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REUSING THE URBAN FABRIC

Adaptive re-use of an abandoned heritage building to explore community empowerment within the Johannesburg CBD's textile industry



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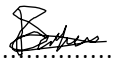
A Research report submitted to the faculty of Engineering and the Built Environment, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Masters of Architecture(Pr)

Johannesburg, 2023

Declaration

I declare that this research report is my own independently produced work. It is being submitted for the Master of Architecture (Pr) to the Faculty of Engineering and the Built Environment at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.

.....

(Signature of candidate) .....

Day of.....2023/04/17.....(Day)(Month) (Year)

Abstract

The city of Johannesburg has undergone massive transformations since its conception and the discovery of gold that set the city on an exponentially rising trajectory. In the aftermaths of apartheid, many post-industrial buildings are scattered through the city landscape, forgotten, and decaying with accompanying detrimental effects to their surrounding context.

This investigation aims to reuse a delipidated heritage building to grow economy through local industry. In the case of this investigation, the relevant industry is the ever-growing textile and secondhand clothing market. This industry is contextually relevant, and the basic design principles of Architectural theory demand a building be responsive to the context to be successful. The hypothesis is that if an industrial function can be retrofitted to dilapidated buildings, then these buildings can be saved and enhance the environment in which it dwells.

The textile industry in this case offers a multitude of job opportunities as well as applications in architecture and construction. Traits that could possibly help working class, and female entrepreneurs have a stronger foothold in the city, as industrial labor, and basic job access can become more available to women that may be unemployed and unskilled.

Design methodologies such as adaptive re-use and symbiotic architecture are aimed to be implemented to endorse an architecture that is feasible for abandoned heritage buildings, concurrently these methodologies are intended to be explored through the textile industry. Architecture that is intended to be easy and cheap to assemble; architecture that can move, grow and change based on the needs of the user while preserving the identity of the building and at the same time creating a new one for a new generation.

The end goal is to create a mixed use closed loop self-sustaining building that programmatically focuses on the education and economic components of the context as well as enhances community development in the city.

The investigation aims to understand (through experimentation) if an architecture can be applied to the delipidating heritage typology as an effort to reuse space and the preserve character, memory, and diversity in a way that the generation of today will be excited to be in an old building. The city has become a hub for informal traders and entrepreneurs, a social and economic melting pot. There is an opportunity for existing industries to revitalize fragmented infrastructure to add to the mixture.

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PART 1: Introduction

1.1 Preamble

An introduction to the issue of the South African Abandoned Heritage Building- Scattered throughout the landscape of South Africa, lie remnants, forgotten ruins that remind the South African populace of a time that wants to be forgotten and yet must be acknowledged. The footprint of the post-industrial 18th and 19th century architecture that imprinted itself on South African soil remains in a time that does not know what to do with them.
The 'South African city', referring to major cities like Johannesburg, Durban, and Cape town, the urban decay continues to exist and multiply while having ever increasingly adverse effects of the urban environment. Every time I had the opportunity to be in each of these cities, I observed these ruins, and the more I explored these cities the more I observed that this has become an increasingly recurring problem as time has progressed.

What I have seen in the inner city of Johannesburg, is that it is diverse in its architectural styles, from colonial style buildings to brutalist and neoclassical buildings, to the 'typical glass high-rise', but more what is more prominent is the consistency of lost public space, minimal pedestrian movement and the recurrence of deteriorating, decaying, abandoned and ruined buildings that vitiate the urban environment of Johannesburg. The major cities are alike in this common problem with increasing crime rates, lack of employment, contamination, or damage to property as elements that contribute to the current issues that the 'South African city' has.

From observing these cities and the city of Johannesburg specifically, there is a substantial number of neglected buildings that are categorized as heritage buildings throughout the city. In South Africa a heritage building is classified as a building over the age of 60 years and above. This means a large portion of buildings being protected by heritage laws may not have the design qualities associated with architectural heritage and design principles such as balance, rhythm, pattern, symmetry, and proportion that are worth saving. This does not mean doing away with them but reusing them to their maximum potential without being too restricted in the alterations of these buildings. It is also important for the Architect to design in a sustainable way when it comes to altering an old building.

The 'South African city's' elements of lost space, and decay has always been an interest of mine to dissect. I have always wanted to attempt to create out of these wasted spaces and lost landscapes so perhaps these spaces will become less lost through time, and give a form of
change that encourages diversity, empowerment, and rejuvenation not just to the city of Johannesburg but to the other major cities of South Africa that may share the same issues.

1.2 History and context- The city of abandoned buildings.

The 19th century post-industrial landscape contains these urban ruins due to the suburban flight that occurred in the later parts of the 19th century and early parts of the 20th century. The City of Johannesburg much like the cities of Durban and Cape town, witnessed a change in accessibility when apartheid ended in 1994. The suburban preference and growth of commercialization resulted in many of the white population as well as any of those who possessed wealth to migrate into estates and newly developed towns that slowly became thriving economic hubs whilst the lower income populace and those effected by the apartheid regime's legislation and the group areas act continue to live in segregation-based zones that have limitations on economic and educational opportunity (Garner 2011: 18).

The city, despite its decay, has become a hub for most of the South African populace to formulate an economy that is integral to their livelihoods, although the city's urban form does not accommodate the climate of today. The abandoned buildings (with many of them categorized as heritage) that trickle throughout the city exhibit typical features of neglect and lack of maintenance; usually peeling plaster, broken walls that inherently embody a space for illegal squatting amidst the decay of the building (Joynt & Webster 2011:159).

The wide roads designed for carriages in the 18th and 19th century promote vehicular movement, the freestanding buildings, space in between buildings accommodate cars, public squares have minimal activity, small sidewalks house entire populations and ruined buildings promote illegal squatting and drug dens that exist throughout the Urban landscape of Johannesburg's inner city that evidently leads to social and environmental decay. (Joynt & Webster 2011:159).

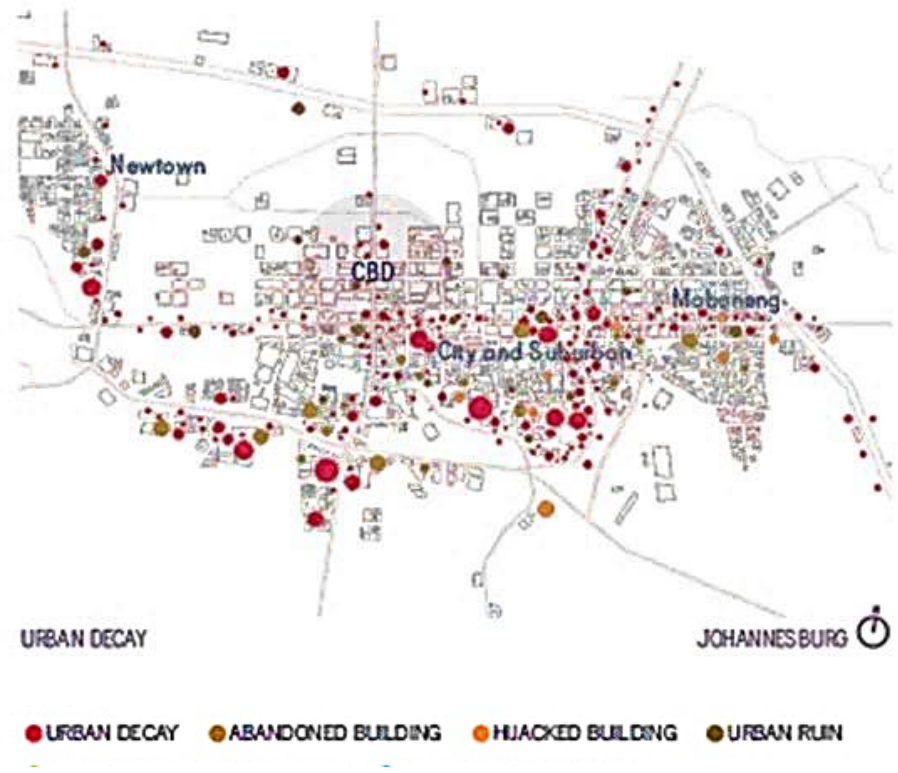


Figure 1: Urban abandonment mapping of Marshalltown(Cook, 2018- Edited by Author)

1.3 Problem statement

The city is a place of 'complex history', but it is also a hub to form a truly diverse and identifiable South African community. The history of the city, through industrial change, the suburban flight through the introduction of the motor vehicle, and the change of segregation-based legislation restricting access and ownership define the current landscape of Johannesburg's inner city.

This has led to many changes both positive and negative, the city is now accessible and can serve everyone, the issue is that it was not designed to serve everyone. People of color could tend to dissociate with the architectural identity that was imposed during the apartheid state of oppression, hence these buildings and their language are rejected despite regeneration projects happening in places in the city like Maboneng. It is important to observe that the influences of the city's conception and system are Eurocentric and western, and that they have been imprinted and imposed onto an African context with laws designed for European descendants to thrive while there were restrictions on the rest of the population. What is left is a fragmented and disjointed context with an influx of local people after the abolishment of apartheid struggling to live in the city as efficiently as they could be.

Urban decay is prominent and continues to negatively influence the urban context when it can encourage diversity and identity. Attempts to rejuvenate the decaying architecture of heritage and other abandoned buildings alike has resulted more so in gentrification. Initiatives like the Maboneng precinct seek to act as an urban theme park by luring visitors from outside the city to interact with it briefly. The South African city has the terrible reputation of being one of the world's most hazardous places to live and play. Liebmann, the mind behind Maboneng, saw opportunity in the urban ruin. In short, it became a shining example of how real estate development can stop urban deterioration by attracting investors, via hip galleries, and craft stores. However, the business of this development failed from a monetary perspective, with units auctioned off to bargain-hunters for much less than their assessed market worth. (Hogg, 2019) People gravitating in and out of the precinct does not allow the precinct to act as a resource to the city, and from the capitalist investor's perspective, the precinct is starting to fail in that regard as well. The built environment of the city is decaying, and the people within the inner city- especially after the COVID-19 pandemic- were not thriving. Households everywhere were hardly earning a living, and not all schools had the ability to conduct lessons remotely, as such the economic and education sector were detrimentally affected.

A large populace needs a city to function. A city with failing infrastructure and abandoned buildings does not adhere to the necessary functionality of the city. Heritage conservation buildings and urban regeneration precincts need to link and work hand in hand to act as a resource to the city. Colonial history, Heritage laws, Gentrification and urban decay are the obstacles in redeveloping the city.

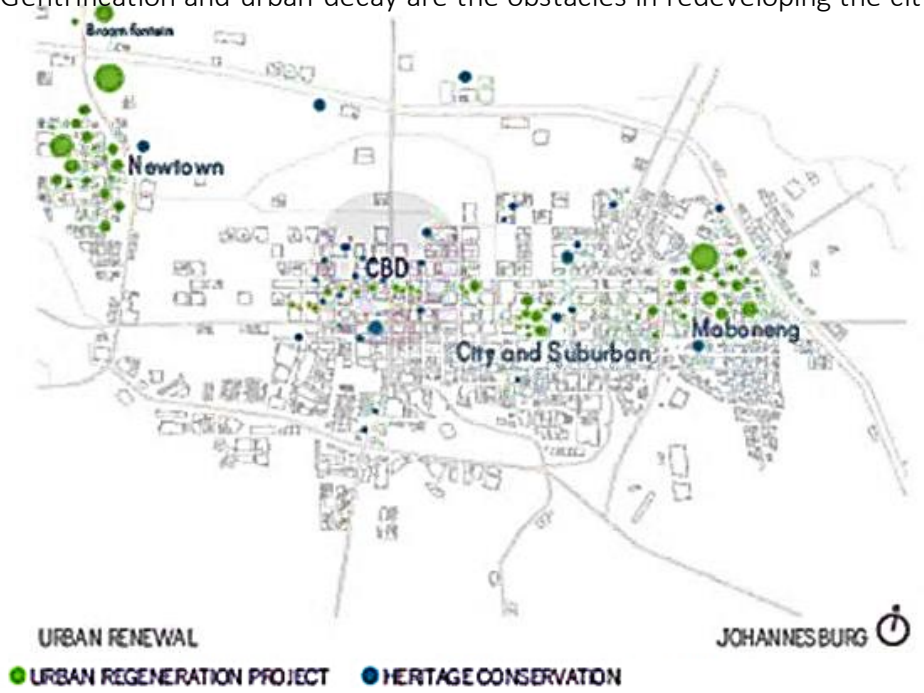


Figure 2: Lost space vs green space mapping of Marshalltown (Author, 2022)

1.4 research questions

Issues:

-what do we do with existing urban fabric [rich in history] that serves the city [and its marginalized communities] in a more democratic manner, right now and as we move into the future?

-Urban decay:

-Why are there so many deteriorating buildings in the inner city? And are these abandoned, ruined or decaying buildings viable to restore financially and from a structural and construction point of view?

-How many of these buildings can be considered heritage buildings?

-Why are most abandoned heritage buildings left stagnant?

-How do we address heritage preservation? Whose heritage does it belong to? Should it be preserved?

-Are urban regeneration projects in the city successful?

-Women working in the city:

The textile industry has a predominantly female workforce, so the city needs to consider the daily living of working-class women.

-Why is the city unsafe for women to live and work? -

What ownership do women have of property in the city?

-How much economic and educational opportunities are available for women, especially single moms without qualifications?

-How do households with the head as women manage multigenerational living in the city?

Textiles:

-Why has second hand clothing exponentially improved as a market?

-How do we address textile waste and landfills from huge corporate clothing companies?

-How can we start looking at fabrics as an architectural language?

-What skills and opportunities can the textile industry, more specifically second-hand clothing offer economically and educationally to benefit local communities?

The city:

- is there value to empowering marginalized groups within the city?

- What role do established local economies and industries play for inner city communities and can they serve as a platform/ catalyst for empowerment and urban regeneration?

1.5 aims and objectives

Urban abandonment- heritage buildings have character, they add variety to the city, an aim needs to be how to revitalize these buildings as they lead to vagrant occupation, drug dealing and safety issues.

Urban Communities-. These issues can be negated by using the relics of the past that facilitate waste and decay to promote community engagement. The textile industry needs to provide jobs, education and upliftment in aesthetics, safety and experience for the user.

Adaptive re-use- Addressing urban abandonment and the need to accentuate social, economic, and cultural success within the community, new life needs to be implanted into decaying fragments of the city. Adaptive Re-use dictates that the additional form and function create a sensitive symbiosis with the existing structure to preserve Historical features while ensuring new life for the building and immediate context.

Johannesburg Textile industry- The fashion district is one such exception of an industry that does well especially due to the impact of second-hand clothing. The second-hand clothing industry allows retailers to have clothes produced cheaper and sold at reasonable prices, but what is more important is that instead of clothing being a constituent in textile waste, is rather recycled and given new life as adaptive reuse would in application to a building. Through textiles the aim is to facilitate:

- identity & belonging
- inclusive, democratic, safe and activated urban spaces,
- elevating and stimulating small business/ industry through technology/ education
- value of developing local community for urban regeneration

1.6 Research and design methodology

Research Methods and timeline

Qualitative Research:

Walkthroughs of the city to map urban decay and lost space. The plan is to regularly walk through the inner city of Johannesburg mapping my immediate and surrounding context in terms of decaying, ruined and abandoned buildings as well as heritage buildings to understand the pattern and consistency of urban decay in the inner-city. The walks will also help in identifying textile, garment and clothing outlets that support the second-hand market and create jobs in the city so that a synergy can be identified to the site of the three castles building in Marshalltown. 8

Quantitative Research:

-Census Statistics and historical studies.

-Statistics on women ownership, crime rates against women, women with or without qualifications, as well as age range.

-Statistics on textile waste and landfill as well as cost and production of second-hand clothing.

-Urban planning analysis, study of city spatial structures.

-SWAT Analysis: Economic and educational success in the city of Johannesburg.

PART 2- Context and Urban Analysis

Introduction

The information on a context in its present, and past can only help formulate a hypothesis for its future. The aim is to solve an issue that infects the city of Johannesburg. The information assessed and presented in this chapter intends to share the story of Johannesburg, its people, its buildings, its successes, and failures based on the intention of its conception, and its change in dynamics throughout different periods of time.

Every change is an important one from the birth of a city to its condition now in the current day. The city has a pile of issues that can stack as tall as one of its high-rises, the issues identified through theorists such as Roger Trancik and Jane Jacobs lead one to believe that the city of Johannesburg that is being assessed in the investigation is not working as effectively as it could for the community that occupies it. The city lacks publics space and eyes on the street, it lacks a relationship with informal traders that clutter the CBD on narrow pedestrian walkways, and there is an excess of lost space due to abandonment that stems from urban flight, additionally there is an issue of pollution of plastics and other common recyclable material, as well as an excess of lost space due to the function of many buildings hosting offices and poorly maintained residences amongst a commercial and trade driven context. The political, racial, cultural, social, and economic history of the context are imperative in the investigation. These are the issues at hand in the context that are going to be assessed in more depth in this chapter, to then subsequently create an appropriate method of dealing with the city's issues.

2.1 Regional Context- The city of Johannesburg's background

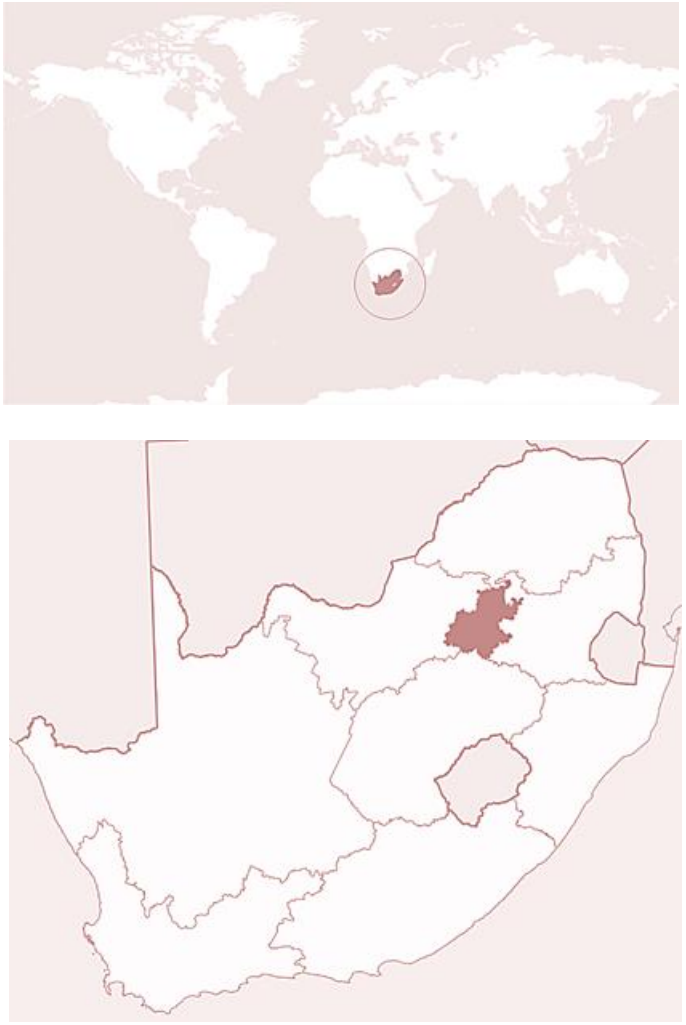


Figure 3: Locality map (Author, 2022)



Figure 4 Orthographic skyline sketch. Source: Heritage Portal.

Johannesburg, the city with the highest buildings in the nation, used to be little more than veld (bush), which was peppered with rocky outcrops, scrubby shrubbery, and a network of creeks. One of the few cities of its magnitude in the world that is not situated on a river or by the sea, it is now a cosmopolitan city with more than four million inhabitants. It is situated in Gauteng, the smallest of South Africa's nine provinces and one that accounts for almost 40% of the country's GDP. (Davie, L..2022) The region that is now Johannesburg has been inhabited by many different groups throughout the years, including Stone Age predecessors who lived there 500 000 years ago, Bushmen who lived there 1,000 years ago, Tswana who lived there 500 years ago, and Boers who lived in farmhouses built in the 1860s. (Davie, L..2022)

It was the discovery of gold by Australian gold prospector George Harrison in 1886 is when the city truly got off the ground. Soon tents and carts started to appear, followed by wooden and iron buildings that were later replaced by brick constructions. (Davie, L.2022) A huge, active market plaza and a town were clearly defined. Buildings grew larger and taller, and today the city is home to the 50-story Carlton Centre, one of the highest structures in Africa. Prospectors from all over the world travelled to the Witwatersrand during the gold rush, which sparked the Anglo-Boer or South African War of 1899–1902 between the British and the Boers over control of the gold-rich Transvaal. (Davie, L.2022)

Another wave of immigrants arrived in Johannesburg during the war; up to 60 000 Chinese workers were brought in to revive the mines before being sent back home six years later. However, Chinese traders had already made a name for themselves in the city and are still there. The mines also attracted immigrants from Europe to the expanding town. Black South Africans were hired at low pay to work in the gold mines while they supplied the funding to dig further into the dirt to find the gold. (Davie, L.2022)

The South African city falls victim to demographic disruption, the history of apartheid created a definitive form of control and segregation (Press, 2018), directly through the built environment through Nationalist Brutalism, colonial identity, western modernist ideologies, and segregation via procuring favourable locations (for the white populace during that period) as well as buffer zones; all of which has inherently been neglected. (Press, 2018)

The very first forced relocation in the town occurred in 1904 when people of Brickfields were relocated 25 kilometres to the south after the town burned down their brickmaking village to quell a bubonic plague epidemic (Davie, L.2022). They made Klipspruit their home. This marked the beginning of Soweto, the largest township in both the city and the nation. The segregated city was thus established. (Davie, L.2022)

The foundation of Johannesburg's explosive expansion was gold. After the 1913 Natives Land Act, which deprived black people of their land, more and more people moved there throughout time in search of work and a piece of the country's wealth. Buildings sprang skyward, and suburbs spread out in all directions, eventually spanning around 1 700 km2 of land.

The 10 million-tree Sachsenwald Forest, which was established during the first ten years of the city's existence, now serves as an urban forest. (Davie, L.2022) Sophiatown was one of these agglomerations. In the 1950s, it saw the second-largest forced removal in the city when apartheid laws ordered the expulsion of 65 000 people to make room for working-class whites. (Davie, L.2022)

he laws around forced removal and selection of spaces creates the idea that a certain type of architecture and public realm is not welcoming to all demographics, these reserved spaces in the form of estates and golf courses can be seen to promote further division. Johannesburg still fights to dismantle apartheid's segregation today.

2.2 Colonial Architecture in the context of Johannesburg.

Travel guides reveals how, in large part, the city celebrates its history and how it refers to itself as a "World Class City," taking pride in having top-notch amenities. In this situation, it would be reasonable to anticipate that the city will regard its industrial past similarly to other world-class cities. However, it is astonishing to find that the city seldom ever discusses its rich mining and industrial background when browsing the website. Grand mansions and the well- known art deco structures from the 1930s may be seen in a collection that showcases "historic Johannesburg."

With a few notable exceptions, history and heritage in this nation have been sanitized, and only the "great mansions" with recognizable Victorian features and traces of a colonial past are recognized as having legacy. (Läuferts & Mavunganidze, 2009)

Segregation, inequality, and social justice continue to be the defining characteristics of South Africa's settlement patterns more than 20 years after the laws regulating apartheid were abolished. (Berlanda 2017).

The result has been that injustice and discrimination have become an integral part of South Africa's topography. A recent series of drone pictures by Johnny Miller, aptly titled 'Unequal Scenes', makes the contrast eloquently visible. (Berlanda 2017).



Figure 5: Unequal scenes, Photograph: Johnny Miller

what appears to be economic folly in certain placement decisions that separated townships from existing towns.

This was solely controlled by ideological factors, and it clearly characterized the township as a "mechanism of control," as Glen Mills phrased it in an article from 1989 titled "Space and Power in South Africa." (Berlanda 2017)

2.3 Apartheid history of Architecture in Johannesburg



Figure 6: Officials examine Johannesburg 'Native Townships' plan. Apartheid Museum Photograph: Apartheid Museum

The Group Areas movement's purpose and impact was to impose control over space as a means of implementing racial segregation. The National Party's Group Zones Act (1950), which divided groups racialized as "black," "Indian," and "coloured" into residential areas separate from those allotted to the "white" population. (Campkin, Magilevich and Ross, 2020)

African people were relocated from Johannesburg's western neighbourhoods, such as Sophiatown, to new gridded suburbs south-west of the city, such as Soweto, as depicted on the map, thanks to the Natives Resettlement Act, Act No. 19 (1954), and pressure from the central government. As a result, over the course of five years beginning in February 1955, some 60,000 individuals were forcibly removed. An additional 3.5 million non-white South Africans would also be uprooted and put into segregated neighbourhoods between 1960 and 1983. (Campkin, Magilevich and Ross, 2020)

Even though they were functioning in new institutional contexts, the professional identities, image-making techniques, image forms, and visual languages utilised in this process were not novel nor unique to South Africa. Instead, they developed because of the export and imposition of planning know-how during European colonisation and modernist rebuilding after World War II. For instance, we may see echoes of garden cities and the postwar British planning system on the map in figure 14. (Campkin, Magilevich and Ross, 2020)

Apartheid urban planning organized segregated townships and provided homes for "natives" or "the bantu" within them as a method of limiting the presence of black labour in metropolitan areas. As a result of South Africa's breach of a League of Nations mandate given to its neighbour after the First World War, apartheid spread from South Africa into Namibia. In numerous places in Namibia, townships were established, and black residents were compelled to relocate there. (Campkin, Magilevich and Ross, 2020)

The original architecture of the single-family homes built for the black male worker, his wife, and their children may still be seen. These homes were built in an effort to socially design nuclear African families and subjectivities. However, following independence and democratization in 1990, the apartheid family experiment, which was incompatible with the extended family patterns in Africa, did not endure to any appreciable level in urban life. Numerous one-family homes have undergone architectural changes

and expansions as a result of intergenerational plans and private housing solutions. (Campkin, Magilevich and Ross, 2020) South African apartheid associated itself with the darker sides of Modernism, in which rational measures and organisations were used to oppress people.

The planning of the township and the design of housing were ingrained into the practises of the international Modern Movement and of colonial planning in other sub-Saharan African countries at the time. As a result, blacks were characterised as being different from the healthy, normal, and white. (Campkin, Magilevich and Ross, 2020)

The contemporary need to categories evolved into a preoccupation with classifications based on skin colour and the placement of space for "others," like townships.

The National Building Research Institute (NBRI) in South Africa conducted a variety of social and technical studies in the late 1940s and early 1950s, for instance, where the modernist principles could be seen in industrial and logical planning as well as architectural design.

Based on this fictitious study, NBRI then created an ideal economic design for standardised township dwelling units. This pretended scientific mindset was prevalent at the time in many other colonial countries. The scientific assertions cover up the deeply ingrained discursive concepts about control and black inferiority that are intended to "enable the reasonable exploitation of African labour." (Campkin, Magilevich and Ross, 2020)

2.4 The history of the Johannesburg CBD's Architectural styles.

Before the discovery of gold on the Witwatersrand in 1886, Johannesburg was a collection of dusty farms on South Africa's highveld.

From the economic prospects bloomed the built environment of Johannesburg birthing various architectural styles which accompanied the inflow of fortune seekers from all over the world, leaving aside the prospectors and miners. (De Villiers, M. 2020) The finance houses, banks, and mining company offices built in the inner city during the late 19th century were the perfect representation of the Victorian era: large, intimidating structures with elaborate window frames, plastered first floors, roof pavilions, wrought iron, and broekie lace (De Villiers, M. 2020).

