conceptual and practical) in order to define which this scheme is able to address and accommodate. Galfetti (2007:13) defines and describes the different typologies of collective housing flexibility in an expanding hierarchy as follows:

01 Flexibility, which must be established prior to occupation. Allowing for this, he states, will ensure variations within the same architectural form.

02 Flexibility after occupation which allows for future change. This can present itself/ be accommodated/ensured through various methods, including:

MOBILITY

This allows for 'swap-in" and "swap-out" rapid change and substitution of space whenever required and as quickly as required.

EVOLUTION

This, unlike the replaceable principle of mobility, describes a "built in" capacity, which is modified over time according to technology or necessity.

ELASTICITY

This approach describes space that can expand or decrease according to necessity, which can be achieved through various material applications and/or methods of making.

The product of this dissertation concerning this spectrum places itself between mobility and elasticity, as the units themselves are standardised and fixed, but the interior components will be able to swap in and out according to necessity. The possibilities of openings (doors and windows) as tools of elasticity to extend space will also be explored.

TECHNICAL PRECEDENTS

CABIN ON THE BORDER
SO? ARCHITECTURE + IDEAS
2018
ERDINE, TURKEY

This freestanding cabin was designed to function as a flexible living unit, capable of being self-sustainable away from any infrastructural provisions.

The openings not only function as doors and windows, but are also the elastic mechanisms which allow the unit to extend itself out into surrounding space. For example, the large polycarbonate window becomes a canopy and the one plywood façade becomes a terrace. The unit is comprised of a laminated timber structure with plywood cladding. The entire unit was prefabricated and transported to site. The interior also fully embodies plywood as a material, and shows flexible, smart design in its furniture – which is either multi-functional, or folds away to open up space when not in use (Griffiths 2018).


10.18


10.19


10.20

^ *Figs. 10.18-20 - Images of 'Cabin on the Border'*

GUCKLHUPF
HANS PETER WÖRNDL
1993
MONDSEE, AUSTRIA

The Gucklhupf was designed and built as an experimental home to explore "the nature of opposites": namely the "strange versus familiar, stillness versus movement, habitation versus travel, the safety of the refuge of home versus the condition of distance in the home – expressed in a deceivingly simple object" (Schumacher et. al. 2010).

The 4x6x7m structure explores flexible space and moving parts through its various gliding, folding, swinging and retracting mechanisms (through dowels, flaps, bolts, hinges and cables) which manipulate walls, floors and openings respectively. This collection of moving parts allows for the ease of personal curation of space – be it dark and small or large and well lit and thus, the unit can be considered to be in a constant state of change without ever moving from its location. In the same way that the units are fixed within this scheme, it is important for them to be able to breathe between the ribs of their host skeleton to achieve spatial extension and excitement that is often not achievable in such a small space. The unit is comprised of a simple timber frame structure with marine grade plywood cladding, all supported on concrete piers to elevate the structure above the ground.

^ *Figs. 10.21-23 - Images of the Gucklhupf*

JUBAKO HOUSING BOX
KENGO KUMA
2016
LOCATIONLESS [PRODUCT DESIGN]

Designed by Kuma as a transportable, flexible and non-prescriptive home (KKAA, nd), this box house is comprised of timber panels joined in various ways according to different techniques as a test project for manufacturers. Therefore, although the product itself is simple, it has a layer of experimental complexity within its craftsmanship. In terms of interior flexibility, some of the cladding panels double up as furniture components. For example, the cladding panels over the windows fold out to serve as tables when not used to close up the box. The interiors are designed to render elements down as compactly as possible in order to open up as much space as possible.

^ *Figs. 10.24-26 - Images of the Juckabo Housing Box*

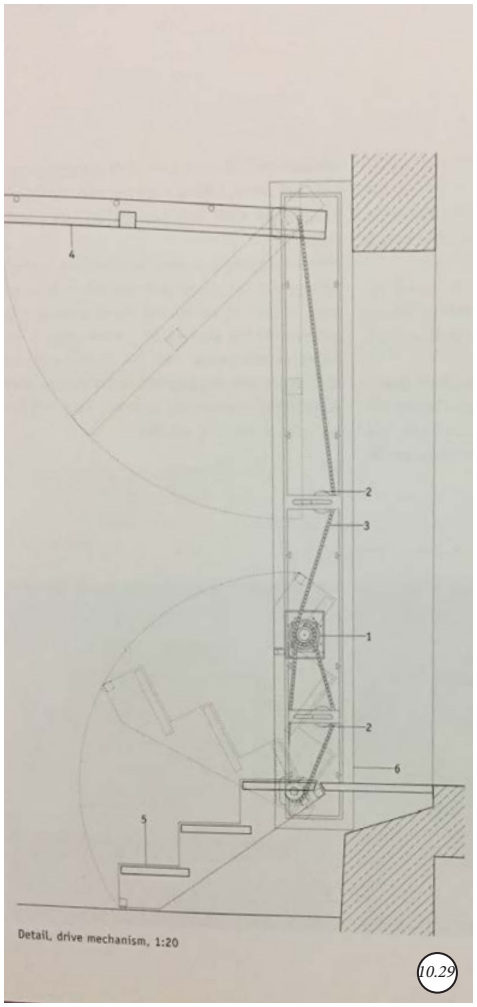
MOVING PARTS

SHOP ENTRANCE
2007
NICKEL UND WACHTER ARCHITEKTEN
BAMBERG, GERMANY

The entrance to this local shop is comprised of a metal portal encasement and a fold out door and step, and whilst open, the door acts as a canopy. The door is driven by a hand-operated crank handle and chain mechanism that lowers the stairs and opens the door simultaneously. To secure the door and stair in the open position, the winding mechanism is locked in place with a retaining bolt. This door demonstrates a strong, manual mechanism, as well as a simple solution to achieve a door-as-canopy which can be adapted as a tool for spatial extension.


10.27


10.28



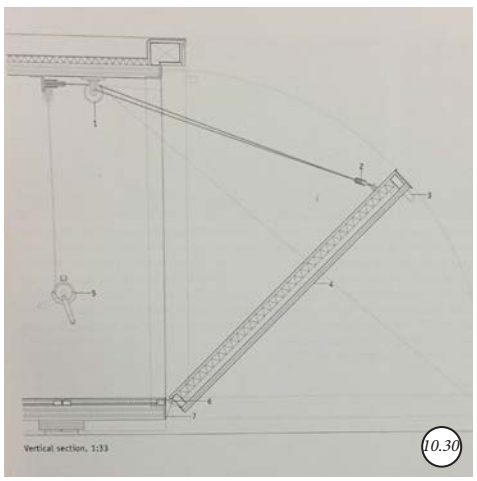
10.29

Figs. 10.27-29 - Images of the Shop Entrance

HOUSE NO. 19
UTRECHT, NETHERLANDS
2003
BIK VAN DER POL

This experimental house was created as part of a city initiative entitled "Beyond" in response to the rapid growth of urban environments. It is intended to be a temporary house for people in transition between places (such as on business). The box is comprised of a steel frame with robust timber cladding. The box has three distinctive openings which change its entire nature, described as "folding flaps" which fold out and extend the space beyond the box.

The timber panel flaps are connected to a series of ceiling mounted pulleys and steel cables, which are operated by a wall mounted hand crank.



10.30


10.31

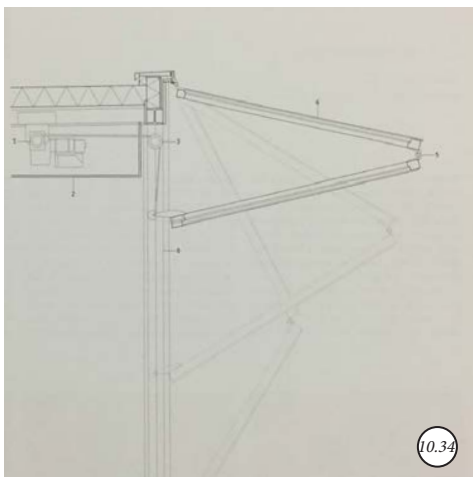

10.32

^ *Figs. 10.30-32 - Images of House No. 19*

FABIO'S RESTAURANT
VIENNA, AUSTRIA
2002
BEHF ARCHITEKTEN

The entire façade of this restaurant folds up as a mechanism of spatial extension. Sections of the façade can be folded up or the entire façade can be opened. The façade is controlled by electric concealed mechanisms, achieving a far more sophisticated and controlled aesthetic, less focused on the participative role of people in their place making processes, and more focused on the technology. The lower edge is raised by cables concealed in the intermediary structure between modules, allowing the 'fold up' principle to be achieved.


10.33


10.34

Figs. 10.33 & 34 - Images of Fabios Restaurant

INVESTIGATIONS:

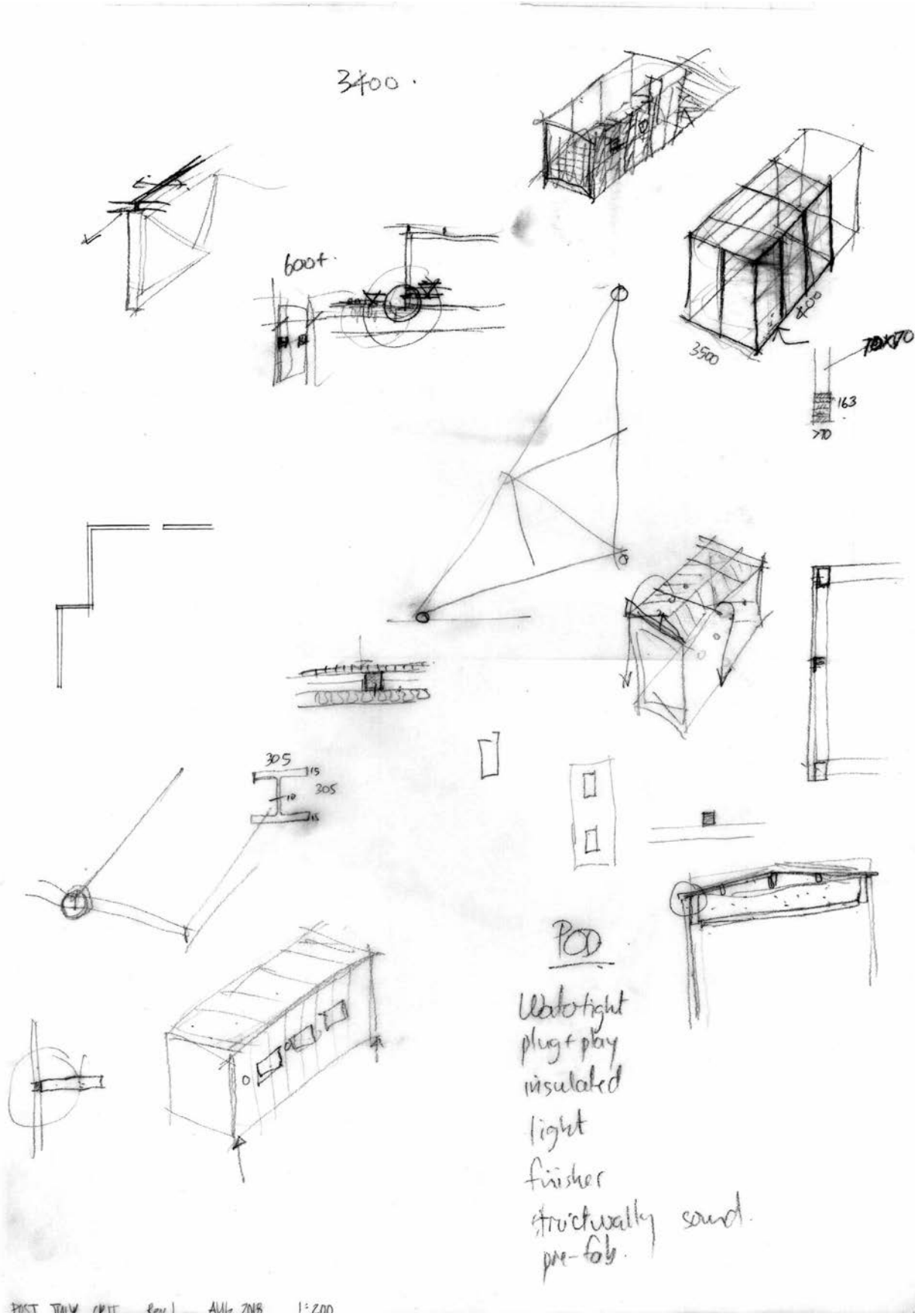
Through an iterative process as illustrated by the sketches below, timber and steel were investigated as possible frame structures, into which panels/modules could be inserted.

Other key considerations which were unpacked through this investigation included:

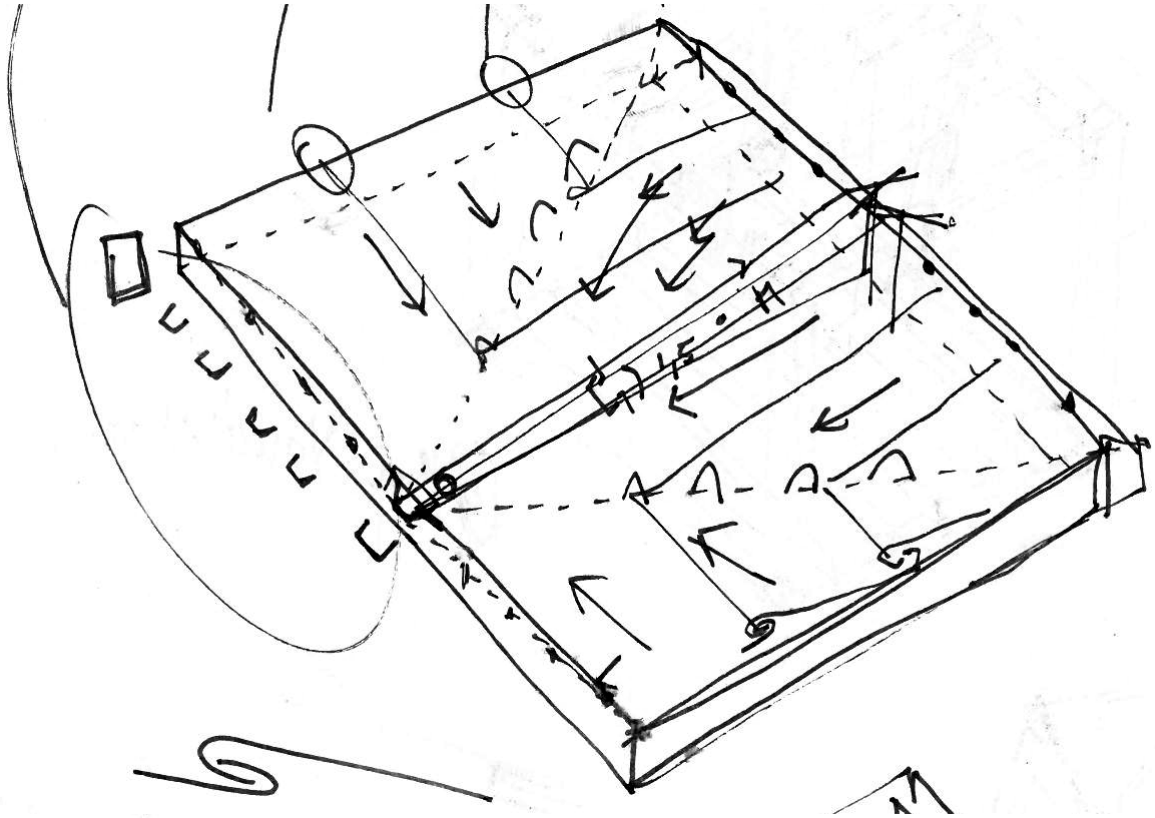
- It was imperative to ensure that the design was able to be flipped both ways (east/west to achieve back-to-back servicing and north/south to accommodate different spill out directions) which determined the positioning of the bathroom module within the unit;

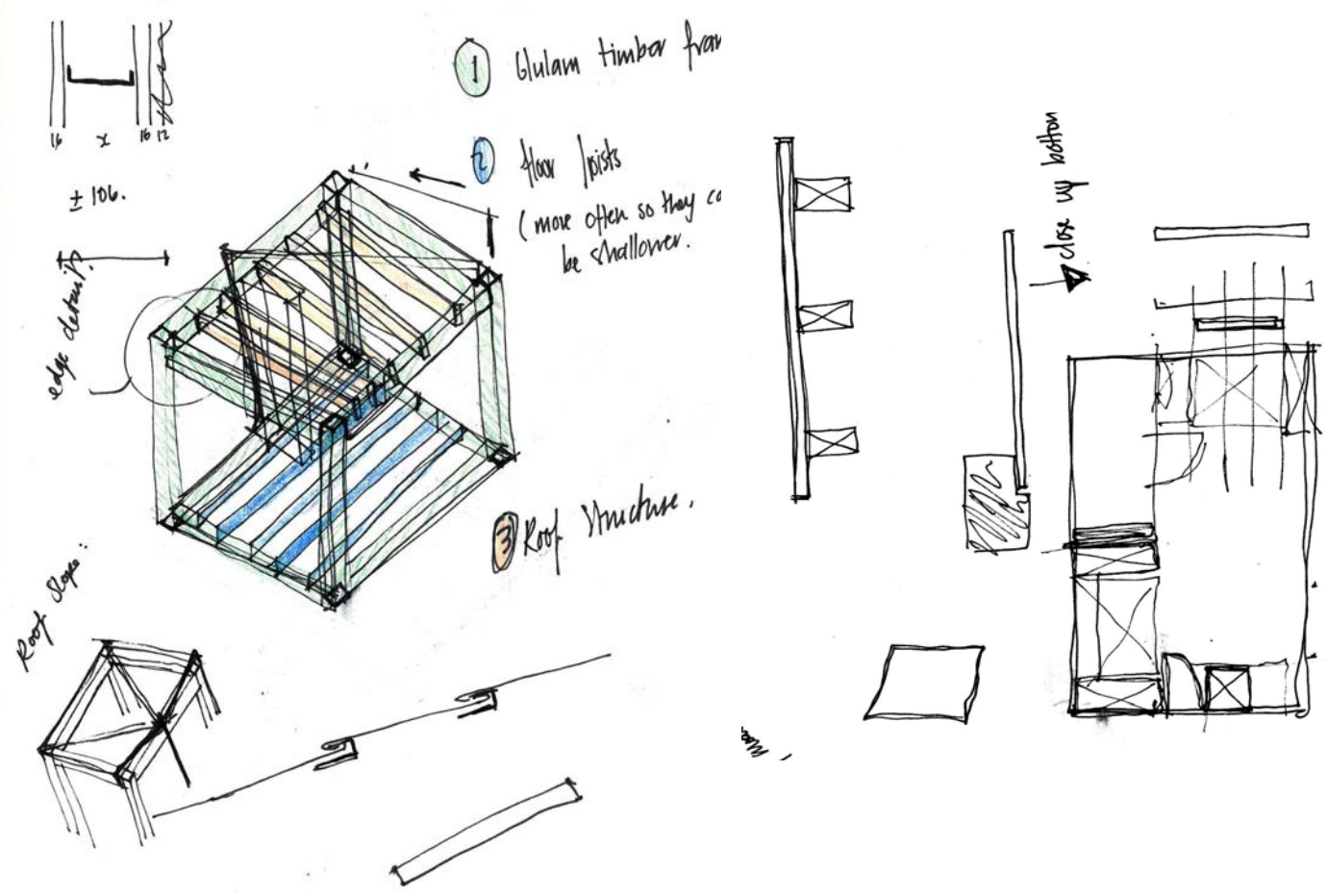
- Privacy from both the north and south sides of the unit and the subsequent positioning of openings (and louvres) and the types of openings provided for the units;

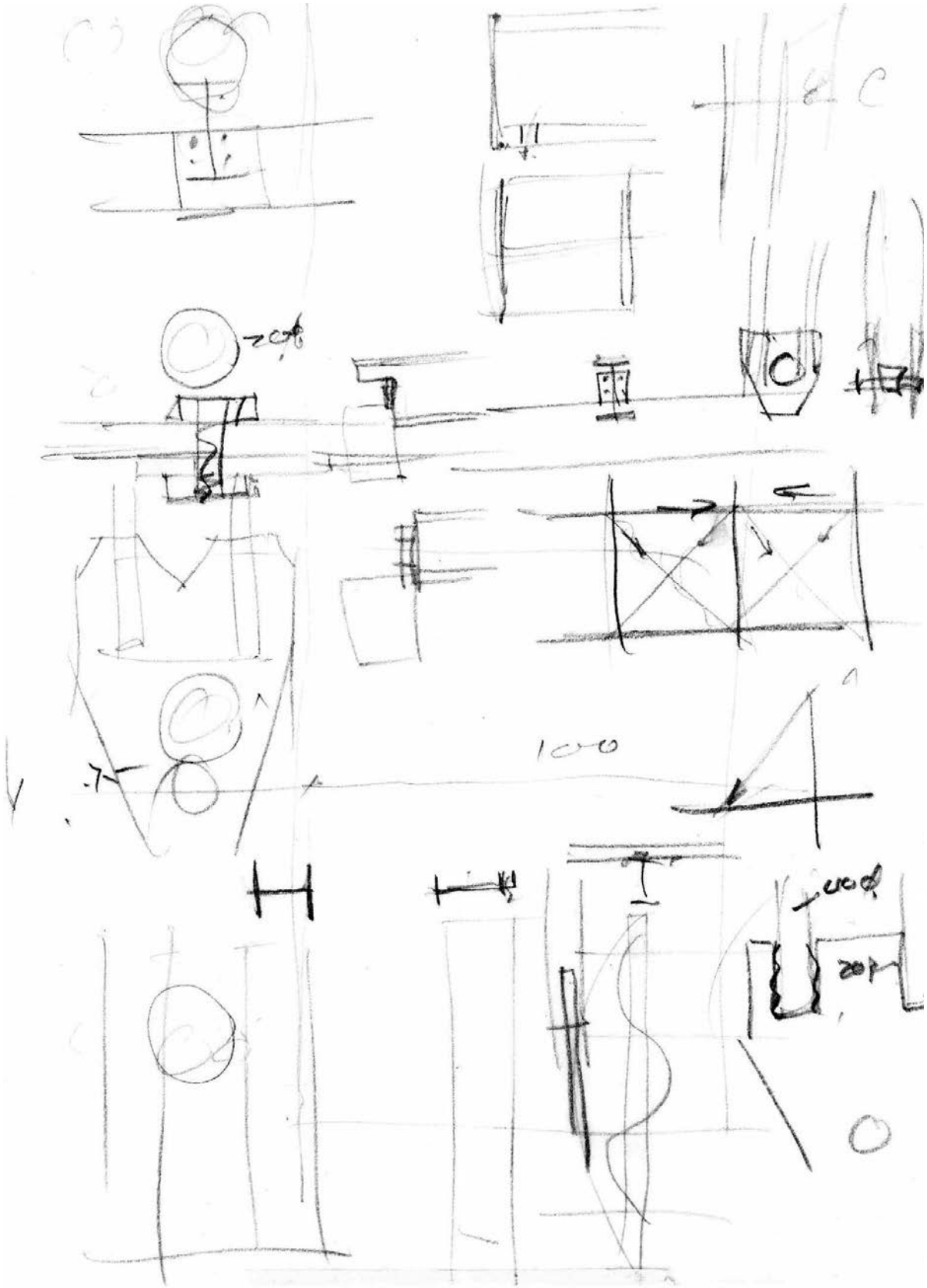
- The roof design needed to be thoroughly investigated to be as compact as possible, and to accommodate both the exposed and sheltered conditions.