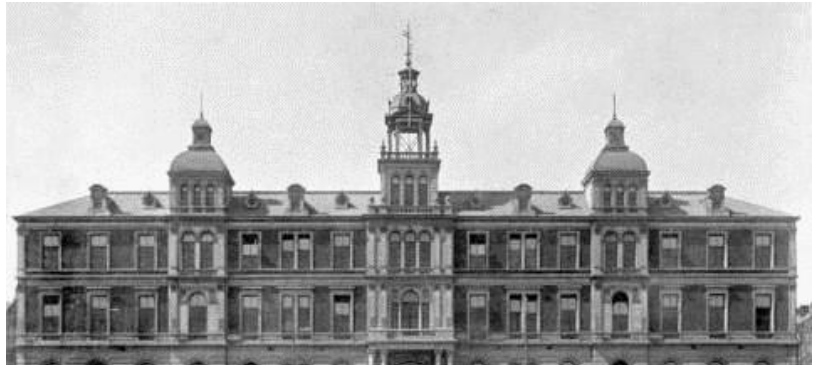


Figure 7: A victorian era buildings, the Rissik Street Post Office

Image: wiki.up.ac.za via Wikimedia Commons



Figure 8: The Rand Club. Image: Johannesburg Heritage Foundation

The Rand Club, located at 33 Loveday Street in Marshalltown, is the most notable example of Edwardian neo-Baroque architecture. Cecil John Rhodes established this gentleman's club in 1887. It has undergone three constructions, with the most recent one being finished in 1904.

The prefabricated steel building designed by William Leck and Frank Emley has a rusticated ground floor, a stained-glass dome, Doric pillars, and porticoes.

In the early 1900s, Herbert Baker resided in Johannesburg and rose to fame for his rough-hewn stone structures with whitewashed walls, Venetian windows, and steep tiled roofs. The wealthy locals frequently hired him to design their homes. As a result, most Baker mansions can be seen in Westcliff and Parktown, two rich suburbs with expansive vistas of the Magaliesberg. In addition to other projects, Baker was hired to design St.

John's College, Roedean School, and St. Mary's Cathedral.

By the 1920s, modernity and Americanism had come to be synonymous, and this town was determined to copy the style of the financial capital of the world: midtown Manhattan.

The emergence of "Little New York" and the skyscraper age are now upon us.The Barbican Building, a real Manhattan-esque wonder in Egoli's inner city, was the first skyscraper to grace Joburg's skyline when it was finished in 1929. It has 11 stories of diverse Art Deco and Edwardian classic splendour.

Regardless of aspirations for Yank-worthy heights, Art Deco, a fashion in pre-World War 1 France characterised by sleek geometric patterns and forms, straight lines, and ornamental accents, had a significant influence on the CBD's architectur

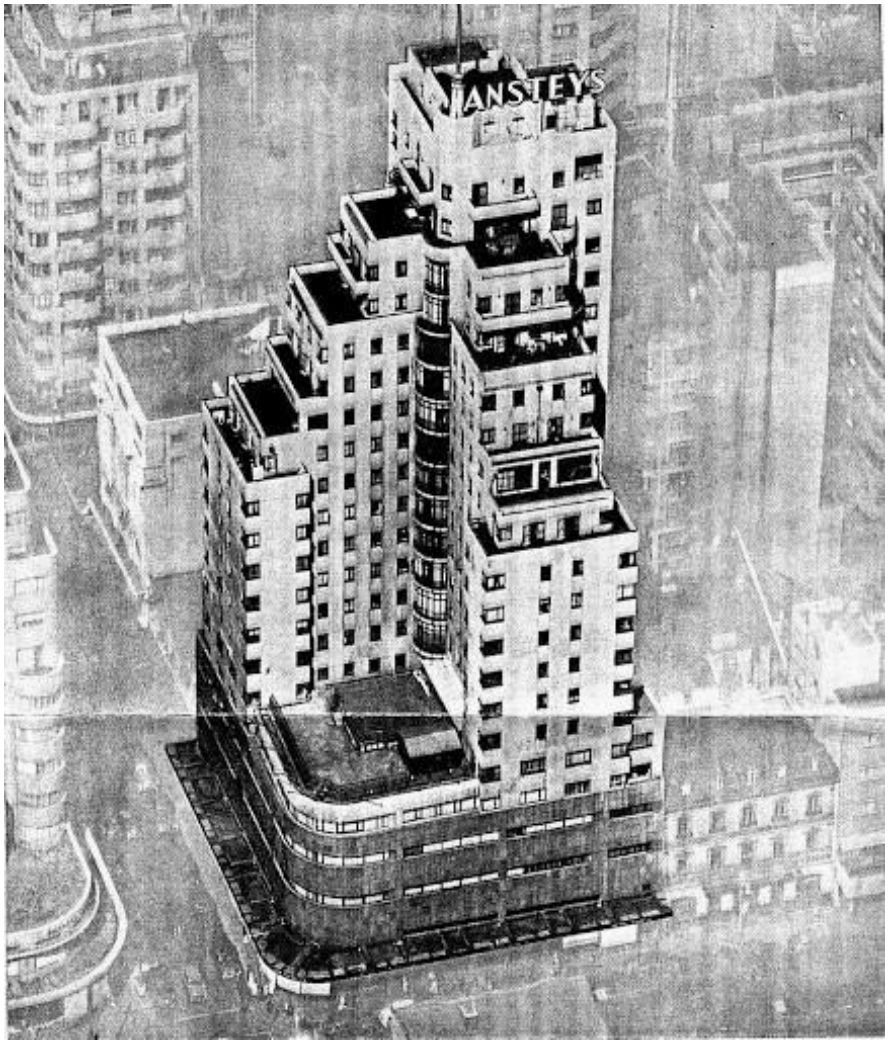


Figure 9: Anstey's Building. Image: Wikipedia

One of South Africa's most iconic Art Deco structures is the 20-story Anstey's Building, built in 1937. Anstey's, a ziggurat-inspired structure with sharply angled wings, angled geometrics, and cylinder glass windows, temporarily held the title of one of Africa's highest structures.

Due to the Brazilian influences on its construction, the highly populated Hillbrow residential district, which is made up of high-rise flats, came to be known as "Little Brazil" by 1950.

The Telkom or Hillbrow Tower, which was built between 1968 and 1971, and the much misunderstood, enigmatic Ponte City, which has seen an equal amount of opulence and celebrity since its construction in 1976, are still located in Hillbrow, even if Little Brazil is no longer there.

Despite its innovative and renowned buildings, apartheid-era South African architecture nonetheless serves as a stark physical reminder of the nation's dark history. The Brutalist Civic Centre, which was built in 1962, is a stark representation of the period's roughness.

Yasmin Mayat, an architect, and expert on cultural heritage, likens the concrete-heavy, monolithic structure to the previous administration as being "unapproachable, harsh, and dictatorial. "On the other hand, Mayat described the 1980s in Joburg's architectural history as "another boom and bust," with the inner city witnessing a large multiplication of structures, from "fancy glass buildings" to hotels. Despite being a relatively new metropolis, Mayat claims that Johannesburg serves as a sort of microcosm of South Africa. "The heritage of many styles is incredible." Laurice Taitz, the publisher of Johannesburg in Your City Pocket Guide, agrees with this. She claims that because South Africans live in a culture where "values around ownership and legacy were twisted by apartheid history," Johannesburg frequently gives the impression that it doesn't place much weight on history. What this metropolis lacks in natural beauty, it makes up for with a miscellany of physical legacy and history, including colonial gentleman's clubs, and skyscrapers

2.5 Context: The history and life of Marshalltown

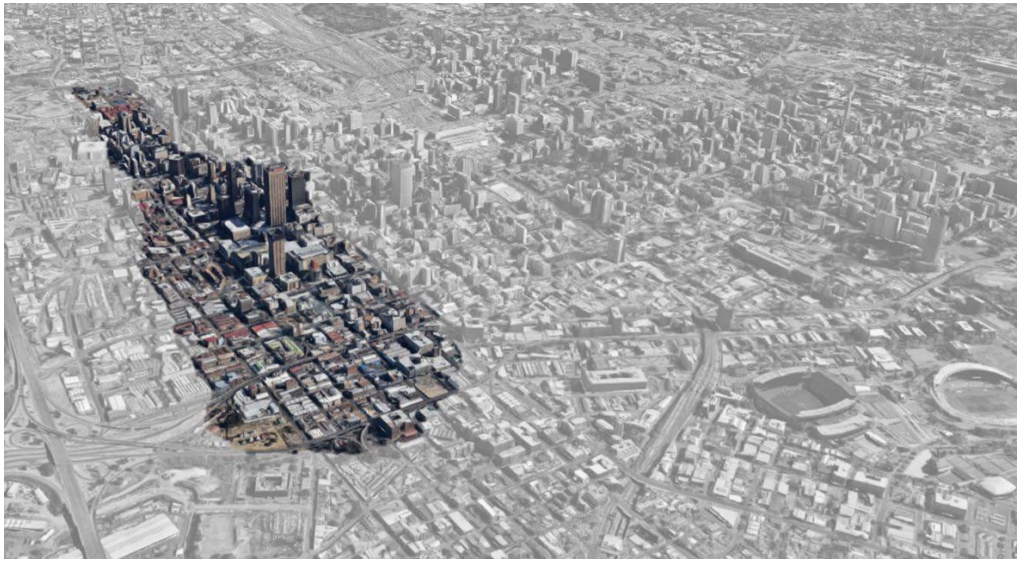


Figure 10: Orthographic map of Marshalltown. Source: Google Imagery (Edited by Author)

Fast forward, and the bankers and investors are still here, with a sprinkle of gentrification coupled with an entirely different entity of a government that is riddled with corruption, which continues to prevent the city from progress and collectively fails to stop the degradation, criminal activity that stems from desperation, as well as the illegal squatting of buildings. South Africa's Marshalltown is an example of a neighborhood in Johannesburg that illustrates that through the neglected buildings.

The historical Marshalltown neighbourhood, which is adjacent to Braamfontein, Jeppestown, Joubert Park, and the cultural hub of Newtown, is attempting to restore its strategic significance in the city's social and economic growth through urban regeneration projects today through the implementation of mixed-use buildings.

Over time, an urban area with a dense population has replaced the historical notion of the core city as a "Central Business District." multi- purpose setting. The Urban Development Framework for the Johannesburg's Southern Inner-City Belt (2009) states that the Over the past 15 years or so, the inner city's function has evolved from being the "Central district commercial area" of Johannesburg to a substantial residential area that is mixed-use in the city. This necessitates a review of the Marshall Precinct. town as a mostly industrial region solely, but rather as an urban setting with a variety of uses and purposes (Kwong, 2014); and one that can accommodate several people of different ages and conditions.

Marshalltown and the inner city are undoubtedly active and more safer during the daytime because of the efforts of several corporate and local government collaborations to enhance safety and the area's appeal.

It's difficult to determine whether people are avoiding the city centre at night unless they are travelling in groups or going to watch a play in Newtown or the Market area.

Although it is still developing its own personality, locals think it is no more dangerous than any other area in Johannesburg. There aren't many pubs and restaurants in Marshalltown, and the social scene is lacking. The main reason you're staying here is for local business, which is a wise decision considering your location. A significant benefit is the sensation of remaining in the "actual city," as opposed to the upscale northern suburbs, which are impenetrable in comparison.

2.6 Heritage and the Three Castle's

Site Selection

Among the concrete high-rises and glass skyscrapers, it can be said that the identity of the low rise, and classical building with symmetry, proportion, rhythm, repetition, hierarchy, as well as decoration and ornamentation provides character to the city. The importance and diversity of heritage in South Africa is like no other country in the world. The diversity of language, beliefs and way of living have both divided and unified the many ethnicities of South Africa, the more open minded at least, and another aim of this investigation is not only to reuse and activate lost space but to create an environment where a unified South African community can live and prosper, in this case, almost poetically in a heritage building that existed in a time that represented division.

This is why interrogating this issue is imperative, and delicate. When dealing with heritage, you are dealing with someone's' culture, identity, and memories. With our Apartheid history, architecture can be a good reminder for some and a bad reminder for others. The question always becomes-

What do we preserve? What do we discard? What is useful? What is not? Heritage buildings have recurring issues like infestations, structural instability from fire hazards, some buildings are merely facades gutted from their core, some are purely abandoned either not fully built or built and left behind due to suburban flight. They are left stagnant, still, gathering clusters of vagrants and drug dealers that service them, and they create unsafe environments today when they were once proud feats

of architecture meant to serve the larger community, a purpose now lost. These abandoned heritage buildings are colonial style and many might choose to demolish or many might choose to reuse. This, chapter will aim at dissecting the architectural history of the city of Johannesburg, of Marshalltown, and of the Three Castles, in an effort to understand the rise and fall of the typology of the abandoned heritage building and whether it is possible and feasible in a period of time with low economic prosperity for South Africa to preserve this architecture through the implementation of a symbiote that aims to integrate new life into an old building for a new South Africa that still remembers.

2.7 Locality and background



The building, which is in the Johannesburg CBD on the corner of Marshall and Goud Streets, has long been a center for social gatherings and fun times. The three Castles represents the industrial past and the stylization that synthesizes an 'historic building'.

The period when it was built, classical Victorian features, as well as its program at the time of its conception making it industrial heritage places it as a colonial building in the heart of the city much like other examples named in the regional context of the inner city. These factors resonate as to why the building and locality create a viable site whilst addressing Adaptive re-use, Urban Abandonment, Heritage, Urban Communities, and the Johannesburg textile industry that now dominates trade and activity in the vicinity of Marshalltown.

It was constructed in 1894 for Acme Cigarette Co, the company that made Three Castles Cigarettes, but in the closing years of the 19th century, President Paul Kruger took control of it and reopened it.

The building was thereafter occupied until 1953, according to the City of Johannesburg, by another tobacco firm. (Edwards, 2016)

Figure11: Locality map – Google Imagery (Edited by Author)

Figure 12: Photograph (Author)



After then, the structure housed several successful nightclubs in the neighborhood, including the homosexual bar Dungeon Club, which occupied the space for 25 years. The structure, which was destroyed by fire around 2011, is in risk of being demolished, according to several websites, including the Heritage Portal. The once-famous structure is now unrecognizable, covered in graffiti, surrounded by garbage bags containing decaying materials, and walled off with barbed wire.

The Provincial Heritage Resources Authority Gauteng and the Egoli Heritage Foundation have partnered to request that the Heritage Association of South Africa protect the historically significant structure to restore it to its former splendor. One of Gauteng's four medieval castles, this one is the only one to be in such a sad and decaying condition. (Edwards, 2016)

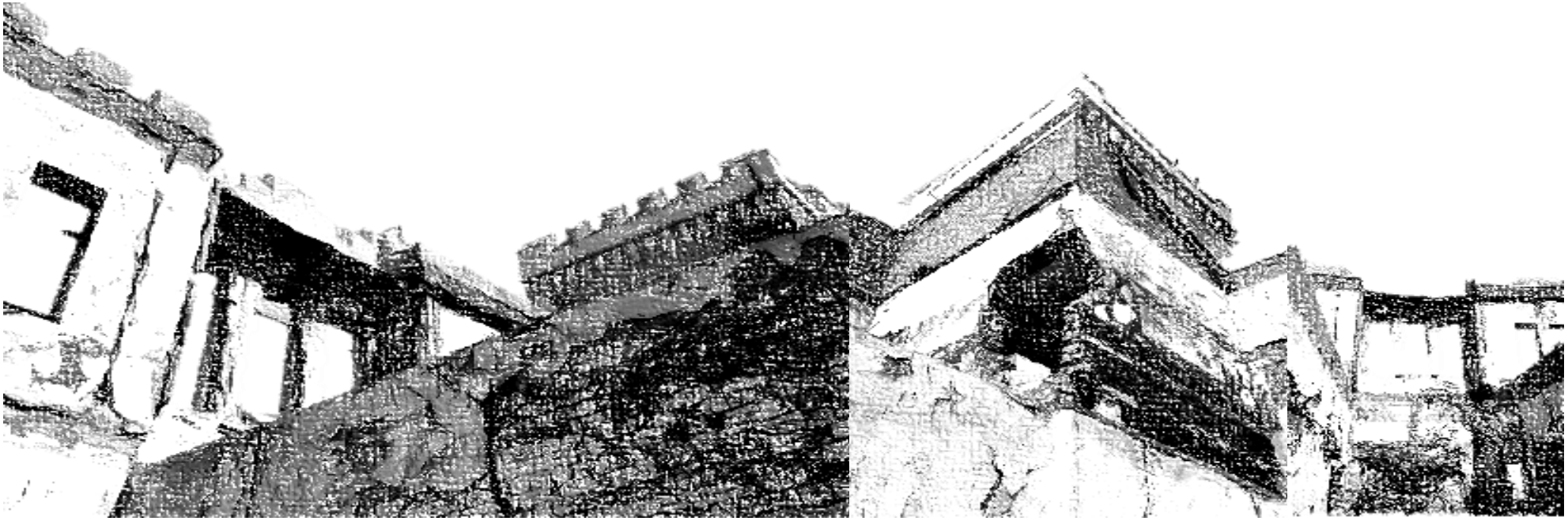
Site: The Three Castle's



2.8 The Ruin in Marshalltown

The three Castles Building is a testament to the post-industrial 19th century architecture left to decay now in the 21st century much like other abandoned heritage buildings in the inner city. The building has worn down facades, covered with cracks, gaps, and graffiti, and consist of vegetation that ingest the interior of the building, as well as ash and soot that reminisce the fire that had ravaged the building at a point in its lifetime.

Figure 13: Photomontage (Author, 2022)



The Three Castles

-was between 1894 and in 1898, it first opened as a brand representative building. The 'Three castles' was a British cigarette company, and they had opted to design the building to resonate with the logo and the trends of architecture of the time.

The three turrets seen of the building are derived from the logo and the stylized features of the building (such as the plaster mouldings) are Victorian in their definition.

The branded building became an advocate for women in the 1920s during the women's movement by advocating smoking through sensuality as part of a marketing campaign that one could essentially say capitalized on the sale of cigarettes by objectifying as sexual objects during the women's movement as a marketing strategy to create a false sense of empowerment.

These heritage buildings have become canvases from an old era for local artists that implement an artform of a modern era. The building's age is seen in its conditioning, in its scars and coverings that showcase the life and decay of the building, yet even in stagnancy the building hold's purpose in micro and macro scales.



Figure 14: Photomontage (Author, 2022)

Years later, it became a predominantly women employed garment and lingerie factory. The Three Castle's then became a nightclub for which it was known as the 'Dungeon' in the final years of its life as an active building.

The building has a history as an industrial building in the city, a relationship with textiles and the history of textiles in Johannesburg, making it a relevant landmark to the fashion district in Marshalltown.

Figure 22: Image (Heritage portal, 2022)



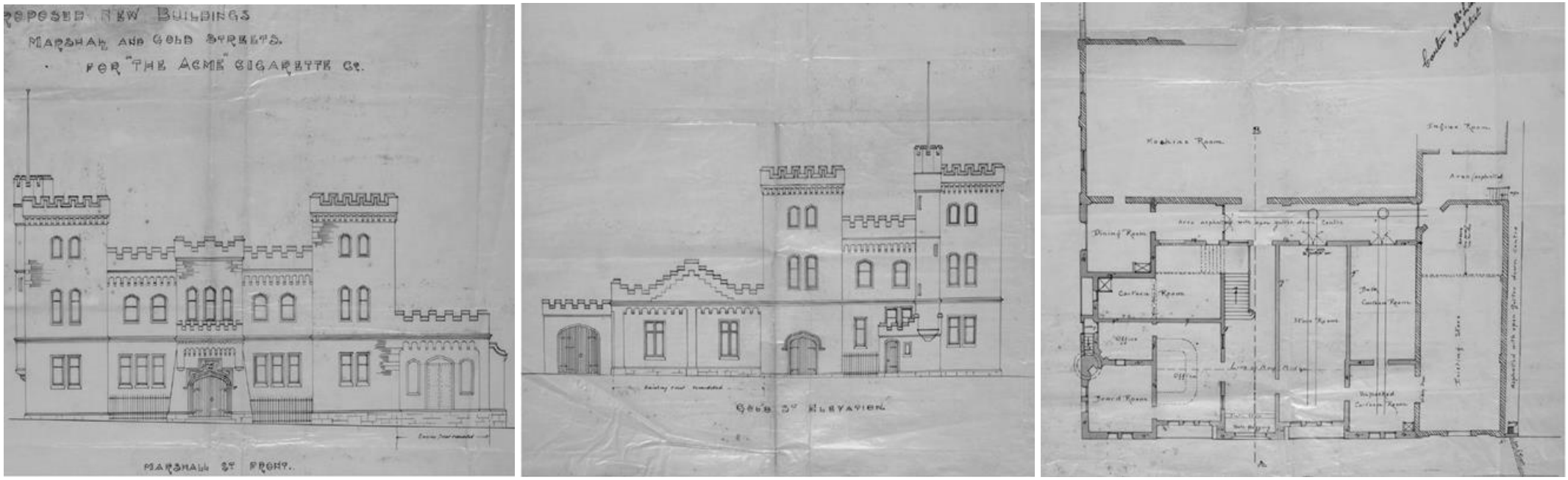


Figure 23: Image collection edited by author (Heritage portal, 2022)

1852
The first recorded discovery of gold in the area draws the attention of many European prospectors as Johannesburg begins to established itself as a tented mining camp.

1884
The Acme Tobacco Company begins export to South Africa.

1886
Johannesburg was formally established as a mining town.

ca. 1888
The Three Castles Cigarettes collection cards are launched in South Africa.

1890
Tobacco Cigarette manufacturing began on the factory site.

1897
Tobacco storage room built on the eastern side of the property a year before the main factory was built.

1898
The Three Castles building was designed as a stylistic representation of a Victorian castle as an advertising campaign for Three Castles Cigarettes, a brand of the Acme Cigarette Company.

It was the first building designed in a particular style for advertising purposes in South Africa.
(Shorten 1970:481)

1899
President Paul Kruger, an enthusiastic smoker, travels to Johannesburg in April to open the Three Castles building of the Acme Cigarette Company.

This marked Kruger's last visit to Johannesburg, just before the outbreak of the Second Boer War.
(Meiring 1986:32)

1900
The Begbie's Iron Foundry explodes four blocks west of The Three Castles (expected sabotage by British residents in support of the Second Boer War).
(The Transvaal 26 April 1900)

1952
The New Nugget Hotel is built adjacent to the Three Castles building, on the eastern side of the city block.

1953
United Tobacco Companies vacates the building, moving to new premises in Industria.
(van Rensburg, 1986:259)

The building is bought by a womens fashion company that produces lingerie.
(Sie*2016)

ca. 1970
Restoration of the Three Castles building.

The factory is converted into sub-sectional office building which is rented out to a variety of businesses.

ca. 1975
The Three Castles becomes the home of 'The Dungeon' gay nightclub which occupies the first floor of the building.

The ground floor workshops are used by an air-conditioner repair and sales company.

Figure 24: Timeline c photographs of plan (Cook, 2018- Edited by Author)

"The original factory was not mechanised. Instead, 100 women were employed to roll cigarettes by hand" (Shorten 1970:481).

"The original warehouse would have been a simple structure made from timber and iron. It would have merely been one large space filled with women rolling cigarettes, and may have had an office or shop that opened to the street" (Shorten 1970:481).



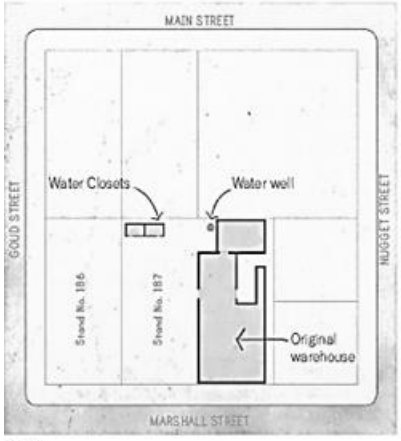
1897
The original facade of the tobacco storage warehouse was built in an Edwardian architectural style but was remodeled to match the style of the Victorian castle a year later.
(Museum Africa archive collection)

"The factory's water demand was met by a water well on site up until 1910" (Meiring 1986:32).

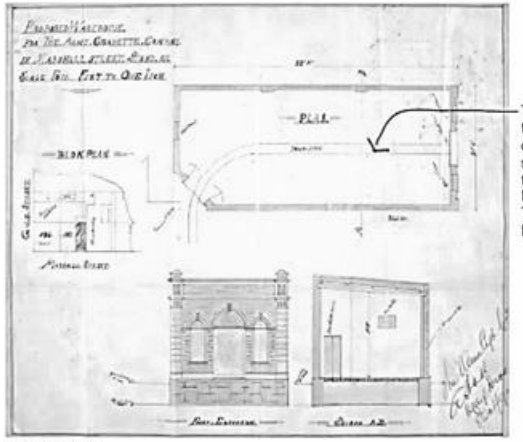
"The demolition and rebuilding of buildings was a common occurrence in early Johannesburg as the town grew into a city" (van Rensburg 1986:72).



14 October 1897
A letter addressed to the Johannesburg Town Council requesting permission for The Three Castles to be built.
(Museum Africa archive collection)



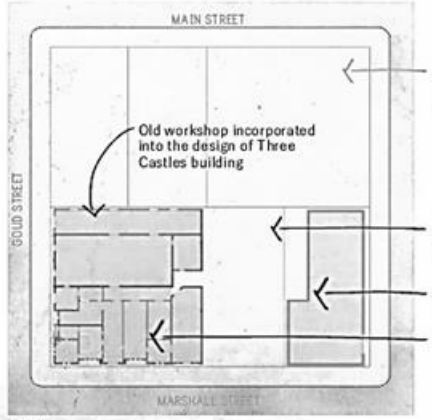
1890
Original block plan and first development.



8 October 1897
Original drawings of the tobacco storage warehouse.



1897
The development of the Three Castles city block.



1950's
The development of the Three Castles city block.

1980's

The Three Castles building functions solely as a gay night club called 'The Dungeon'.

The club is later re-branded, during the height of police raids in Johannesburg night clubs. The club's name changes to 'Icon'.

(Sunday Express 30 September 1984)

1998

Parts of the western wing are destroyed by a fire, allegedly started by the owner for an insurance claim.

(Davie 2003)

1999

Minor repairs occurred on the building after it was purchased by an industrial piping company.

(Davie 2003)

2005

The Building is sold for 1,5 million Rand and the piping company vacates the premises.

(Business Day 9 December 2005)

2006

The new owner makes multiple attempts to resell the building over the next few years, without success.

(The Sunday Times 23 January 2005, 7 October 2006 & 19 November 2006)

2008

The Castle is completely abandoned after the roof structure collapses due to a lack of maintenance.

2010

Vagrants occupy the building following the demolition of a hijacked building, two blocks north from the Three Castles, on Commissioner street.

2015

The demolition of the Three Castles building is proposed for the redevelopment of the site.