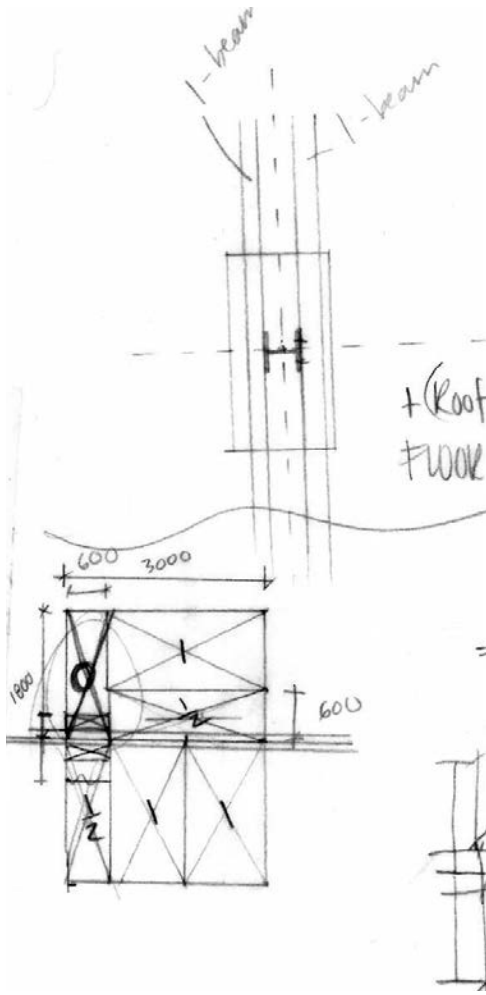


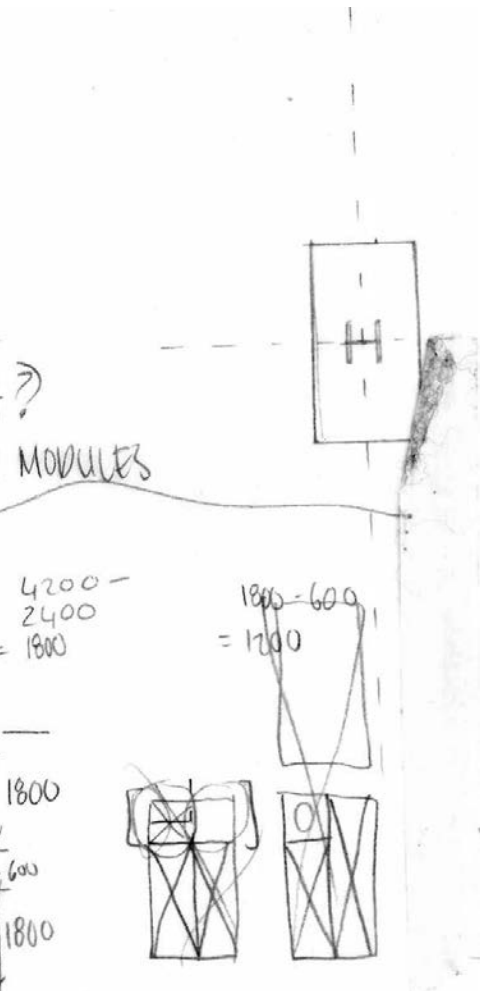
› *Fig. 10.35 - A series of explorative sketches*











Hammock hooks.

connect to infrastructural thing

or look after self? read up

up + in ?

down + out ?

what happens here??

plan

Sliders how like. Nice example?

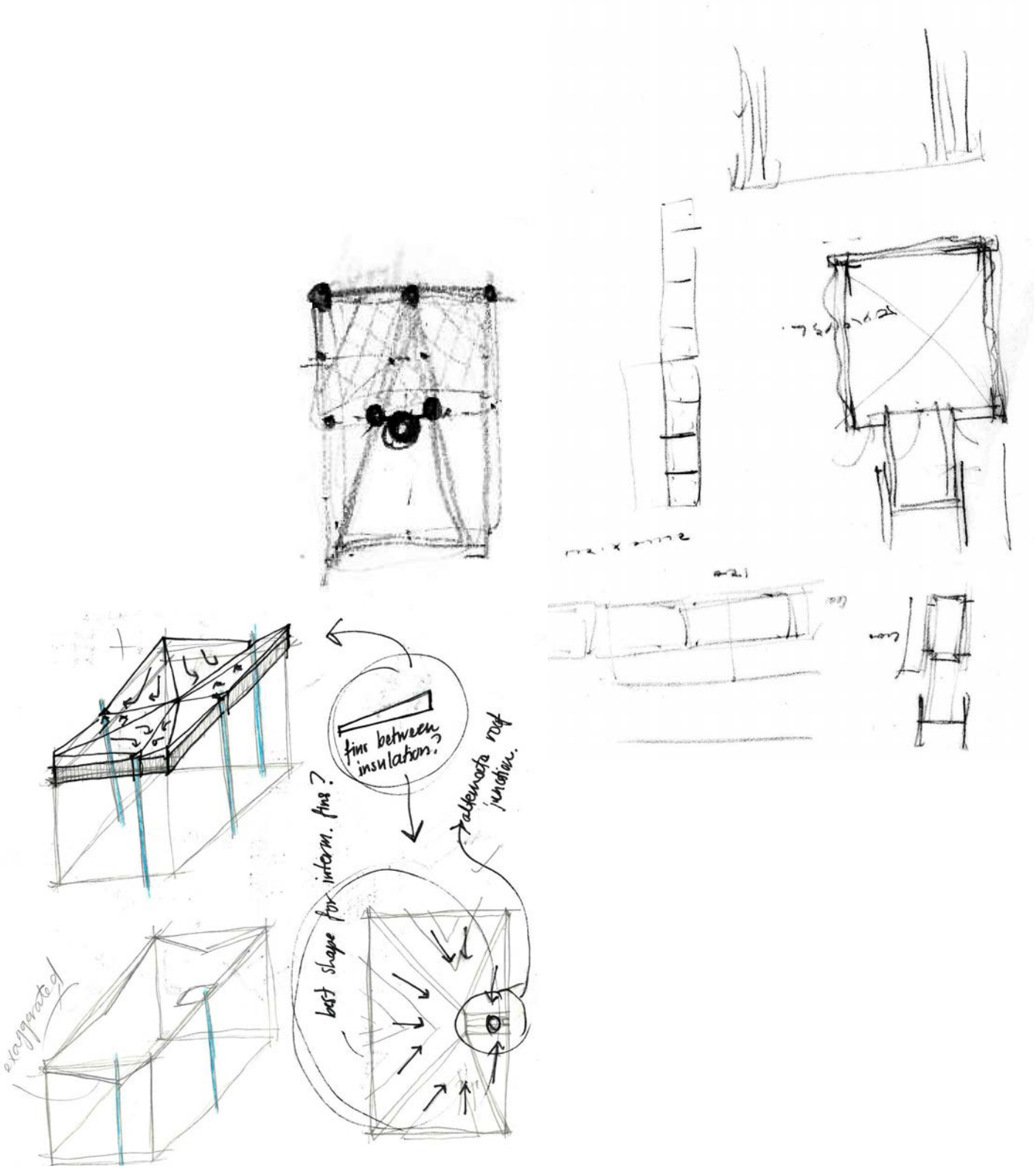
section.

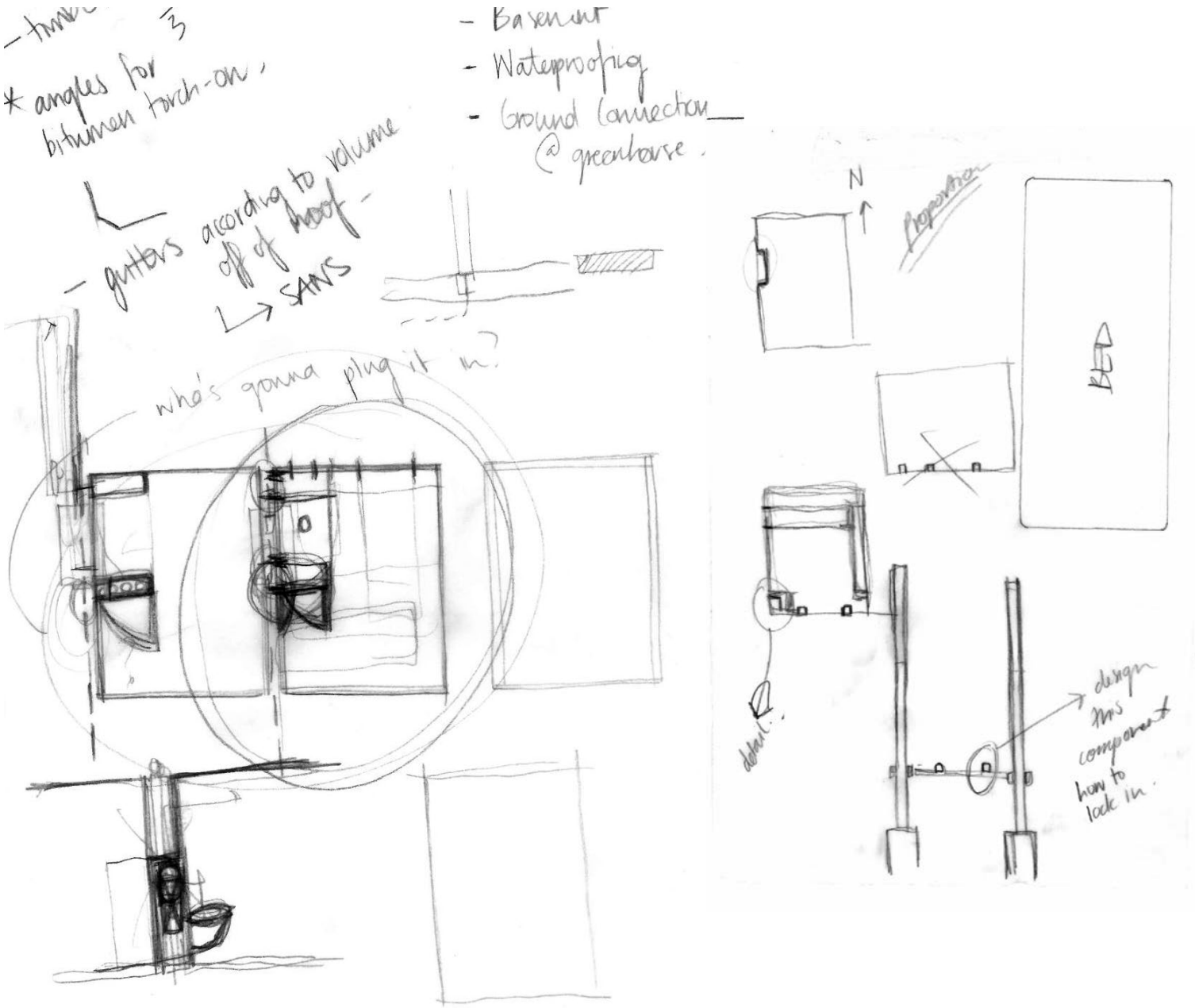
2,4 ext ; 2,1 int.

design this component → what could this be?

resolve spacing whole panel is removable. + replace for future.

~~other~~ of these + of beams below





RESULTANT UNIT:

The units themselves are comprised of a lightweight gauge steel frame with panel inserts and plywood external cladding and plywood interiors. The units are standardized according to a baseline model to ensure economic and consistent production. The units will be transported to site as a series of prefabricated parts which will be assembled on site and hoisted into position.

CLIMATIC CONCERNS:

The units have a minor overhang, ensuring only that the unit is water tight. Therefore all large windows have adjustable louvres to act as a shading device and privacy tool to the north and south sides of the units. The u-values of walls, roof and floor are in accordance with SANS regulations. No major ventilation strategies were incorporated into the units as they are well insulated and cross ventilation is easily achieved through the opening of windows on the north and south sides of the units.

FLEXIBILITY:

The flexibility within the units is achieved through the substitution of interior components and the moving parts (a fold up and a flap up door) to achieve a variety of spatial combinations according to time of day, social activity inhabitant's needs and general preference.

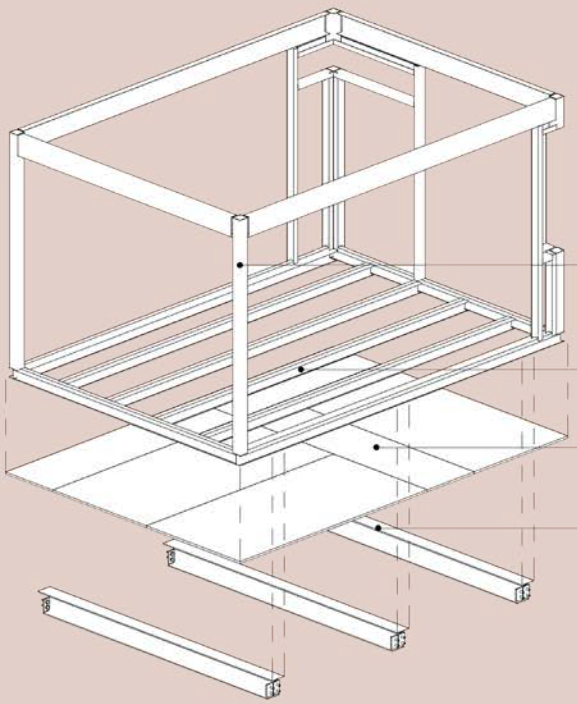
Some examples of substitutable components include:

- A single bed/cupboard/table
- A cupboard/table
- Two single bed/cupboard/table units for a couple
- Additional side bed/table for child (which can slide along the wall according to user preference)
- A bunk bed/cupboard combo for siblings/friends

The doors can be opened/left closed according to user preference, and are operated by exposed steel cable hand pulley mechanisms within the units.

ON SITE ASSEMBLY OF PREFABRICATED PARTS:

04 a



Primary light weight gauge steel frame to be site assembled from separate pieces to manufacturer's details and specifications

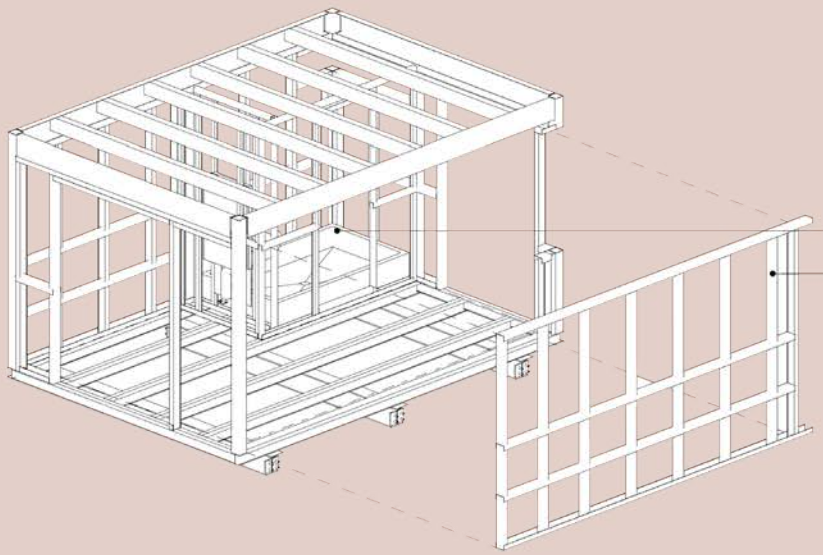
100x50x1.2 light weight gauge steel back-to-back channel joists at 600 c/c's

22mm plywood T+G floorboards with fully supported/stiffened joints laid on 10mm industrial felt (acoustic and movement buffer)

203 x 152 Galvanised mild steel I-beam with 4 x 120x80x12 pre-welded mild steel projecting plates spaced @ 1600 c/c's. To be bolted to main structure with 2x M16 blind bolts per plate to Eng's detail

Fig. 10.36 - Unit Assembly step 1

04 b



Insertion of prefabricated bathroom module

Insertion of prefabricated wall panels comprising of:

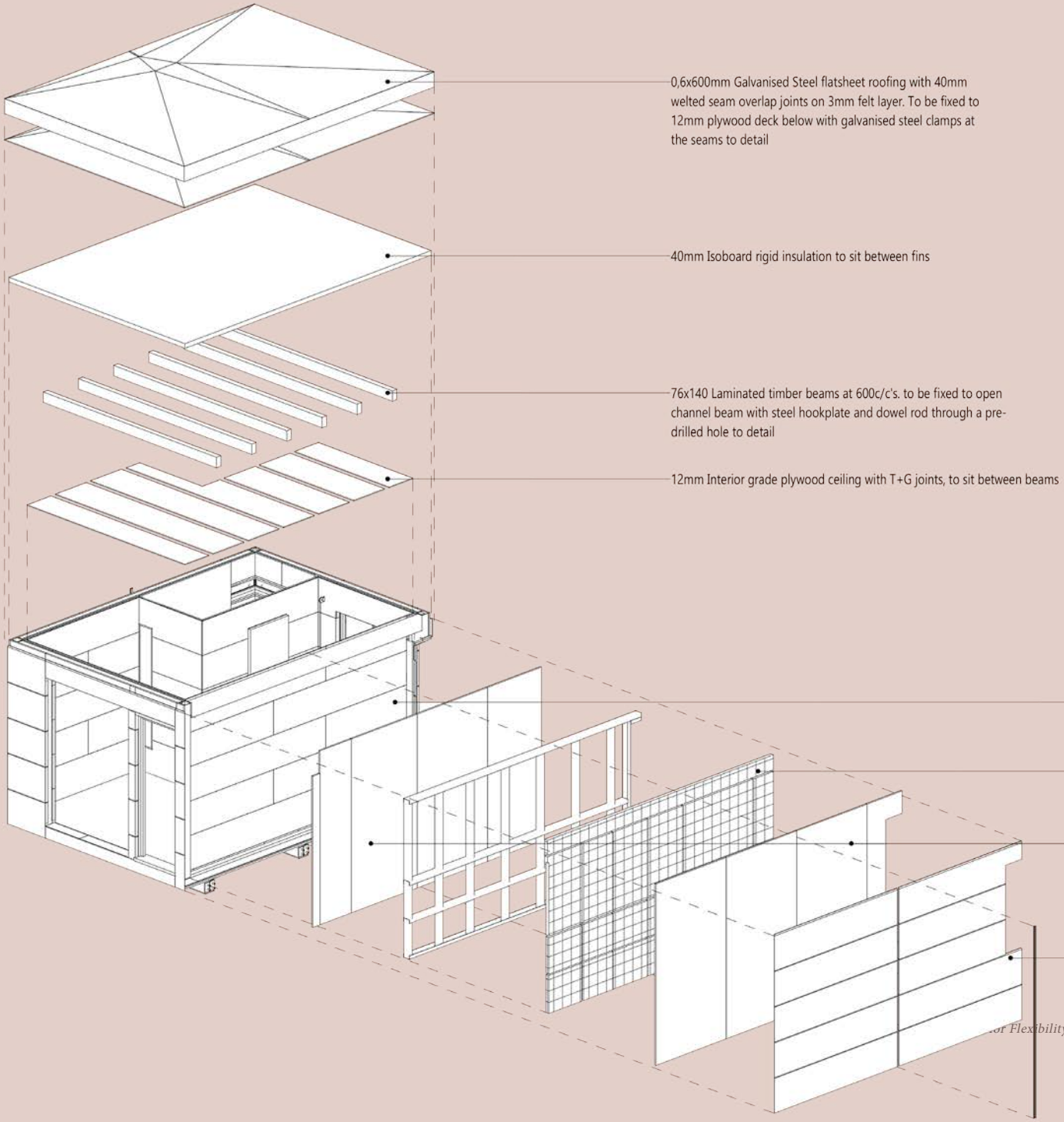
- 100x50x1.2 light weight gauge steel open channel horizontal top and bottom rails;
- 100x50x1.2 light weight gauge steel open channel horizontal bracing rails;
- 100x50x1.2 light weight gauge steel lipped channel vertical studs

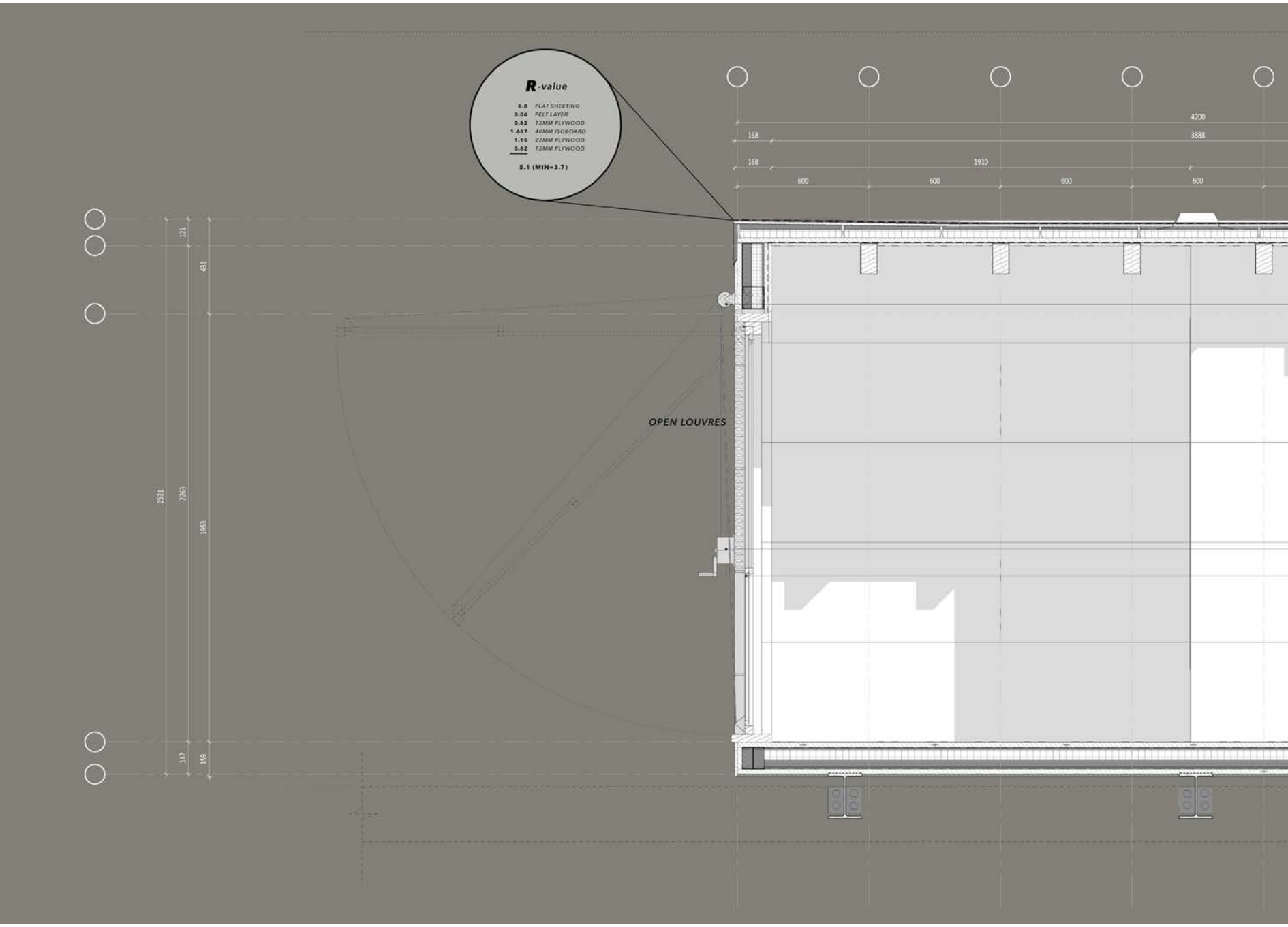
All of which to be fixed together according to manufacturer's detail and specifications.

^ *Fig. 10.37 - Unit assembly step 2*

› *Fig. 10.38 - Unit assembly step 3*

04 c





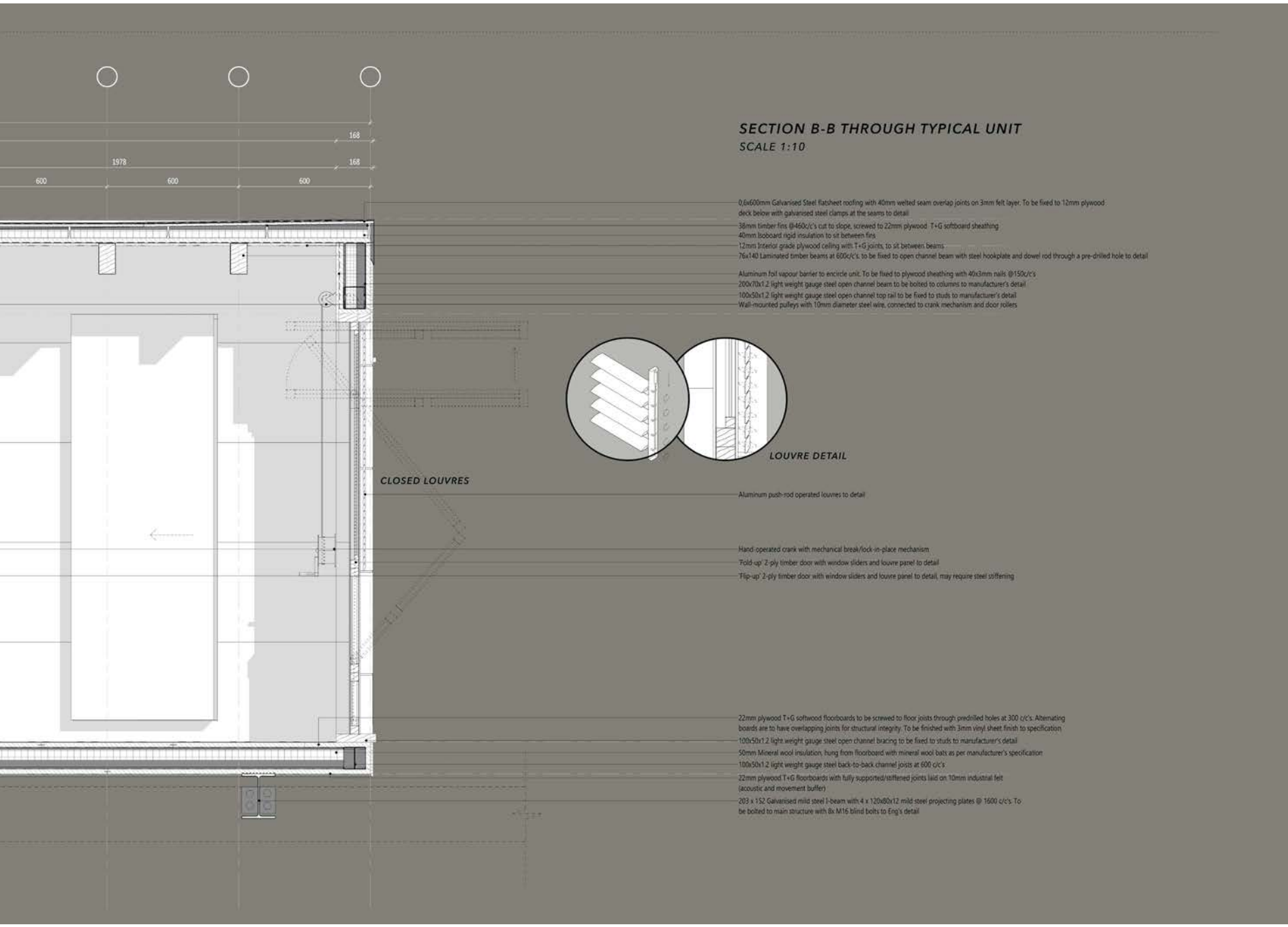
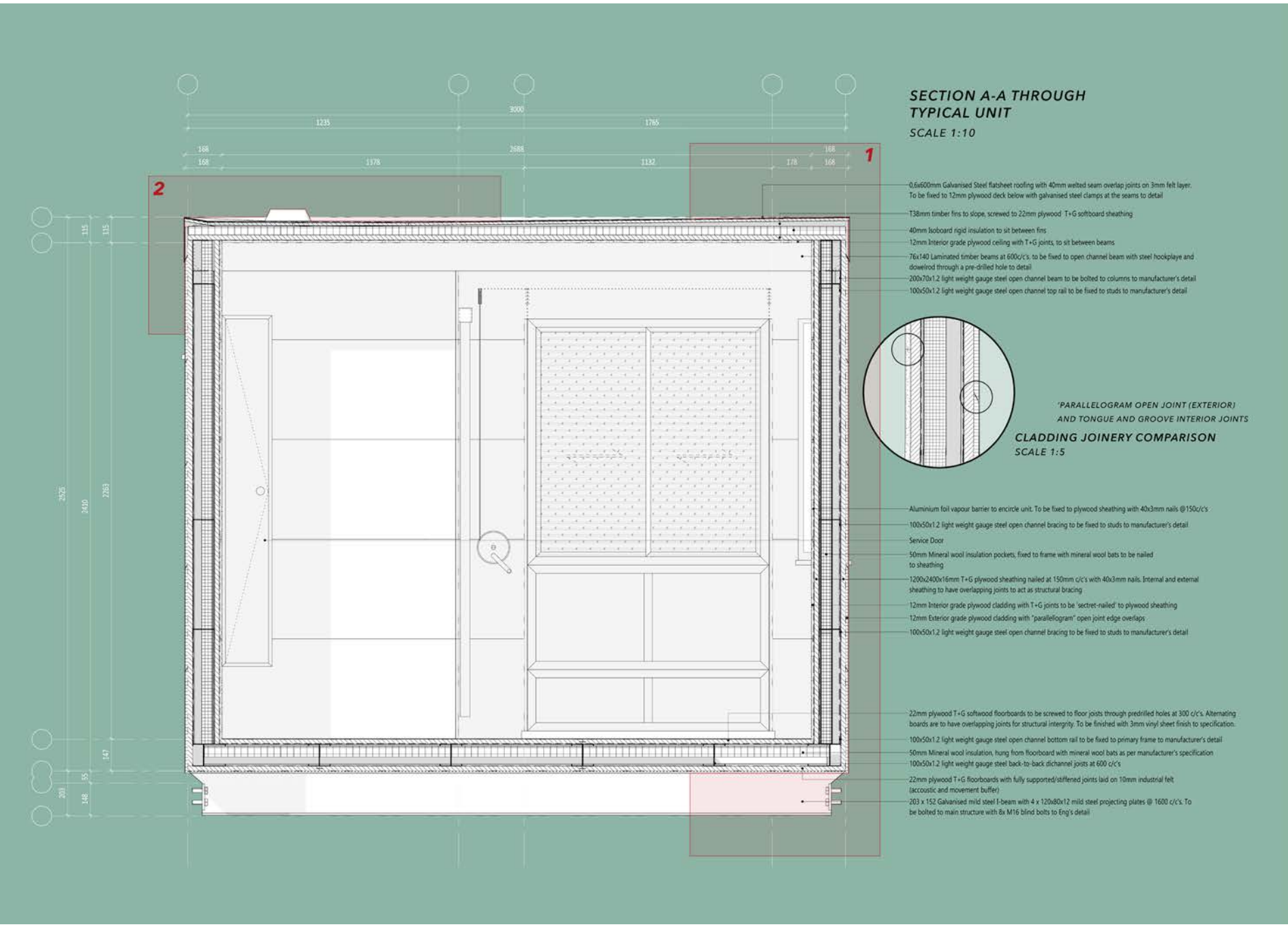


Fig. 10.39 - Longitudinal section through unit



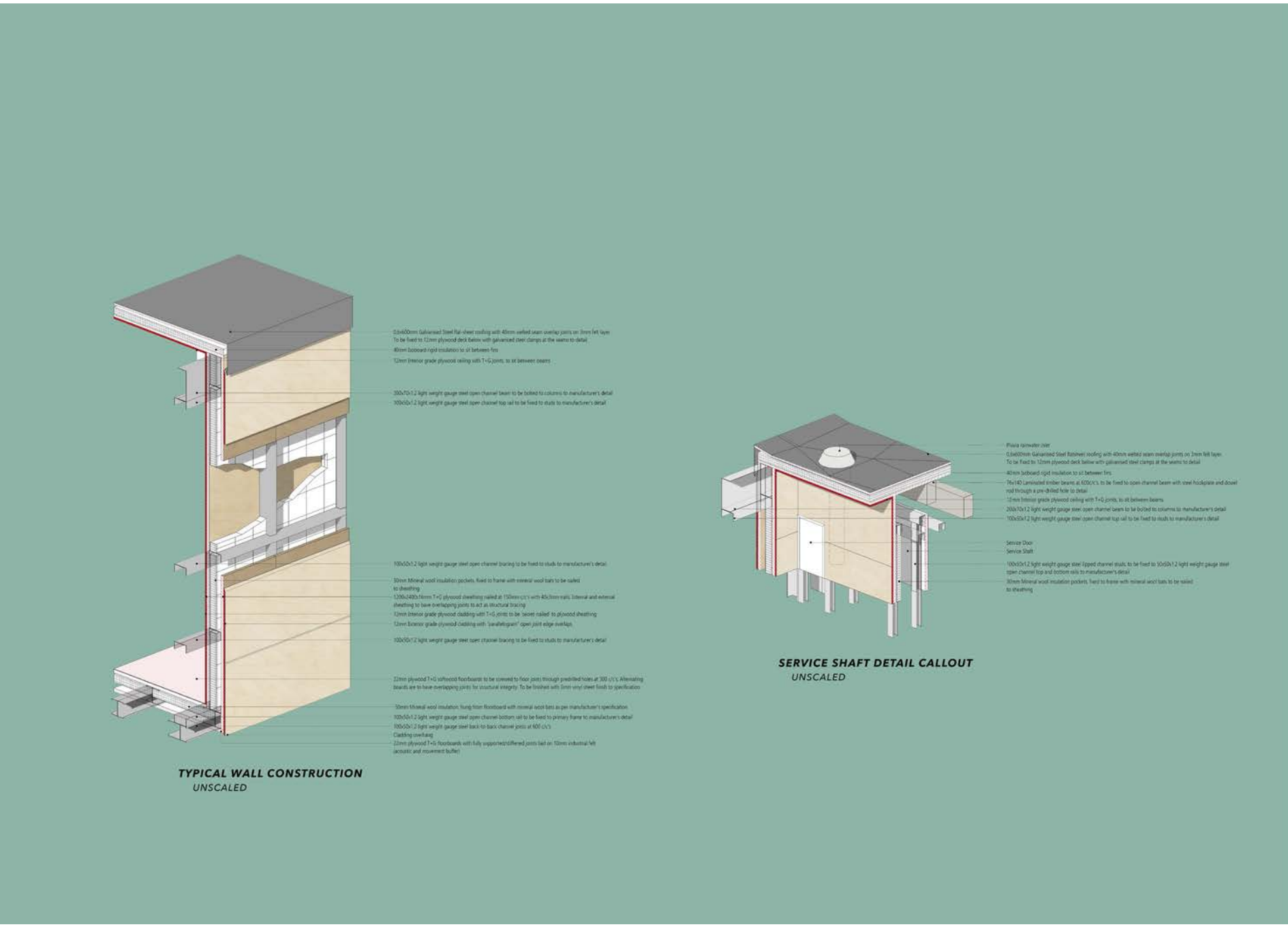


Fig. 10.40 - Short section through unit with callout details

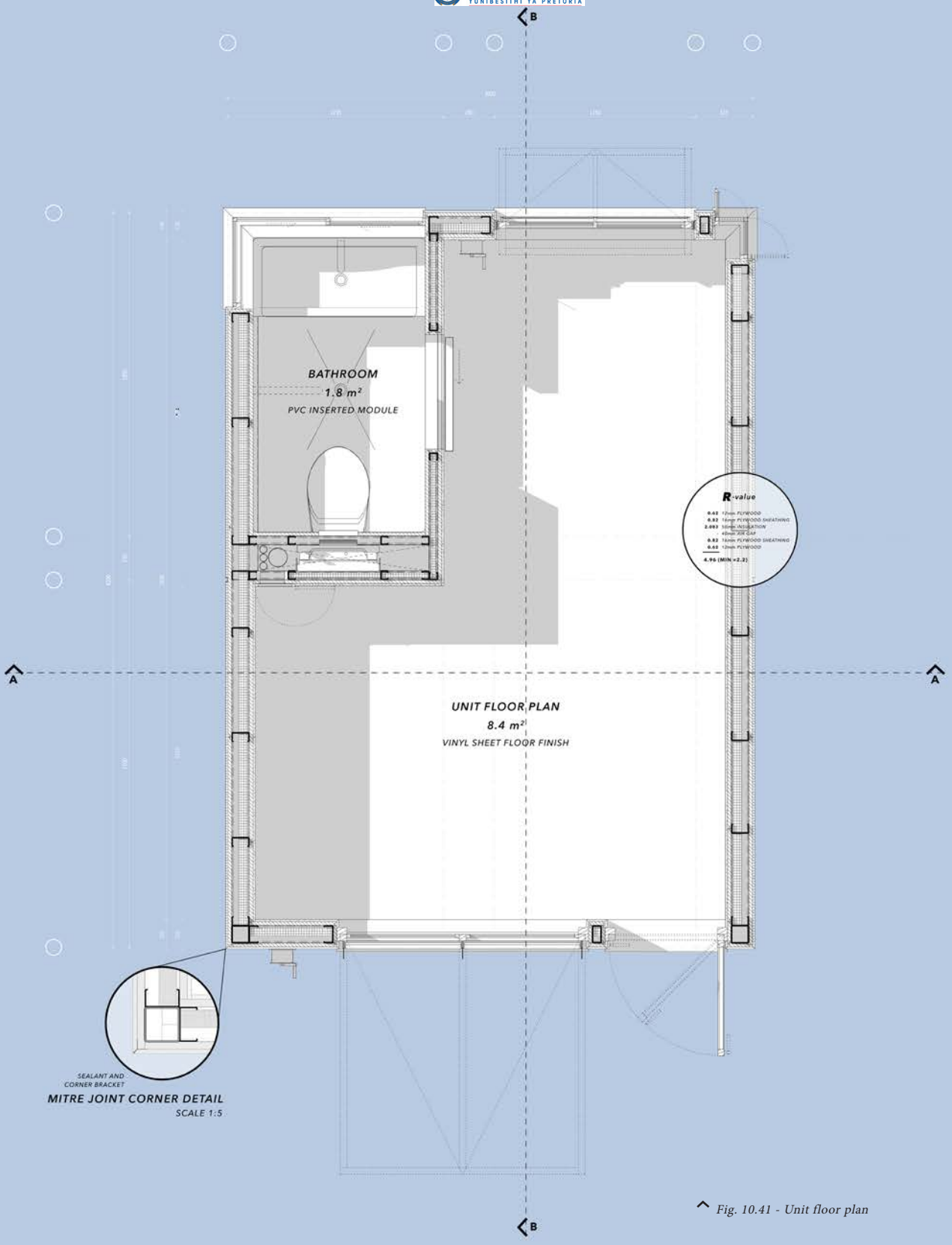
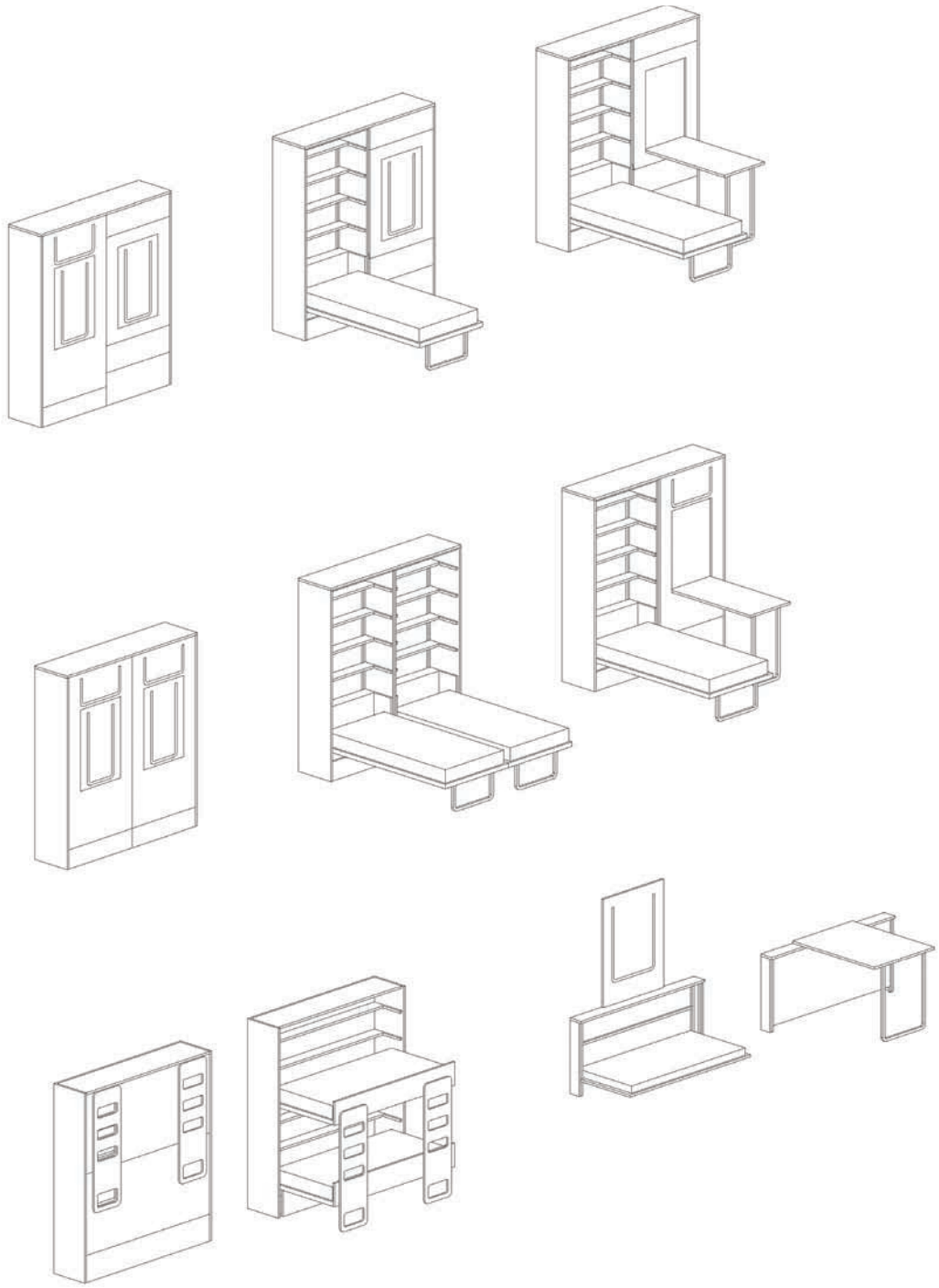
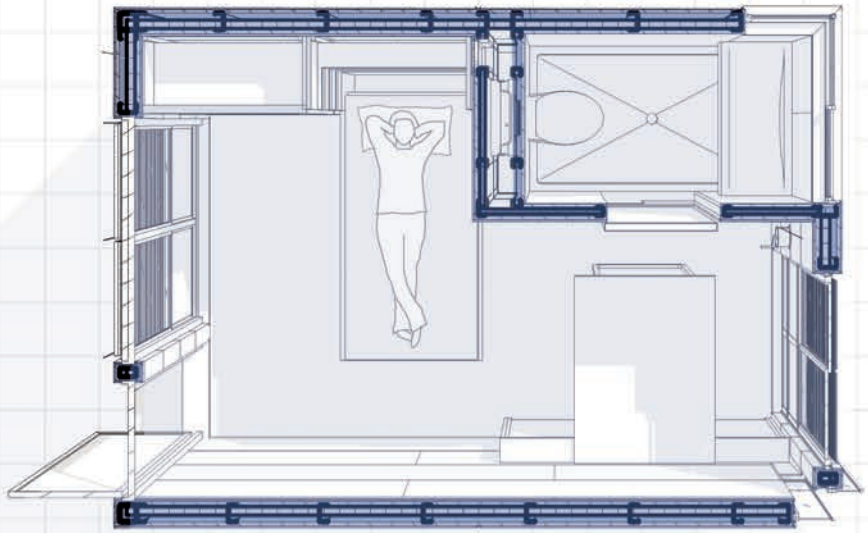
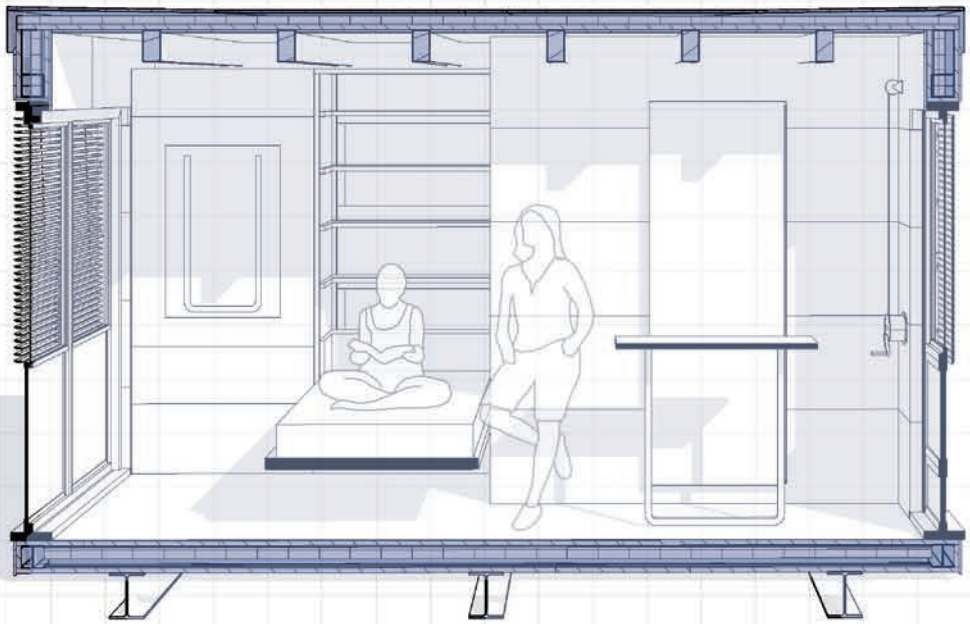


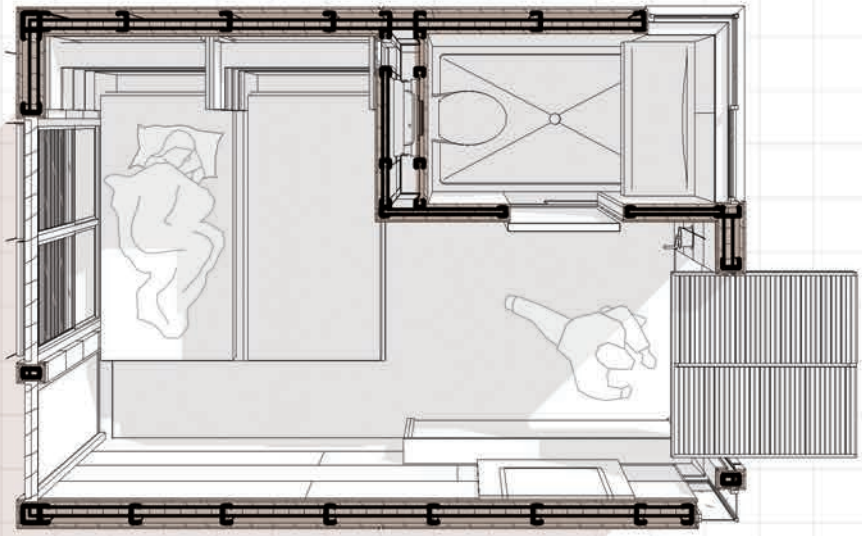
Fig. 10.41 - Unit floor plan

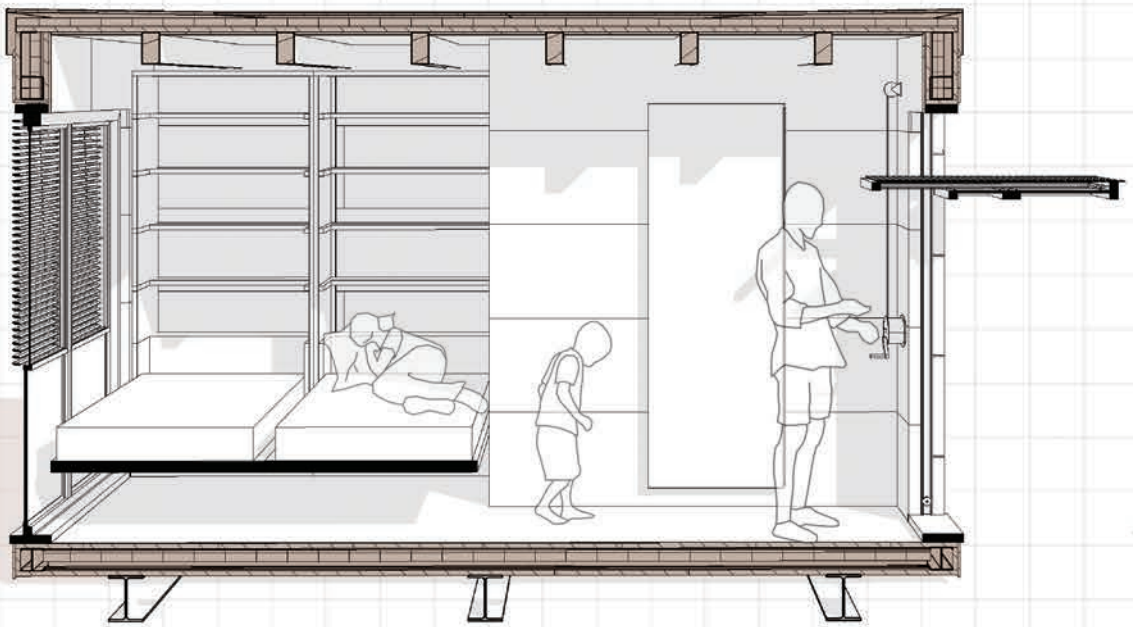


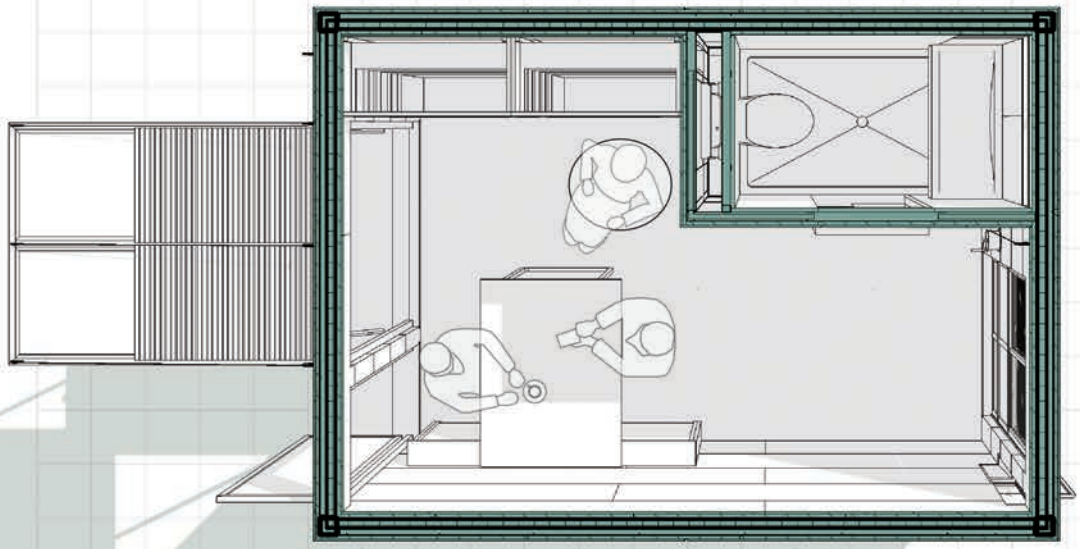
Figs. 10.42-48 - Exploring flexibility through modular furniture components