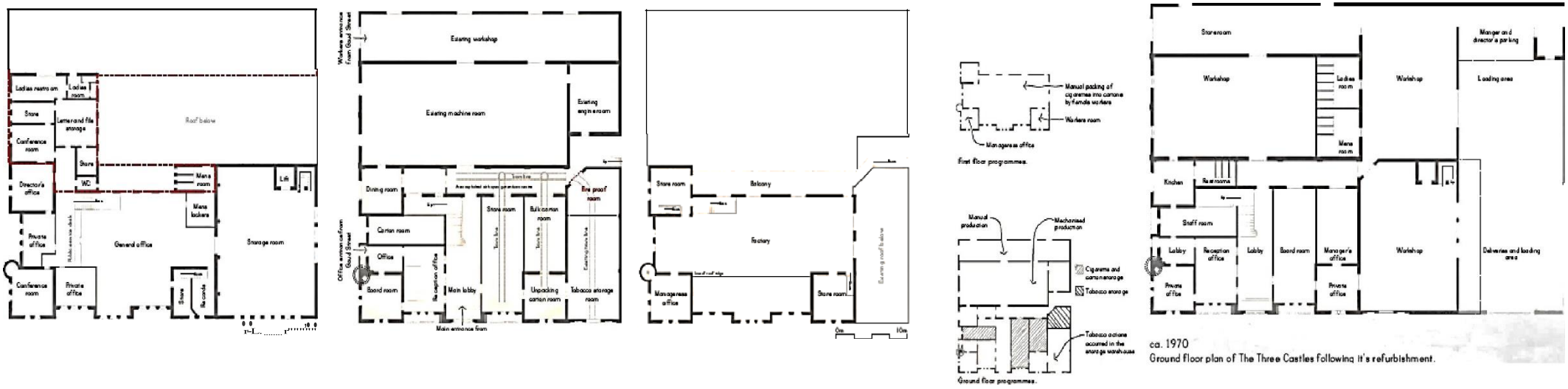
2017

The empty window and door openings of the building are bricked up and a barbed wire fence is erected to deter vagrants from reentering the ruin.

2018

The Three Castles building remains in a state of ruin as the City of Johannesburg and other interested parties attempt to obtain ownership of the site.

Figure 25: Timeline and photographs of plans (Cook, 2018- Edited by Author)



2.9 Heritage conservation: the status quo

The beginning of the Black Plaques Campaign by the Gauteng Heritage Action Group as a show of public sorrow over the condition of particular cultural treasures. Ten historical interest organisations from all throughout the province have come together to form the organisation.

They chose to launch a campaign to expose building owners and developers who had allowed their historic homes to deteriorate through neglect.

Owners have frequently delayed their feet or purposely caused structures to degrade to the point where they can get a demolition order (Ho, U.

2017).

Flo Bird Heritage Portal abstract

Thee Johannesburg Heritage Foundation's Flo Bird, claims that careless owners in both the private and public sectors have avoided their duties for far too long. (Ho, U. 2017).

According to Bird, "The National Heritage Resources Act is not being implemented and, in many cases, owners have delayed their time or have purposely caused the structures to degrade to the point where they may obtain a demolition order." (Ho, U. 2017). She thinks that preserving historic buildings and architecture improves contemporary urban living..

According to Bird, there is also plenty of room for job creation and skill development in heritage preservation. The City of Johannesburg might educate and train craftspeople in restoring and constructing historic structures. Bookings for the foundation's Heritage Month trips were often oversubscribed, which shows the potential for profitable heritage tourism projects. We need public signs to identify owners who are not abiding by the regulations because we are mourning the loss of these structures, according to Bird.

Figure 26: Marshall Street barracks, Johannesburg. Image: Supplied



2.10 Conclusions on conservation

Three Castle's- Heritage conservation- The need for conservation from a social and experiential perspective comes from the ability to achieve architectural diversity in the city using Heritage buildings.

In my perspective, due to the colonial and apartheid history of South Africa, some buildings with the colonial style can be a reminder of a time that is hard to remember for large parts of non-white demographic. Therefore, it becomes important to redefine the identity of these buildings and what these buildings mean today as opposed to what they meant before. With that in consideration, the Three Castle's specifically is a pivotal building in terms of technology, style and significance during the lifetime and progression of the city.

A cigarette factory, a garment store, a piping company, and a nightclub showcase the number of uses of the building throughout its life in Marshalltown. It provided use, a landmark, a central point in the city and memories that should once again be reintroduced to benefit a new age.

2.11 Urban Analysis

The streets of Gauteng offer a visually appealing representation of the wide variety of roadway designs seen across the Gauteng City-Region.

The empty areas stand in for "open space," which includes parking lots, servitudes, parks, golf courses, railroads, bodies of water, and, primarily, roadways. A "figure-ground" is a stark, monochrome portrayal of spatial organization differs significantly from typical city maps of roads, plots, transportation hubs, significant natural features, or tourist attractions .(Naidoo and Maree, 2021)

In *figure* 9, we observe that the streets of Gauteng are complex landscapes. On the one hand, they were virtually always created to make it easier for cars to move about. .(Naidoo and Maree, 2021)

.



Figure 27: Figure ground diagram. Source(GCRO)

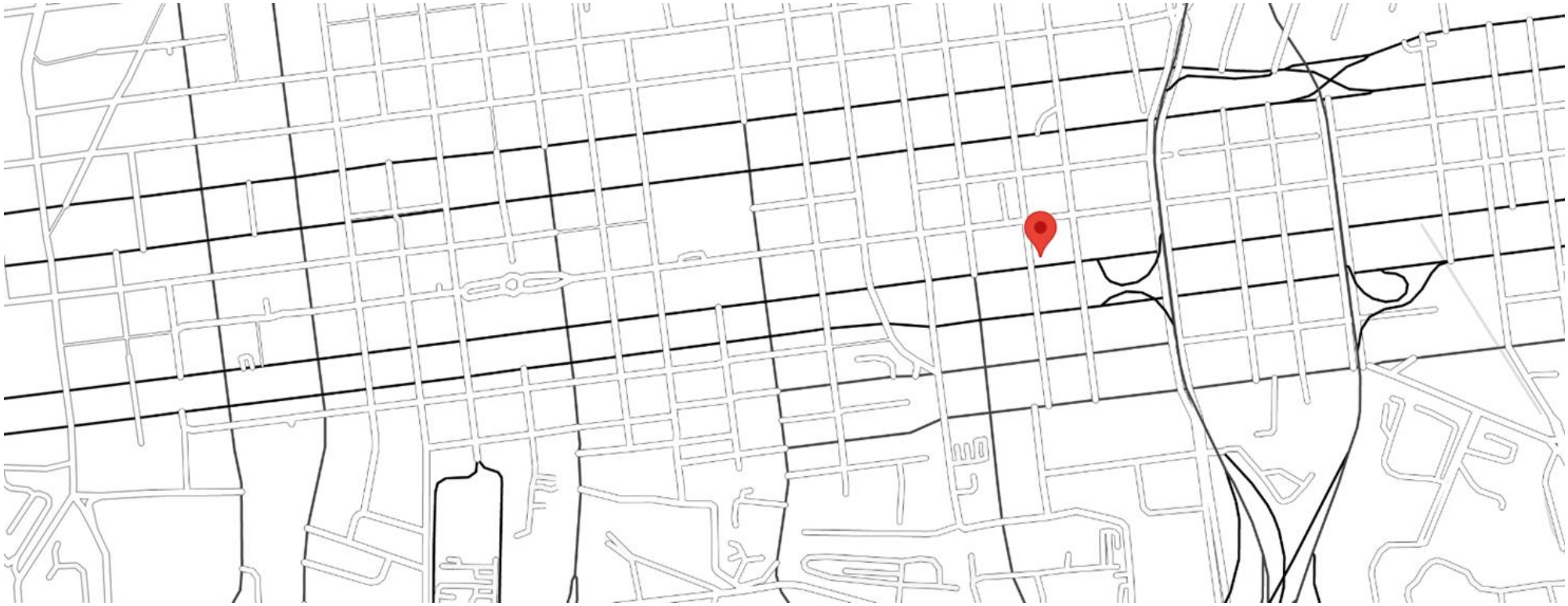
The fabric of street life has been affected differently by these varied design approaches. The urban activity in each place has been impacted differently by these varied architectural aims and hence diversified the tapestry of the street. (Parker, 2018)



Figure 28: Figure ground diagram. Source (GCRO)

Essentially, the figure-ground depicted the typical built-up density and uniformity of a typical CBD, with a clear absence of parks as well as other open/grey space (Naidoo and Maree, 2021). When examined closely, the figure-ground shows several peculiar historical oddities in the construction of this street-grid that still have an effect on how it functions now (Naidoo and Maree, 2021).

Shortly after the finding of gold in 1886, the first formal delineation of stands in what is now the inner-city of Johannesburg took place to provide some type of order to a thriving mining colony. (Parker, 2018).



The surveyors also aimed to build as many street corners as they could in this early grid layout since corner stands had the highest lease value; the smaller the block sizes, the more street corner stands, the more money the state would get from leasing the property. (Parker, 2018)

The outcome was a fairly compact grid, the movement of motor vehicles would not have needed to be taken into account while designing streets in the middle of the 1880s (Beavon, 2004). Today, the tight grid and its odd kinks seriously hinder traffic flow. Coupled with intense pedestrian use and street trader activity this has given some to name this part of the inner city 'the chaos precinct'. (Parker, 2018)



Figure 29: Urban street mapping and locality diagram (Author, 2022)

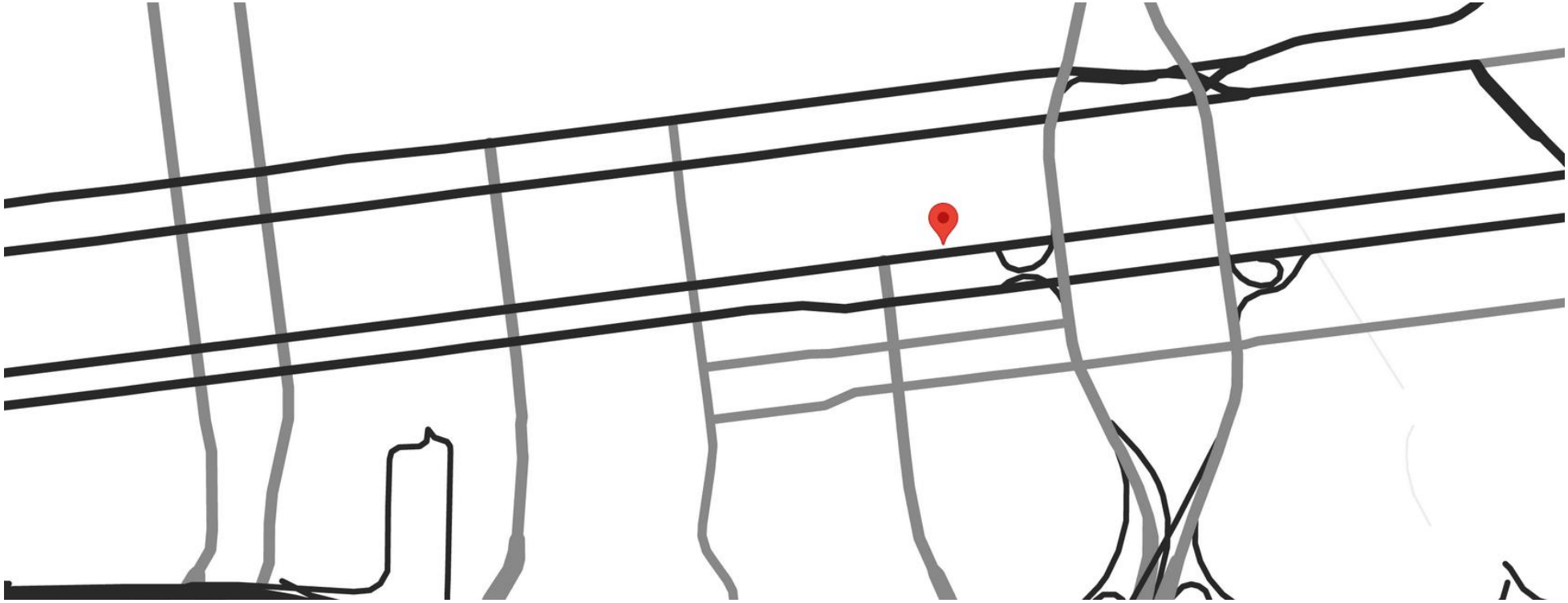


Figure 30: Urban street mapping expressing major and minor arterioles (Author, 2022)

However, findings show that there is a complicated interaction of players in the historical and contemporary usage of Gauteng streets, with street users, property owners, and the state all acting in accordance with their respective, individualized agendas, depending on the specific street in question (Parker, 2018). As a result, there are many pedestrian activities on the streets, which are chaotic, competitive, and always changing. They were undoubtedly car-centric, but they also had a diversified and have an active pedestrian population and other non-motorized life.

Street grid designs also varied greatly throughout the city-region. As a component of the apartheid state's security system (Naidoo and Maree, 2021)), one would say they were created in various regions with the goal of population control.

In certain locations, they were designed to have as many street corners as possible.

In some areas, there was very little consideration given to the density of the street network as private developers worked to amass enormous plots of land on which to construct gated communities that were inwardly centered and isolated from the surrounding urban fabric. (Parker, 2018)

As a result of the unauthorized and unofficial use of property, street grids of a type have spontaneously and randomly developed in various regions

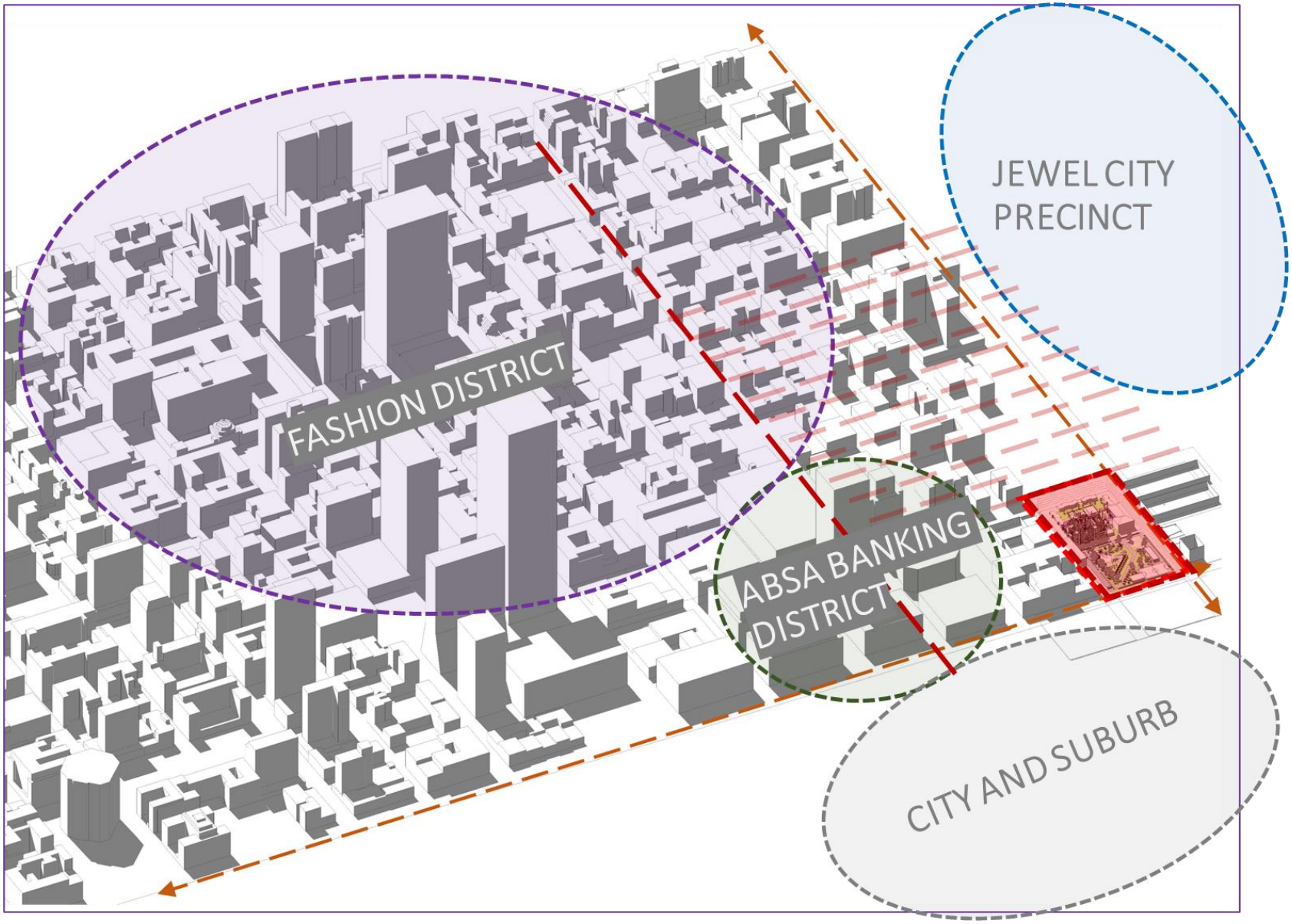


Figure 31: Urban analysis axonometric drawing(Author, 2022)

The Three Castles falls between the Fashion district, the ABSA banking district, the city and suburb, and the new Maboneng Jewel city precinct.The context already has an underlying use of textiles and adaptive reuse methodologies applied to refurbish buildings, the co-hesion between both is missing, the Three Castle's has an opportunity to rectify that issue.

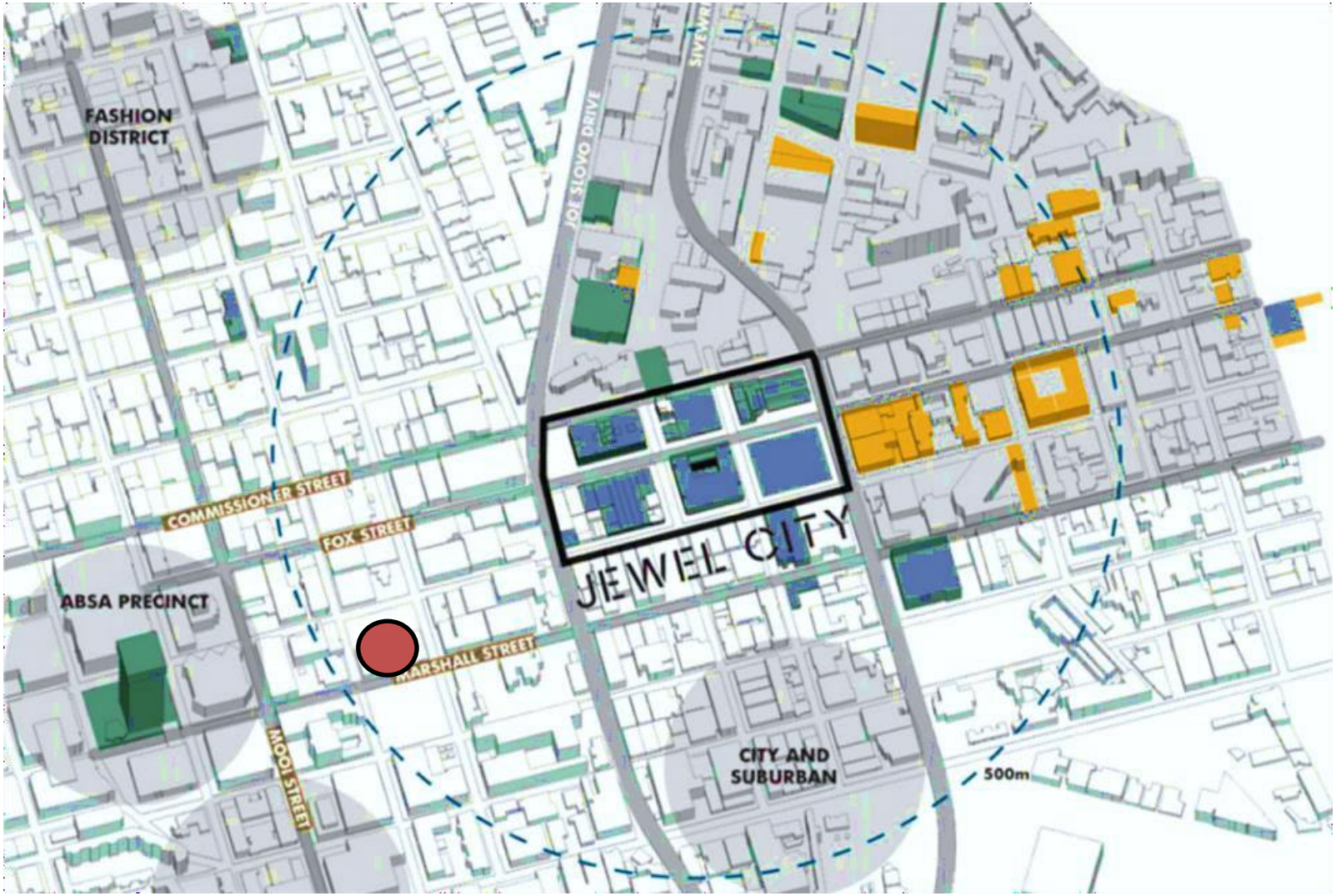


Figure 32: Urban analysis drawing-(Author, 2022)

The Three Castle's as a rejuvenation project sits ideally in a rapidly developing hub, and may act as a counter measure to gentrification ot create uplifment through the use of locals engaging, creating and investing in the Textile innovation center to arise. The variety of zones endorse a mixed use approach, commercial and residential districts meet at the Three Castles, the hub is central to a diverse set of districts.



Figure 33: Urban analysis drawing (Author, 2022)

MAKING MIXED-USE

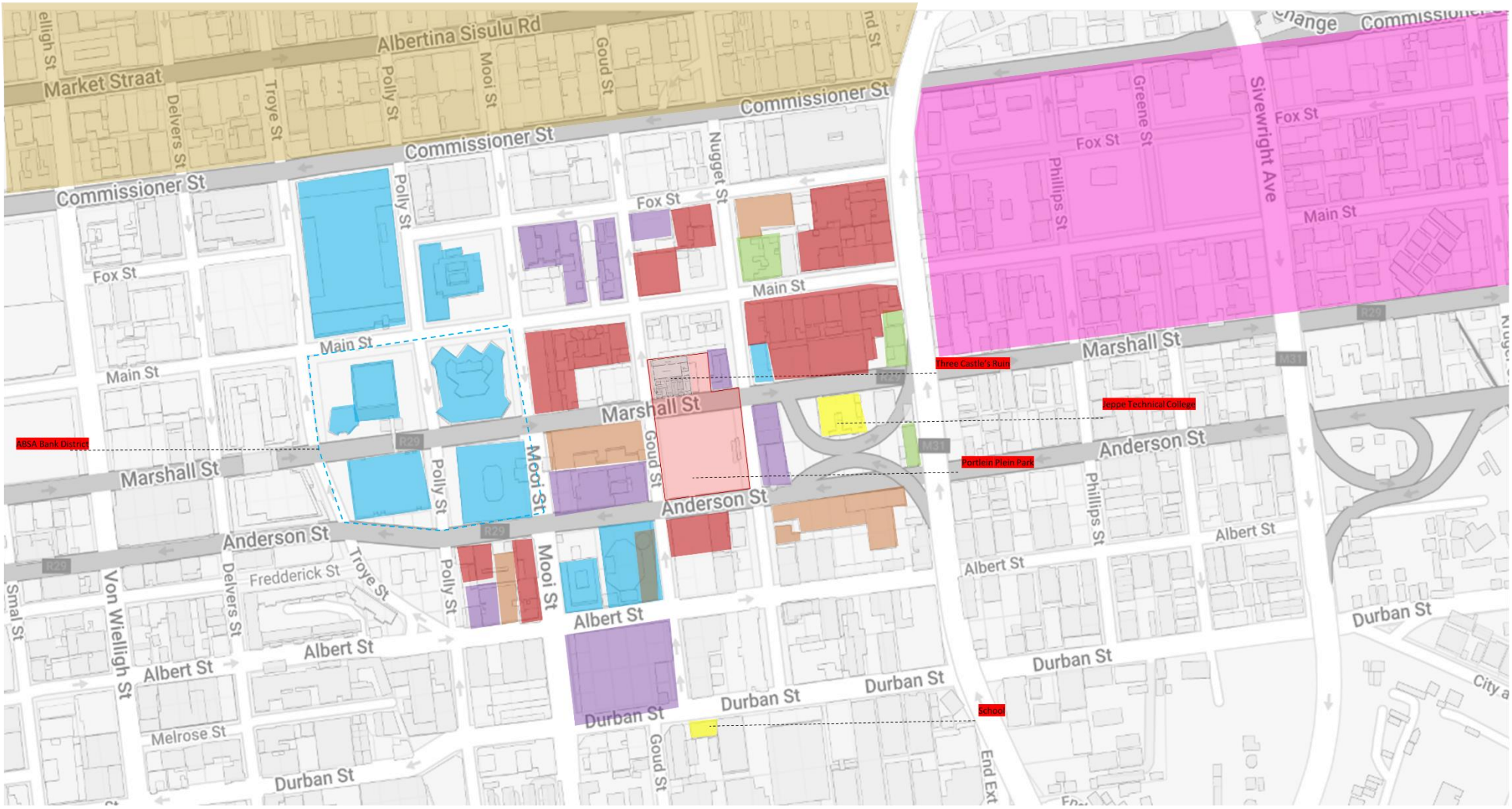


Figure 33: Urban analysis drawing (Author, 2022)

Nestled between the Fashion district and Mobeneng. Main street on the north of the site connects to Ghandi square and continues east to Mabneng's jewel city which replicates the shopfront, mid-rise and public space relations that aren't gentrifying but relevantly activating qualities of a mixed use precinct in the context of Johannesburg city.
The ABSA banking district as well as a handful of schools, including the Jeppe culinary school are all within a 6 block or 1 kilometer radius of the site. The fashion district trickles down towards Marshall town from the north of the city in the form of upholstery stores, clothing stores etc. The connection between commercial activity in terms of retail relevant to repair, production and recycling indicates a textile innovation center could be adequate to the industry, economy, and surrounding students and entrepreneurs interested in the opportunity that comes with empowering the community. The context with commercial to the north, industrial to the south, education to the east, and an amalgamation of abandoned buildings surrounding the site calls for the opportunity for a mixed use precinct language in a way that does not gentrify.



Figure 34: Urban mapping of Marshalltown CBD (Author,2022)

The district of Marshalltown as discussed has an opportunity to be a bridge between two newly established urban regeneration interventions, Newtown and Maboneng. This offers Marshalltown to be a place of opportunity to live and work. The Jeppe college, neighbouring schools, clothes, food, banking districts are all forming within the context offering a prime location to revive spaces that aren't functioning. Main street connects directly from Ghandi square which means a major arteriole route of the city passes right though the Three Castle's, making it an important circulation and resting landmark in the city.