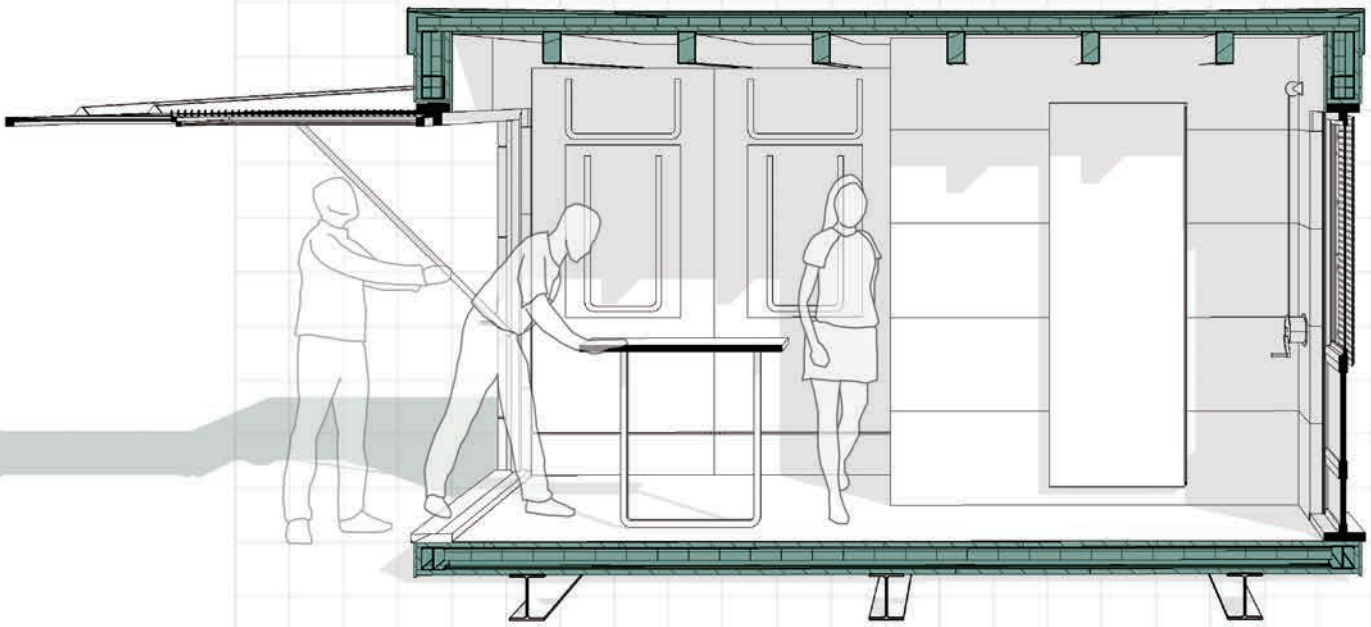


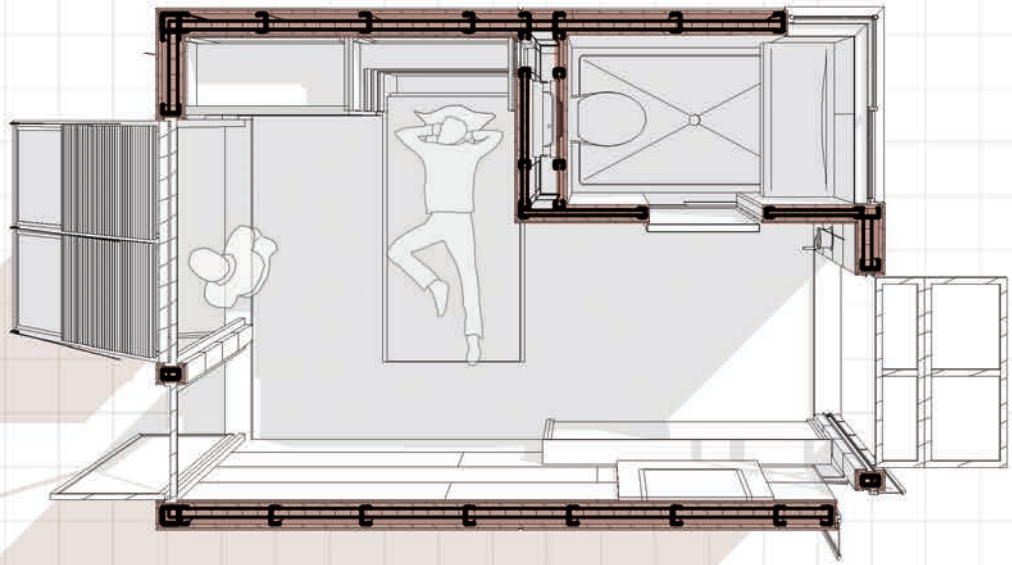


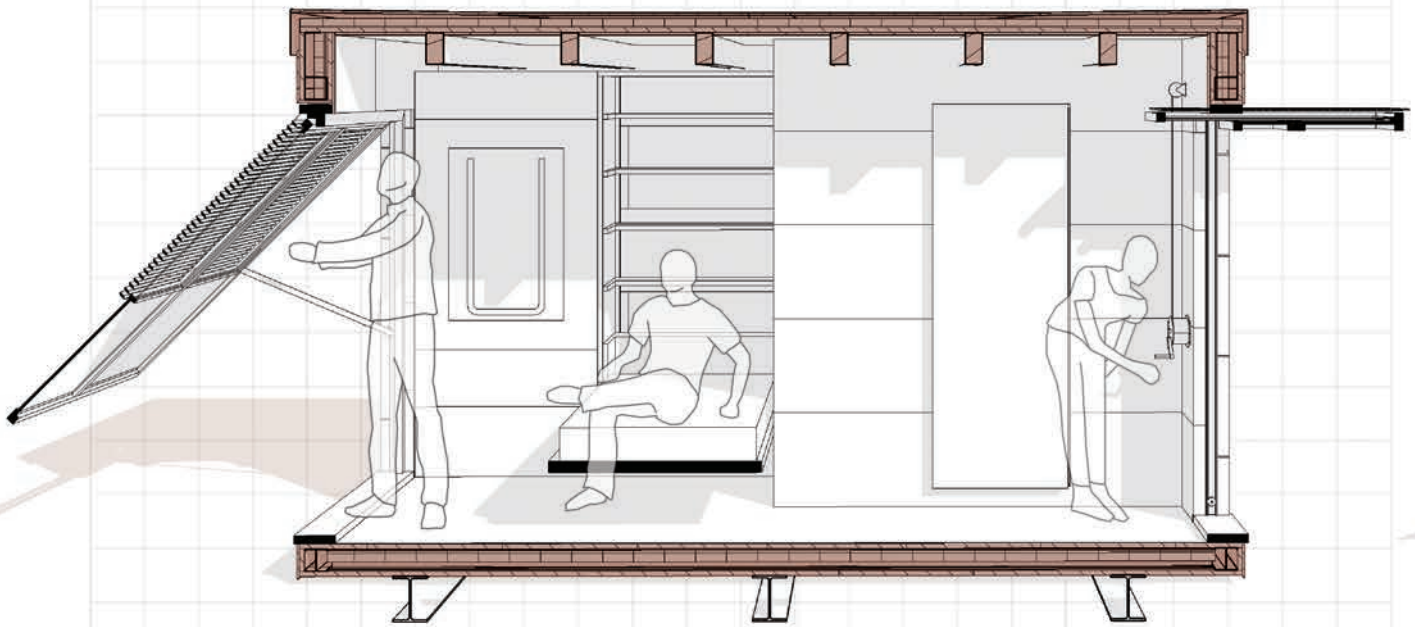


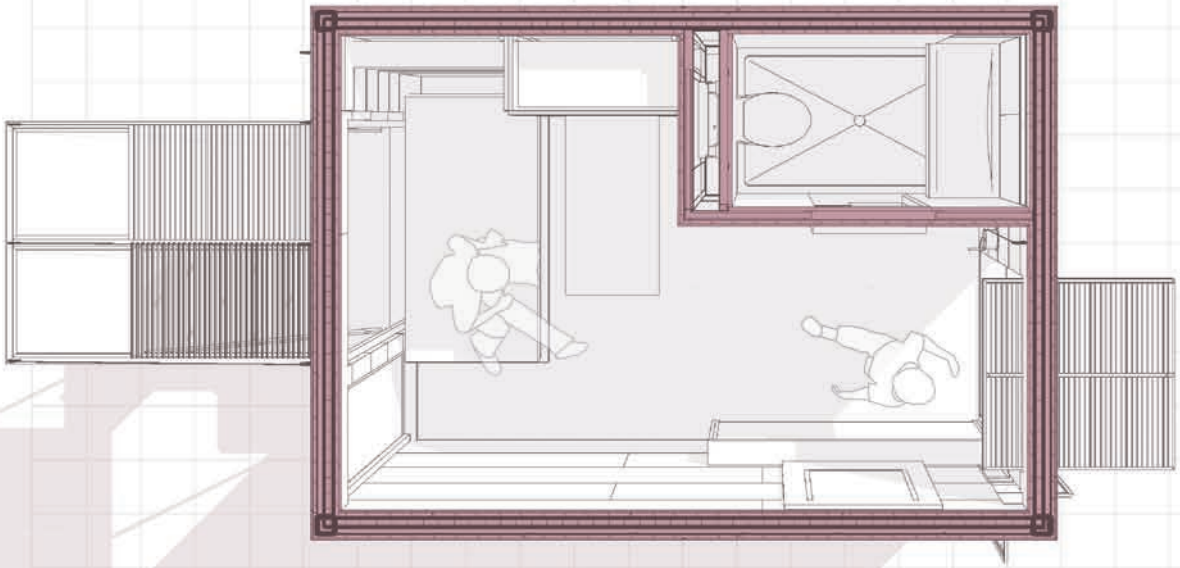


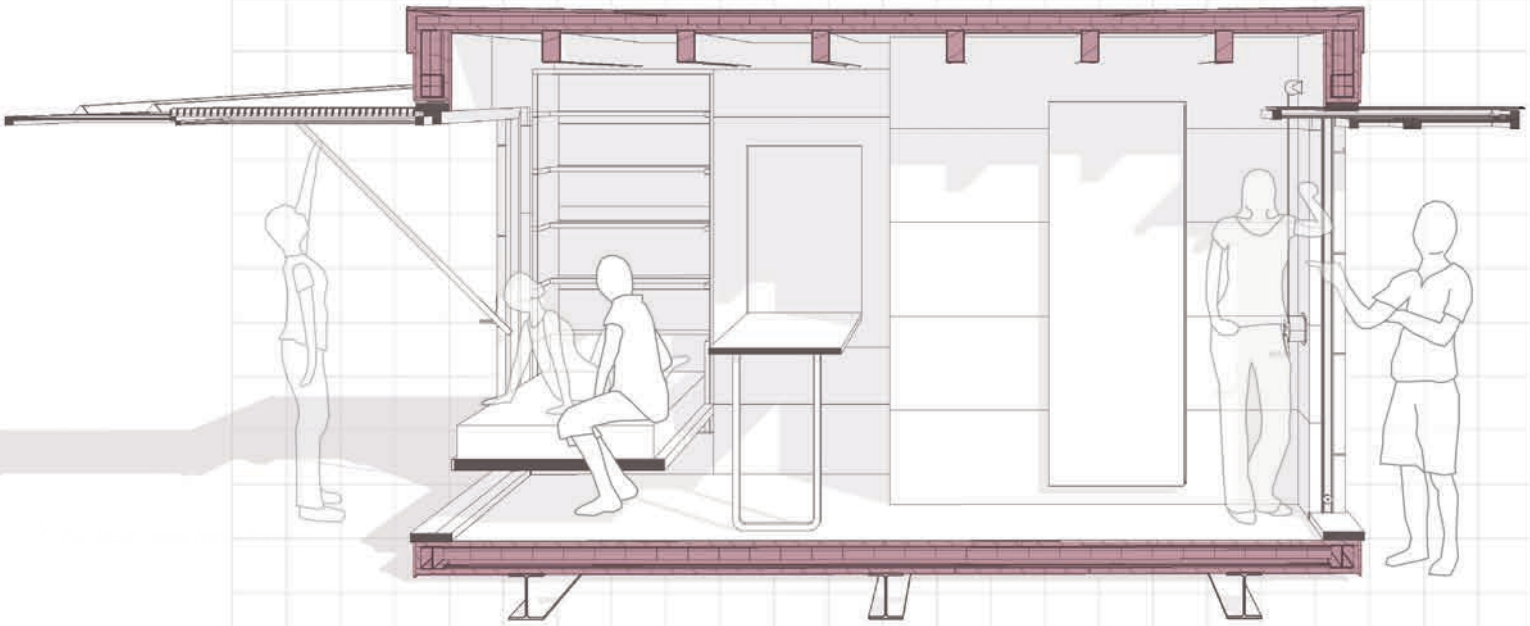


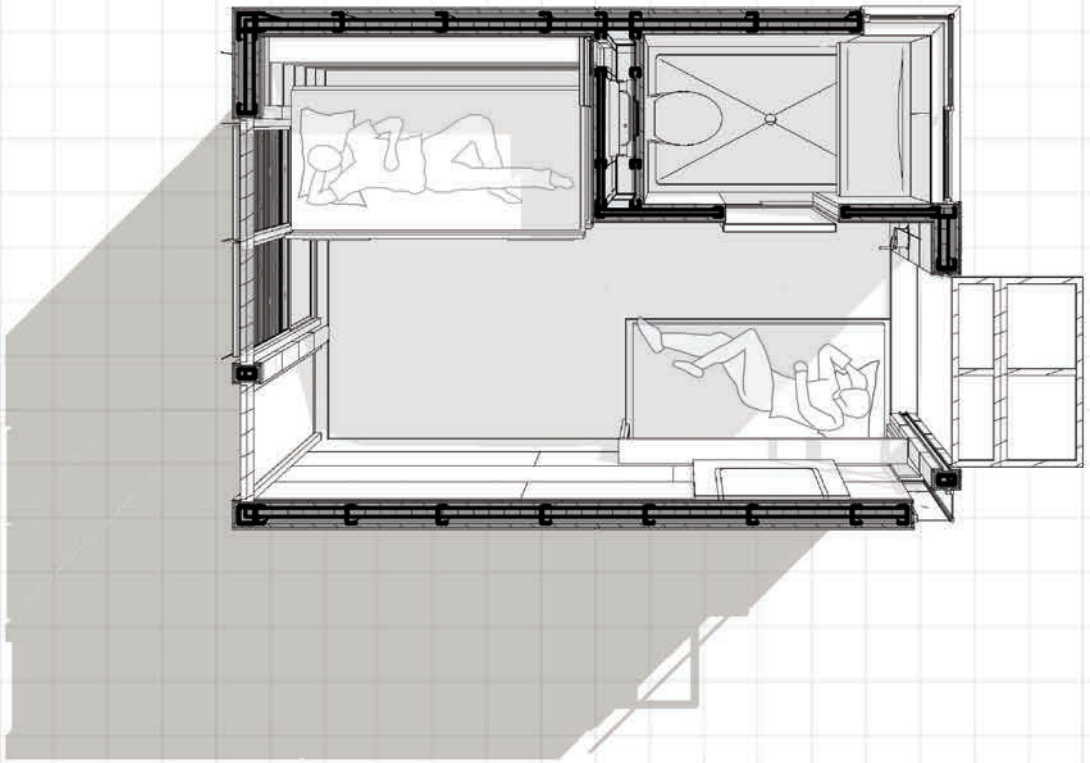


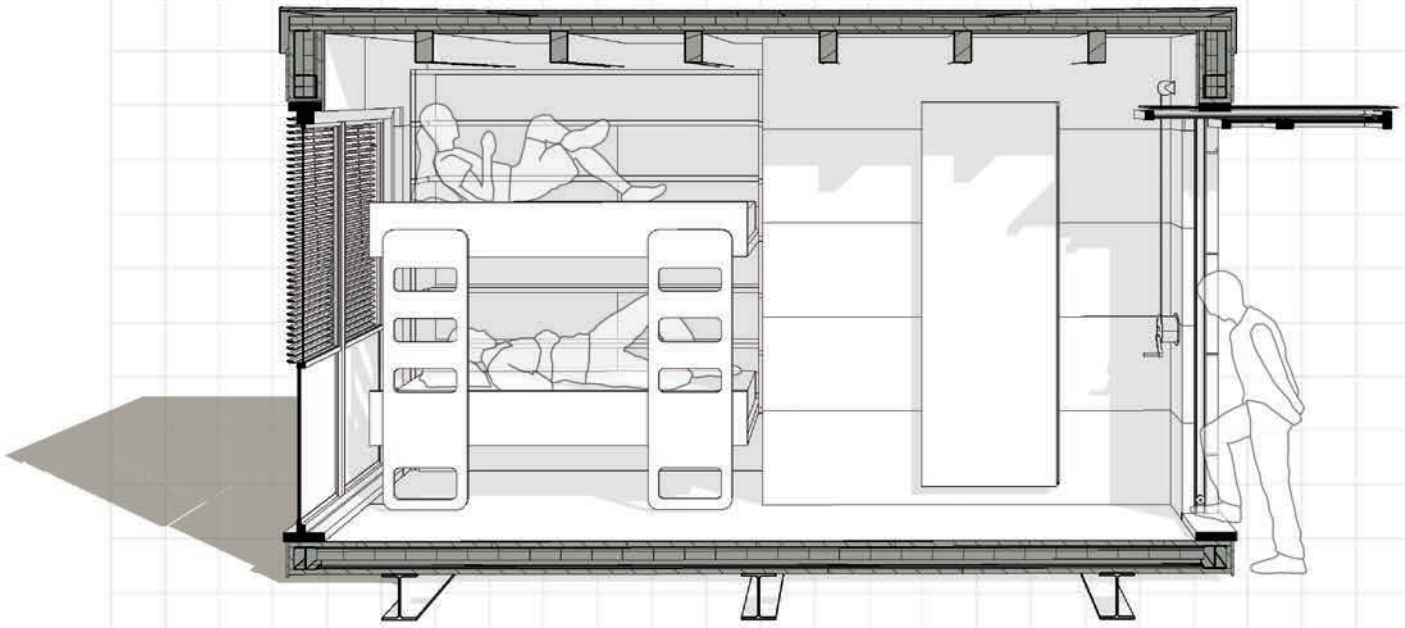












10.3 THE CONSERVATORY

CLIMATISATION AND THE FIFTH FAÇADE

The conservatory, as the new, visible and permanent entity on the site, has a set of technical informants which differ greatly from those of the temporary scheme as follows:

THE NEEDS OF THE CONSERVATORY:

The conservatory hosts primary horticultural (hydroponics) and water-recycling processes, and thus will require specific lighting, ventilation and temperature strategies in order to achieve the optimal internal condition for plant growth.

VENTILATION:

As a general rule of thumb for greenhouse design in South Africa, the required area of openings measuring 15% of the floor area needs to be included in the design to accommodate the warmer months of the year (Rodriguez, 2010). In this scheme, the openings will be placed along the lower edge of the building, facing the square.

The primary reason for enclosing the conservatory is to protect the plants and hydroponics from the poor air quality and high levels of pollution within the voids of the inner city. Gosling & Chernick (2015) report extremely high levels of sulphur dioxide, ozone, lead and carbon monoxide and other pollutants in the air. Furthermore, according to a study conducted by the State of Environment South Africa (in Gosling & Chernick 2015), Johannesburg and Pretoria have the highest concentration of the pollutant nitrogen oxide (NO^2) in the southern hemisphere. These specific pollutants have a negative impact on the majority of plants as explained by Lovett et. al. (2009), that high levels of sulphur dioxide, ozone and nitric oxides physiologically alter the chemical compositions of plants; slow down their growth; and often store the pollutants within the leaves themselves, rendering plants such as lettuce and spinach dangerous for consumption.

Therefore, in addition to enclosing the conservatory, the openings which face the square will be lined with dense hyperaccumulators (which will also be planted within the conservatory itself) which by definition are plants which absorb high levels of pollutants without being poisoned themselves, in order to minimise the concentration of pollutants within the greenhouse for the vegetables to absorb.

LIGHTING:

Unlike European greenhouses which require 100% light transmission for heat and UV gain, South Africa experiences a far warmer climate and thus requires only 40% light transmission in order to achieve the most effective heat and UV gain for the plants within. Independent, small scale greenhouses most often utilize a 40% transmission netting which is hung over a frame, however due to the nature of this structure, a more robust filtration mechanism is required and will thus need to be incorporated into the modular glazing system as a mesh screen. In order to ensure that the mesh screen was achieving an optimal internal lighting condition, a lux study was conducted. According to Brown (n.d) the optimal lux levels for optimal plant growth is between 35 000 and 40 0000 Lux.

Furthermore, fruit and vegetables do differ in their UV requirements for optimal output, which will be provided for in the internal layout of the greenhouse. According to Rodriguez (2010) fruity plants such as tomatoes, peppers and cucumbers require eight hours of light per day, whilst leafy vegetables such as lettuce, spinach and cabbage require four hours of light per day. Thus, all of the fruit bearing plants will be hung to ensure they receive the maximum sunlit hours, whilst the leafy vegetables will be situated below, subject to the moving shadows of the fruity plants without their production being hindered.

TEMPERATURE:

The optimal temperature (general) for plant production is between 18 and 28 degrees Celsius (Vosloo, 2018). This can be easily monitored by a temperature gauge and adjusted through opening and closing windows as required in this temperate climate (Vosloo, 2018).

MANIFESTATION OF THE FIFTH FAÇADE:

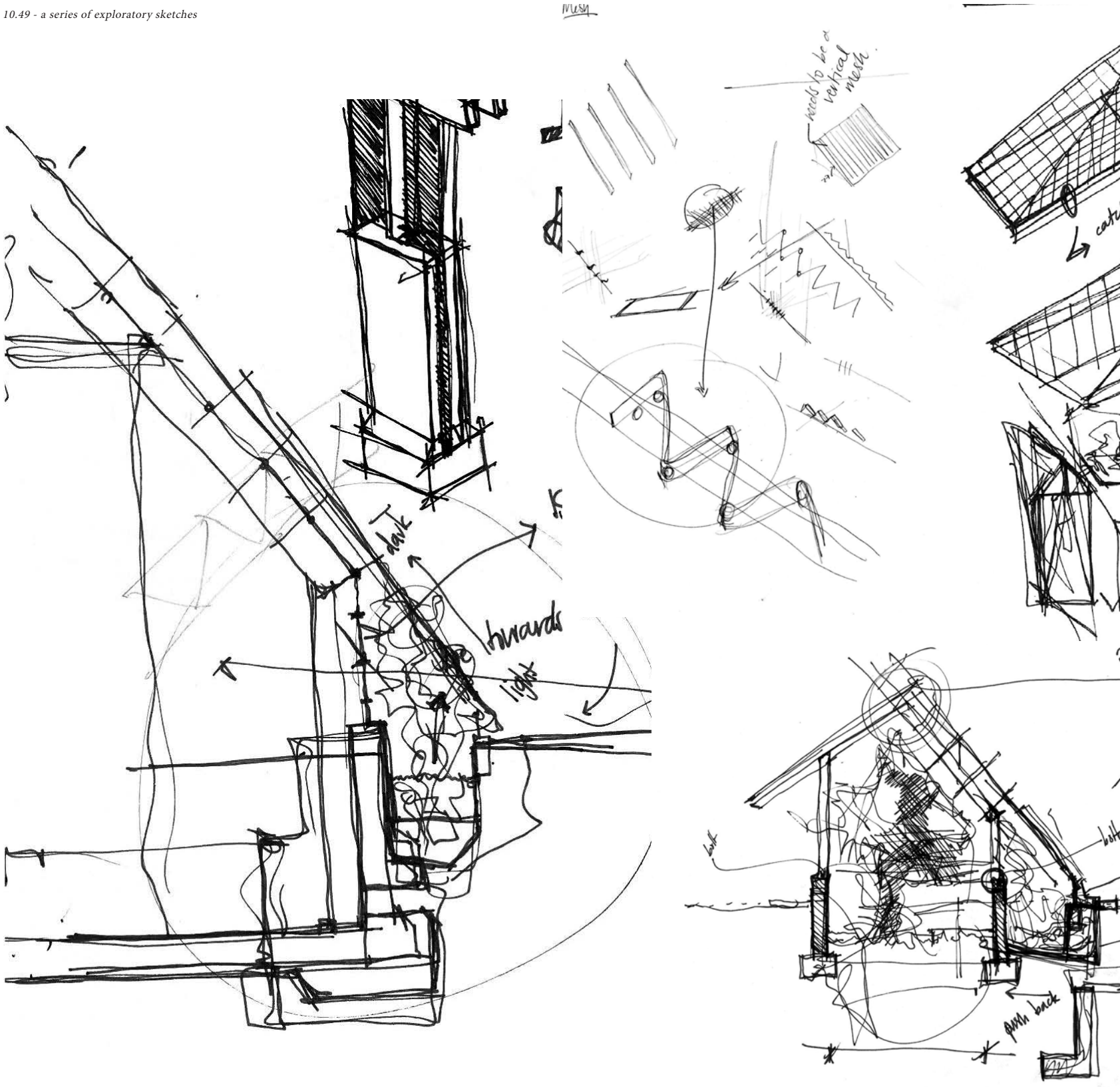
The structural requirements and informants of such a permanent glass structure will differ greatly from the exposed tectonics of the temporary structure – accordingly, achieving a strong architectural cohesion between parts is not a simple task. However, some form of continuity will be achieved between the two parts through two aspects. Firstly, through materiality in the use of structural steel and secondly, through the modular and prefabricated methods of making in achieving a structural façade system.

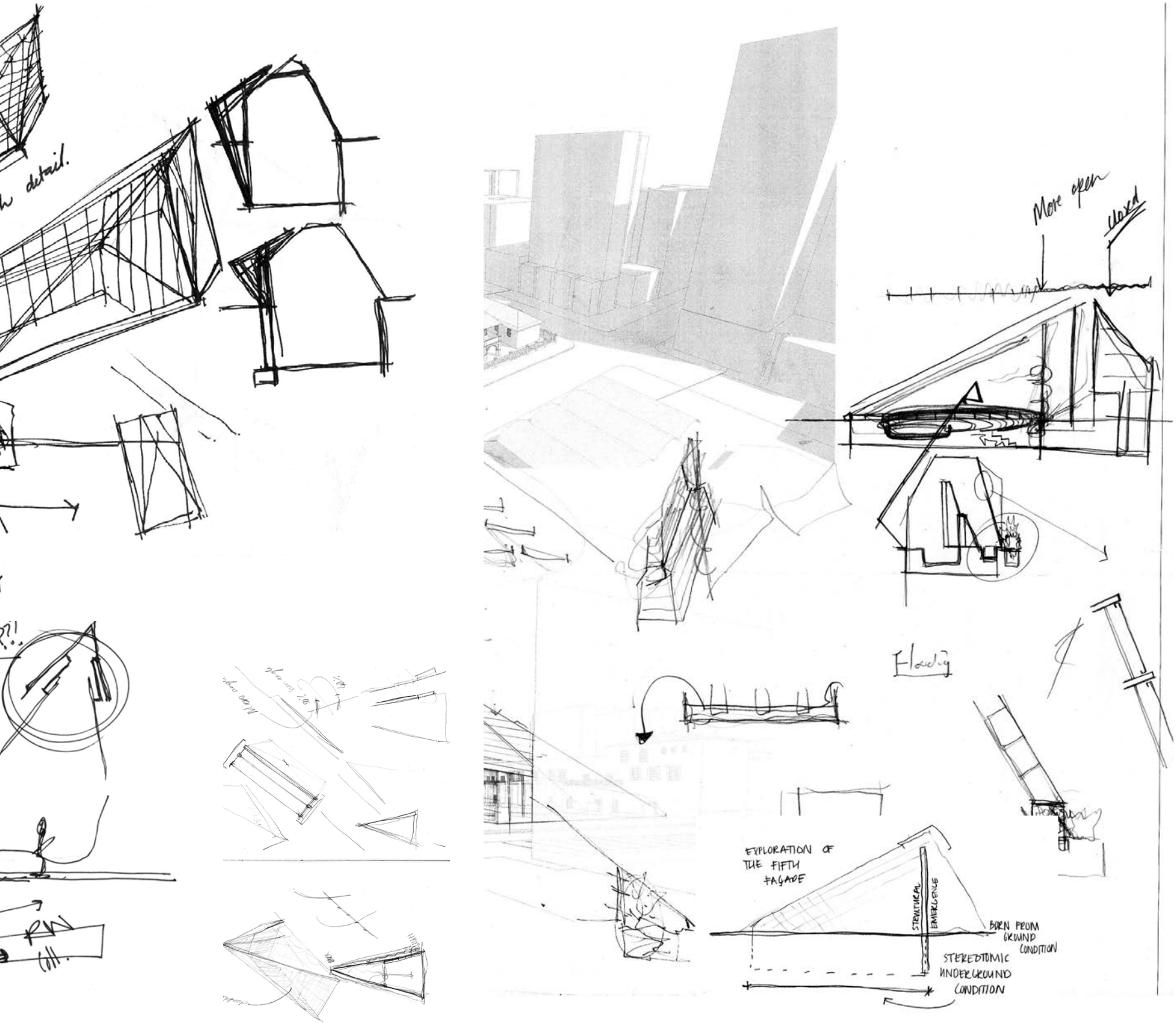
EMBODIMENT IN THE STRUCTURAL FAÇADE AND THE GLAZED GRID SHELL:

The facades on all sides will be structural in order to transfer the loads down to the grade according to the slopes of the sides whilst simultaneously providing bracing (Staib et. al. 2008). The prefabricated panels consist of glass panels with steel frames and will incorporate a shading screen to meet the needs of the plants within. Furthermore, this modular panel frame system is appropriate for the consistent and unified nature of the various facades, allowing for consistencies in the design. A base frame carcass will be executed on site, onto which the fully prefabricated structural panels will be mounted. All joints will be treated with flexible seals to provide movement tolerances and will also act as moisture barriers. Due to the inclusion of a mesh screen to control the internal conditions, single glazing will suffice. Due to the highly technical nature and technical development of such a structure, where high-level technology and specialists would conduct the appropriate virtual experiments in the resolution of such a form, herein the principle will be applied which embodies the intension of achieving free space enclosed in a grid-based glass shell.

INVESTIGATIONS:

› *Fig. 10.49 - a series of exploratory sketches*





RESOLUTION:

SECTION B-B
SCALE 1:50

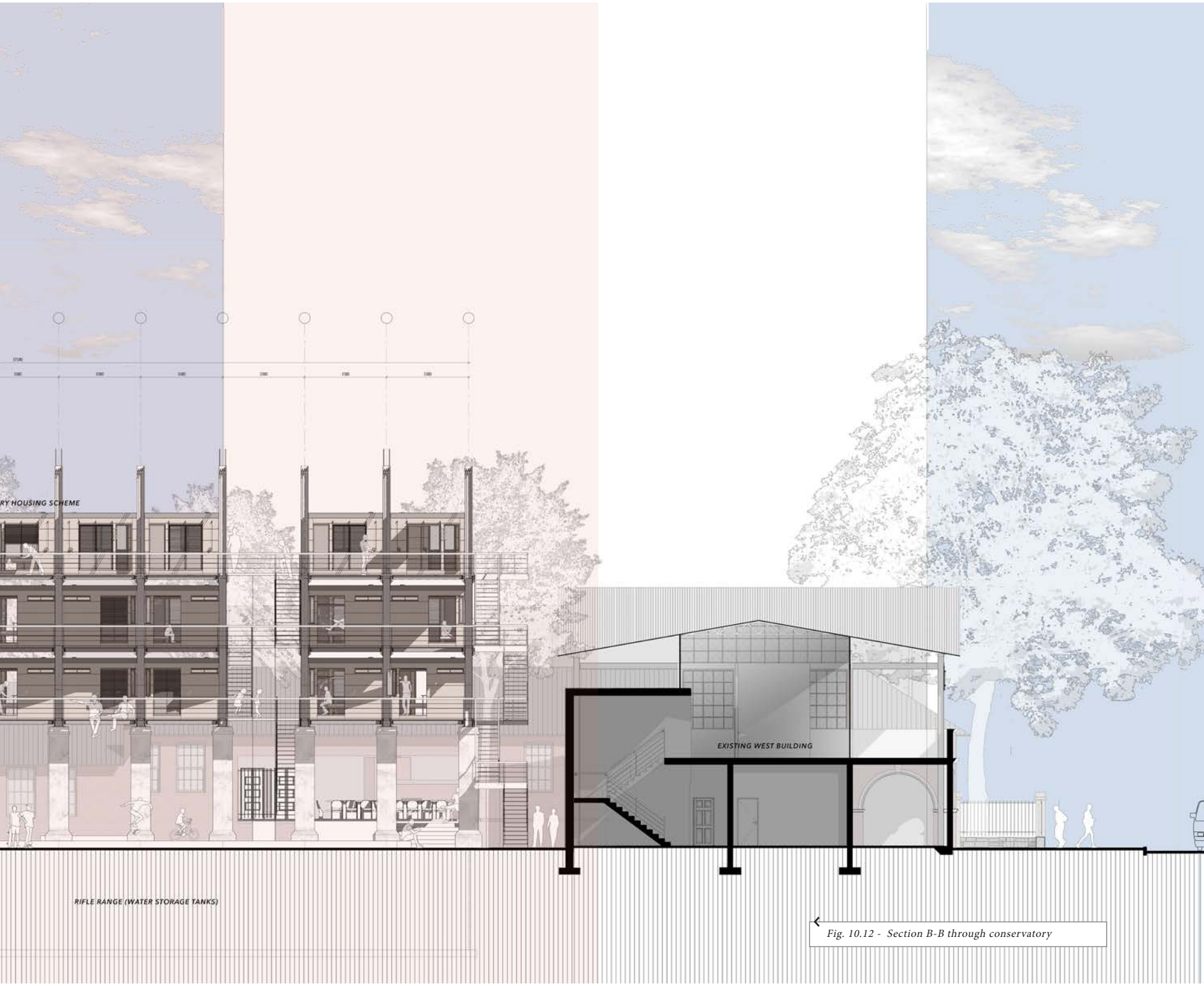


Fig. 10.12 - Section B-B through conservatory

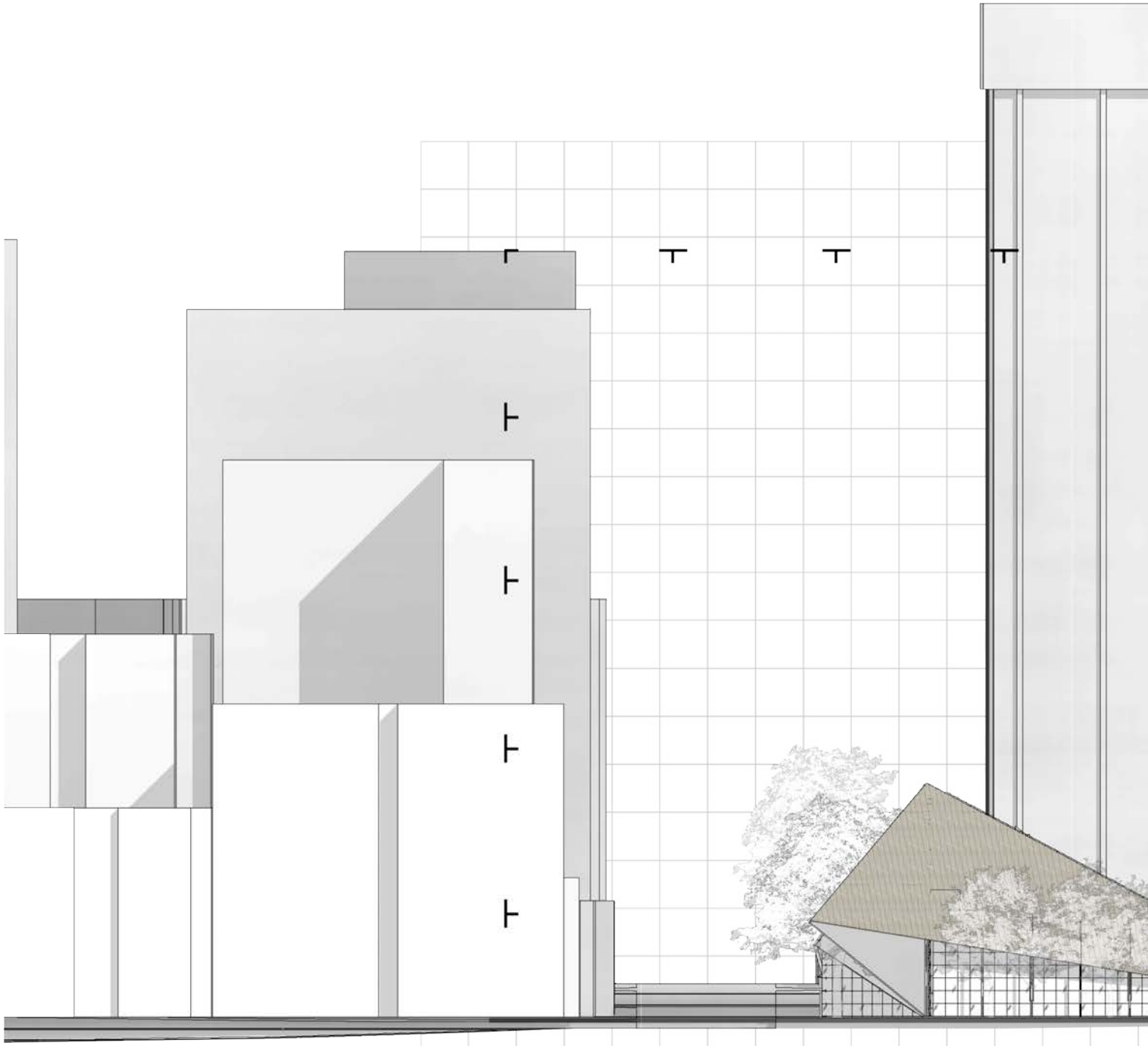
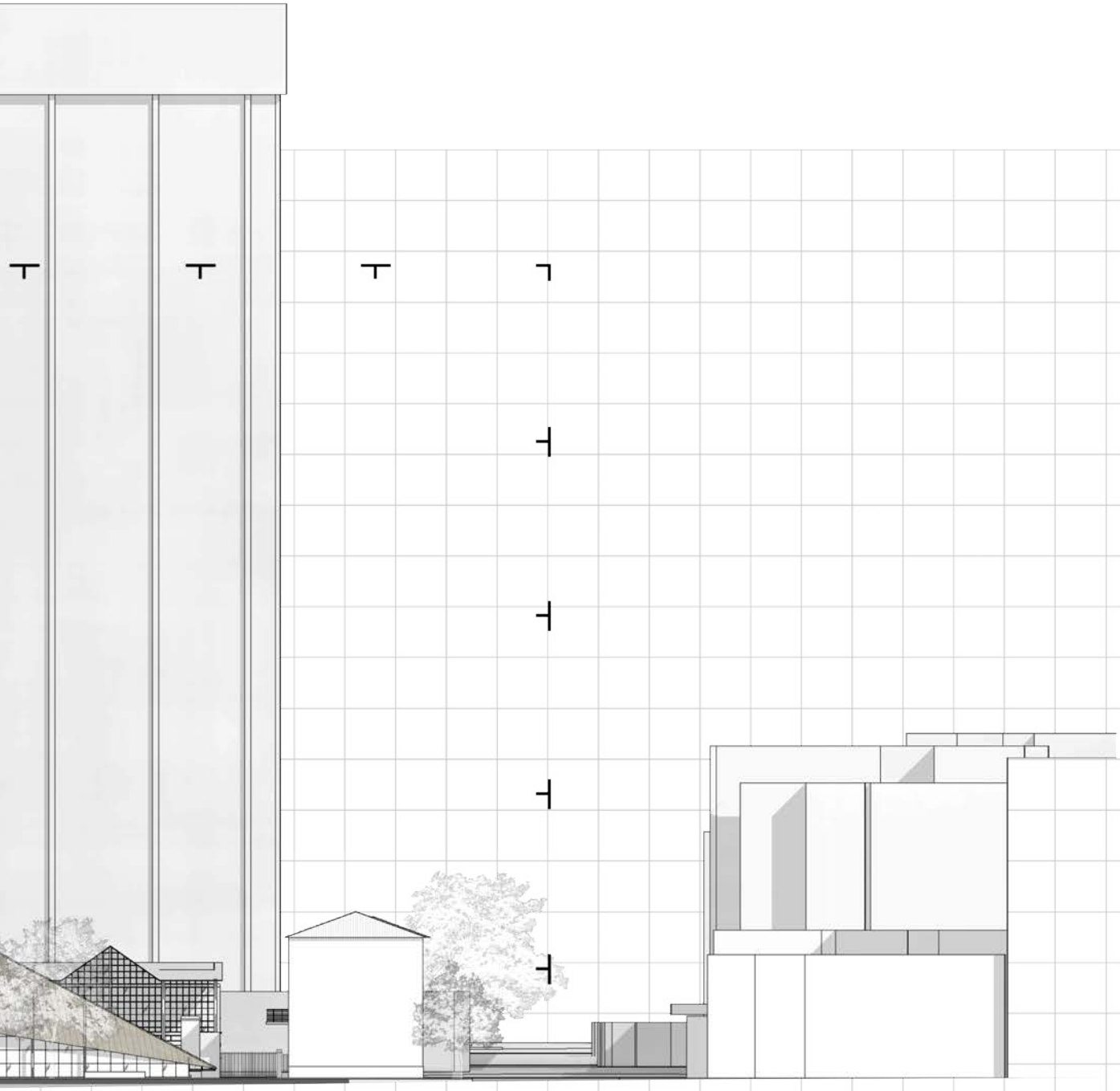
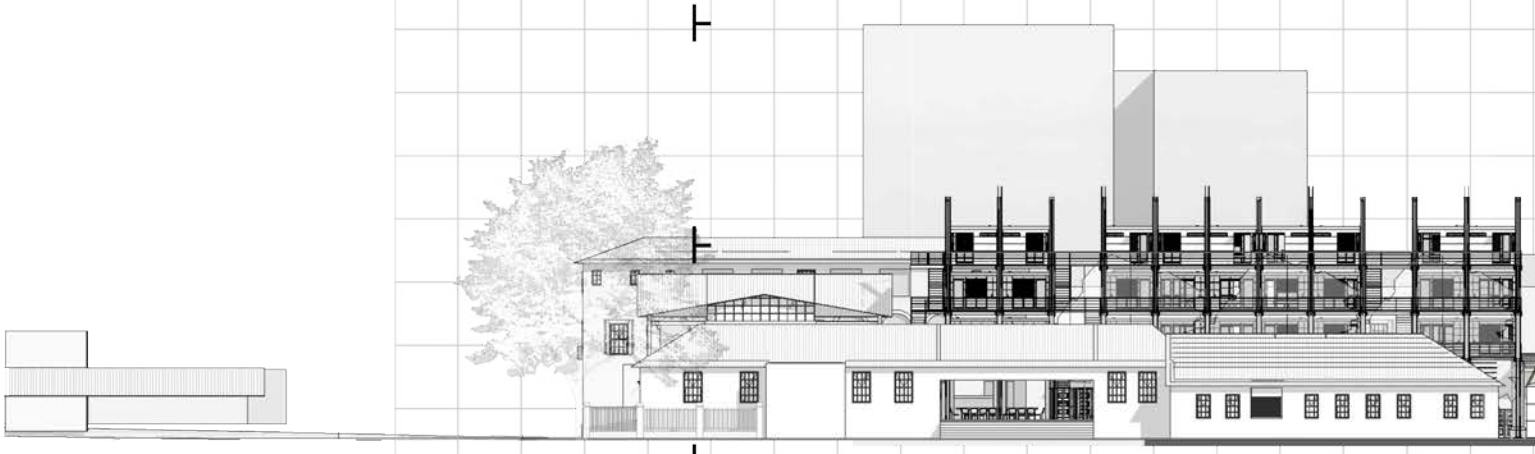