2.12 Micro- Site Analysis on the Three Castle's

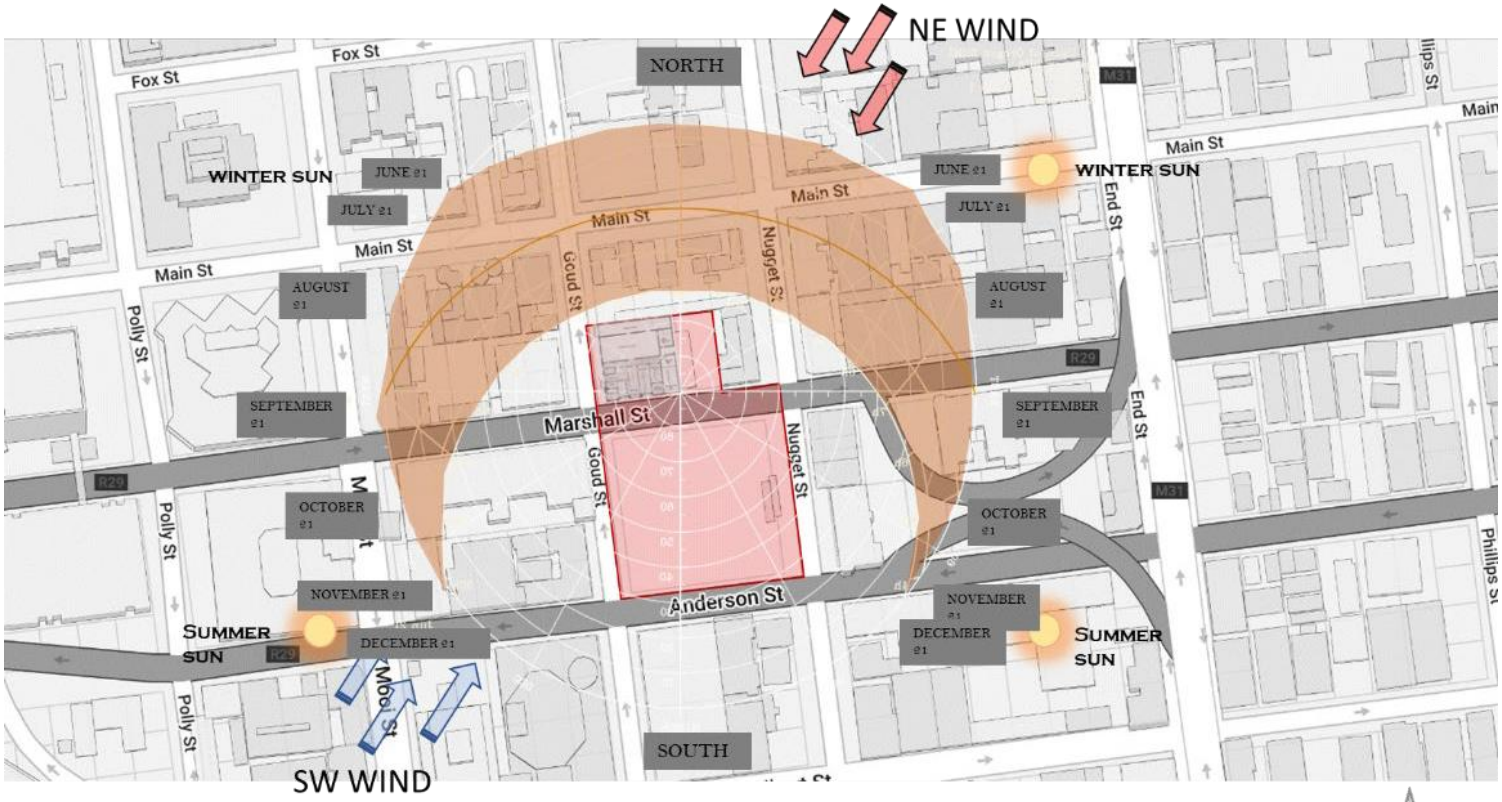


Figure 35: Site Analysis (Author, 2022)

The sites longer façade faces directly north, the splitting off ramps keep Jeppe college eats of the site low allowing for the sun to radiate fully onto the site of the

Three Castle's and Portplein Park south of the site, the high rise west of the site create minimal gaps of stray light to pass through in the afternoon.

The ABSA banking district casts a substantial shadow. Cross ventilation into the sporadic courtyards next to the Three Castles will easily flow.

The existing trees in the courtyard have sufficient exposure to the sun and walking through the space would be cool and shaded on a hot day naturally.



Figure 36: Micro- sun study diagram (Author, 2022)

The necessity to do a solar and wind study is imperative to understand how to catch the light and cool breezes in the intended courtyards. The light and ventilation study is paramount to the textile response in using passive materials to deal with creating comfortable spaces with various experiences



Figure 36: Dead- streets and lost space study diagram(Author, 2022) –

The only two points active are the taxi stops on the north and south side of the site. The grocery store on the west adjacent to the park does not activate the street, Jeppe college to the east does not either, and the park is inactive, the two northern parking also hinder the activation around the Three Castle's

Movement

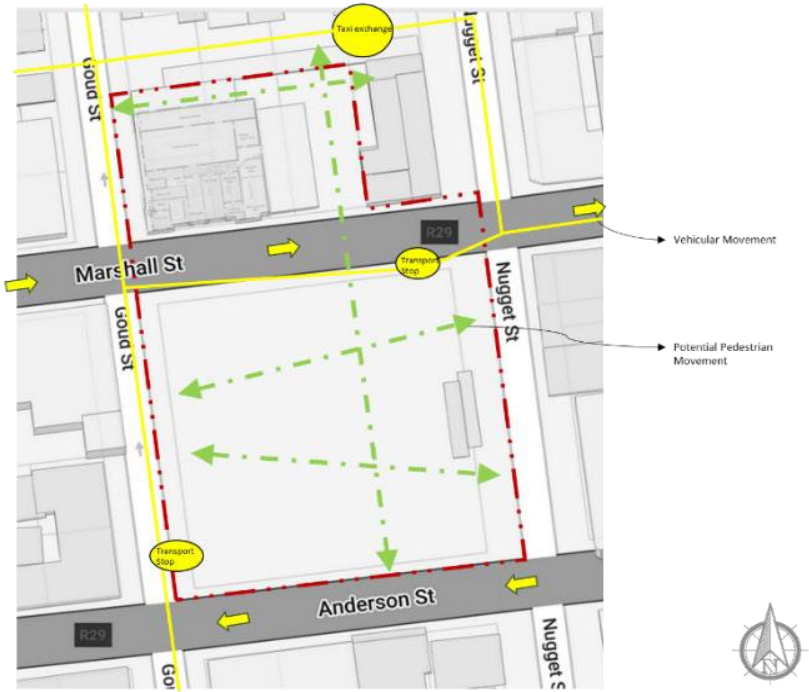


Figure 37: Site Analysis (Author, 2022)

The exposure of full north orientation also benefits the park.

A cluster of tall to short indigenous trees clutter the park appropriately, offering the same sense of shade the existing trees in the Three Castle's site do, this already facilitates a link in experience of a cool and shade space to navigate the city through.

Ecology

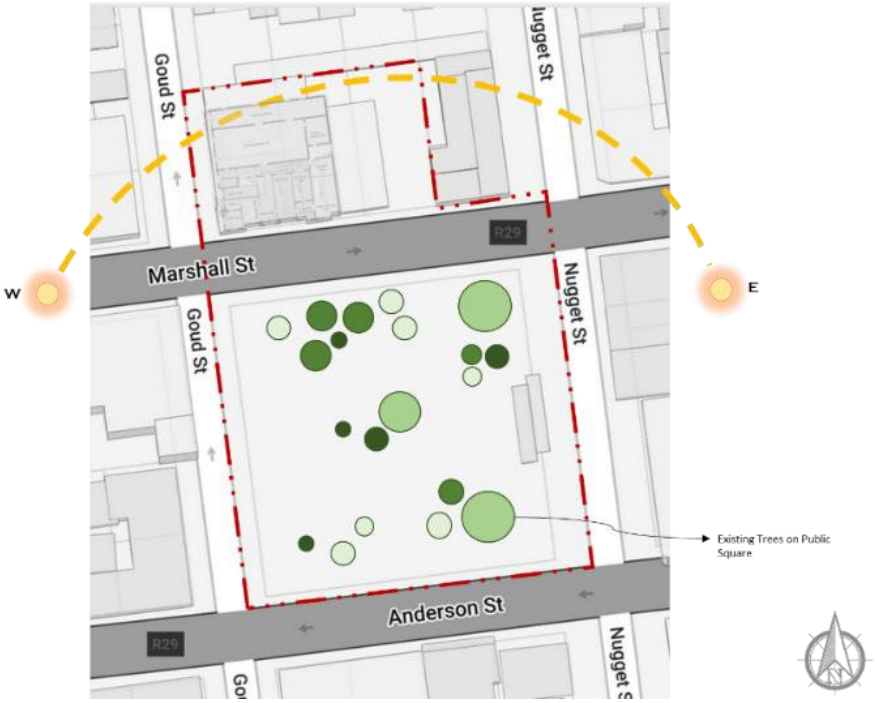


Figure 38: Micro Site Analysis (Author, 2022)

The major pedestrian movement is influenced by the light, shade and ventilation the site already produces. There is a natural affinity to move through public space to comfortably access another part of the city.

The navigation through the open courtyard is an inevitable working spine that will allow branches through the site to access different parts of it. The movement would naturally service the Three Castle's and the adjacent Nugget hotel with its L shaped form embracing the courtyard.

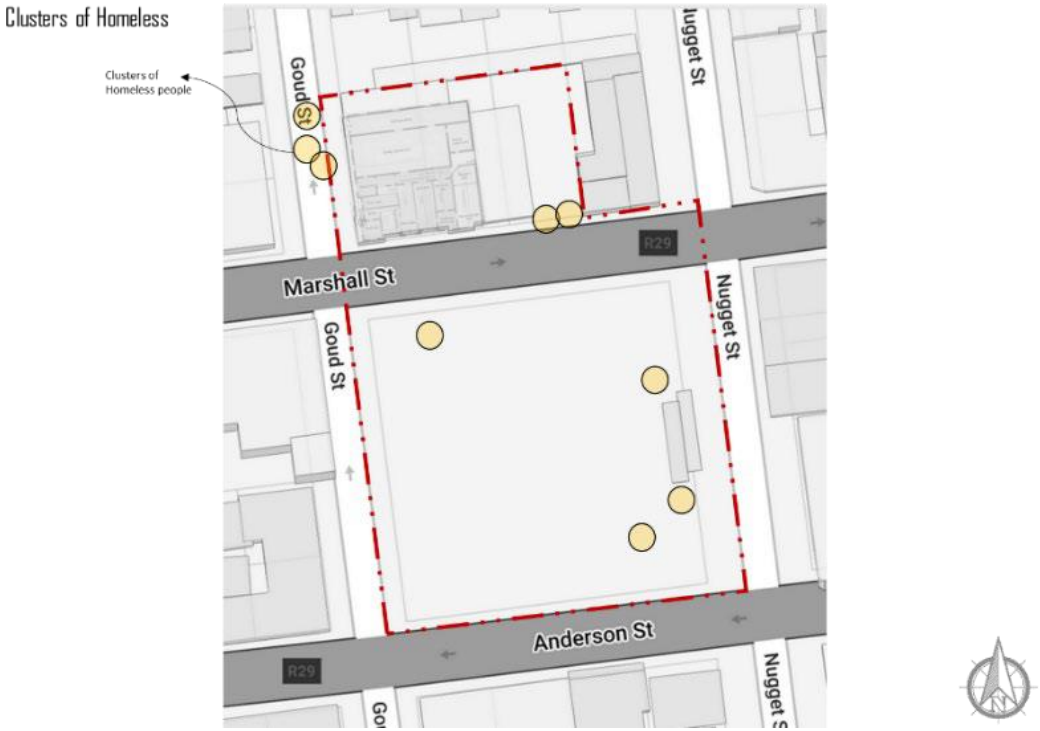


Figure 39: Site Analysis (Author, 2022)

There are groups of homeless people that gravitate around the building. In some way the Three Castles has become a victim of a vast amount of littering, and being adjacent to a public park does nothing but enforce the issue further.

The homeless collect these piles of plastics and papers to take to recycling plants where they are compensated for their efforts. The materials collected are presumably then recycled and reused.



Figure 40: Site Analysis (Author, 2022)

The Façade is defined by the Three turrets of the Three Castle's representative of the brand's former cigarette company, an additional fourth turret terminates the building façade on the west side. The nugget Hotel and the last turret on the south side frame the beautiful courtyard space shared between the two buildings.

The centre turret on the south side and the space between the two turrets on the west side frame excellent entrances to a smaller existing courtyard framed between the turrets that lead conveniently to the larger courtyard space between the nugget hotel and the Three Castle's.



Site Analysis- The ruin of the Three Castle's embraces an adjacent car lots, vacant land, and tight restricting streets presents problems of urban ruination/abandonment of buildings, resulting in lost space and lack of pedestrian movement in a city with people that are dependent on local informal trade.

The low-rise cluster of buildings including the Three Castle's provide a perfect traditional public square space for Portplein park adjacent to the south façade of the site. Marshall street is directly east of the new Jewel city precinct which works well to assist pedestrian activity along the street and continue the language of Urban regeneration. The site could act as example in reusing buildings and public spaces that have deteriorated or are less active when they are in a pivotal position to be useful to the people of the city.`

Figure 41: Site Analysis (Author, 2022)

PART 3- The Textile Industry

Introduction

The architecture intended to be applied to delipidating heritage buildings must support a second hand recommerce clothing enterprise that focuses of sustainably re-using clothes the way the building is re-used to serve a new purpose. The architecture with symbiosis and adaptive re-use in mind, must also especially accommodate residential components and will have to be flexible and multi-generational to prolong and enhance life of city-living.

The business could be homing in on the retail and rebranding of second- hand clothes. Skills such as art, fashion design, marketing and entrepreneurship are intended to be at the core of the educational and economic focus.

3.1 The local South African textile industry

South African textile and clothing apparel industry is contributed for about 14% manufacturing employment, 9% country GDP and second largest source of tax revenue in South Africa. Historically one of the biggest garments, apparel products and textile yarn material exporter and producers on the African continent.

Employment fell substantially, particularly in the apparel industry.
This came about because of an increase in clothing imports and a decrease in domestic clothing manufacture.
The pipeline felt the effects of this. (Claasens, 2017)
East Asia controls most production and is a direct contributor to cheap labour sweatshops that are constituents of fast fashion and the ever-polluting consequences that come with fast fashion.

Local trade in and making of textiles will be discussed in length, the just of the local industry is that secondhand clothing and authentic materials and style associated with culture and identity are becoming more and more prominent (Showme, 2012). The success of the local industry is growing through this medium.

3.2 Introduction to textiles:

Textiles are literally embedded in our living conditions. They are a necessity as well as a luxury for a human being. Clothing is a textile that we as a human race could probably not live comfortably without, so of course clothes, but textiles are already extremely necessary even in the construction industry, because things such as insulation, roofing materials, screens, and furniture, essentially a home would be incomplete without the necessary textiles. Therefore, it is as mentioned, a necessity that can be applied and useful and various applications of day-to-day ergonomics.

Textiles are so widely used and so valuable that they can be found in the health industry where artificial hearts are at least 50% Velcro, or they can be found, in the industrial sector with transportation using textiles in vehicles through components such as brakes linings, seals, seat belts, air bags and filters of vehicles, as well as Kevlar being used for protection in bullet proof vests and are used in military applications, jets are even made of so much carbon fibre that its mostly textiles that are being embedded into the DNA of developing technology. (The future of Fashion, 2022)

Plastics or more specifically polymers in textiles with materials like nylon, Teflon and polyester make the plastic synonymous with textile production due to the scale clothing made with these materials can be produced at a high rate. These materials are referred to as thermoplastics and can be found in carpets, clothes, and furniture. These elements soften when heated and can be easily recycled. Then there are thermosets which are polymers such as Bakelite, silicone and melamine which are found in electrical fittings, work surfaces, and car chassis, hence is a more rigid and permanent plastic used more in the industrial sector. Plastic is also used as

a clothing application through latex which keeps clothing waterproof. (The future of Fashion, 2022)

On the adverse side of textiles, plastic equals pollution, not that the standard farming of cotton or silk are sustainable for the clothing textile component, but plastic and its notable impact on clothing in the existence of nylon and polyester, means that it is part of energy intensive and pollutive manufacturing process. Plastic is already a problem with nearly seven billion tonnes of plastic waste generated globally and less than 10 percent of it has been recycled, and textiles or synthetic fibres is the third highest contributor. (The future of Fashion, 2022)

The textile industry is the second largest polluting industry after oil and ironically uses a large amount of oil in the production of new clothes. The process also involves an extreme number of chemicals and are glued, sprayed, dyed, pressed, and stretched to achieve textures and shapes and this costs energy and use of hazardous materials. Aside from people discarding clothes almost every season to then get new ones, Corporations like Zara and H&M also discard waste material and open factories in places like Bangladesh where they predominantly pay women to do the work but pay them less than the standard minimum wage of the country; and in countries like Bangladesh and India, they have access to cheap materials to keep cutting costs with their cheap labour. It's an industry that is essential yet exploits and pollutes that is a direct result of 'fast fashion'. (The future of Fashion, 2022)

3.3 Textiles of the Fashion district and Marshalltown

The Johannesburg Growth Agency (JDA) launched the Fashion District as part of the city's 2030 long-term economic development strategy. On the eastern extremity of the district, which spans 26 city blocks, within the CBD, delimited by Commissioner, Von Wielligh, Jeppe, and End Streets.
More than a hundred fashion-related firms are housed there, a variety of major and smaller fashion-related manufacturers entrepreneurs.
Additionally, the region provides training for fashion professionals through organizations connected to the Department of Labor, enabling the sector to grow and improve continuously. The organization has upgraded public facilities, including roads, telephones, and the renovation of outdated structures.

The Fashion District boosted the eastern portion of the CBD's economy up until the late 1980s and early 1990s, or for more than 50 years. Large enterprises leaving Johannesburg caused a deterioration in the local economy in the CBD. The district's upgrading and rebuilding have boosted its profile, which in turn helps aspiring designers and business enthusiasts In the context.

The district Features a training facility that encourages the development of skills for business owners as well as the unofficial fashion industry.
People who want to work in the business can rent space at the manufacturing centre, which also gives them access to shared administrative buildings, restrooms, and equipment. Designers are encouraged to work with manufacturing, micro cutting, and improving all facets of the district by pruning (CMT) companies chain store for apparel. The Fashion District's mission is to support local manufacturing and employment creation at many stages, including equipment repair and design. The objective is to prevent mass production by emphasising quality output and value goods.

3.4 Marshalltown's Textile trade

One of the most underrated retail areas in Johannesburg must be the Fashion District in the eastern part of the city, which runs from Troye Street to Goud Street via Pritchard and President Streets.

More than 300 fashion-related micro-businesses are in the newly renovated area, including several small stores in claustrophobic spaces that are filled with supplies and clothing, as well as tailors and seamstresses from all over southern Africa. (Showme, 2012)

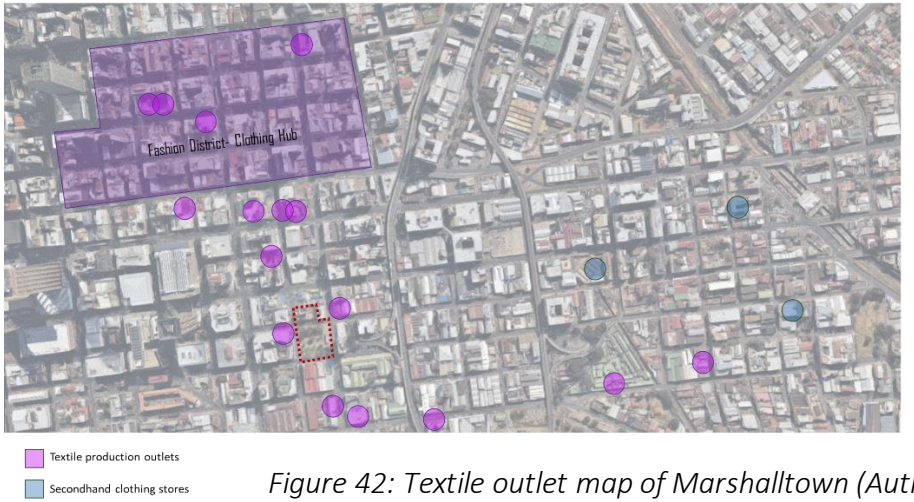


Figure 42: Textile outlet map of Marshalltown (Author, 2022)

The high fashion seen here is same to that found in Rosebank and Sandton shops, although the prices appear to be considerably better. Additionally, certain stores, particularly those that specialize in men's fashion, have such broad selections of top-quality goods that you are spoiled for choice. Top fashion designers like Clive Rundle and Bongiwe Walaza have set up shop, and the clothing is a remarkable fusion of Pan-African and western designs. The Johannesburg Sewing Centre, whose owner, Rees Mann, has been at the centre of the rehabilitation of this area of Johannesburg, supports them admirably. Sewing machines and other equipment are purchased in bulk by Rees, who then sells them to unauthorized producers. He frequently places orders for a million meters of ribbon. At the largest haberdashery store in Johannesburg, located at 109 Pritchard Street, he has more than 7000 button types and 500 thread colours. They really assert that they carry every Shweshwe design currently in print over at Studio 109, right next door. (Showme, 2012)



Figure 43: Program map of Marshalltown (Author, 2022)

The centre of this neighbourhood is Fashion Kapitoi, which also has the first outdoor fashion ramp in public and the headquarters of the Rees Mann-led Fashion District Institute. The JDA's initiative is inspiring, and it includes 32 stores, including the Fashion Shack, which sells locally created apparel and accessories, primarily made of Shweshwe (African) fabric, as well as a variety of ironic T-shirts. In the unique courtyard, which is dominated by a large painting commissioned by Zimbabwean artists, The Fashion Shack has built a restaurant. It is owned by Jonathan Jorge and Emma Whittle, who have interpreted regional dishes. There is a market there every Saturday from 9 a.m. to 14 p.m., with live music starting at 11 a.m.
The Fashion district upon customization and user interaction increasing through textiles, the programmatic function of these spaces adjoined with mixed uses start to engage with public space and different building typologies. (Showme, 2012)

Similar to the Neighbourgoods Market in Braamfontein or 44 Stanley in Millpark, Fashion Kapitol is a cutting-edge retail establishment with a magnificent public area in Pritchard Street.



Figure 44: Photograph of Fashion district ((Source: Showme)



Figure 45: Photograph of Fashion district (Source: Showme)



Figure 46: Photographs of Fashion district ((Source: Showme)

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Figure 47: Photographs of Fashion district ((Source: Showme)





Figure 48: Photographs of Fashion district ((Source: Showme)

The Fashion Shack is a store and café combination located inside the Fashion Kapitol neighborhood. The enormous, vivid artwork that represents South African life and their inventive usage of coffee tables was appealing to me. Among them were an old glass-topped bathtub and a truck tire.







Fashion District Wholesalers on 109 Pritchard Street across the street is the biggest establishment and haberdashery store in the city.
Across the hall from Studio 109, they have a great selection of traditional Shweshwe patterns. They assert that they carry every Shweshwe design that is currently in print.

Figure 49: Photographs of Fashion district ((Source: Showme)





Figure 50: Photographs of Shweshwe garments ((Source: Showme)

3.5 Cotton

The predicted output of cotton woven garments has increased somewhat, while cotton yarn production looks to be declining. However, it is not conclusive to assume that the cluster is slowly beginning to show indications of improvement despite the rise in the production of woven cotton fabric(Claasens, 2017). Programs that exclusively sought to boost exports often had little impact (although it might have served certain sectors in the industry). Despite a fall in employment, imports rose while exports barely changed. The local economy shrank. (Claasens, 2017)

It seems that money is required to boost the cotton pipeline specifically (and the sector as a whole), beginning with investments in ginning and spinning mills as well as cotton fiber output. (Claasens, 2017) Input-cost financing is required to support small farmers (to help with fuel, maintenance of equipment, etc). The money put into the Sustainable Cotton Cluster so far suggested that there may be an increase in cotton lint output. To adopt indigenous produce, however, ginning facilities must be invested in (Claasens, 2017).

Application

With traditional textile materials in short supply and the cost of producing materials like cotton being unsustainable, the recycling and upcycling of textiles are becoming a more viable option. The prices of such items tend to cost more especially in South Africa, this makes the material unsustainable as an investment in the market, this drives the reuse of textiles further to produce cheap to make and cheap to buy clothing.

3.6 Understanding identity through textile:

Oppressive institutions, first colonialism and subsequently Apartheid, governed every aspect of peoples' life from the right to vote to employment prospects from the middle of the 19th century until 1994. Dress became one of the many areas governed since these laws were centered on the body, primarily the control of black bodies by white. After all, we communicate our opinions, proclaim our identities, show our loyalties, and display our cultural pride via our clothing. They have a deep awareness of the historical, social, and political value of clothing in South Africa and across the world, as well as the numerous ways that textiles may be used for positive change.

As mentioned, Nicholas Hlobo views identity as a fabric.
Building a self needs addition, subtraction, and stitching, as the artist explains: "Trying to identify your identity is about chopping things off and bringing them back; sometimes you don't sure what you want to preserve." His unconventional material choices, especially the sharp contrast of rubber and ribbon, serve as a symbol for this process of self-creation. A discourse about the haphazard, homemade patchwork of gender, race, and sexuality may be sparked by the artist using black rubber, which is coded as male, and ribbon, which is symbolically feminine, which sit almost awkwardly side by side.

We are both what has come before and what we want to be.
We declare our intents to the world and establish objectives for ourselves through signifiers like artwork and clothing.
The road toward achieving our goals includes the work, the successes, and the disappointments. Clothing, carpets, curtains, and the fabric that is embedded within them as well as the method of articulating these fabrics convey an identity and relation. The location and methods of dealing with these fabrics make people feel certain ways about them.

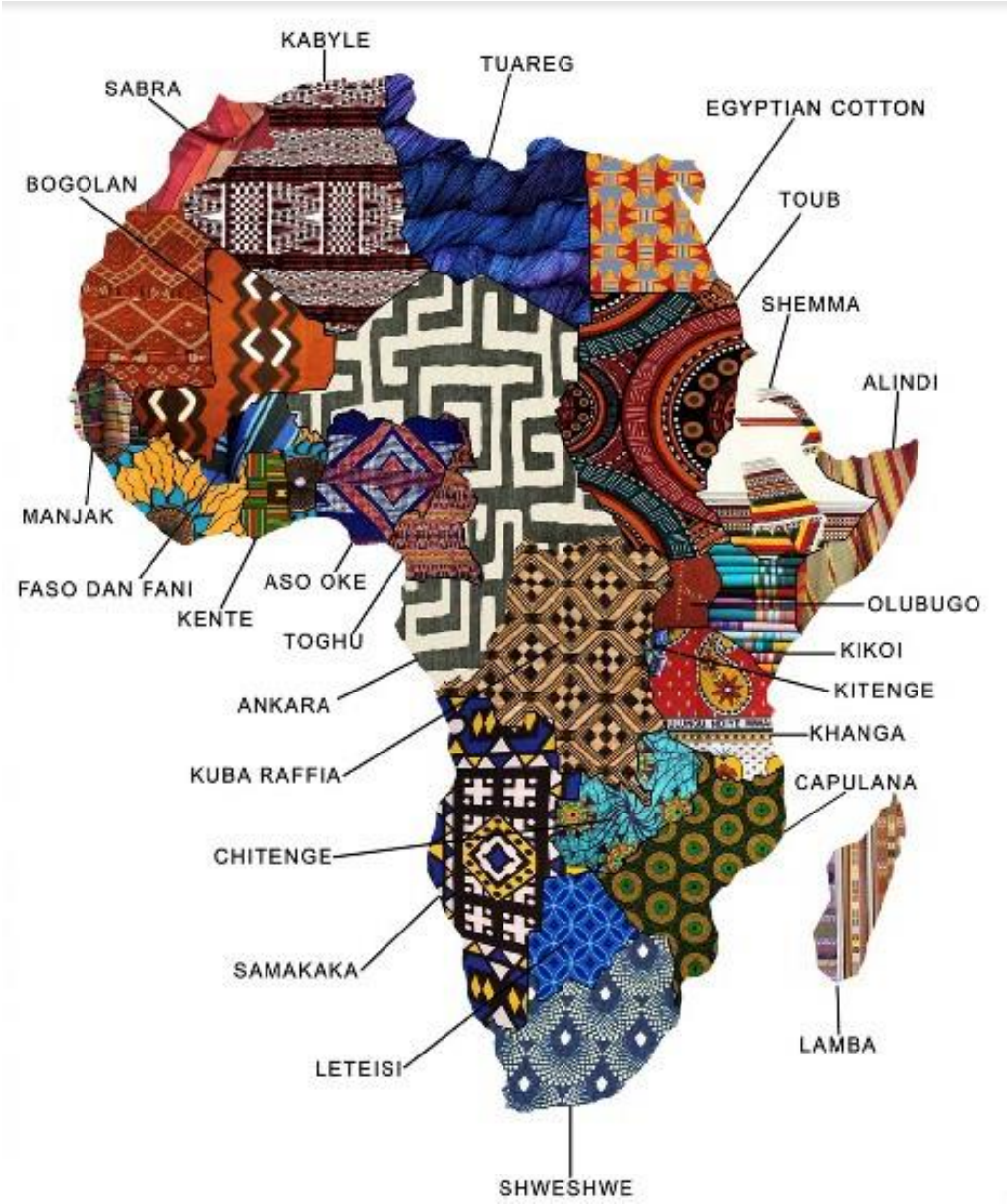


Figure 51: Fabric Map of Africa (Source: www.mind-africa.org)

3.7 Fabrics of Africa

African fabric manufacture may be traced back to 5000 BC in Ancient Egypt, where flax was used for linen weaving. With the cultivation of raw materials made from tree barks, animal skins, cotton, palm, jute, flax, and silk, North Africa had a thriving textile industry. Before the Dutch (Ankara) and French (Shweshwe) introduced Batik and Tie & Dye, which gave rise to an African textile variation throughout the history of textiles in Africa. (Textiles, African. 2022)

It has been reported that in the early 1800s, the Dutch brought materials they possessed to the African nations who were along their trading lines. African soldiers who were Dutch recruits began returning home with presents of cloth during this period as well. West African nations accepted this new cloth, making it their own over time. (Textiles, African. 2022)

While the cloth was adopted, it is important to acknowledge the roots and authenticity of the African textile industry from its conception.