Fig. 10.51-54 - Elevations

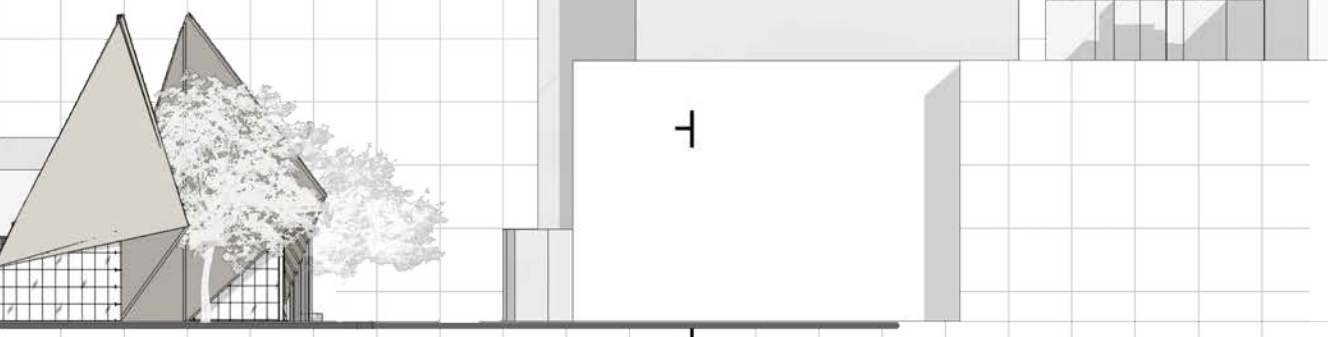


EVATION

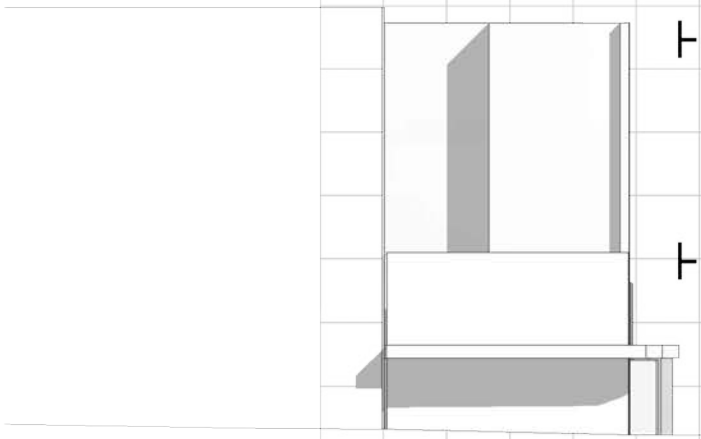


SOUTH EL

Fig. 10.51-54 - Elevations

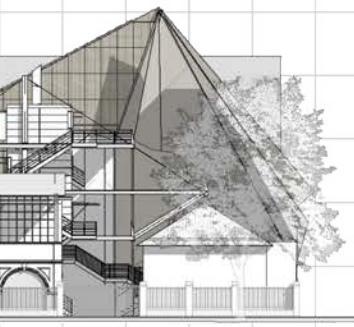


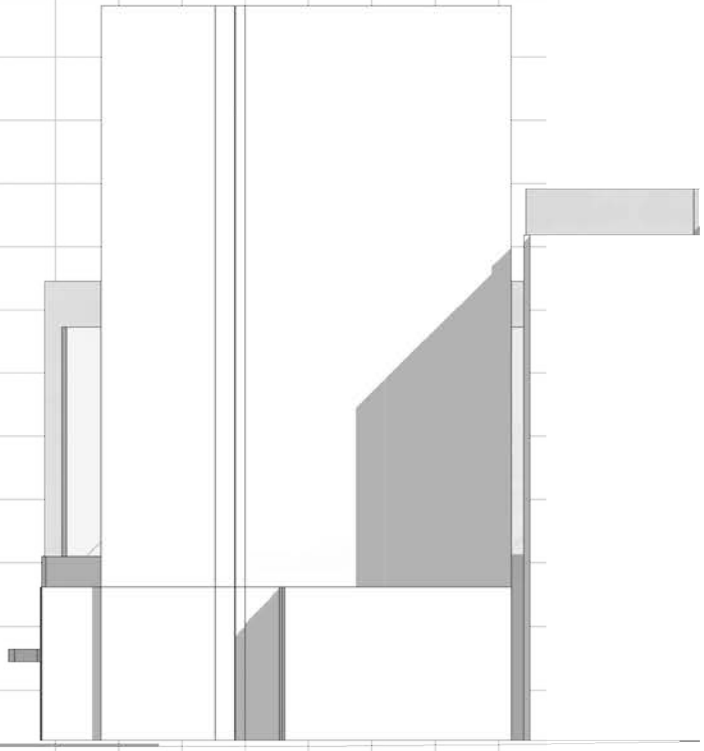
LEVATION



WEST ELEVA

Fig. 10.51-54 - Elevations





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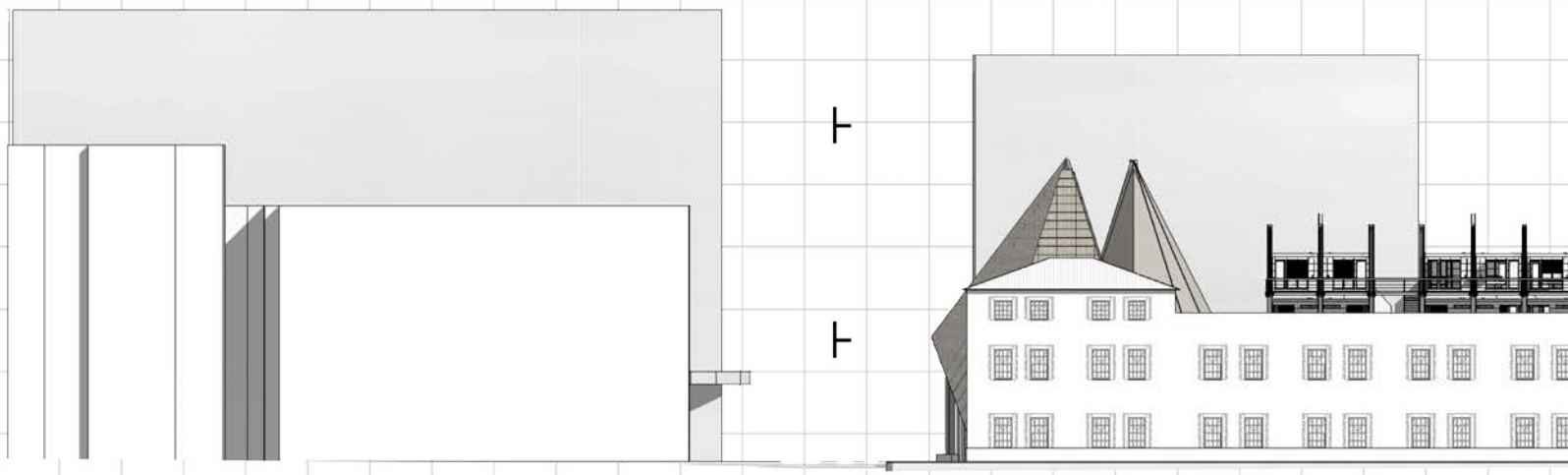
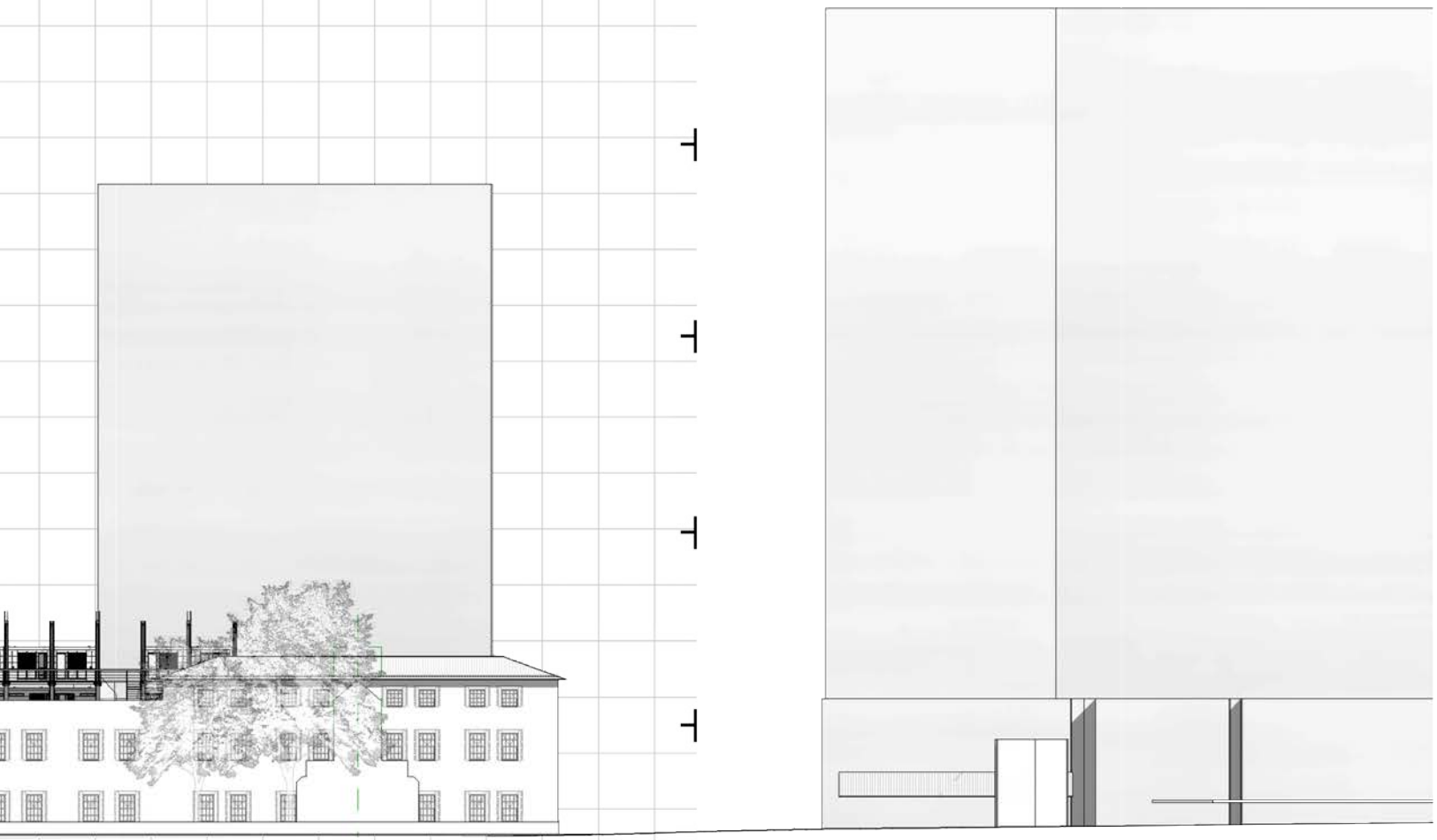


NORTH

Fig. 10.51-54 - Elevation



I ELEVATION

s

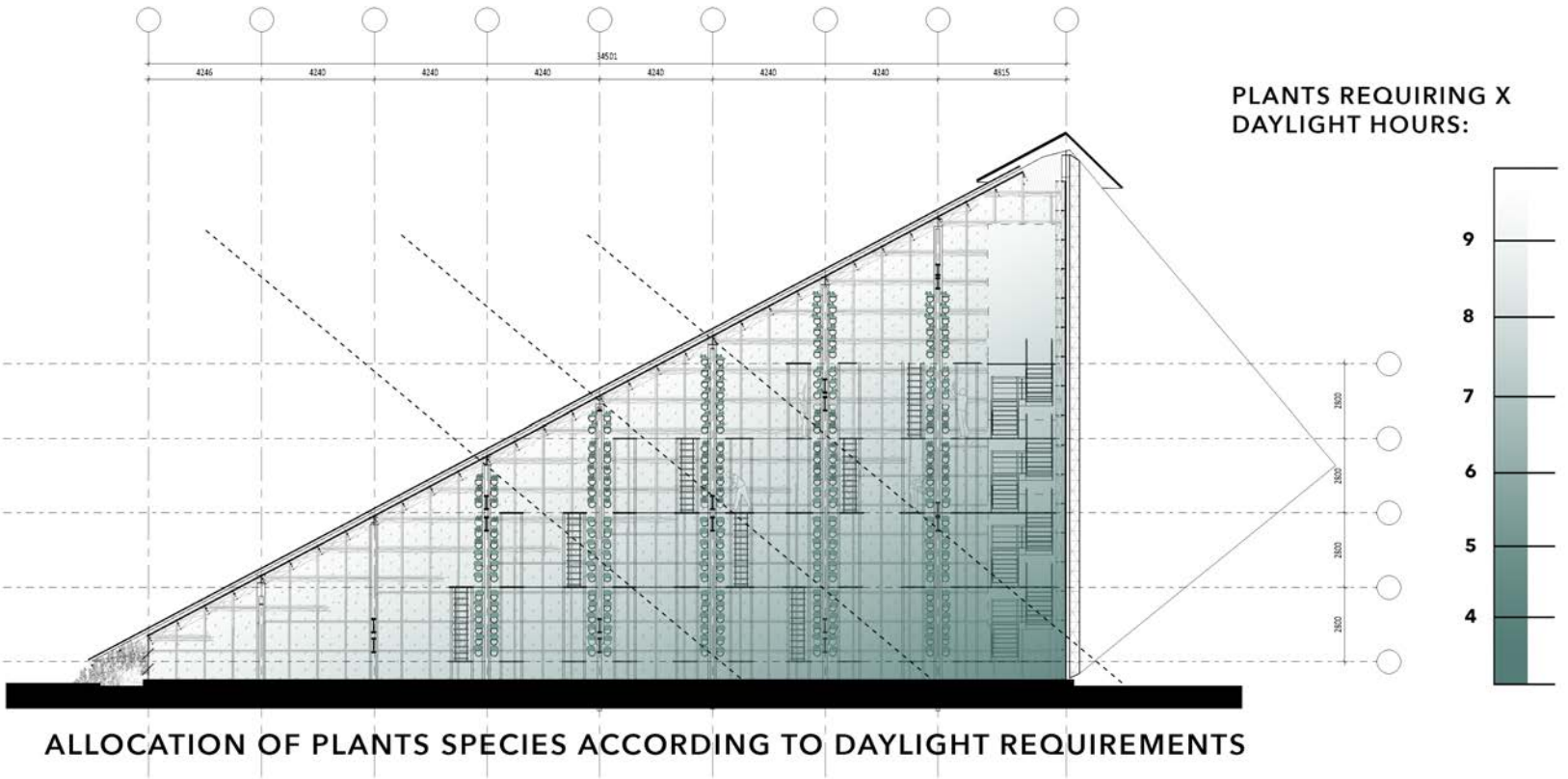
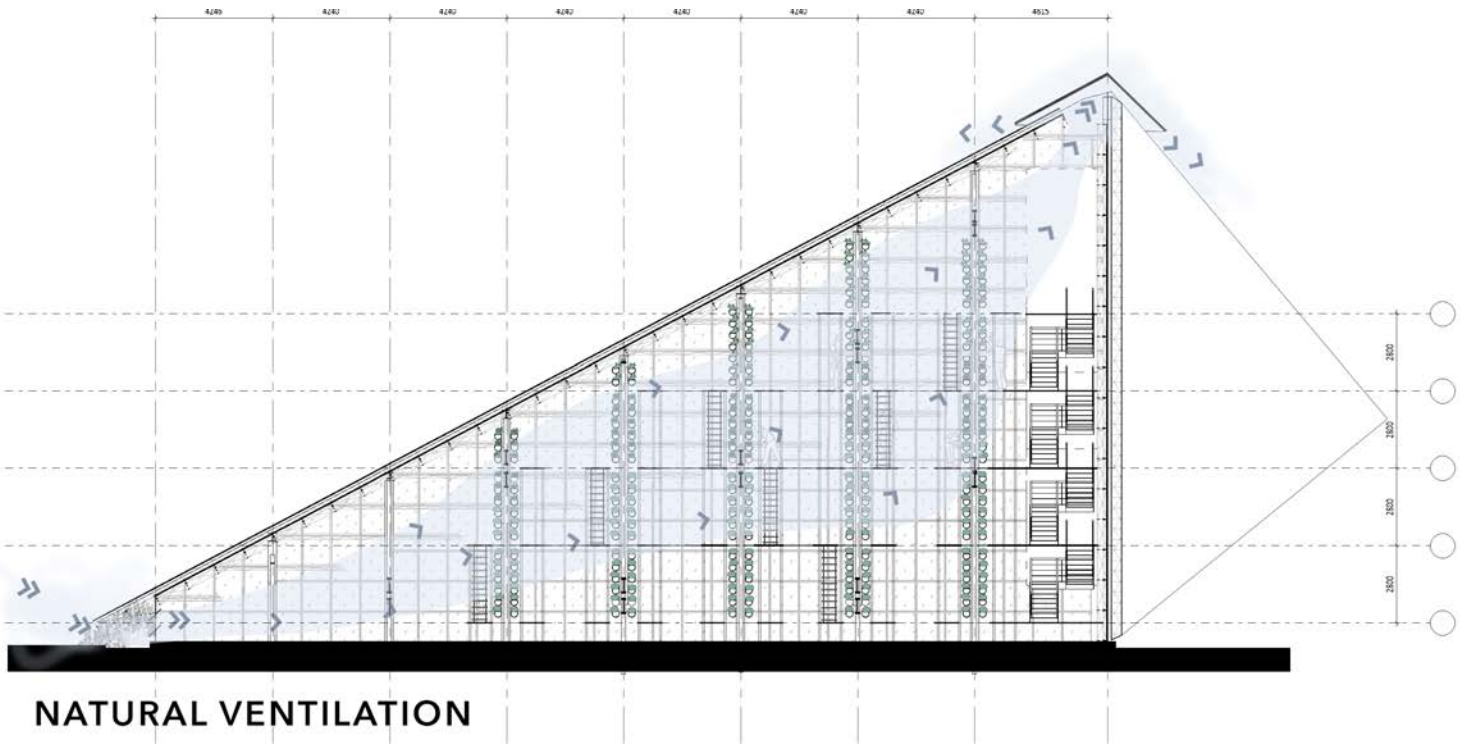
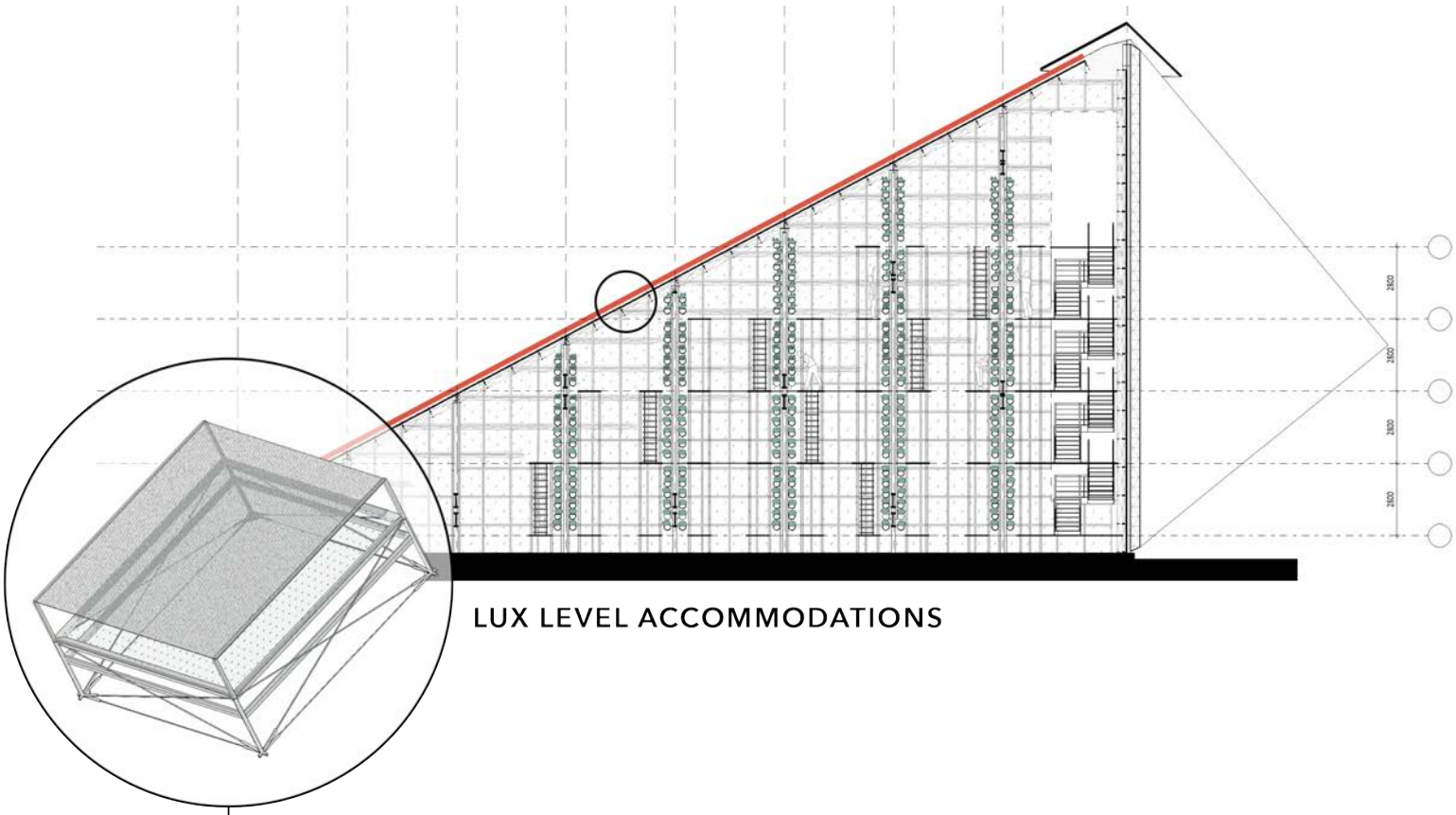


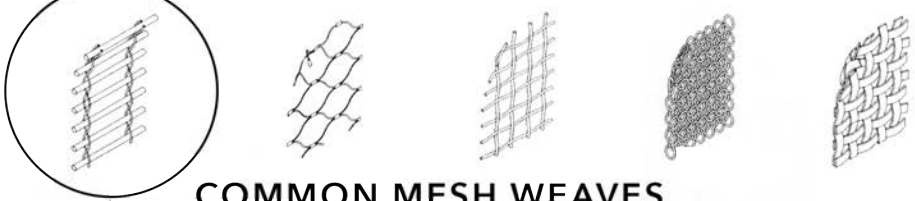
Fig. 10.55-58 - Climate strategies for conservatory



NATURAL VENTILATION

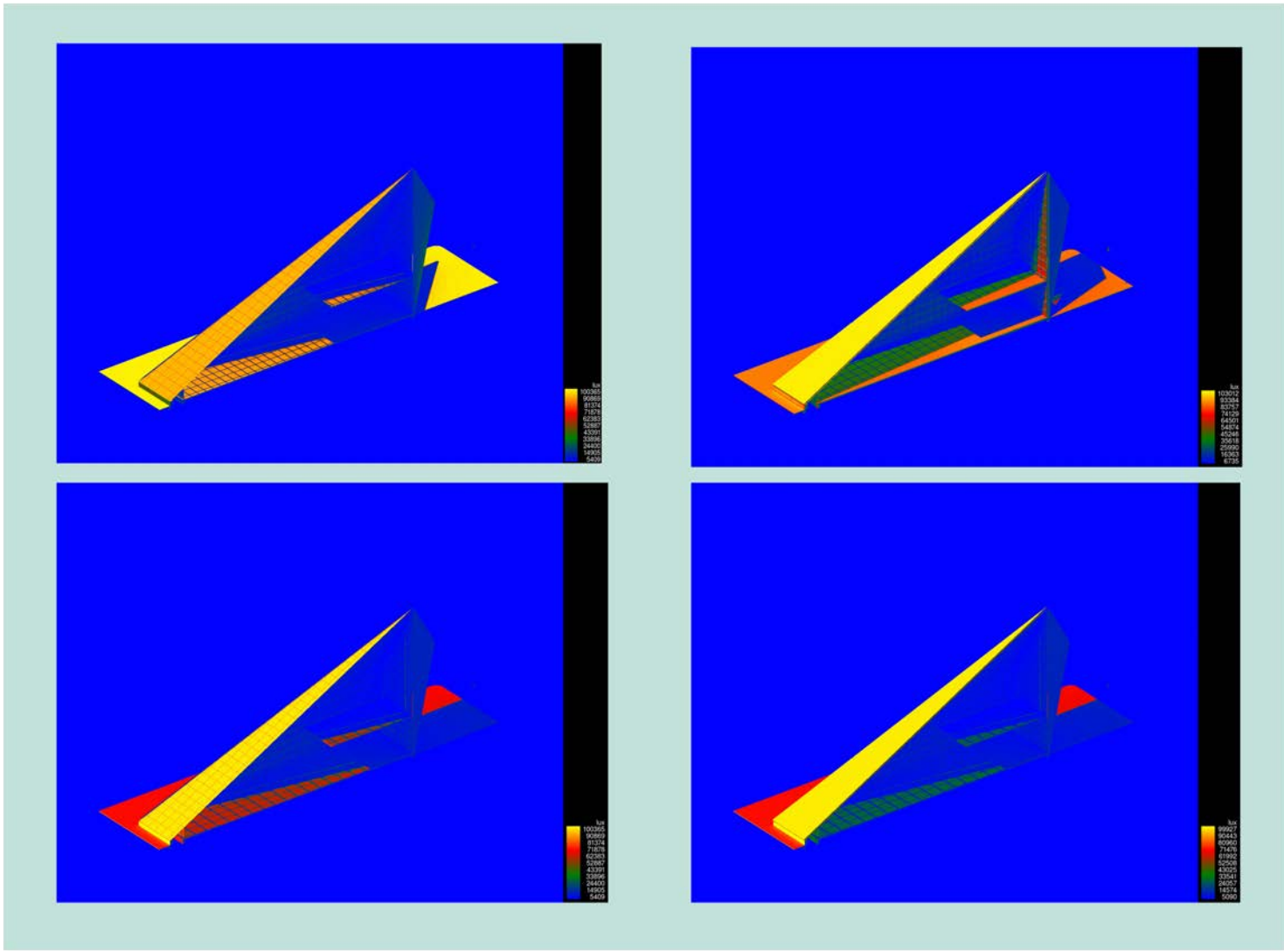


LUX LEVEL ACCOMMODATIONS



COMMON MESH WEAVES

MOST APPROPRIATE WEAVE FOR SLOPED, DENSITIES AS TESTED BELOW:



Virtual Lux level test analyses

10.4 THE SYSTEM

WATER RECYCLING, PROVISIONS AND PROCESSES

BASELINE HORTICULTURAL PROCESSES:

There are various hydroponic systems available today, and the NFT (nutrient film technique) will be utilised in the conservatory for the following reasons:

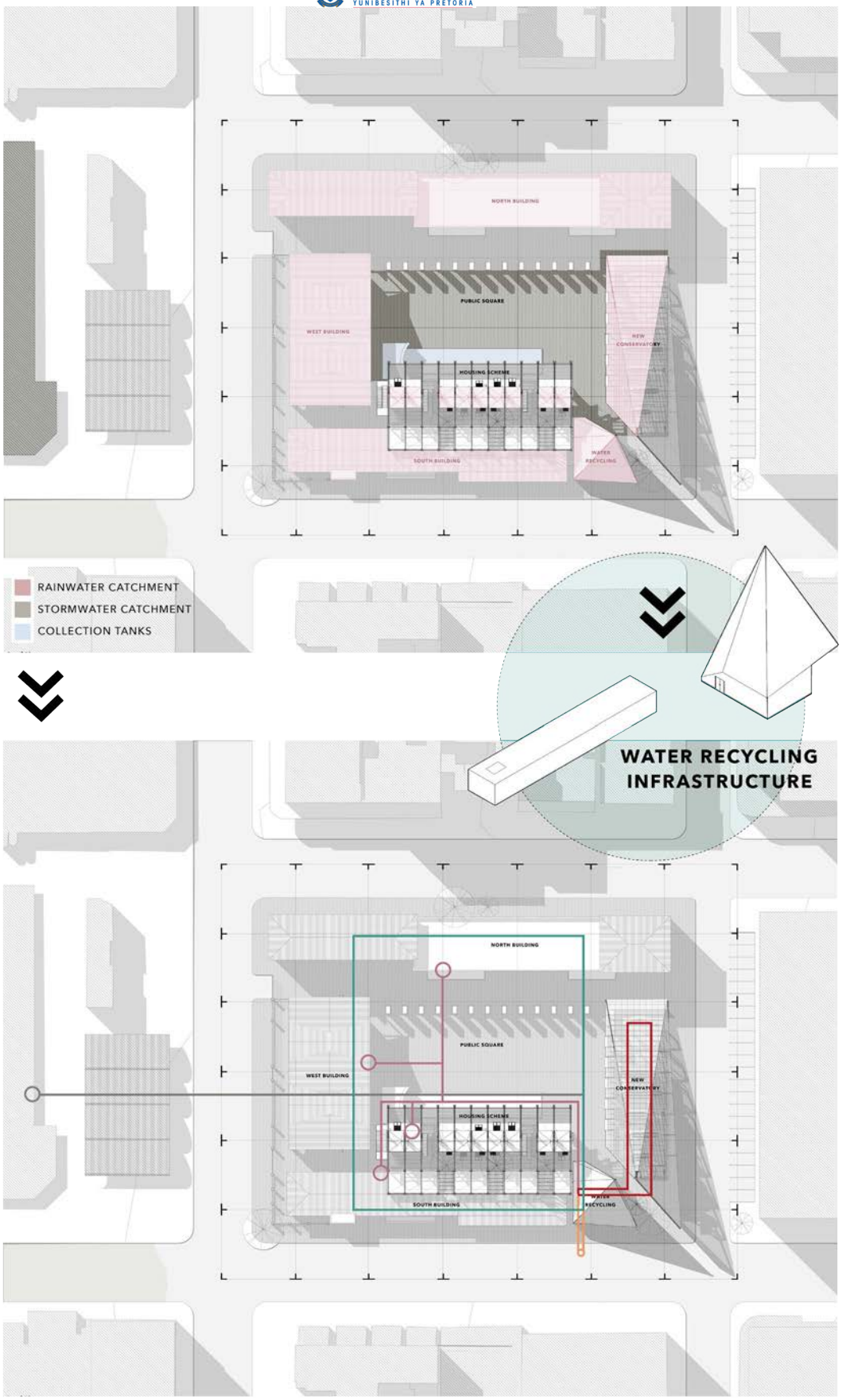
- It is the most water wise hydroponic system as it reuses the water that it runs through the system two or three times as opposed to a continuously fresh supply;
- The staggered nature of the stands will work well together with architectural form in achieving staggered terraces to optimize space and is also most comfortable for people to use (as opposed to a vertical wall or a wide, flat bed);
- The water requirements of the conservatory are as established in the figure alongside.