As was previously mentioned, the history of the African textile industry stretches back as far as 5,000 BC, when the ancient Egyptians first started growing flax and weaving it into linen.A horizontal loom may be shown being used by weavers in a 12th dynasty picture from the tomb of Khnumhotep, which was recovered in antique pottery from this time period (ca 2400 BC).Pyramids, artwork, and hieroglyphs all depict clothed Egyptians in a vivid manner. (Textiles, African. 2022)

Their southern neighbours, the Nubians, had a thriving textile industry, as evidenced by the sculptures of the great queen Amanishakheto, pharaoh Piye, and the Mero pyramids. Later, when numerous civilizations grew in Africa, cotton started to be used more often as a fabric. Weavers existed in Timbuktu and the Mali empire in the 1300s, according to the traveller Ibn Battuta. Many people in West Africa started donning the boubou when Islam spread there (Textiles, African. 2022)

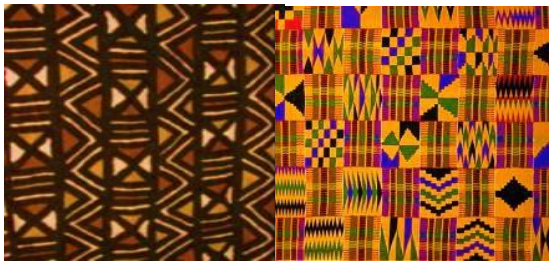


Figure 52: Bagolan cloth(left) and Kent cloth(right) - Source: www.mind-africa.org

Across Africa, a thriving textile heritage may be found. The hand-woven Bogolan, often known as "mud cloth," originates in Mali. Ghana's national fabric, kente cloth, is exclusively created with the most expensive golden threads for monarchs (in the days of traditional monarchy) (Textiles, African. 2022). Fabric manufactured from tree bark has a long tradition in Cameroon, with certain fabrics made specifically from obom. Raffia fibres are still often used to create garments and bags. (Textiles, African. 2022)

In addition, Kings in West Cameroon wear exquisitely woven garments created by the finest weavers in the country and decorated with beads. While people from Chad and the Central African Republic weave cotton strips on horizontal looms and use a range of natural colours, the Pygmies utilise bark fabric manufactured from tropical fig trees. (Textiles, African. 2022) Raffia is used by the Kuba people of the Democratic Republic of the Congo to create some of the most exquisite handwoven sculptures, clothes, and blankets(Textiles, African. 2022). Beautiful, vibrant quilts and blankets produced entirely by hand are a great heritage among our own Ndebele people of South Africa and Zimbabwe.

Shweshwe- The fabric of South Africa:

IsiShweshwe and Colonialism

The fabric referred to as amajamane, amajerimane, or isishweshwe has its roots in the East and was initially created using cotton and indigo plant dye for the colour blue. (Textiles, African. 2022)

It expanded around the world through commerce, including to the Cape, where it was first worn by slaves, Khoisan, and colonialists.The oldest roots of isishweshwe can be found in the wildfire of colourful indiennes (Indian cottons) that swept over Europe in the middle of the sixteenth century. The intricate processes used to create multicoloured indiennes in Central Europe were later modified to use simply indigo as a colour. (Textiles, African. 2022)

Indienne

Indienne, one of the collection's oldest artefacts, is fashioned of Indian cotton (chintz or calico) and features a never-ending design of exquisite, entwined stems with foliage and flowers. The textile was created in the third quarter of the 18th century on the Indian Coromandel coast.Indian chintz, which was imported into the Netherlands by the Dutch East India Company and made accessible at the Company's midway point at the Cape, was very popular during the eighteenth century. (Textiles, African. 2022)

Blaudruck

On a deep blue backdrop, a fabric with tiny, white, regularly spaced designs was produced using straightforward resist-dyeing methods. In Germany, this was referred to as "blaudruck" (blue print). This material was made into workwear and peasant attire, and it grew to be connected with regional and Protestant fashion in Europe as well as the expression of nationalist feelings. German missionaries and traders carried their "blaudruck" and conducted commerce with people they met when they travelled to the Eastern Cape and other regions of southern Africa in the middle of the 1800s.On mission posts, ladies started to enjoy it. Later, IsiXhosa women in the Eastern Cape utilised this fabric to make clothing. (Textiles, African. 2022)

Origins of the Name

There are two opposing theories on the name's etymology, isiswheshwe. Some claim that it is onomatopoeic and only captures the sound of the fabric swishing as the user moves. (Textiles, African. 2022)

Others contend that it was called after Moshoeshoe, the Sotho King, who received indigo-printed fabric as a gift from French missionaries in the early 1840s, according to this theory. (Textiles, African. 2022)

The Political Resistance of IsiShweshwe

The fabric has transformed over the years from its original setting as a commerce item and missionary-inspired clothing, just like the identities of its wearers have changed. It was widely used as a political statement against South Africa's apartheid, even as a sign of sympathy by liberal and left-leaning organisations. (Textiles, African. 2022)

Teaching Needlework

In the middle of the 1980s, Marie Peacey was called to teach needlework by Nico Ferreira, who was then the chancellor for Lennox Sebe (President of Ciskei), as part of an effort to provide a source of income for women in the apartheid-era Ciskei homeland. (Textiles, African. 2022)

She taught people how to sew mola appliqué squares at the Ciskeian Small Business Corporation in Mitford for a total of 13 months. She then put the squares together to form jackets, waistcoats, etc. that she subsequently sold in clothing stores. Ma Sisulu, a.k.a. Albertina Sisulu, was a South African anti-apartheid activist and Walter Sisulu's wife. Wearing clothing with isishweshwe prints in the 1980s was a symbol of unity among liberals, left-wing organisations, and white South Africans. (Textiles, African. 2022).

Application:

On site Education- these skills can be taught in the form of workshops, lectures, and exhibitions- upskilling but also instilling strong cultural links in the community – to ensure authenticity in the product and the production.

This is imperative in supporting local entrepreneurs and the local economy, the dependency of imports effect local business in a negative manner.

3.8 Production of textiles in South Africa

The powerful social and economic dynamics connected to the early 1900s saw an industrial boom, which made inner cities a dynamic region of employment near to the worker's residence force. The 1920s and 1930s saw advancements in both the commercial and public sectors. Due to transportation, rich urban residents moved from the inner city to the suburbs. Around, this movement of resources and expertise out of the inner city persisted. The world, resulting in sprawl and the decline of these urban cores.

Due to patterns of labour movement and international commerce, the western industrial nations saw fast economic expansion in the 1950s and 1960s. Significant capital shipments were made from underdeveloped to wealthy nations via systems for international trade. Significant capital investment flowed in, as well as industrial activities to the growing Asian national businesses relocated in an effort to lower manufacturing costs moving assembly activities to regions with cheaper labour.

Fresh production plants with advanced technology were moved to developing nations and competing with already-established industries in developed-world cities. This resulted in due to the swift fall of several towns, which was followed by a significant drop in the employment level. There were attempts to revive the conventional economic sectors, although in many Western democracies, this was only temporary.

South Africa's apparel and textile industry had a fortunate position owing to government protection before 1994. South Africa after 1994 Re-entered the global economy, resulting in increased competition from both domestic and foreign markets. The volume of imported goods has increased during the last ten years.

Apparel items, given that the cost of importing goods from Asian nations is far less than that produced in South Africa. The causes among these factors are Asia's cheaper cost of living, which lowers labour expenses.

Due to an inflow of cheaper clothes and fabric imports apparel shops profit by adding a higher markup on discount items. As a result, local textile and garment producers have taken the most hit. A consequence of this predicament is that South Africa cannot produce goods at the same cheap pricing. The South African textile industry, which is centred mostly in the Western Cape, Eastern Cape, KwaZulu-Natal, and Gauteng) contributed to a major portion of the nation's economic activity and labour force. Due the employment market and the textile industry have both suffered since 2003 due to and the national economy has suffered.

Application:

The dependency on Asia and the lack of jobs in South Africa demand that the Textile Industry become more localized. There isn’t enough effort to facilitate this, projects like the proposed Three Castle’s Textile Innovation center aim to promote local industry and people for community upliftment, the dependency and value of the products in South Africa are rich in identity, in pattern, color and culture, the production process just needs to change to a more feasible model for the economically damaged country of South Africa



Figure 53: Collage (Author, 2022)

3.9 South Africa's textile agenda

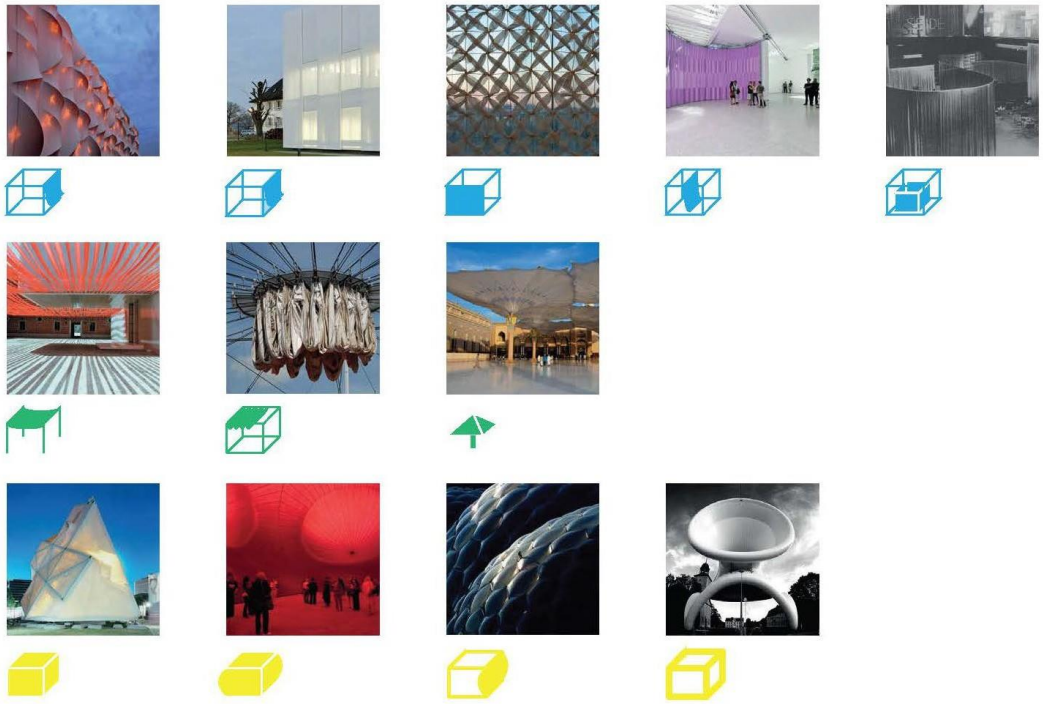
The South African government is a key player in the apparel and textile supply chain. The DTI increased import tariff structures to safeguard internal materials organizations that obtain inputs from international marketplaces are penalized. The growth of the SMME (small, micro, and medium-sized enterprises) economy has been identified as a key. national policy goal, with the justification that SMMEs are regarded as essential to reducing poverty and creating jobs.

The DTI has created a framework for the production of garments in South Africa, which acknowledges competition from both domestic and international as well as the global market that is now harming the textile and apparel industries. However, with a wealth of knowledge and experience in the industry, it may be revived as a force that challenges competition- both home and abroad - by emphasising additional value, utilising technology to improve the quality and efficient use of all resources (http://www.dti.gov.za/publications.htm)

3.10 Textile applications to architecture:

There are so many polymers and synthetic fibres as well as more common fibres associated with clothing that can have numerous possibilities as lightweight, easy to construct interventions with each material and application offering different qualities of light, temperature, and adaptability to name a few. The type of structures differs from material to material depending on the tensile strength and durability. Building techniques for textile from vernacular to high tech - weaving, stitching, stretching, draping, stacking, compressing, inflating, overlaying, hanging, dressing, composites.

Material innovations and applications:



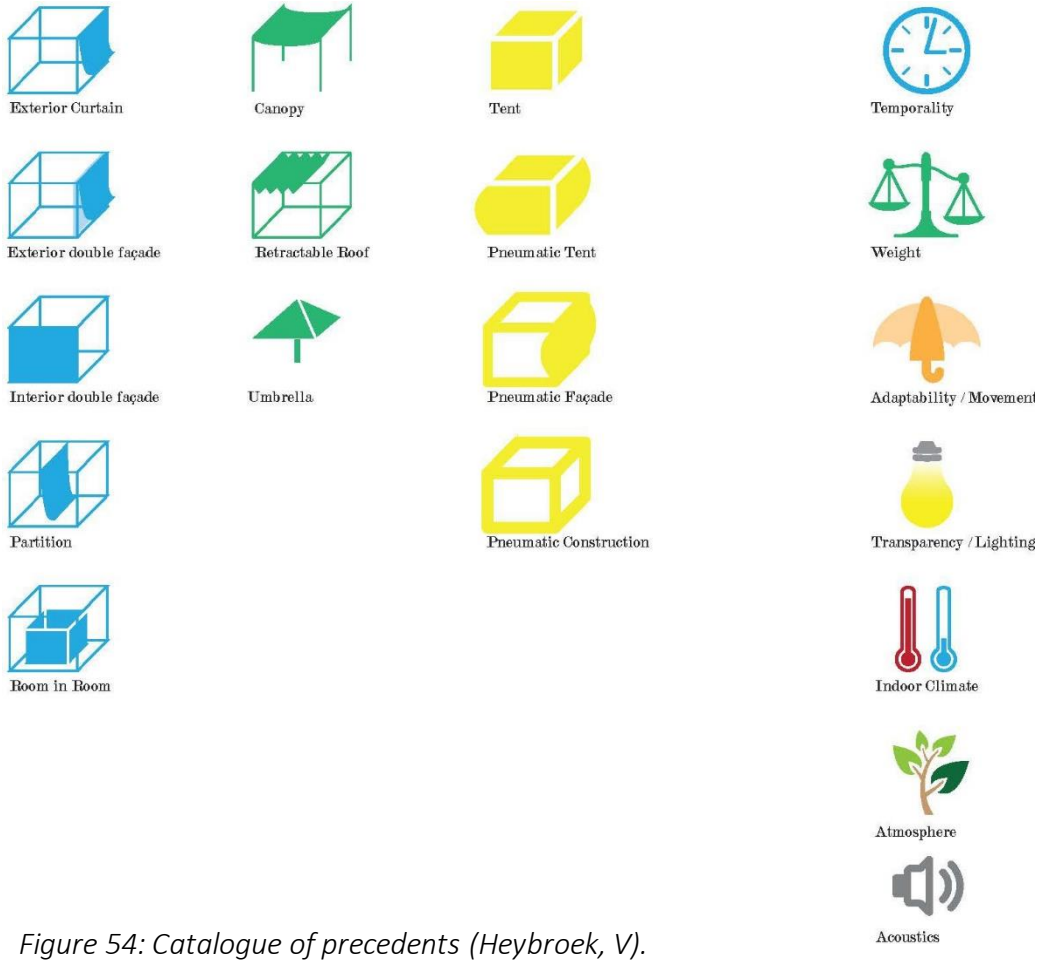


Figure 54: Catalogue of precedents (Heybroek, V).



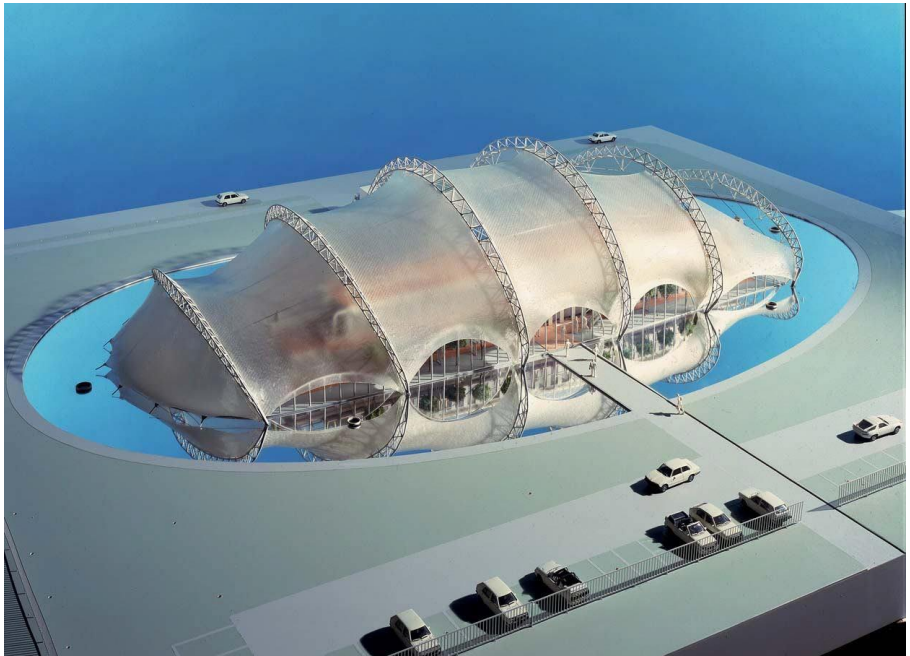
Laboratorium M&G Ricerche, Venafro 1991

Material: PVC-coated polyester fabric

Designed by Philippe Samyn & Partners

This fabric structures are suitable for the function because of natural light and the big span gives lots of flexibility to the ground floor. The program of this research center can be divided in two parts; a technical area with pilot plans for the development of production and processing methods, and a chemical-physical area with labs for synthesis and analysis of chemical products. The program asked for a minimal height of 15 meters and a controlled environment. The design team find the fabric structure suitable because of its flexibility and natural daylight.







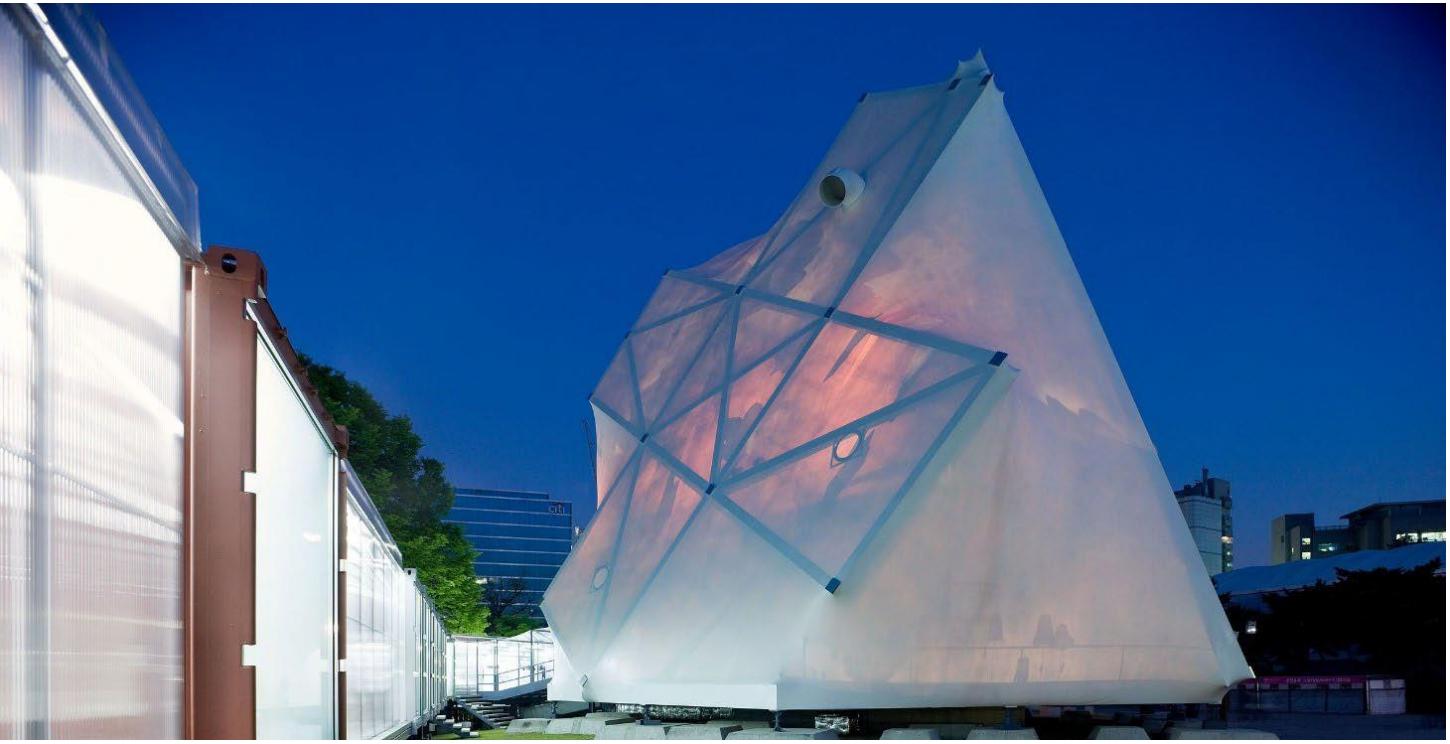


Prada transformer, Seoul 2009

Material: Cocoon Mothballing System (Cocoon Holland)

Designed by OMA/Rem Koolhaas

The Prada Transformer has one of four different apparent shapes, depending on the function of the building that is needed now. The pavilions' shape is that of a tetrahedron, a tetrahedron is a polyhedron composed of four triangular faces, three of which meet at each vertex. The tetrahedron sort is of a pyramid, which is a polyhedron with a flat polygon base and triangular faces connecting the base to a common point. Cranes have been used throughout the event to lift the building and rotate it so that the tetrahedron levels with the ground on one side and therefore, change the building's form and function while it leaves the remaining three shapes to compose the ever-changing building for



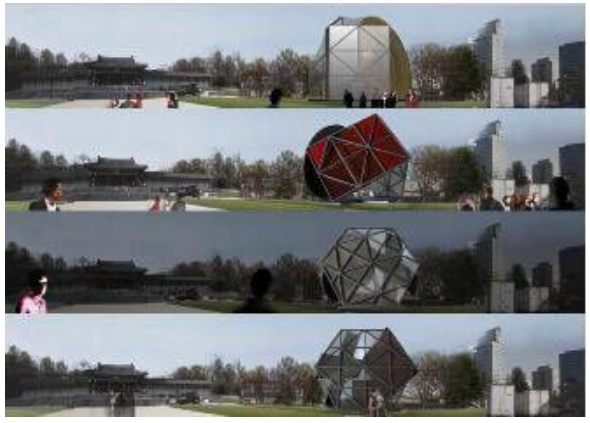




Figure 55: Illustration showing the process of selecting and printing clothing generated out of synthetic or used materials, where the clothing is designed and printed by the user on site. (The future of Fashion, 2022) -The above illustration is an example of how an integrated textile manufacturing process can change the paradigm of selecting and personalizing clothing from a domestic perspective.

Economy: To elaborate further on textiles, it can be noted that textiles can be applied in various ways to the city. The recycling of textiles and application as building materials and reconfigured and redesigned second- hand clothing can form a support in the recycling of the plastic and textile waste crisis. Upon adding jobs that can create opportunities for a women empowered design opportunities that can possibly change to the drastic wages orchestrated by corporations, as well change the circumstances of ownership especially in the inner city 'Fashion district'.

Education: artistic and creative skills, knowledge of texture, patterns, dyes, and yarns, an understanding of colour, shape, and form, knowledge of design-related software, good communication, presentation, and negotiation skills, to work to deadlines and budgets and problem-solving skills. Workshops, seminars, design labs, fab labs, exhibitions. Education could be provided in the form of apprenticeships for those passionate about a career in the industry, as well as be open to the public in the form of workshops and seminars which are intended for the local student populace in the context of Marshalltown.

3.11 Viability

THE PROJECT

1.1 Brief

1.2 Executive statement

1.3 Program

CLIENT

2.1 Stakeholders and Investors

TOWNPLANNING

3.1 Requirements and Rezoning

3.2 Site overview

SOCIAL

4.1 Economic Stimulation and social contracts

4.2 Skills development

FINANCE/FUNDING

5.1 Financial Constraints

5.2 Cash flow and funding

5.3 Professional Fees and Operating Costs

5.4 Market and Demand

CONSTRUCTION AND DESIGN IMPLEMENTATION

6.1 Method of construction

6.2 Technology and material catalogue of textiles

6.3 Conclusions

Executive Summary:

Site selection:

The city has become a hub for informal traders and entrepreneurs a social and economic melting pot. The industry and function of the city I believe can be enhanced for marginalized groups using restoring abandoned buildings with a functionality to compliment the current climate of the Johannesburg CBD.

The aim of the project- is to readapt a delipidating heritage building like the three castles to grow industry and economy through the ever-growing textile and second-hand clothing industry that might possibly help enhance existing industries, abandoned buildings and the local community.

Program

PROGRAMMING:

MIXED USE- Education and Economy

Program to function through industrial, commercial, and residential typologies. Recycling of textiles: secondhand clothing and plastics create job opportunities and skill enhancement, hence providing an education, Social, recreational, educational, and economic impact is at the core of the programming intentions. The urban plan takes advantage of the banking/commercial, mixed-use precincts in Maboneng and the Fashion district as well as recycling plants in proximity which can create a system of industrial and commercial mixed-use buildings that stimulate economy through textiles.

CLIENT

Stakeholders/Investors

The city of Johannesburg, the project has an aspect of social relief, low-cost housing and economic stimulation that could be worth an investment from the government. Investors can include:

The JDA (Johannesburg Development

Agency). World Bank.

The investment can be in a form of a grant or loan in structure and can come from other investors such as an SME like a Business Partners Women in Business Fund which is relevant to the project as it aims to expand women ownership and businesses in the inner city. If the city funds the project, it will be fully publicly led.