RECYCLE TRACKS

The water recycling system functons on the basis of two recycling tracks according to water processes (excluding water processes which require fresh potable water), namely the hydroponic recycle track (red) the grey water recycle track (green) according to figures 10.48 and 10.49).

The sizing of storage tanks, overflow tanks, inlets, pumps and other required equipment and purification stations have been dsigned and sized according to the water calculations as stipulated in figures 10.50-10.62

Fig. 10.59 - Diagram of integrated water system



WATER SYSTEM AND PROCESSES FOR PHASE 1 (TO ACCOMMODATE THE HOUSING)

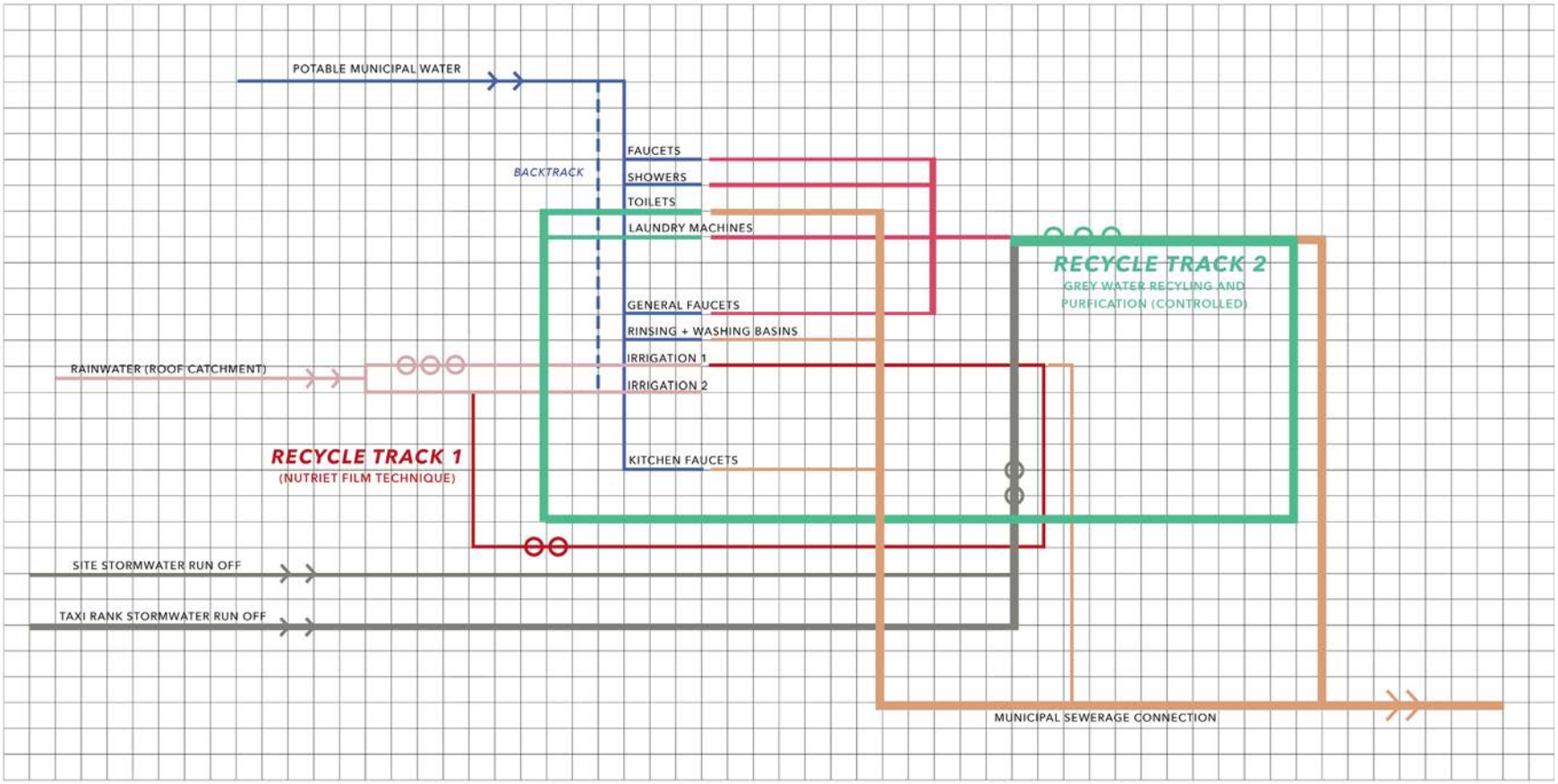


Fig. 10.60- Diagram of integrated water system phase 1

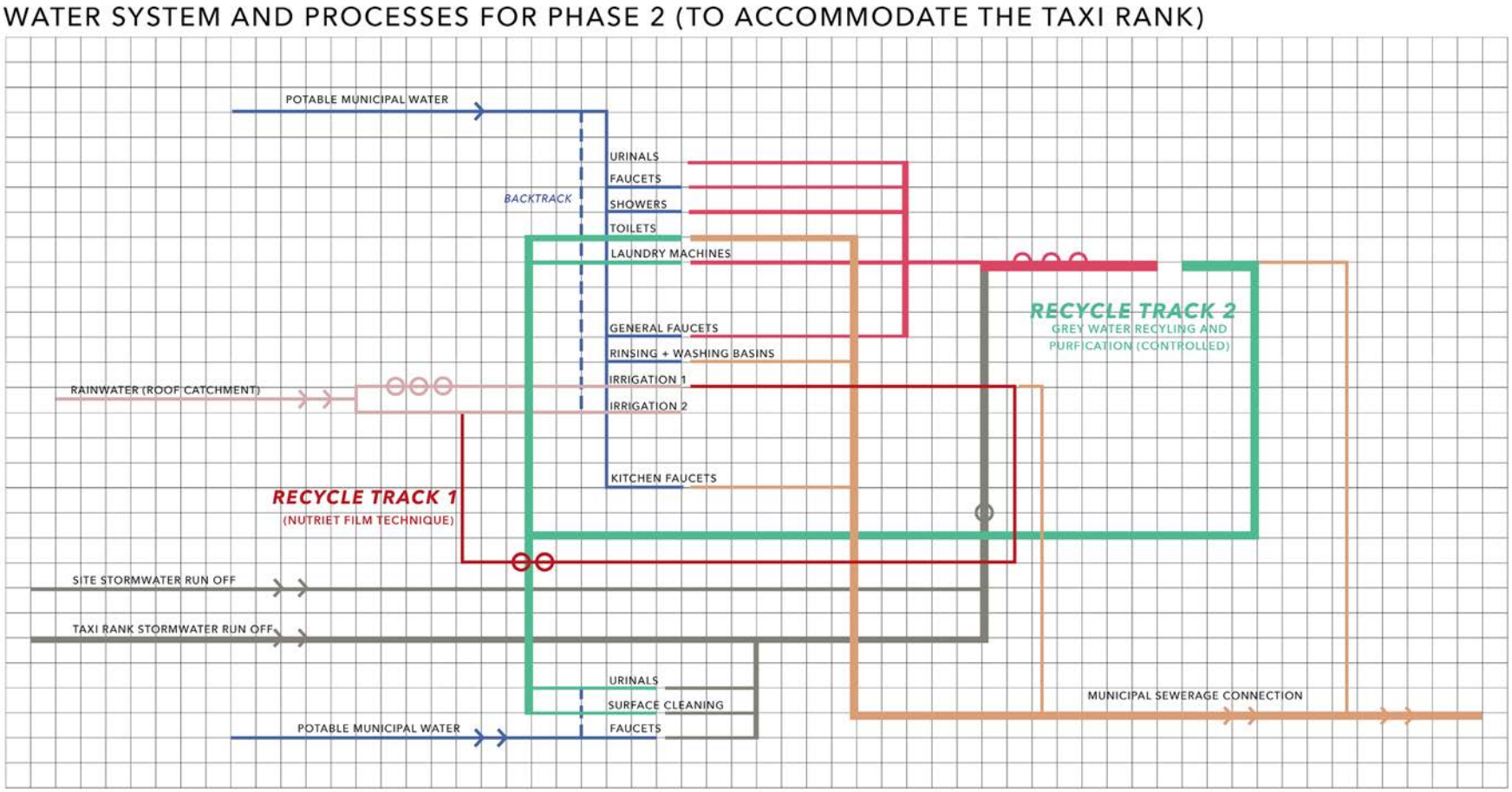


Fig. 10.61- Diagram of integrated water system phase 2

Supporting water calculations:

TABLE 3A	WEEK DAY WATER LOADS - PHASE 1										
PEOPLE-ORIENTED WATER LOADS	ITEM	SINGLE USE (L)/ FLOW RATE	AVERAGE USES PER DAY / L PER DAY PER PERSON	AVERAGE DAILY DEMAND/PERSON (L)	REFERENCE	CALCULATED `USES/ITEM	JUSTIFICATION	WATER USED/ WEEKDAY (L)	WATER USED / WEEK (L)	RECYCLE TRACK 2 INPUT (COLLECTION)	RECYCLE TRACK TWO OUTPUT (FOR SUPPLY)
GENERAL FUNCTIONS WATER LOADS	Toilet	4 - 11 L per use/	5.1 Uses/day	25	PBCoC + Vosloo	300	520 others moving in and out of the site daily (ref Table xx)	7500	37500	-	37500
	Urinal	1L per use / 2L per minute	5.1 Uses/day	10	PBCoC	250		2500	12500	12500	12500
	Hand wash basin	1L per use / 2L per minute	8.1 mins /day	15	PBCoC + Vosloo	550		8250	41250	41250	-
								18250	**91250**	**53750**	**50000**
RESIDENTIAL WATER LOADS	Toilet	4 - 11 L per use/	5.1 Uses/day	25	PBCoC + Vosloo	45	All on-site residents accommodated for, and half of temp residents as others work elsewhere	1125	5625	-	5625
	Urinal	1L per use / 2L per minute	5.1 Uses/day	10	PBCoC	0	No urinals in residences	0	0	0	-
	Hand wash basin	1L per use / 2L per minute	8.1 mins /day	15	PBCoC + Vosloo	50	All on-site residents accommodated for, and half of temp residents as others work elsewhere - allowance for additional washes	750	3750	3750	-
	Shower	7.5 L per minute	5.3 mins/day	40	PBCoC	80	All residents accommodated for (temp housing and on-site	3200	16000	16000	-
	Laundry	100 L per use	-	40	PBCoC	80	All residents accommodated for (temp housing and on-site	3200	16000	16000	-
								8275	**41375**	**35750**	**5625**
COMMERCIAL WATER LOADS	Cooking and Dishwashing	-	-	20	Vosloo	450	Average people eating on site daily (see kitchen load table xx)	9000	45000	-	-
	Shower	7.5 L per minute	5.3 mins/day	40	PBCoC	30	All workers in commercial industrial functions have a shower allowance	1200	6000	6000	-
								10200	**51000**	**6000**	**0**
							TOTALS	36725	183625	95500	55625
									MONTHLY LOAD	382000	222500

TABLE 3B	WEEKEND DAY WATER LOADS - PHASE 1										
PEOPLE-ORIENTED WATER LOADS	ITEM	SINGLE USE (L)/ FLOW RATE	AVERAGE USES PER DAY / L PER DAY PER PERSON	AVERAGE DAILY DEMAND/PERSON (L)	REFERENCE	CALCULATED `USES/ITEM	JUSTIFICATION	WATER USED/ WEEKDAY (L)	WATER USED / WEEK (L)	RECYCLE TRACK 2 INPUT (COLLECTION)	RECYCLE TRACK TWO OUTPUT (FOR SUPPLY)
GENERAL FUNCTIONS WATER LOADS	Toilet	4 - 11 L per use/	5.1 Uses/day	25	PBCoC + Vosloo	50	Far less people moving in and out of the site, informal trade is still active (Ref table xx)	1250	6250	-	6250
	Urinal	1L per use / 2L per minute	5.1 Uses/day	10	PBCoC	50		500	2500	2500	2500
	Hand wash basin	1L per use / 2L per minute	8.1 mins /day	15	PBCoC + Vosloo	60		900	4500	4500	-
								2650	**13250**	**7000**	**8750**
RESIDENTIAL WATER LOADS	Toilet	4 - 11 L per use/	5.1 Uses/day	25	PBCoC + Vosloo	80	All residents accommodated for (temp housing and on-site) and flux allowance for guests	2000	10000	-	10000
	Urinal	1L per use / 2L per minute	5.1 Uses/day	10	PBCoC	0	No urinals in residences	0	0	0	0
	Hand wash basin	1L per use / 2L per minute	8.1 mins /day	15	PBCoC + Vosloo	90	All residents accommodated for (temp housing and on-site) and flux allowance for guests	1350	6750	6750	-
	Shower	7.5 L per minute	5.3 mins/day	40	PBCoC	80	All residents accommodated for (temp housing and on-site) and flux allowance for guests	3200	16000	16000	-
	Laundry	100 L per use	-	40	PBCoC	80	All residents accommodated for (temp housing and on-site)	3200	16000	16000	-
								9750	**48750**	**38750**	**10000**
COMMERCIAL WATER LOADS	Cooking and Dishwashing	-	-	20	Vosloo	300	Average people eating on site daily (see kitchen load table xx)	6000	30000	-	-
	Shower	7.5 L per minute	5.3 mins/day	40	PBCoC	0	Commercial functions inactive on weekends	0	0	0	0
								6000	**30000**	**0**	**0**
							TOTALS	18400	92000	45750	18750
									MONTHLY LOAD	183000	75000

TABLE 3C	DAILY INDUSTRIAL WATER LOADS								
INDUSTRY-ORIENTED WATER LOADS	ITEM	RULE OF THUMB	REFERENCE	AREA (M2)	LITRES / HR FLOWRATE	TOTAL LITRES / HOUR	LITRES / DAY CYCLE	LITRES WITH 3 WATER CYCLES	LITRES / MONTH
CONSERVATORY GENERAL	Greenhouse Irrigation	3-5L/square metre	Vosloo	45	-	225	2700	-	32400
HORTICULTURAL PROCESSES	Hydroponic System	1L / minute flowrate per 10m length	Venter	80	60	4800	86400	28800	115200

TABLE 4A	WEEKEND DAY WATER LOADS - PHASE 2										
PEOPLE-ORIENTED WATER LOADS	ITEM	SINGLE USE (L)/ FLOW RATE	AVERAGE USES PER DAY / L PER DAY PER PERSON	AVERAGE DAILY DEMAND/PERSON (L)	REFERENCE	CALCULATED 'USES/ITEM	JUSTIFICATION	WATER USED/ WEEKDAY (L)	WATER USED / WEEK (L)	RECYCLE TRACK 2 INPUT (COLLECTION)	RECYCLE TRACK TWO OUTPUT (FOR SUPPLY)
GENERAL FUNCTIONS WATER LOADS	Toilet	4 - 11 L per use/	5.1 Uses/day	25	PBCoC + Vosloo	280	565 others moving in and out of the site daily (ref Table xx)	7000	35000	-	35000
	Urinal	1L per use / 2L per minute	5.1 Uses/day	10	PBCoC	310		3100	15500	15500	15500
	Hand wash basin	1L per use / 2L per minute	8.1 mins /day	15	PBCoC + Vosloo	600		9000	45000	45000	-
								19100	**95500**	**60500**	**50500**
RESIDENTIAL WATER LOADS	Toilet	4 - 11 L per use/	5.1 Uses/day	25	PBCoC + Vosloo	5	All on-site residents accommodated for	125	625	-	625
	Urinal	1L per use / 2L per minute	5.1 Uses/day	10	PBCoC	0	No urinals in residences	0	0	0	0
	Hand wash basin	1L per use / 2L per minute	8.1 mins /day	15	PBCoC + Vosloo	10	All on-site residents accommodated for, and allowance for additional washes	150	750	750	-
	Shower	7.5 L per minute	5.3 mins/day	40	PBCoC	5	All on-site residents accommodated for	200	1000	1000	-
	Laundry	100 L per use	-	40	PBCoC	5	All on-site residents accommodated for	200	1000	1000	-
								675	3375	2750	625
COMMERCIAL WATER LOADS	Cooking and Dishwashing	-	-	20	Vosloo	330	Average people eating on site daily (see kitchen load table xx)	6600	33000	-	-
	Shower	7.5 L per minute	5.3 mins/day	40	PBCoC	5	All workers are residents, however a small flux allowance	200	1000	1000	-
								6800	34000	1000	0
							TOTALS	26575	132875	64250	51125
									MONTHLY LOAD:	257000	204500

TABLE 4B	WEEK END WATER LOADS - PHASE 2										
PEOPLE-ORIENTED WATER LOADS	ITEM	SINGLE USE (L)/ FLOW RATE	AVERAGE USES PER DAY / L PER DAY PER PERSON	AVERAGE DAILY DEMAND/PERSON (L)	REFERENCE	CALCULATED 'USES/ITEM	JUSTIFICATION	WATER USED/ WEEKDAY (L)	WATER USED / WEEK (L)	RECYCLE TRACK 2 INPUT (COLLECTION)	RECYCLE TRACK TWO OUTPUT (FOR SUPPLY)
GENERAL FUNCTIONS WATER LOADS	Toilet	4 - 11 L per use/	5.1 Uses/day	25	PBCoC + Vosloo	50	Far less people moving in and out of the site, informal trade is still active (Ref table xx)	1250	6250	-	6250
	Urinal	1L per use / 2L per minute	5.1 Uses/day	10	PBCoC	50		500	2500	2500	2500
	Hand wash basin	1L per use / 2L per minute	8.1 mins /day	15	PBCoC + Vosloo	60		900	4500	4500	-
								2650	**13250**	**7000**	**8750**
RESIDENTIAL WATER LOADS	Toilet	4 - 11 L per use/	5.1 Uses/day	25	PBCoC + Vosloo	5	All on-site residents accommodated for	125	625	-	625
	Urinal	1L per use / 2L per minute	5.1 Uses/day	10	PBCoC	0	No urinals in residences	0	0	0	0
	Hand wash basin	1L per use / 2L per minute	8.1 mins /day	15	PBCoC + Vosloo	10	All on-site residents accommodated for, and allowance for additional washes	150	750	750	-
	Shower	7.5 L per minute	5.3 mins/day	40	PBCoC	5	All on-site residents accommodated for	200	1000	1000	-
	Laundry	100 L per use	-	40	PBCoC	5	All on-site residents accommodated for	200	1000	1000	-
								675	3375	2750	625
COMMERCIAL WATER LOADS	Cooking and Dishwashing	-	-	20	Vosloo	45	Average people eating on site daily (see kitchen load table xx)	900	4500	-	-
	Shower	7.5 L per minute	5.3 mins/day	40	PBCoC	0	Commercial functions inactive on weekends	0	0	0	-
								900	4500	0	0
							TOTALS	4225	21125	9750	9375
									MONTHLY LOAD:	39000	37500

TABLE 4C	DAILY WATER LOADS - PHASE 2									
INDUSTRY-ORIENTED WATER LOADS	Item	Rule of Thumb	Reference							
Conservatory General	Greenhouse Irrigation	3-5L/square metre								

TABLE 5A		EFFECTIVE CATCHMENT AREAS				
				FLAT SURFACE AREA (ACTUAL) M2	RUN-OFF CO-EFFICIENT	EFFECTIVE AREA
RAINWATER CATCHMENT	SITE BLOCK	Original Fabric	South Building 1	588.594	0.9	529.7346
			West Building	516.260		464.634
			North Building	859.470		773.523
		New Fabric	South Building 2	165.525	0.9	148.9725
			East Building	532.937		479.6433
				2662.786		2396.5074
		Central Square	Hard surface	3660.032	0.85	3111.0272
			Soft Surface	-	0.65	-
						7904.042
					Calculation Area	**7900**
		Temporary Fabric	-	100.800	0.9	90.72
					Calculation Area	**90**
	TAXI BLOCK		Petrol Station Roof 1	496.448	0.9	446.8032
			Small Building 1	112.596		101.3364
			Small Building 2	112.596		101.3364
						649.476
					Calculation Area	**650**
					SITE AREA ONLY	**7900**
					PHASE 1 AREA	**8640**
					PHASE 2 AREA	**8550**
STORMWATER CATCHMENT	SITE BLOCK		Hard surface Run-off			0
			Soft Surface Run-off			0
					Calculation Area	**0**
	TAXI BLOCK		Taxi Rank	7154.750	0.85	6081.538
			Tank Rank Block	4598.645		3908.84825
				11753.395		9990.38575
					Calculation Area	**9990**
					SITE AREA ONLY	0
					PHASE 1 AREA	9990
					PHASE 2 AREA	9990

TABLE 5B		RAINWATER CATCHMENT			
		PHASE 1		PHASE 2	
MONTH	RAINFALL (L/M2)	EFFECTIVE AREA (M)	COLLECTED (L)	EFFECTIVE AREA (M)	COLLECTED (L)
JANUARY	125	8,640	1,080,000	8,550	1,068,750
FEBRUARY	94		812,160		803,700
MARCH	90		777,600		769,500
APRIL	54		466,560		461,700
MAY	13		112,320		111,150
JUNE	9		77,760		76,950
JULY	4		34,560		34,200
AUGUST	6		51,840		51,300
SEPTEMBER	27		233,280		230,850
OCTOBER	7		60,480		59,850
NOVEMBER	11		95,040		94,050
DECEMBER	103		889,920		880,650
			4,691,520		**4,642,650**