Client:

City of Johannesburg- Through Grant, loan, or subsidy. Alternatively, a private investor to mimic the investment methodology involved with the mixed-use urban regeneration projects in Maboneng as a proposal to expand on the precinct.

TOWNPLANNING



Since the erf for the three castle's building has been subdivided, the plot would need to undergo rezoning to achieve full use of the abandoned heritage building.

The urban masterplan proposal will make use of the adjacent site on the north, the nugget hotel to the east and the open public square south of the building and will be needed to be taken into consideration.

The four separate plots may have been rezoned for a specific purpose when the last owner procured the site for possible redevelopment, but of course after some time, the building remains unused. The rezoning will incur additional costs.



Figure 56: Three Castle's Photomontage. (Source: Google imagery edited by Author, 2022)

FINANCE/FUNDING

Financial constraints

Repurposing abandoned and ruined buildings incurs additional costs such as geotechnical work by a Geotech engineer, structural integrity analysis by an engineer as well as legal service fees. These need to be done before any work can commence.

Determining the cost of demolition largely depends on the method of demolition, which can either be blasting or mechanical. Deconstruction is more expensive than blasting because further processing of materials is required, requiring more time to schedule.

Although the main Return of investment is established in a mixed use program through the mutual relationships between, industrial, retail, commercial and residential aspects, especially in the case of my project, it can be noted that the cost of reusing an abandoned building can be significantly less than the financial implications of demolishing an existing building for which case there is more embodied energy is consumed, whereas embodied energy is conserved when adaptive reuse is implemented, hence making it a more cost effective and sustainable approach if done carefully rather than demolishing and starting anew.

Abandoned buildings are significantly cheap and the yield of a mixed-use program despite the additional costs due to the complications of dealing with abandoned structures, can still provide a more beneficial ratio relative to return on investment economically as well as using space that would otherwise contribute to negative effects on the context around it. A possible return of investment on such a program could be the forming of relationships between small scale entrepreneurs which could potentially support one another beyond the scope of this project. A technical exploration of textiles in relationship s with facades and spaces create multiple opportunities for ergonomics and urban farming, which is not central to the adaptive reuse, through textiles, but does however create an interesting by-product that constitutes water storage, vegetation growth, air, sunlight, and water filtration as well as framing for storage or vertical gardens. Weaved undulating textile facades are intended to be used to create transparency of the three castles existing façade forming a veil over the building. This retains heritage while punctures in the façade highlight entrances and public spaces that almost essentially act as a wayfinding system,

Funding

In the case of implementing a mixed-use program into a building, the contrasts of implementing industrial to commercial and residential programs together can be challenging. From the interview, the information one can extract is that functions can be financially cohesive. One program can fund another.

In a project with a light industrial component, you can minimize risks due to scale and programs can start to benefit each other relative to commercial and retail. In my case, with the adaptive reuse of the Three Castle's Building in Marshalltown which will implement a mixed-use program. The commercial and retail components will be supported by the industrial component (being a textile manufacturing Centre), which in turn will fund the housing/residential component.

Cash flow/ Funding mechanisms



Figure 57: Cash flow plan diagram(Author, 2022)

The project procedure and cash flows will develop in phases. The industrial component behind the manufacturing of clothes, building materials and recycled clothes will be at the forefront of the first phase.

The Market / Desirability, demand

Used clothing stores offer a higher profit margin because the inventory is donated or consigned rather than purchased. Another advantage is that these types of stores tend to thrive during periods of slow economic growth

The re-commerce and textile industry project at the heart of the Fashion district will be activating market increases, demand and hence desirability as the recycled and manufactured products will be handled by women working in the textile industry in the city and create an opportunity for entrepreneurship and a well-paid labor industry.

SOCIAL

Economic Stimulation/Social Contracts:

Ownership, entrepreneurship, and human relationships are at the focus of social impact especially for women in the textile industry, that work in the city but do not necessarily have rights to the space or opportunity in terms of basic jobs. Payment in the form of commission is what is intended and therefore the risk is the methodology that the housing will be quick to assemble for users of the building, and hence the payment will also include ownership to housing in the residences above the working space as well as the promotion of women entrepreneurs claiming and using space in the city, in a mixed use phase by phase approach so that profit is generated by the industrial and commercial phases to then fund the housing phase as discussed with the concept of 'Shadow Funding'



Figure 58: Population data (Wazimap, 2022)

Skills development

The workshops, seminars, exhibitions, and lecture venues will host design and theory courses as well as courses relative to industry in the textile and tensile category of material production. The building is intended to host generational living that allow mature women and young students to develop skills to pass on and to use as a foundation to retain a business and home ownership in the city, making it more socially engaging for women in the city of Johannesburg.

Professional fees

SITE SPECIFIC PROFFESSIONAL TEAM:

Heritage consultant required as existing building on the site is older than 60 years old and has imperative Victorian features. The three Castles building therefore serves as a heritage building and will need careful consideration when repurposing the building.

A **structural engineer** will be required as membranes will be applied in the architectural language, due to the necessity to have accuracy in tensile and compressive strengths that can assist in enhancing three-dimensional space relative to abandoned and damaged structures.

PROJECT MANAGER





HERITAGE CONSULTANT



TOWN PLANNER



QUANTITY SURVEYOR



GEOTECHNICAL ENGINEER
STRUCTURAL ENGINEER
CIVIL ENGINEER
MECHANICAL ENGINEER
ELECTRICAL ENGINEER



ARCHITECT

CONTRACTS:

JBCC- Nominated Contractor and Selected contractor

PROCSA



CONSTRUCTION MANAGER



ESTATE AGENT

LEGAL PLANNING DESIGN CONSTRUCTION CLOSURE

Capital / Operational budgets.

Legal- Project Manager and heritage consultant

Planning: Town Planner and Urban Designer

Design: Architect, Landscape Designer, Structural Engineer/Specialist Design

Construction: Construction Manager+ Principal Agent (Architect)+ Quantity Surveyor

Closure (Legal): Estate Agent/ Building Management

Figure 59: Project team diagram (Author, 2022)

The manufacturing process of textiles is energy intensive, but the recycling process and redesign process isn't, so if the industrial aspect were to focus more on manufacturing, but the emphasis is to allow the users to design, recycle, and repair and to allow the optimum facility to do so, there will need to be experts employed in the management of the industrial aspect.

CONSTRUCTION AND DESIGN IMPLEMENTATION

Work Stage 1: Inception

the site and rights and constraints

The building is abandoned and has been since 2007, the owner may owe taxes on it and has not tended to the building since the purchase and there seems to be no intention to redevelop, the building was purchased for R 1 500 000.00, subsequently it was still left abandoned and is now occupied by vagrants.

Geological aspects

The only factor to consider is that the heritage building in this project was afflicted by a fair and hence a Geotechnical investigation needs to be done to ensure what can be retained or needs to be removed as a point of safety.

Social / Cultural /Heritage

The building is a heritage building and hence will need to be approved by AMAFA in terms of design and a heritage expert may need to be consulted to ensure preservation according to regulation.

Environmental issues

The building was afflicted by a fire and is overgrown with vegetation that will require an environmentalist to assess what must be preserved.

methods of contracting

Contractors/Labour

- General Contractor
- Carpenter
- Electrician
- Plastering
- Painter
- Heating and Air-Conditioning (HVAC)

Empowerment /Training

In phase 1, design labs, workshops, seminars, and workstations will be established to formulate the training and implementation of individuals interested or partaking in the textile industry. The skills constitute, design, recycling, manufacturing (of building materials and garments), entrepreneurship and ownership for women in the city.

Work Stage 2: Concept and Viability

proposed materials

Availability – Textile and plastic waste are in abundance to resource recycled tensile membranes; however, time of manufacturing could withhold the process of construction.

suitability- Adaptive reuse: Lightweight materials applied to derelict structures as a form of experimentation and ease of assembly and maintenance.

Labour – skills will need to be specialized in the form of structural engineering and manufacturing of recycled textiles material as tensile membrane applications

Operational consideration- Production of textiles may need a textile expert or designer to have an input in the process regarding specific requirements from the recycling process

Technology and Materials

Use of polymers from textile and plastic waste to produce tensile membrane structures and polymer-based bricks that are new in development and highly experimental, despite recycling and cheap costs to procure the materials, the manufacturing process can be energy intensive and emit carbon fumes in the production process.

Tensile membrane structures can be reliable, adaptable, and enduring but the structural constraints of operating these structures on abandoned and deteriorating buildings needs to be carefully planned and orchestrated.

Where recyclable polymer materials are used for construction of tensile membrane structures, the raw cost of the material is comparatively low. Although, the process of manufacturing contemporary material may be more energy intensive (energy would be electricity, water, labor, etc.), which can possibly result in increased costs.

Textile- Tensile Design technology:

There are so many polymers and synthetic fibers as well as more common fibers associated with clothing that can have numerous possibilities as lightweight, easy to construct interventions with each material and application offering different qualities of light, temperature, and adaptability to name a few. The type of structures differs from material to material depending on the tensile strength and durability. They can conceive new forms or form a symbiosis with existing architectural forms.

PART 4- Adaptive Re-use

Adaptive Reuse- Design Development

Introduction

Because we want to preserve the environment, recycling has become commonplace in modern society. We discover new life in anything from bottles and cartons to garments, automobiles, and structures as part of our effort to reduce, reuse, and recycle trash.
An old or ineffective object can be transformed into a new item that can be utilized for a different purpose through the process of adaptive reuse. Sometimes, just how something is used changes.

The heritage value of the structure and its surroundings should not be adversely affected by the adaptive reuse of a historic structure. (RAIA, 2004). To give a building a new function, developers should first understand why it has heritage classification. They should next explore development that is sensitive to the property. (RAIA, 2004)

The built heritage adaptive reuse projects that respect and preserve the building's historical relevance while adding a modern layer that adds value for the future are the most successful. (RAIA, 2004) Sometimes, adaptive reuse is the only method to preserve, make visible, or interpret a building's fabric while making greater use of the structure itself. If a building can no longer be used for its intended purpose, finding a new use for it through modification may be the only option to maintain its historical relevance. (RAIA, 2004). When evaluating the development of cultural sites, certain state authorities are developing strategies to manage change, including adaptation. Such guidelines include common standards to guarantee that an adaptive reuse project has little effect on a building's heritage assets, including-

• preventing "facadism," or demolishing a structure while preserving its exterior

• looking for a new use for the building that is compatible with its original usage

• needing new work to be identifiable as modern, rather than an appalling replica of the building's original historic style.

The heritage buildings looked at in this chapter have had sustainable, flexible methods of construction that not only restored by introduced something new and cohesive with the existing host in a way that not only preserved but enhanced.

Adaptive re-use is part of a sustainability approach that you are using as a tool uplift a ruined heritage building, within a revitalised mixed -use precinct, that serves the needs of an existing second hand clothing industry in Marshalltown and aims to empower into the future through onsite education and skills training."

4.1 Case studies and precedents:

Artek 4, Durban

The following study is a personal analysis of a house converted into a business in Glenwood. The Glenwood area within the Berea district in Durban is a site for various colonial style houses. The context consists of a variety of Edwardian, Victorian and generic union period style homes.

The building of focus resides across a street of apartment buildings and shops. Along the street and adjacent to the building is almost the opposite consisting of a precinct of colonial buildings. Most of the buildings west of the Artek4 offices are double story Edwardian and Victorian villas. The house is almost on the edge of the suburban zone adjacent the Durban CBD. Though his is not in the city, it can serve as an important study of adapting and extending existing structures in Durban.

Small stylistic details are specific to periods such as choice of material, column details, roof designs and presence of features such as bay windows define and differentiate the Berea style buildings within the context.

The house under analysis is an Edwardian double storey villa built in Vernacular style during the early 1920s and exists as a generic construction of the typology. The house has been passively altered with contemporary building methods with the intention to preserve historic architectural elements while re-adapting the house itself. The house is own by architect Somers Govender, and he is responsible for the parasite that activates the house as an architectural studio.

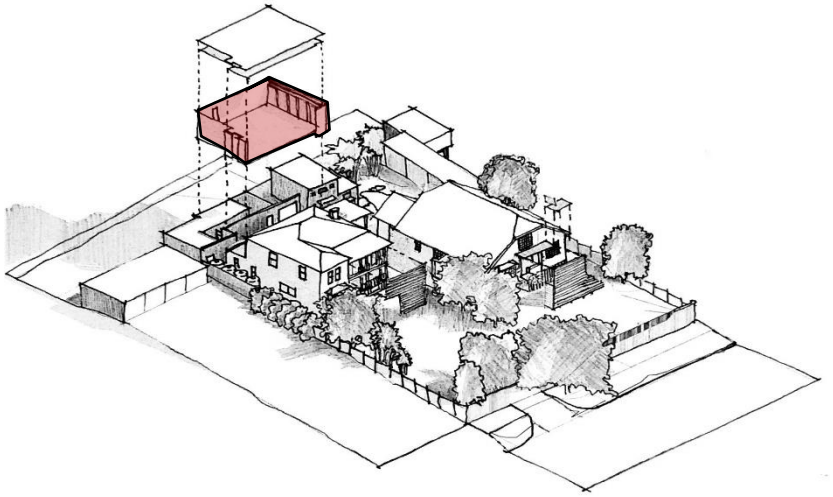


Figure 60: Author's original work

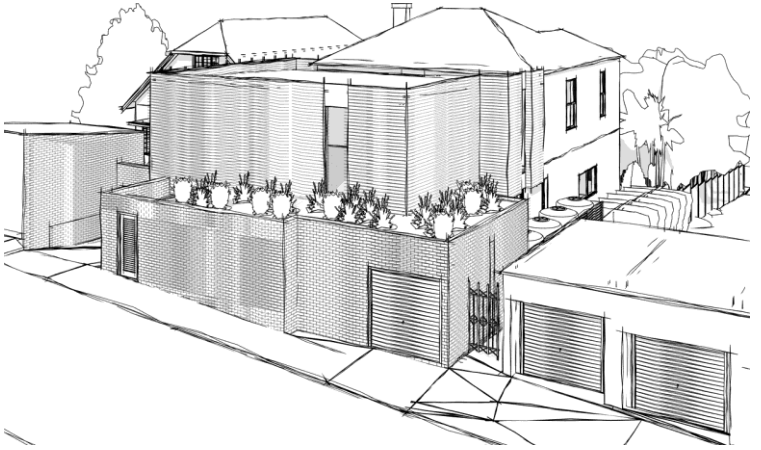
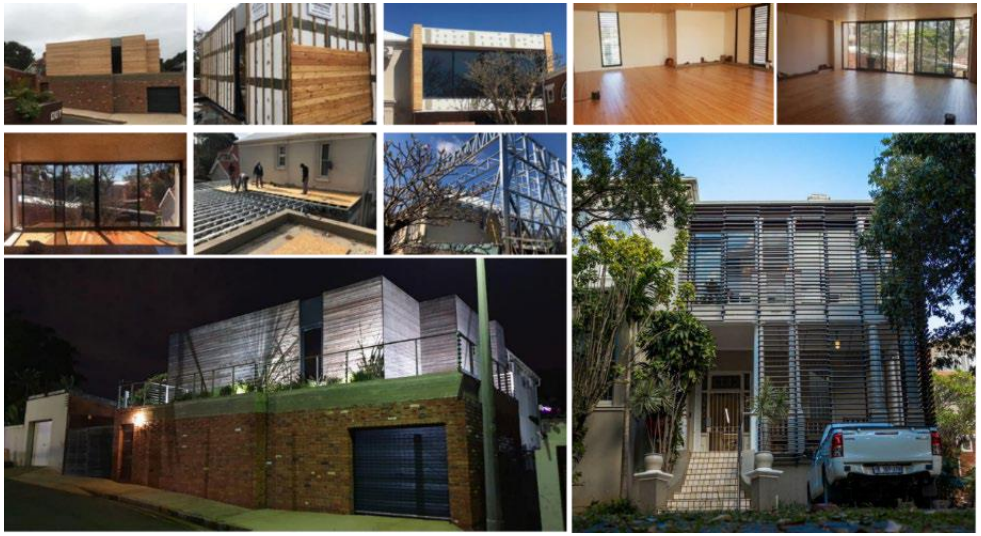


Figure 61: Author's original work

The parasite is a clip-on light weight steel structure cladded in Siberian larch. The clip-on studio pays reference to hierarchy, symmetry, proportion, and rhythm to emulate classical Eurocentric principles that govern the architecture of colonial homes. These principles also respectively emulate modernist principles, and these are the principles that are translated through time with this style of architecture.



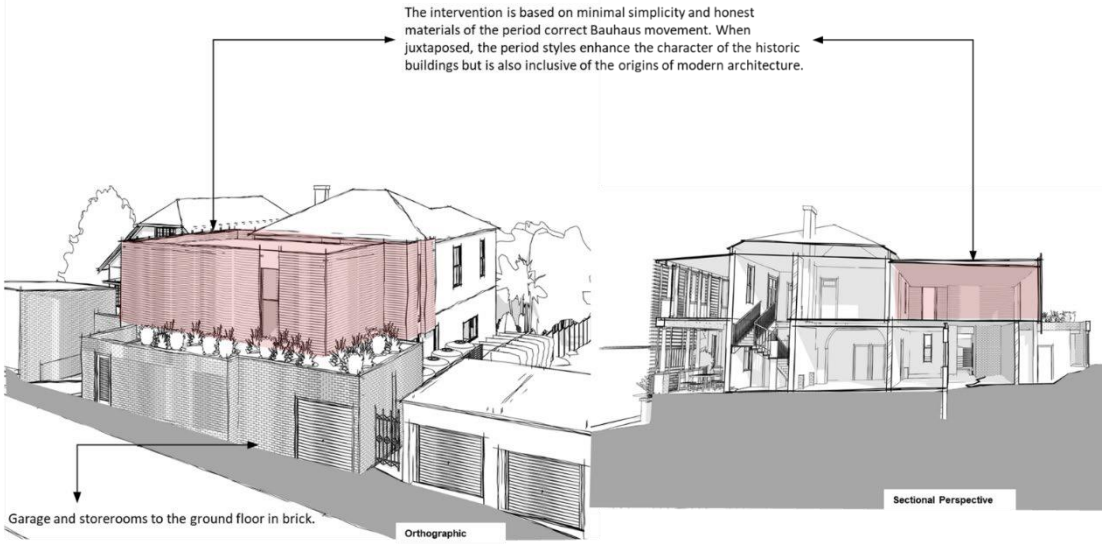


Figure 62: The parasitic intervention and change of functionality of the building within its context gives ideas on how we can change structures while maintaining a sense of respect to the heritage of the building, and as such can be seen as a precedent to initiate changes on small scales to the built environment. (Author's original work)

Documentation and Fieldwork- Research was conducted in numerous site visits over weekends and walkthroughs of the Glenwood area to observe the presence of colonial style buildings. Through obtaining plans for the building and with reference to pictures I was able to construct elevations and a model to illustrate axonometric analysis. Speaking with the Architect and draughtsman allowed me to have insight to the additions but also the existing dwelling itself which aided in the drawing and model analysis.

Drill House, Johannesburg

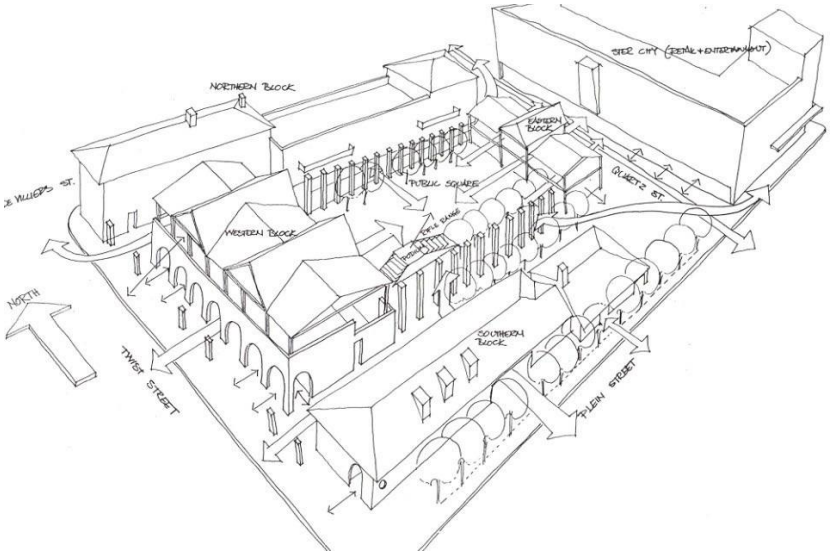


Figure 63: Drill Hall adaptive re-use program (Hart, 2022)

The main accomplishment is related to physical preservation and how it relates to the sociocultural legacy of a location, as well as to the acceptance and reconciliation of the past, as well as to celebration and remembrance. The architectural intervention will allow the memorialization of events, ideas, and people to communicate the essences of Johannesburg's complex past by changing an introverted site into a site of place building. (Hart, 2022)

A synergy reflecting the contemporary social and political situation is created through the flexibility of use and the inclusion of diverse functions, including the military, community facilities, art exhibitions, and events. Users are given the chance to pause and contemplate within the containment of layered constructed fabric thanks to the place-making principle. Visitors will be guided and informed by the information being distributed. The intricacies of the space's design and furnishings will arouse curiosity and prompt reflection, giving old memories fresh significance. (Hart, 2022)

The preservation of existing structures and the intricate fusion of historic relics with modern construction combine to emphasize the necessity for conservation. The new steel structure that rises through the building and highlights the important features of the damaged building has structurally sustained and underpinned the existing walls of the western block. This is accomplished by raising the building's margins to represent its double gable façade and its original height. The clear glass infill acts as a metaphor for a recollection. Elevations on both sides of the building's entrances modify the structure. The street entry is still on the west, while the east responds to the public area. (Hart, 2022)

Giving a property that has fallen into disuse fresh vitality is how sustainable architecture is accomplished. The discovery of this important urban fabric helps to further the city's regeneration. The location has been recovered by the city as its property. The desire and determination of the city's decision-makers will motivate the new residents to assume their roles and responsibilities for improving the quality of life in the city (Hart, 2022).

Turbine Hall, Johannesburg

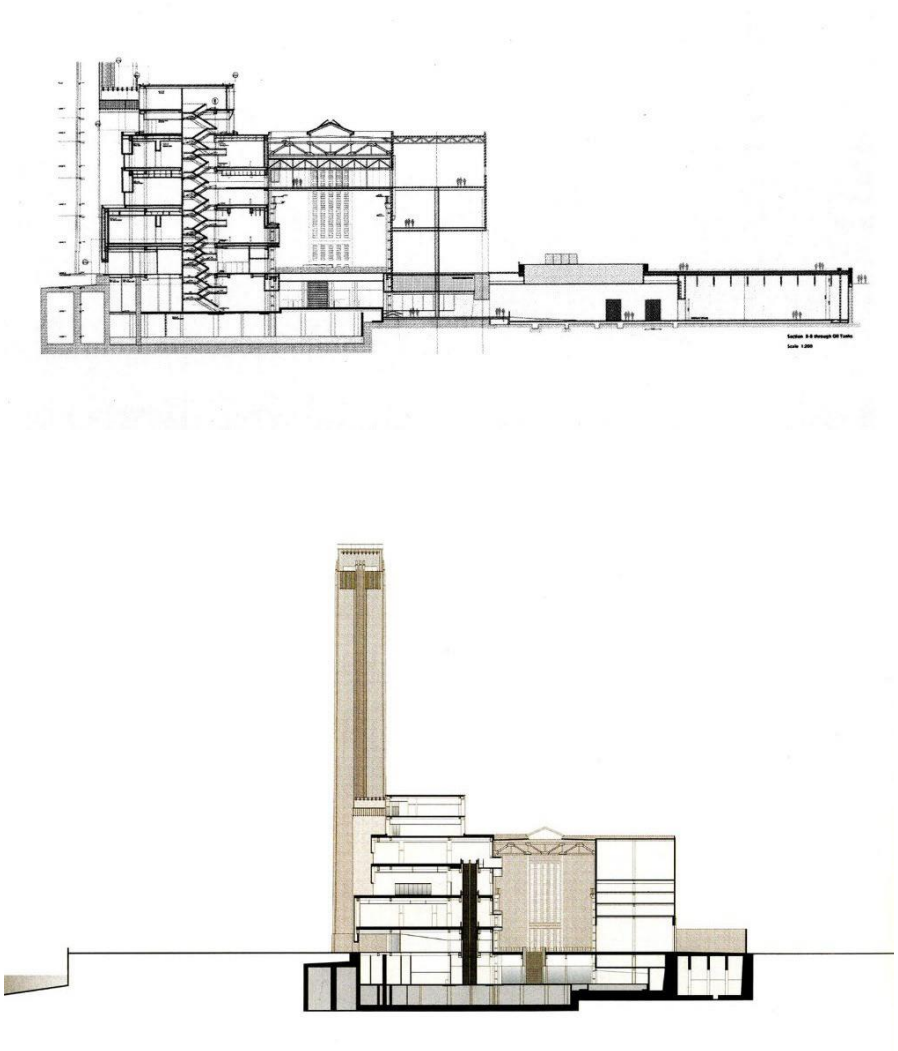


Figure 64: Sections of Turbine Hall (Arch daily, 2022)

The 1930s saw the construction of the Jeppe Street Power Station. Turbine Hall, which was smaller, and a single North Boiler House made up the original site. The Power Station was expanded in 1934 because it could not keep up with Johannesburg's demand for power (Krige & Beswick, 2008: 3).

After being shut down and bricked up in 1970, this magnificent location was isolated from the public. It wasn't until 1990, when squatters broke into the property, that it was once again made public. Over 300 individuals were residing on the property by 2000, therefore the structures were cleaned up and sealed off. (Krige & Beswick, 2008: 3).

When it was used as a venue for events in 2004, the Turbine Hall was once more experienced in all its splendour CEO and Corporate Affairs Executive of AngloGold were tasked with finding the firm new facilities. Following careful research, they selected the Turbine Hall site and hired TPSP Architects to create a new office park by repurposing the existing structures. (Krige and Beswick, 2008).

The architect wanted to design a new building that would pay homage to older industrial structures in terms of material choice, size, and spatial experience. They essentially intended to build a new building with modest appearance old structures were modified on-site, and the designers concentrated on reusing as much of the already-existing components as they could. Ultimately, the building's program would be recreated while including its current character, fully using the building's potential (Krige and Beswick, 2008).



Figure 65: The convent of Sant Fransesc church, which Is located in Catalan, Santpedor was intended to be changed into a cultural facility. David Cross using symbiotic architecture in the form of parasitic architecture managed to allow the church to host a new auditorium and multipurpose center to be used as a cultural space. The upper floors were altered to become historical archives using existing roof volume space.
This building well informs how to create a symbiosis between old and new.



Figure 66: An example of demountable structures, this temporary pavilion was designed by GA estudio + ArtWorks for the 2019 Festival de las Artes Walk&Talk event held in Portugal. The fabric roof, held up by an inflatable balloon, is anchored to movable modules housing exhibits.

4.2 Design development- Re-using the Three Castle's

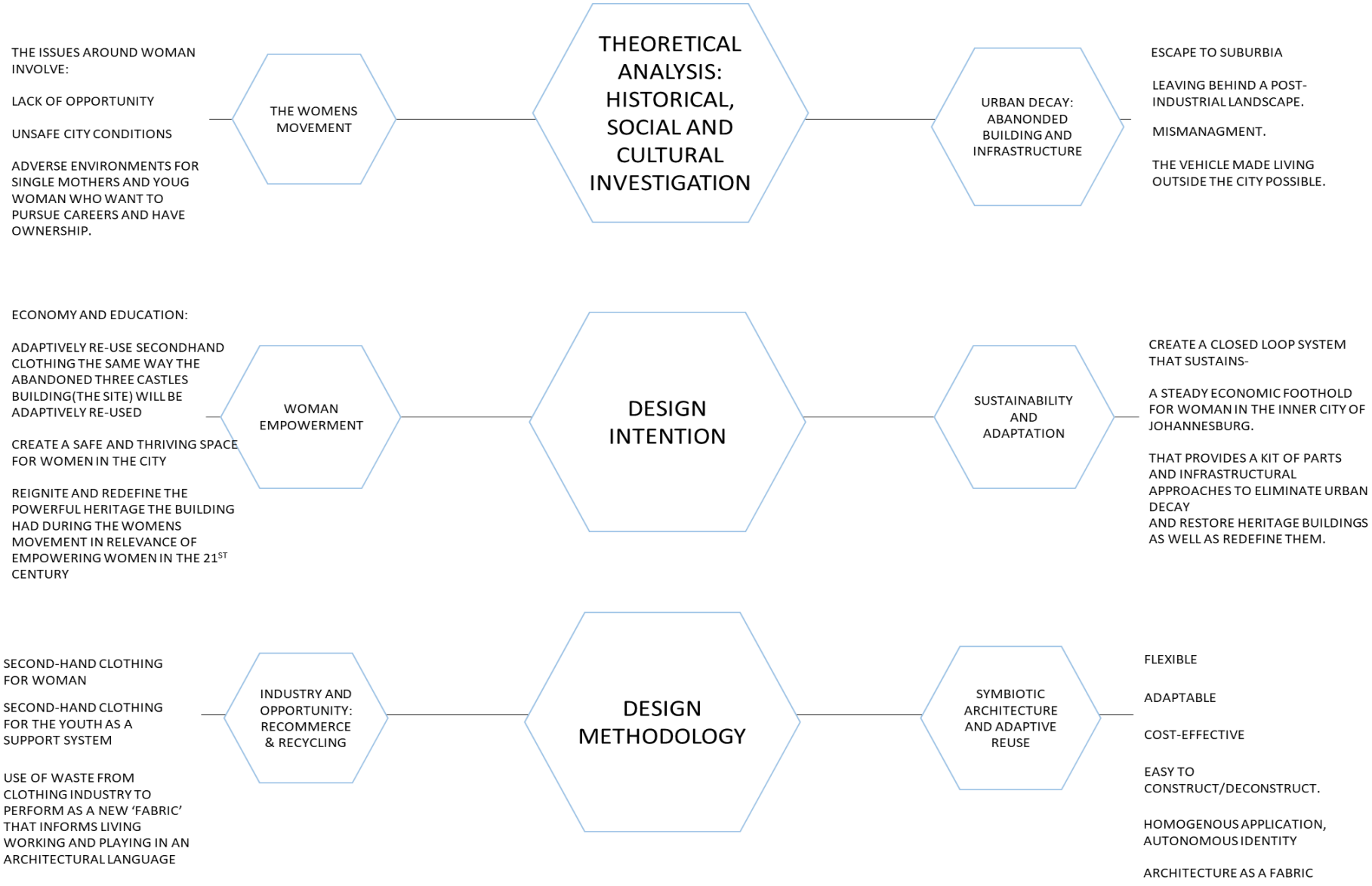


Figure 67: Design Planning (Author, 2022)



Figure 68: Massing program inception diagrams to illustrate initial planning of spaces integrated into the Three Castle's existing building (Author, 2022)

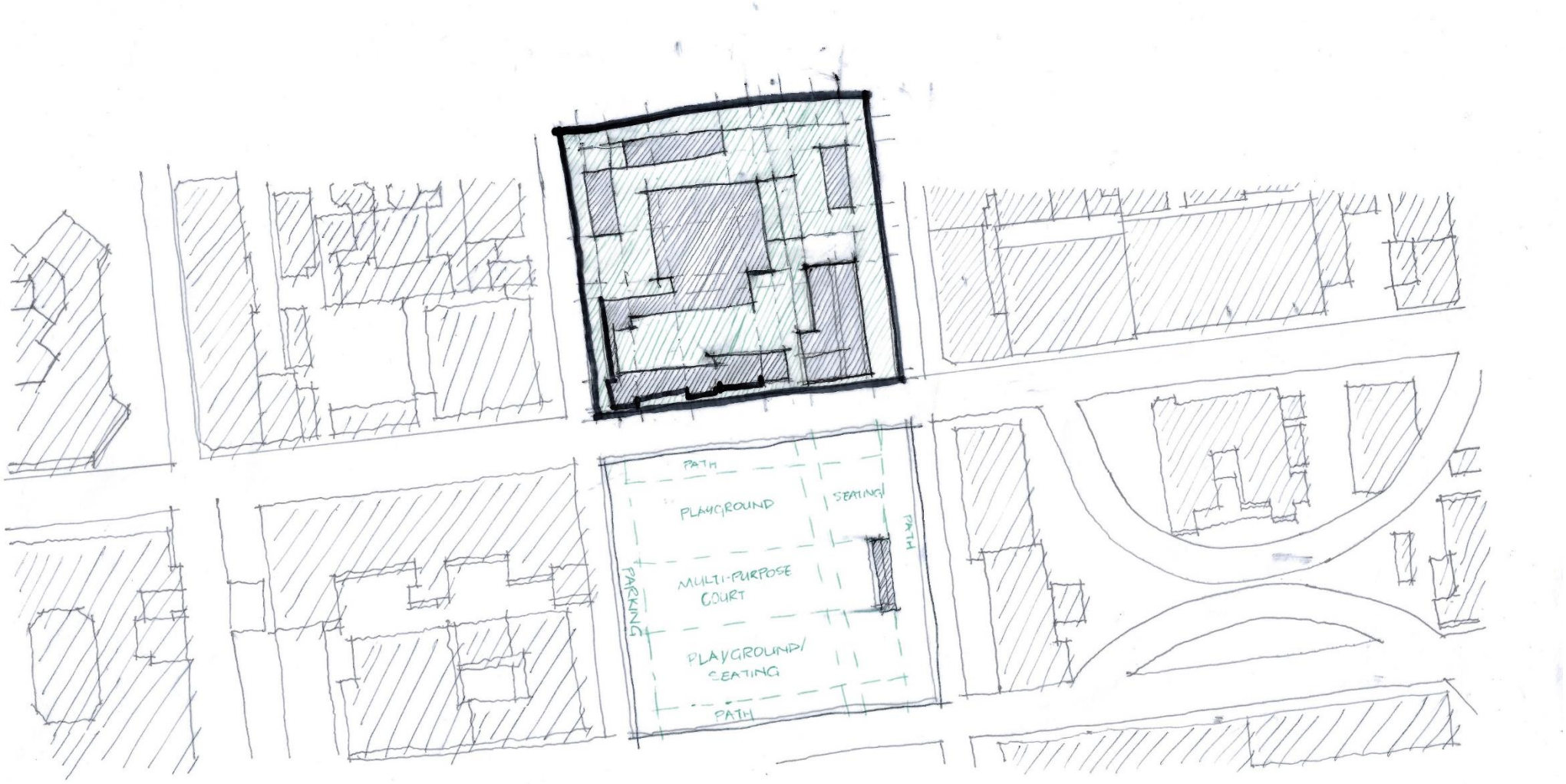


Figure 69: Solid and void massing program diagram illustrating final massing to create courtyards and entrances along the street (Author, 2022)



Figure 70: Detailed programming to expand on massing illustrates form and function in the adaptive reuse intervention. The simple program diagram illustrates how the existing three castle's footprint is respected and complimented by placing the industrial component where the existing warehouse use to be, the spaces along the façade mimic the rhythm, symmetry and proportion (Author, 2022)

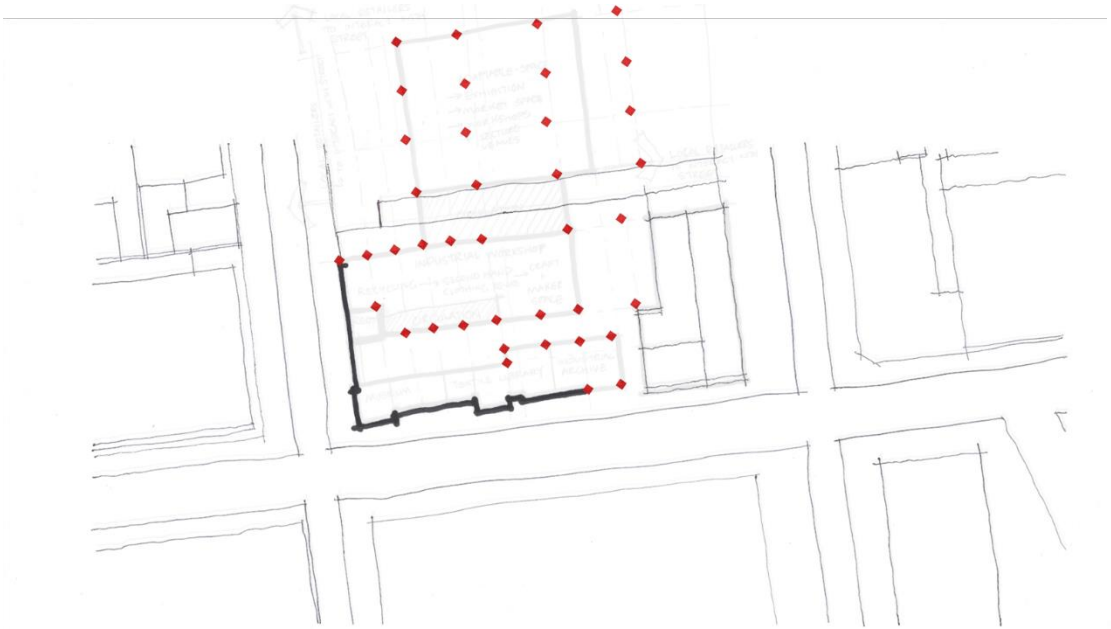
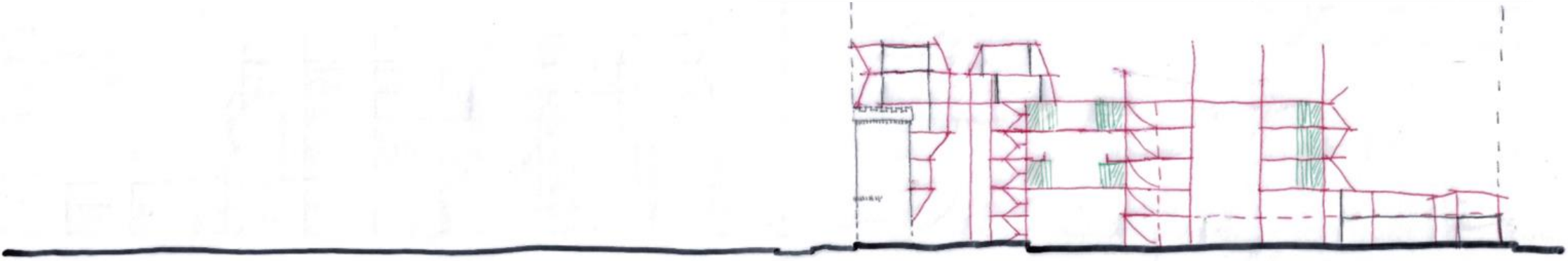


Figure 71: Structural diagram of new column grid-which is born from the symmetries and proportions of the existing Three Castle's building. The structure is aligned around the program to facilitate open voids, atriums and courtyards as well as accentuate entrances (Author, 2022)

STRUCTURE BORN FROM
EXISTING HOST



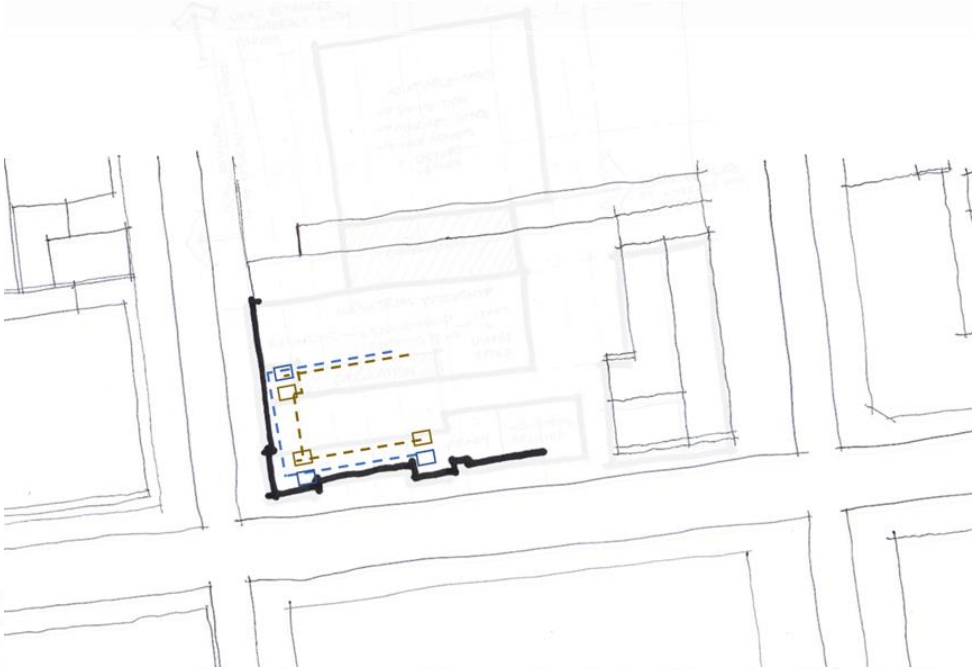
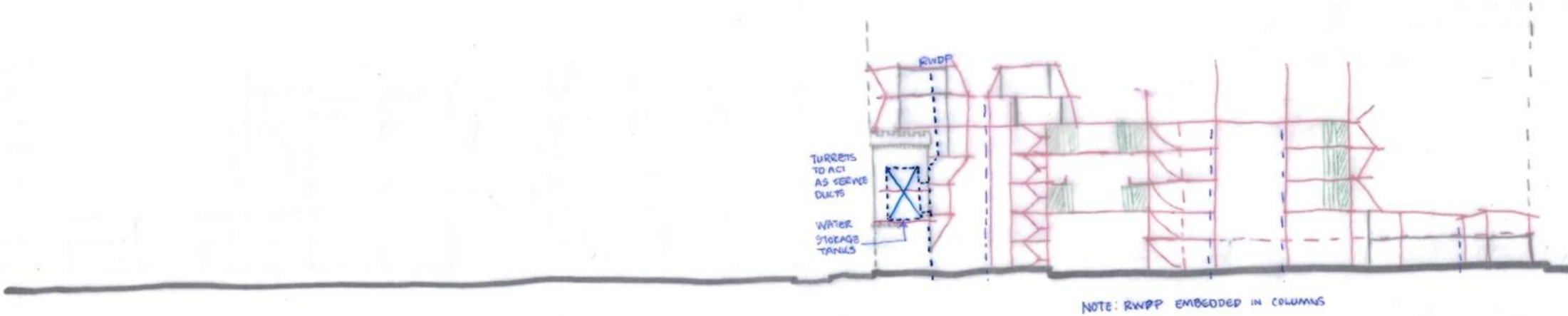


Figure 72: Water systems diagram showing storage and reticulation of water along exiting structure, with the turrets incapable of hosting habitable space, some unusable heritage components are perfect for storage and system use as seen in section (Author, 2022)

WATER RETICULATION AND STORAGE



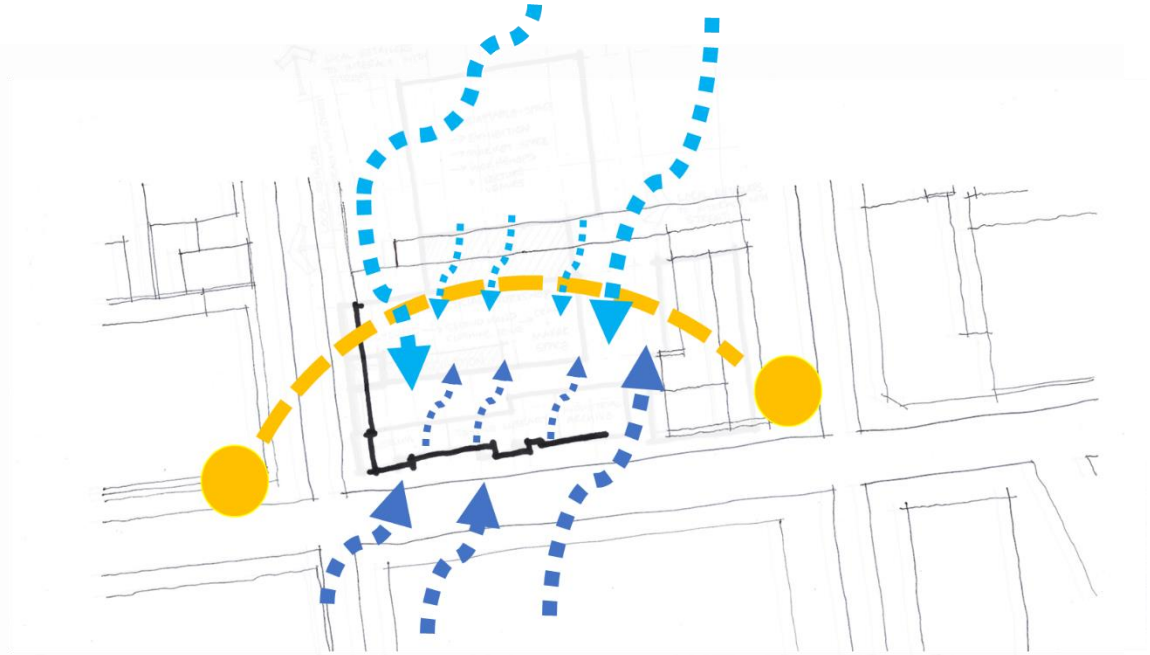
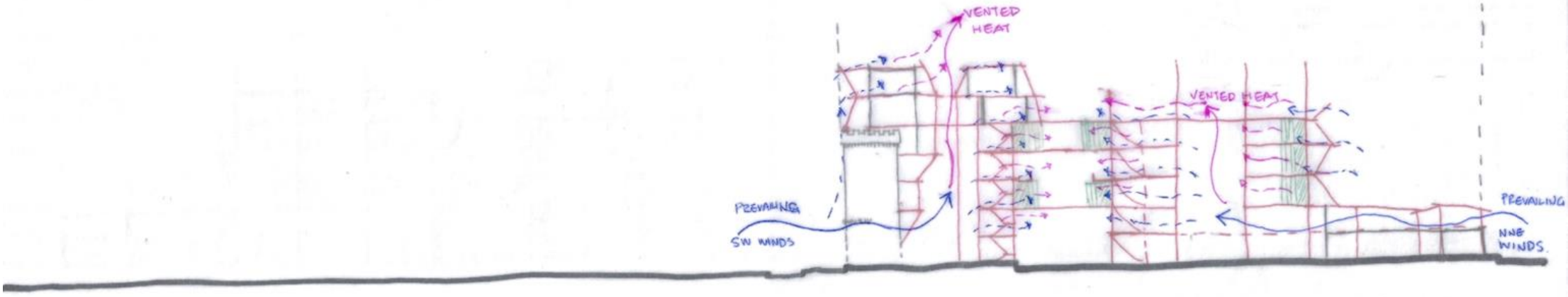


Figure 73: The grid and form articulate open spaces above courtyards that allow the building to behave like a termite mound, with pockets of intermediate served spaces that act as pockets of ventilation shafts allowing hot air to escape ad wind to pass through the ground floor. (Author, 2022)

VENTILATION STUDY



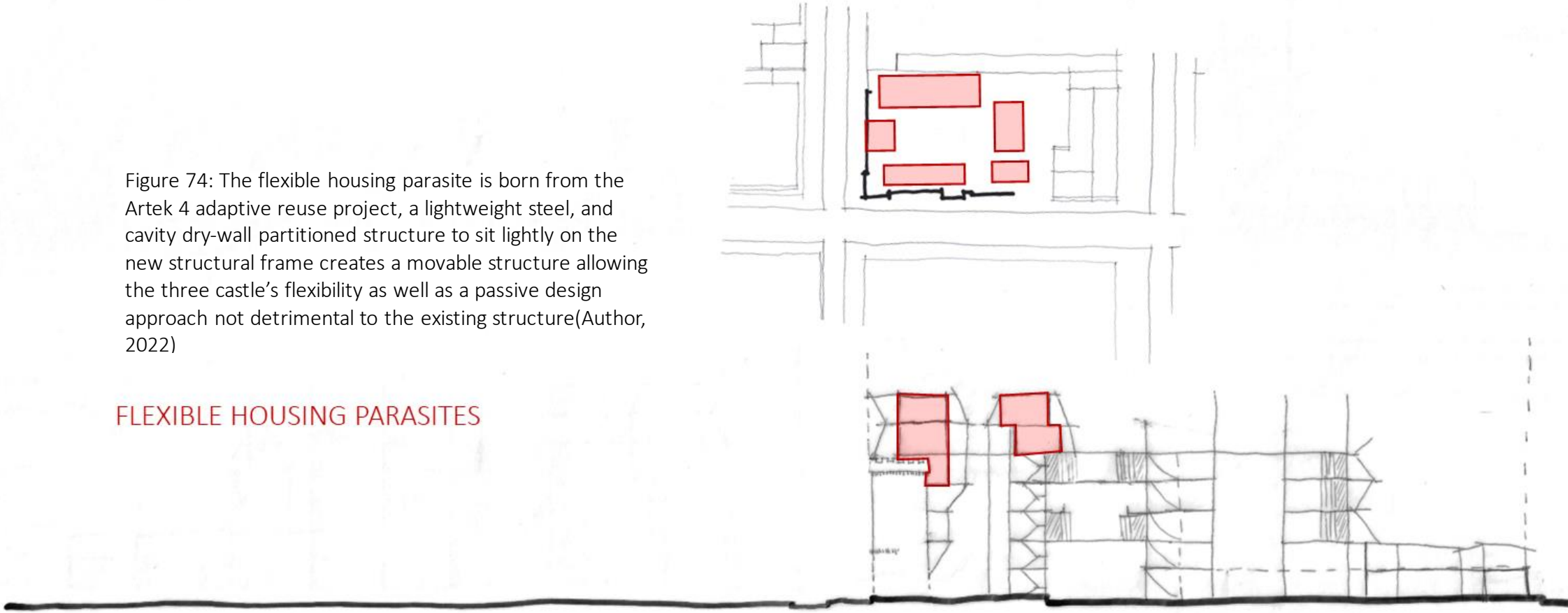


Figure 74: The flexible housing parasite is born from the Artek 4 adaptive reuse project, a lightweight steel, and cavity dry-wall partitioned structure to sit lightly on the new structural frame creates a movable structure allowing the three castle's flexibility as well as a passive design approach not detrimental to the existing structure(Author, 2022)

FLEXIBLE HOUSING PARASITES

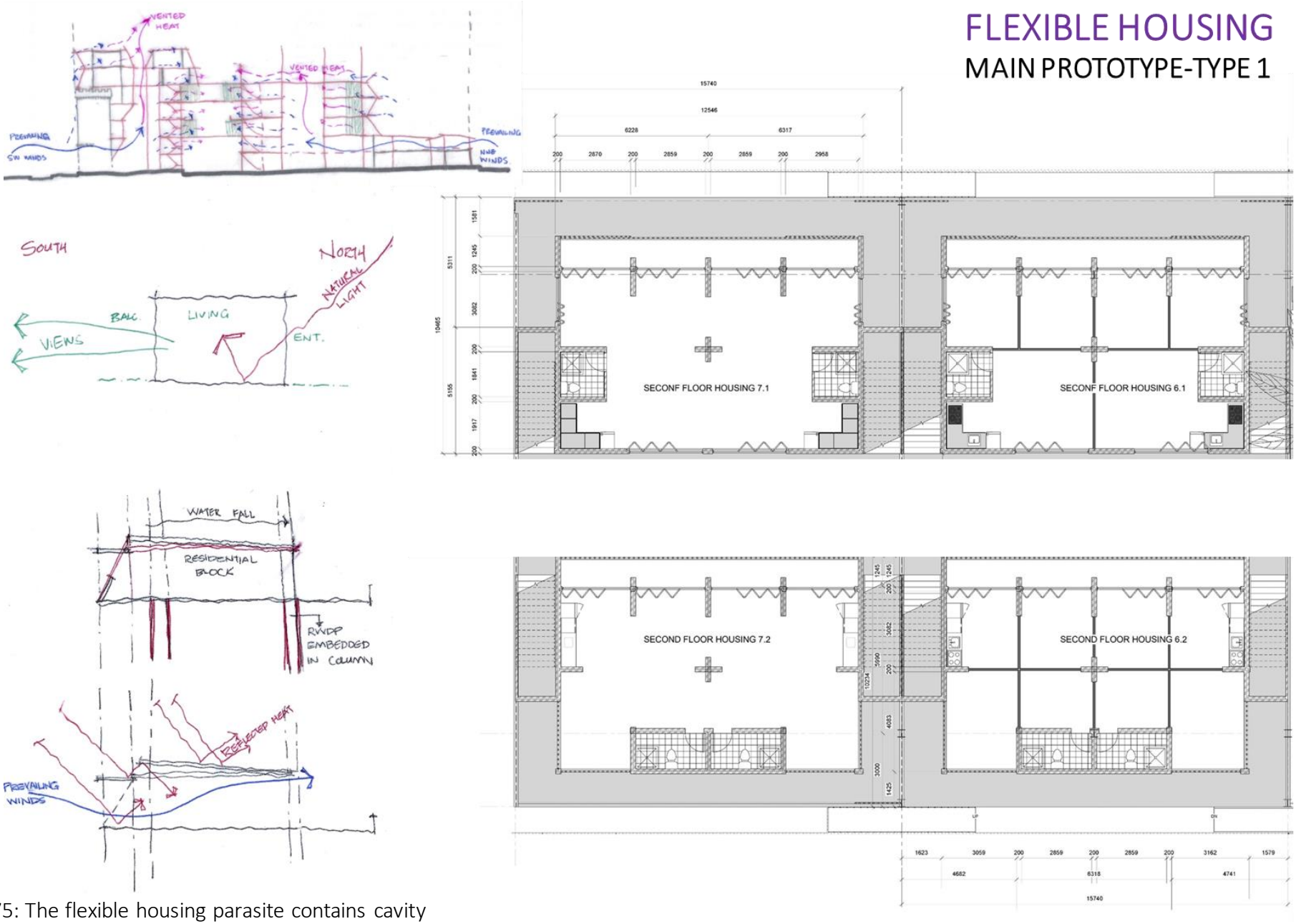
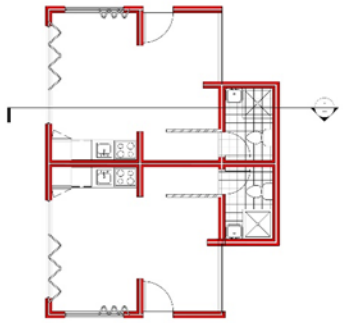
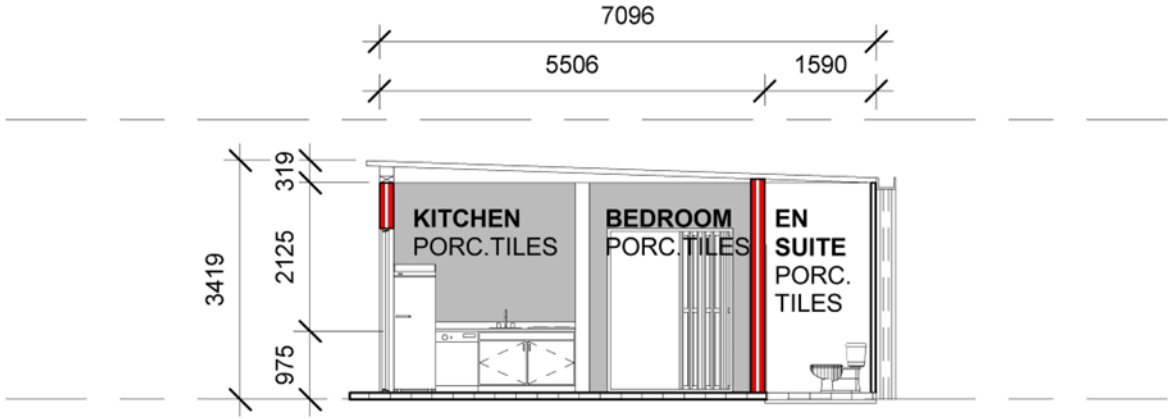