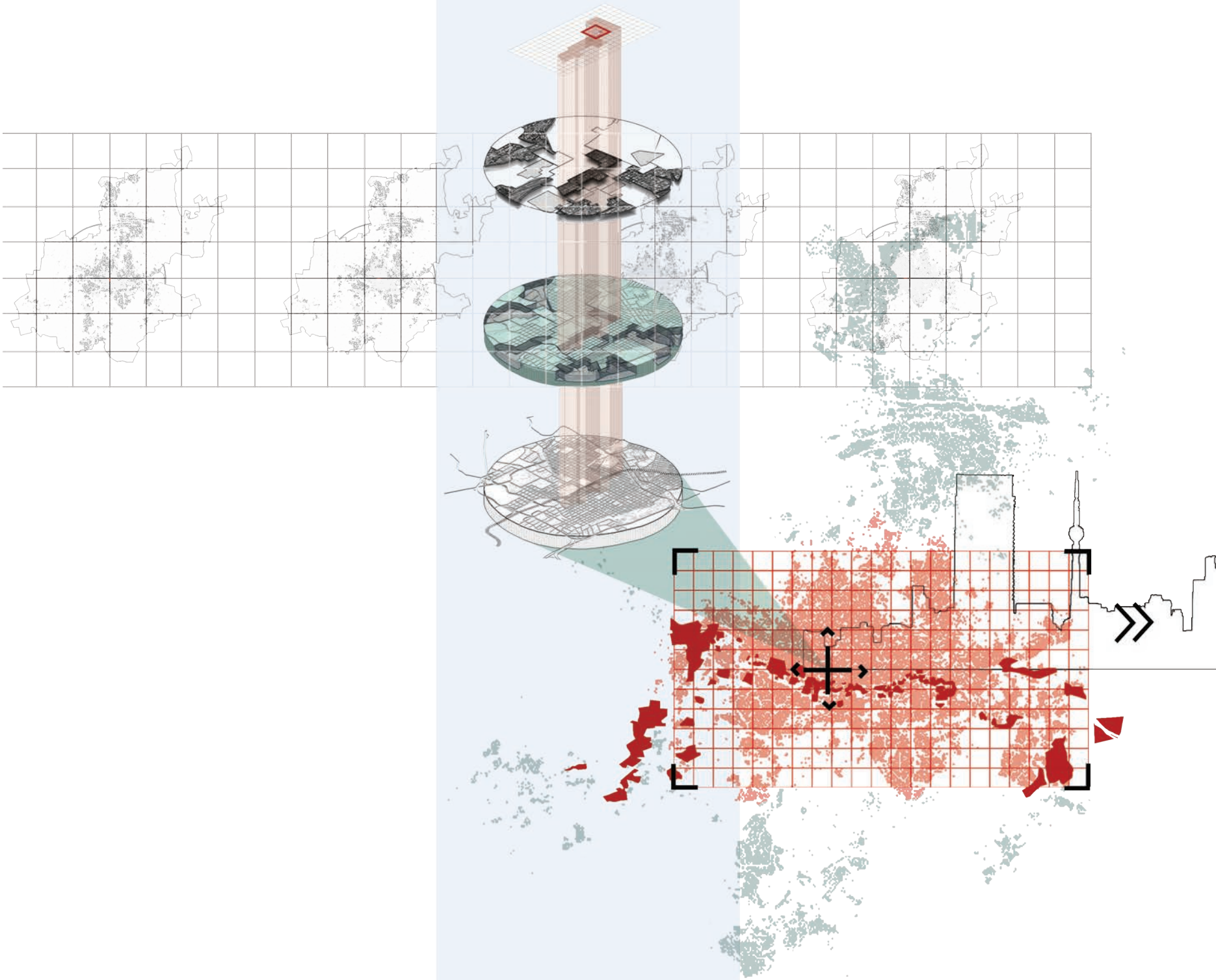
TABLE 6A		TANK SIZING - TRACK 2						
		PHASE 1 (HEAVIEST WATER COLLECTION)		YEAR 1 WITH NO MINUMIN RESERVE		YEAR TWO WITH STARTING RESERVE		
MONTH	RAINFALL (L/M2)	EFFECTIVE AREA (M)	COLLECTED (L)	IRRIGATION OUT PER MONTH (L)	REMAINING IN TANK (L)	IRRIGATION OUT PER MONTH (L)	REMAINING IN TANK (L)	TANK STORAGE REQUIRED
STARTING FIGURE			0		0		3,309,120	
JANUARY	125	8,640	1,080,000	115,200	964,800	115,200	4,273,920	
FEBRUARY	94		812,160	115,200	1,661,760	115,200	4,970,880	
MARCH	90		777,600	115,200	2,324,160	115,200	5,633,280	
APRIL	54		466,560	115,200	**2,675,520**	115,200	5,984,640	
MAY	13		112,320	115,200	2,672,640	115,200	5,981,760	
JUNE	9		77,760	115,200	2,635,200	115,200	5,944,320	
JULY	4		34,560	115,200	2,554,560	115,200	5,863,680	
AUGUST	6		51,840	115,200	2,491,200	115,200	5,800,320	
SEPTEMBER	27		233,280	115,200	2,609,280	115,200	5,918,400	
OCTOBER	7		60,480	115,200	2,554,560	115,200	5,863,680	
NOVEMBER	11		95,040	115,200	2,534,400	115,200	5,843,520	
DECEMBER	103		889,920	115,200	3,309,120	115,200	**6,618,240**	6000000

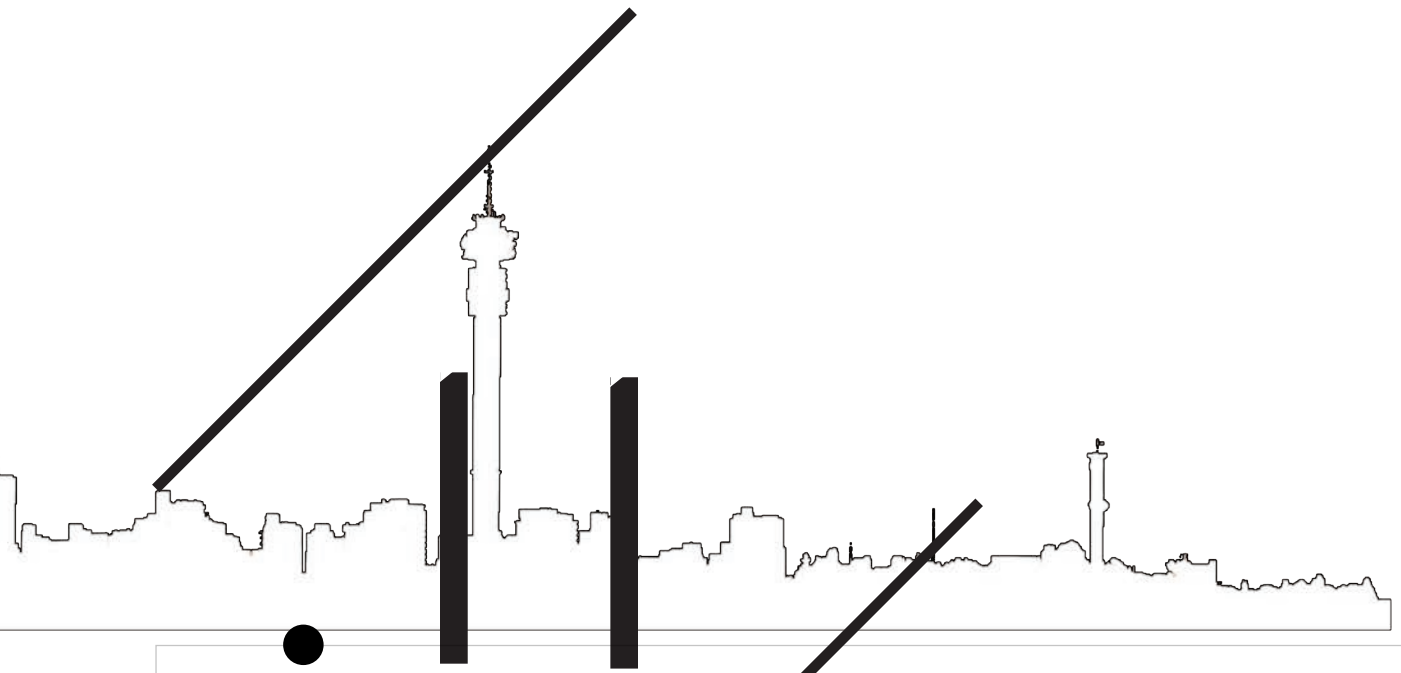
MONTH	RAINFALL (MM)	RAINFALL (L/M2)
JANUARY	125	125
FEBRUARY	94	94
MARCH	90	90
APRIL	54	54
MAY	13	13
JUNE	9	9
JULY	4	4
AUGUST	6	6
SEPTEMBER	27	27
OCTOBER	7	7
NOVEMBER	11	11
DECEMBER	103	103
ANNUAL	543	543

RAINWATER CATCHEMENT CO-EFFICIENTS	
ROOFS	0.9
CBD OF CITIES	0.85
WELL ESTABLISHED TOWNSHIPS AND SUBURBS	0.6
NEWLY ESTABLISHED TOWNSHIPS AND SUBURBS WITH LITTLE VEGETATION	0.65
FORESTS	0.35
SANDY SOILS COVERRED BY PERENNIAL GRASSES	0.25
CLAY SOILS COVERRED BY PERENIAL GRASSES	0.3
WATER BODIES (SUCH AS DAMS)	1

TABLE 6B		PHASE 2 (HEA COLLE
MONTH	RAINFALL (L/M2)	EFFECTIVE AREA (M)
STARTING FIGURE		
JANUARY	125	9,990
FEBRUARY	94	
MARCH	90	
APRIL	54	
MAY	13	
JUNE	9	
JULY	4	
AUGUST	6	
SEPTEMBER	27	
OCTOBER	7	
NOVEMBER	11	
DECEMBER	103	

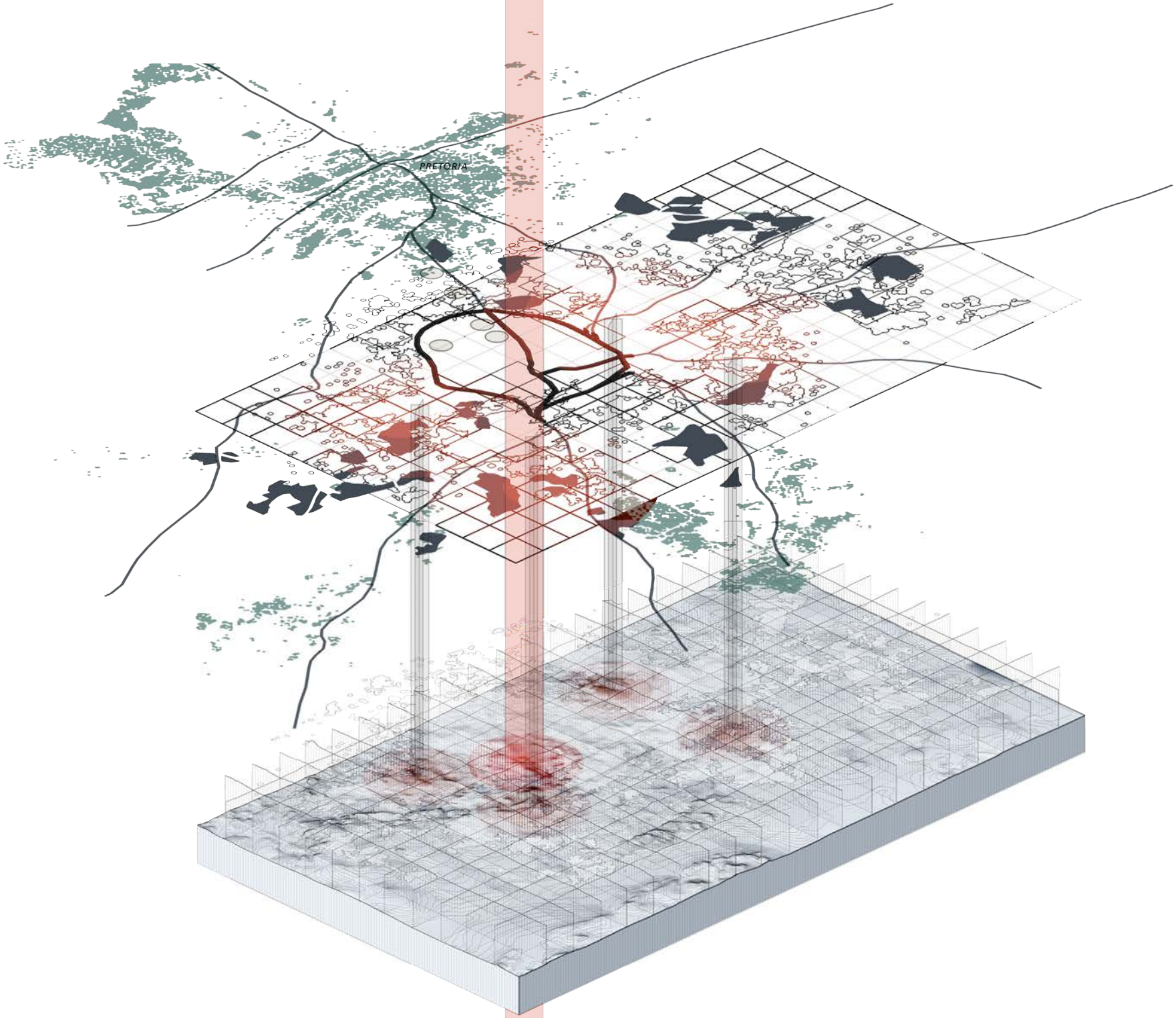
TABLE 5C		STORMWATER CATCHMENT			
		PHASE 1		PHASE 2	
MONTH	RAINFALL (L/M2)	EFFECTIVE AREA (M)	COLLECTED (L)	EFFECTIVE AREA (M)	COLLECTED (L)
JANUARY	125	9,990	1,248,750	9,990	1,248,750
FEBRUARY	94		939,060		939,060
MARCH	90		899,100		899,100
APRIL	54		539,460		539,460
MAY	13		129,870		129,870
JUNE	9		89,910		89,910
JULY	4		39,960		39,960
AUGUST	6		59,940		59,940
SEPTEMBER	27		269,730		269,730
OCTOBER	7		69,930		69,930
NOVEMBER	11		109,890		109,890
DECEMBER	103		1,028,970		1,028,970
			5,424,570		**5,424,570**





the following chapter describes the final design and the technical resolution of the design...

CONCLUSION



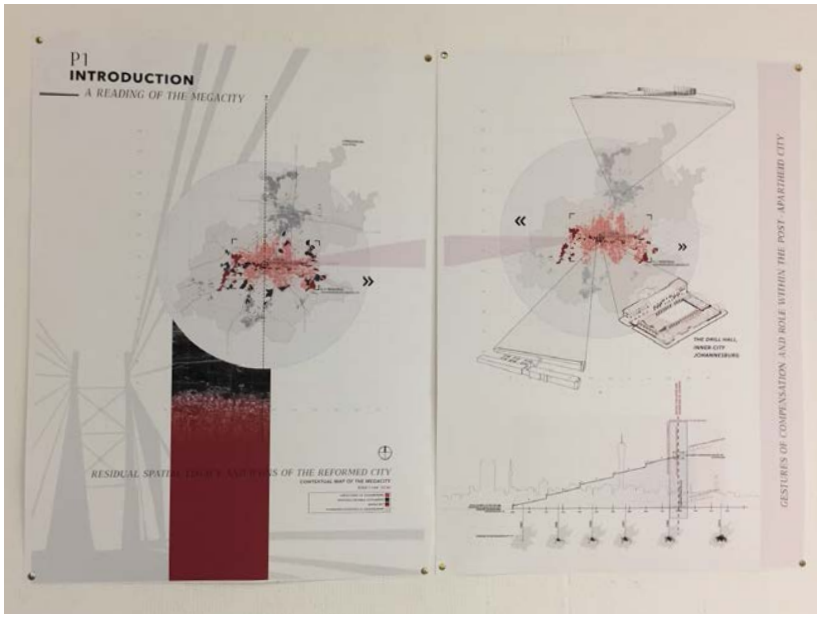
Upon near completion of this dissertation, upon the reflection of the processing of learning, experimenting and exploring theory and architecture, and returning back to the original questions put forth by this dissertation, the following things can be concluded.

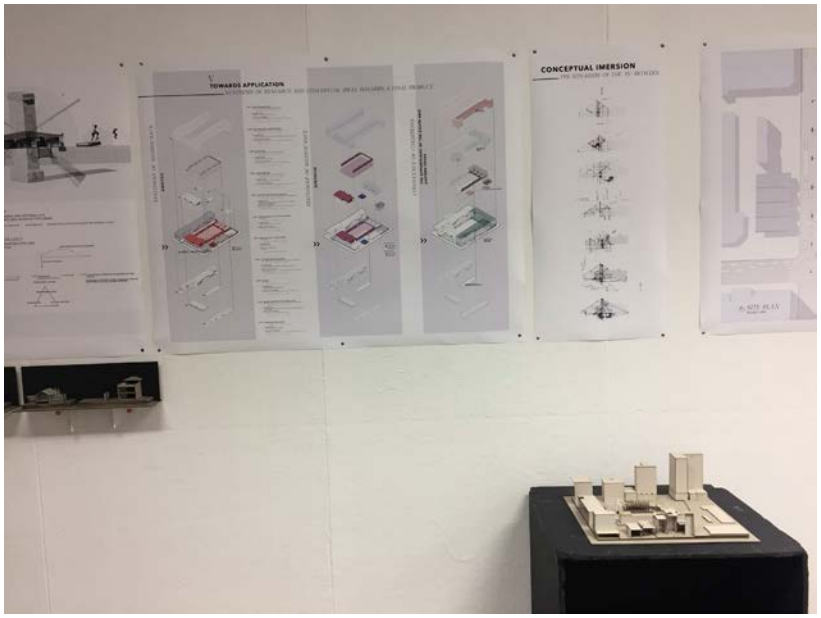
The Drill Hall and other sites of significance truly do possess the amazing quality of being able to address various conceptions of the city, to whom it belongs, memories and heritage and they should give people an active role in engaging in the self-critical process of positively transforming their culture. This is what this dissertation attempted to achieve through various levels of complexity: from the smallest piece of furniture within the unit; to experiments in temporary architecture in both the realms of heritage and urban dwelling; to what a hands-on element of infrastructure can do for reigniting meaning in place with other catalysts.

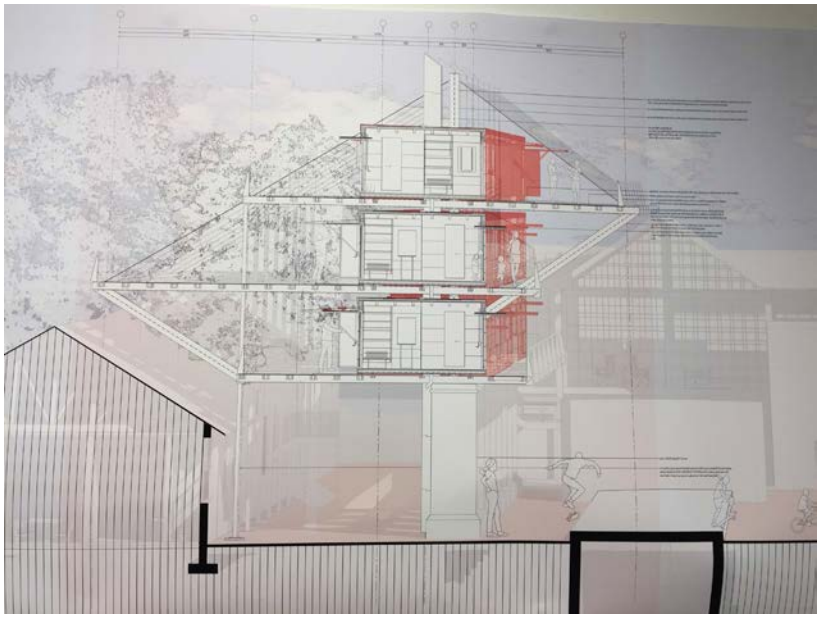
This dissertation in terms of the city, hopes to serve as some form of restitution in reconceptualizing sites of significance within South Africa's narrative to show how identity of place can in fact transform into regenerative, sustainable and meaningful urban models when the right structures are in place and not just left to their own devices.

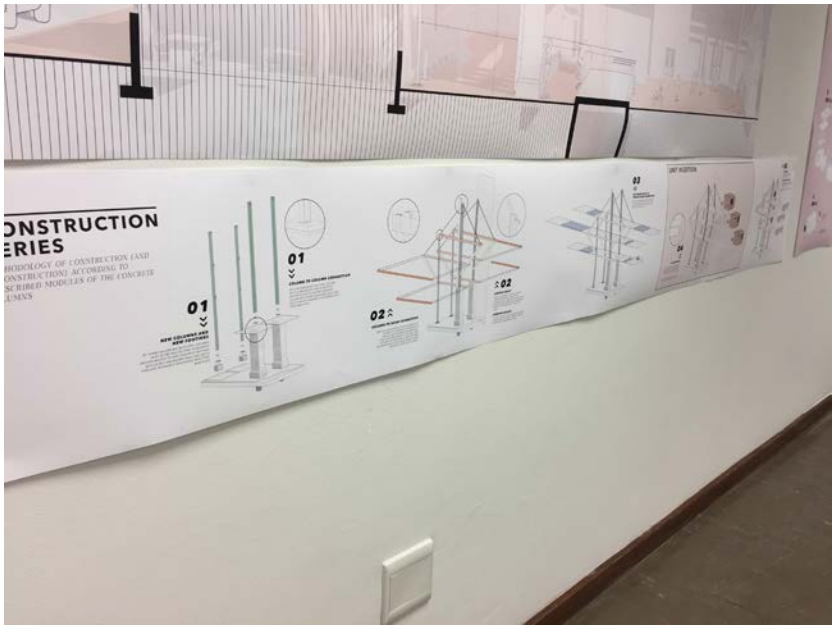
To take this further, one could later explore how the various sites of significance could in fact speak to one another as cohesive injections of urban regeneration, that overtime, like various ripples in a pond, could begin to address the megacity in its totality and address the biases in transformation that have occurred. This one experiment on the Drill Hall is a mere prototypical model of the possibilities.

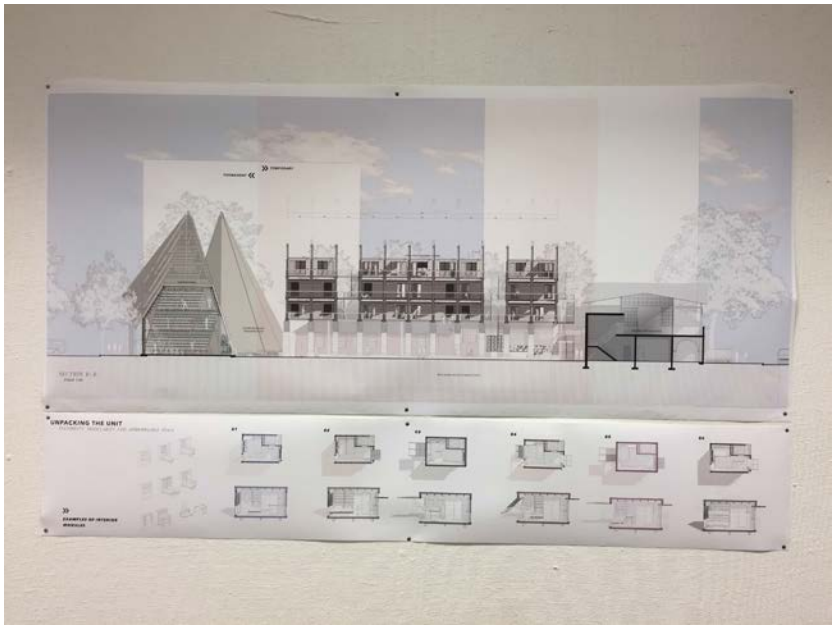
For the most part South Africa's legacy has been detrimental to its evolution, but it has given us these sites of immense potential to push new models – be them urban or architectural – due to the immense value they hold for people, and this energy, significance and value is what I have tried to tap into with this dissertation.

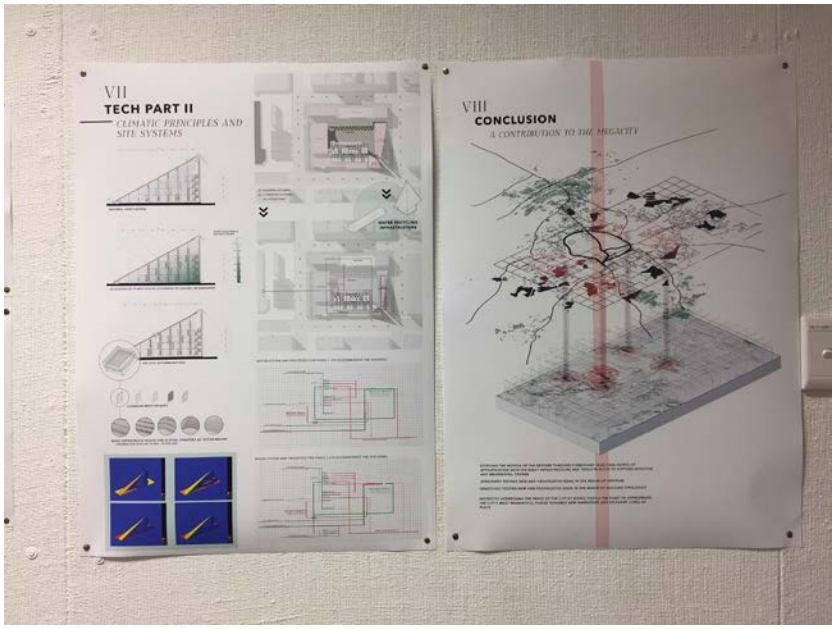












ENDNOTES

1. The Group Areas Act of 1950 outlined the various zones and associated regulations for the permanent residence of people according to their racial category as stipulated in the Population Registration Act of 1950 to ensure urban racial segregation (Morris, 1998).

2. The Burra Charter is an Australian developed set of guidelines which aids in addressing places of cultural or historical significance in need of conservation, restoration or adaptation (Walker, 2013)

3. A Conservation Management Plan included a thorough historic account of site-based events military, political and social, and of communities associated with the site. The CMP included an architectural survey – a statement of cultural and historic significance. The development of a conservation policy then informs the conservation strategy. Each physical element of the drill Hall olds significance and underwent data collection and analysis. The enhanced strategy informed the design proposal and implementation strategy. The result is an embrace of the city's history; its past memories informing future meaning and new interpretations." (Maurtin et al. 2004:54).

4. Nyaope is a highly addictive and dangerous street drug, predominantly used by the poor township youth. It is usually a concoction of primarily heroin and cannabis but often includes anti-retroviral drugs, milk powder, rat poison, bicarbonate of soda and pool cleaner. (health24, 2004).

5. A nearby new urban framework, the Park Station Precinct (which is in its early stages of implementation) neighbours the urban void in which the Drill Hall straddles. In order to accommodate the "concentrated cluster of the rail lines, bus depots, and taxi services" (Murray, 2011:36) of the Park Station epicentre which sees 800 000 commuters in and out of the city daily, the commuter links project intends to "create a pedestrian friendly and walkable urban environment through setting up a network of public spaces, and improved circulation around and access to formal taxi, bus and rail facilities" (JDA, 2012) with special consideration for pedestrians and informal traders.

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LIST OF FIGURES

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