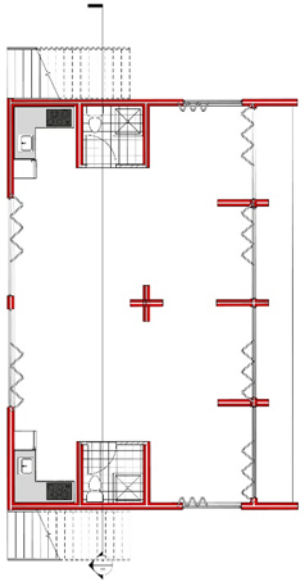
Figure 75: The flexible housing parasite contains cavity walls that are made to host partitions that control open and closed spaces internally with sliding stack doors controlling interaction to the outside. (Author, 2022)

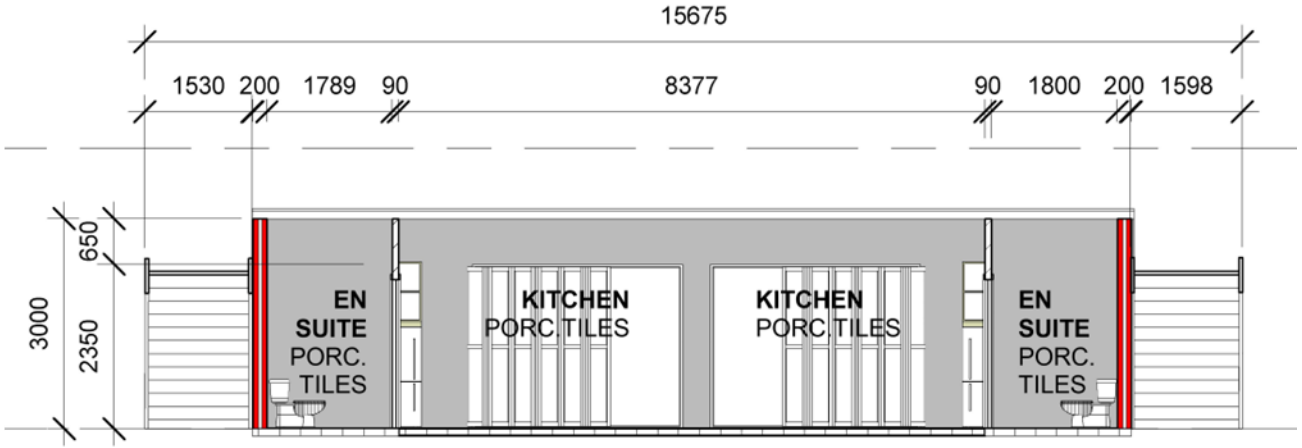
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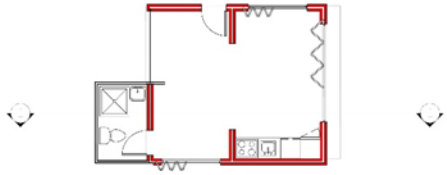


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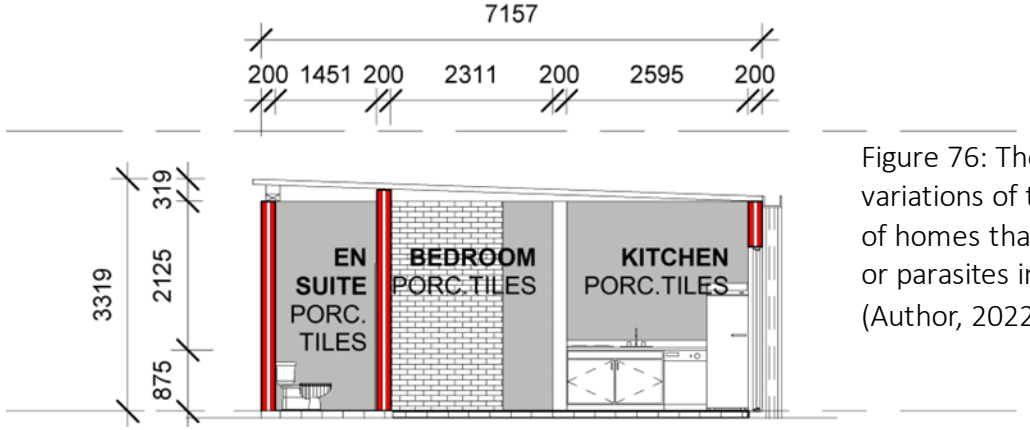
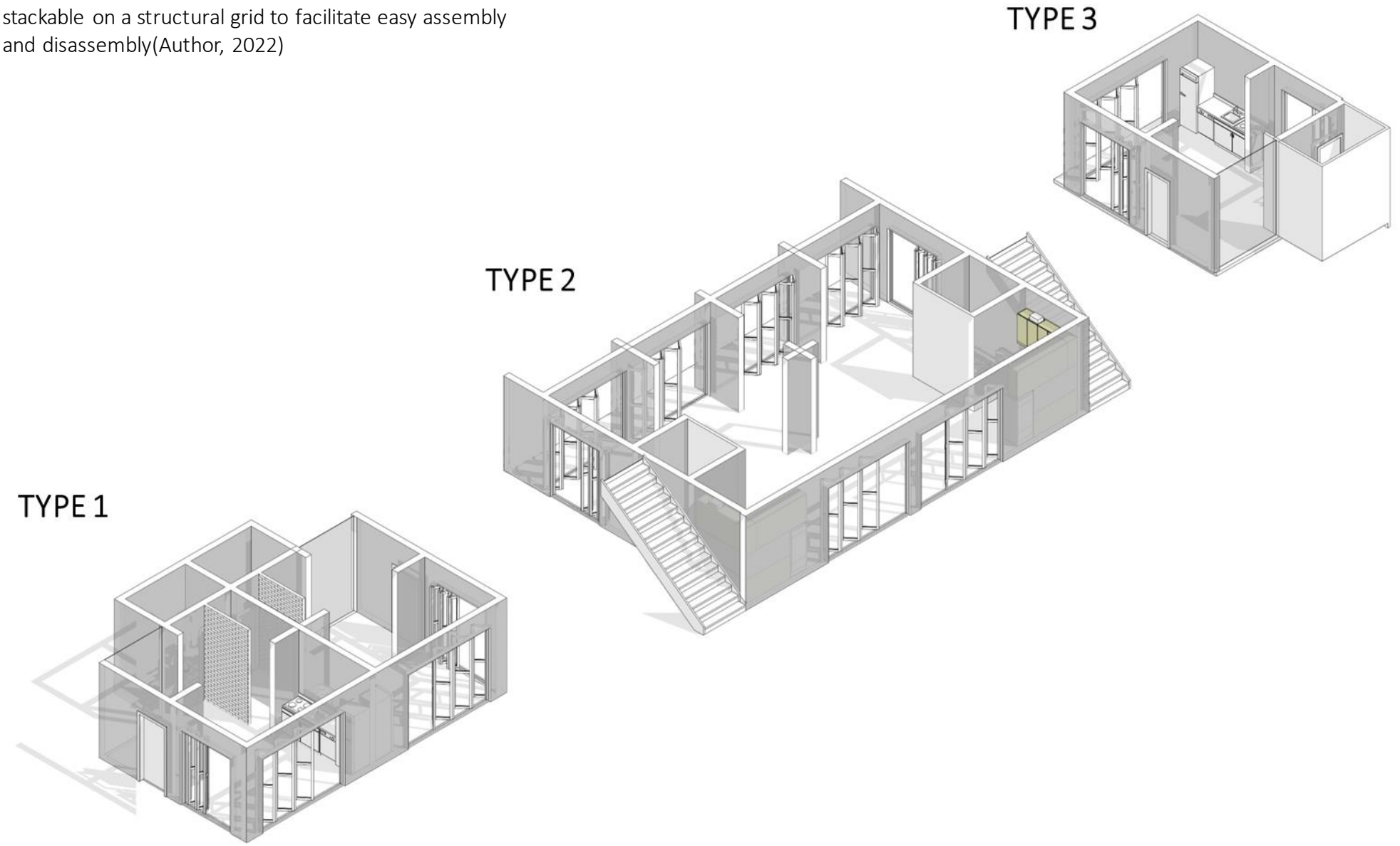
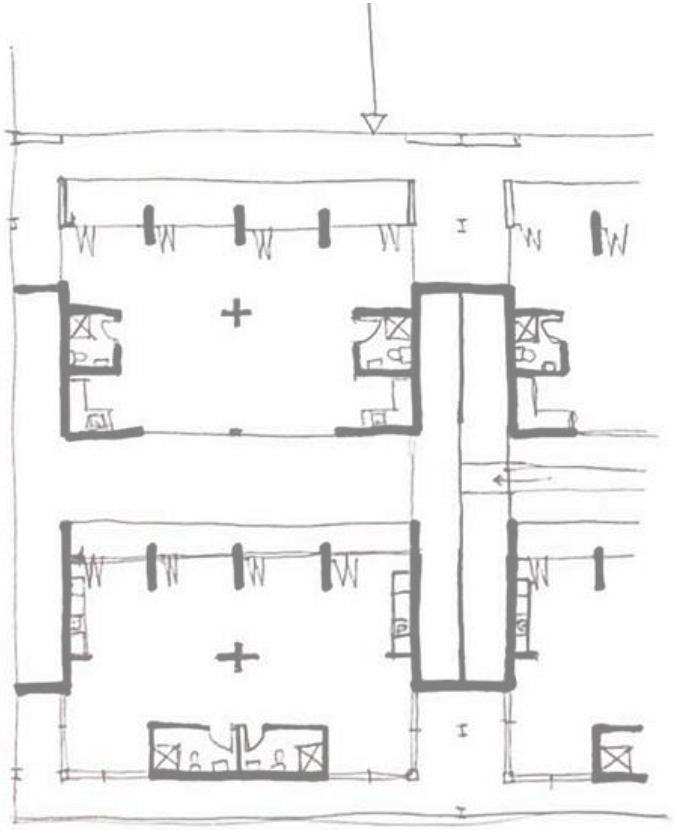


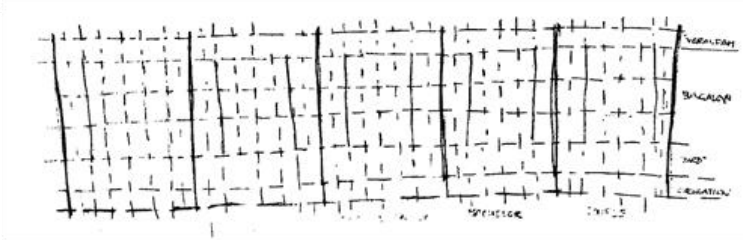
Figure 76: The flexible housing variations of typology create a system of homes that can be applied as pods or parasites in a variety of spaces (Author, 2022)

Figure 77: The pods are designed to be insertable and stackable on a structural grid to facilitate easy assembly and disassembly(Author, 2022)

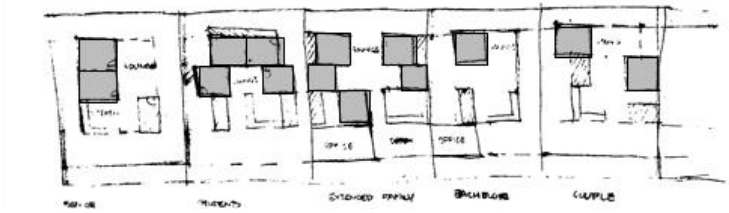




'BUNGALOW'- GRID



FLEXIBLE ADAPTATIONS



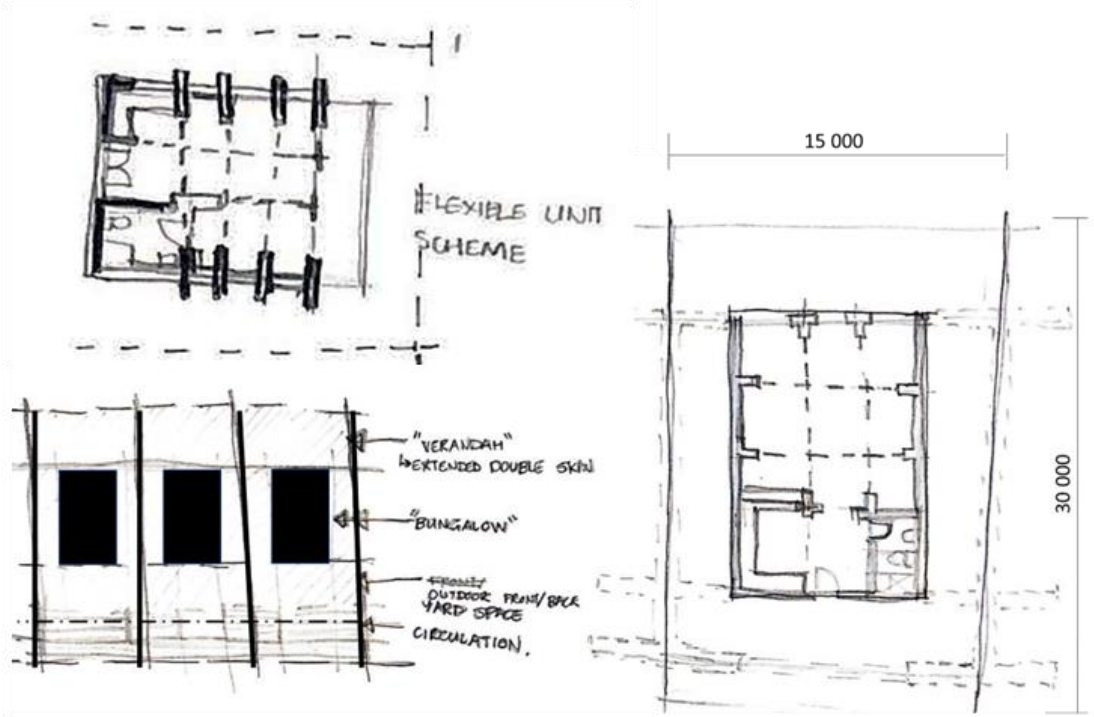
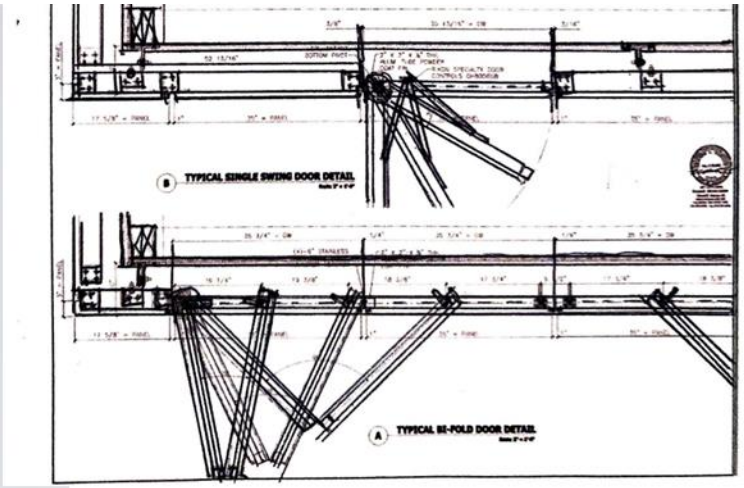


Figure 78: The flexible housing parasite is inspired by the bungalow, the Durban veranda or the typical colonial home, but is deconstructed an reconfigured as abstract spaces that can be applied as a living component to lost space





Cavity Wall structured to host sliding lightweight partitions along tracks to adapt spaces

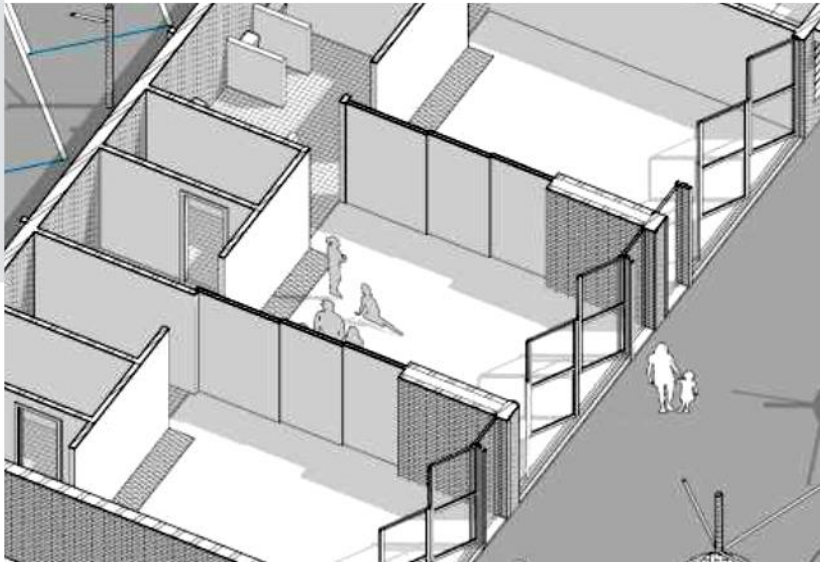


Figure 79: Sliding/stackaway partition details- The stack away and sliding partitions reside within the cavity walls, the are located within the parasites as well as long the main structural volume of the innovation centre space, these walls allow the flexibility of public space in the building to transition between market space, exhibitions and lecture venues(Author, 2022)

4.3 Environmental

-Since historic buildings contribute so much to the landscape, character, and amenities of the communities they are a part of the environmental advantages are particularly important when adaptive reuse incorporates historical buildings.

Retaining the "embodied energy" of the original structure is one of the key advantages of reuse for the environment.
Embodied energy is defined by the CSIRO as the energy used in all processes involved in the creation of a building, from the purchase of raw materials through the delivery of the finished product. These activities include mining, the manufacture of tools and materials, transportation, and office work. (RAIA, 2004) Reusing existing structures allows for the preservation of the embodied energy, making the project far more ecologically friendly than starting from scratch.

The structure and flexible housing system facilitates the use of the existing structure while accommodating the new industrial function in charge of producing the ever-changing aesthetic of the building. The reuse of the building ensure that energy is sustained through upcycling in the industrial component and use of materials and excess materials as construction measures, hence maintaining embodied energy instead of wasting it. The cost, time and energy used to the demolish the Three Castle's would be a waste in contrast to the benefits.

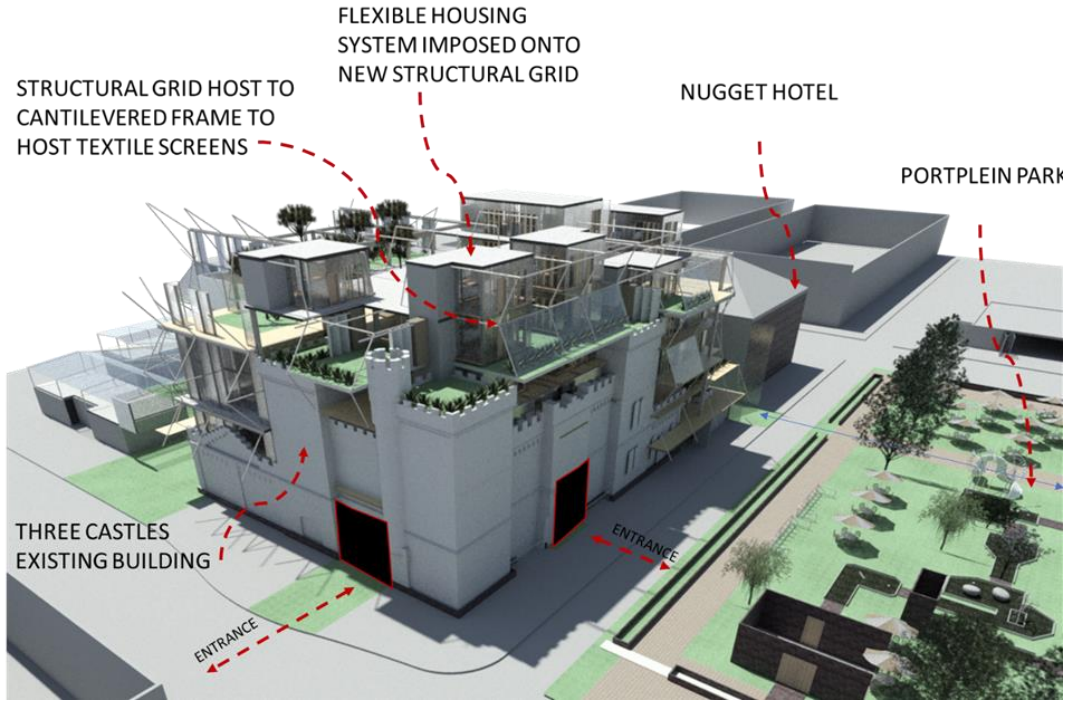


Figure 80: 3D Render-The collection of flexible housing imposed on the structure can be referred to as a symbiote latching onto the Three castle's and Nugget hotel.(Author, 2022)

4.4 Social

-The communities that cherish historic structures get long-term advantages from preserving and utilizing them.
When done correctly, adaptive reuse may preserve a building's heritage importance and aid in its survival. (RAIA, 2004). Heritage structures that are tastefully upcycled can still be used and cherished rather than degrading through neglect or becoming unrecognizable. In the context of South Africa, the initiative would be to redefine and reintroduce historic neglected buildings with a new life ignited through adaptive reuse.

Communities, governments, and developers are increasingly looking for solutions to lower the costs of continuous urban development and expansion on the environment, society, and the economy. (RAIA, 2004)
We're realizing that our level of life and how we affect the environment depend on the quality and design of the built environment in our towns and cities (RAIA, 2004).

In the case of the Three Castle's needs community development through engagement of public space, and development of built form at a cheaper price and quicker pace. The steel, plastic and textile pace of construction is theoretically rapid and opne to change should the community need it.

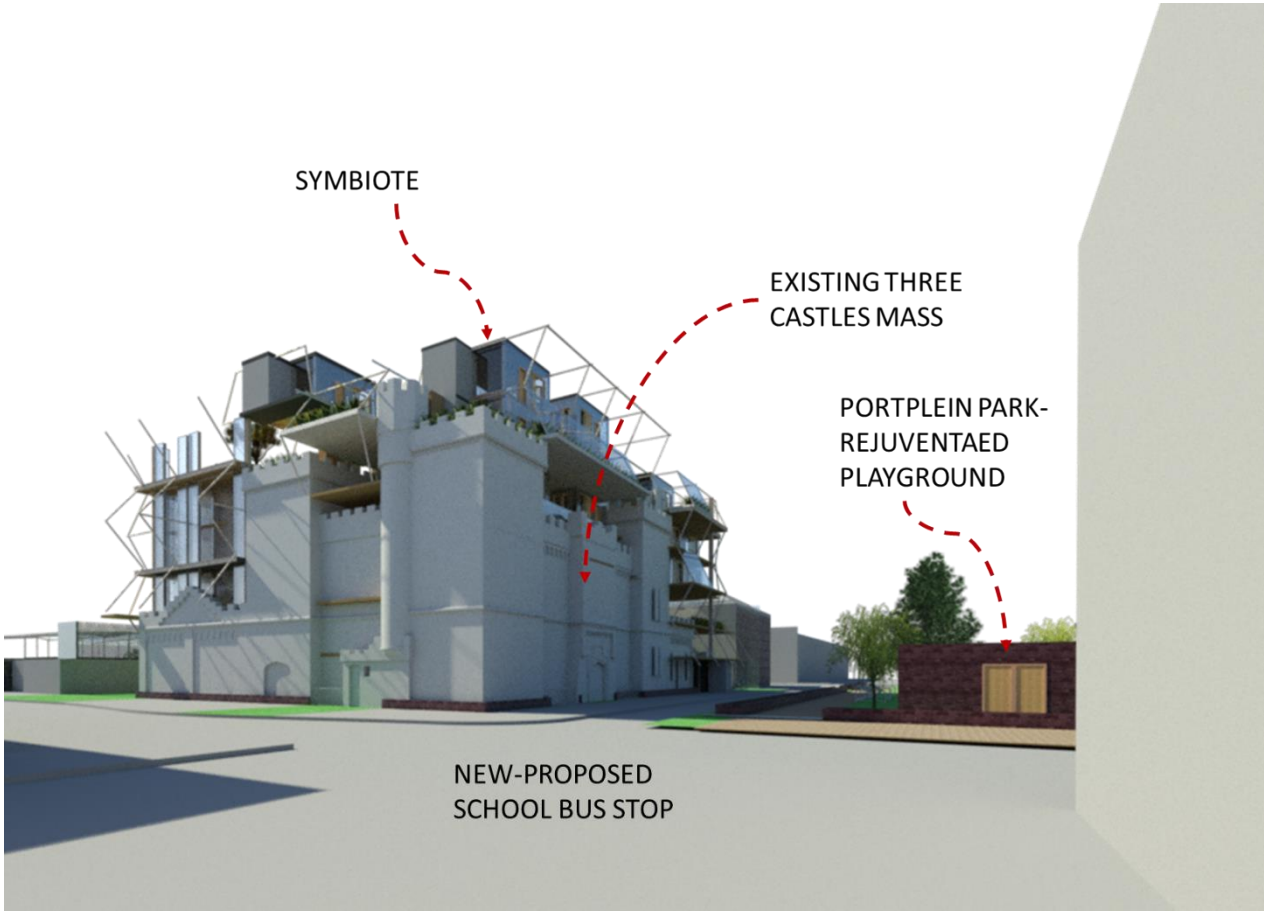


Figure 81: 3D Render(Author, 2022)

4.5 Economic

-The adaptive reuse of old structures offers several financial benefits and returns. Building preservation results in energy savings that will only grow as energy prices are expected to climb in the future.

Reused heritage structures have reportedly been well-liked on the market despite the lack of conclusive study in this area; this is likely due to their uniqueness and historic authenticity. (RAIA, 2004). The combination of financial incentives and the commercially driven character of the adaptive re-use plans exceeded any additional heritage related costs and project risks (RAIA, 2004).

4.6 Innovation

- Finding creative solutions for the adaptation of historic structures is a real challenge for architects and designers.
More heritage buildings are being repurposed as development pressures rise in our cities, leading to some wonderful instances of innovative solutions that preserve heritage value.

THE ADAPTABLE STRUCTURE IS INTENDED TO HOST A VARIATION OF FLEXIBLE TEXTILE SCREENS, CANOPIES AND PARTITIONS , THE BELOW RENDER EXHIBITS PARTIAL FORMATION OF TEXTILES WHILE HIGHTLING THE MAIN ENTRANCE FROM THE ADJACENT PUBLIC PARK

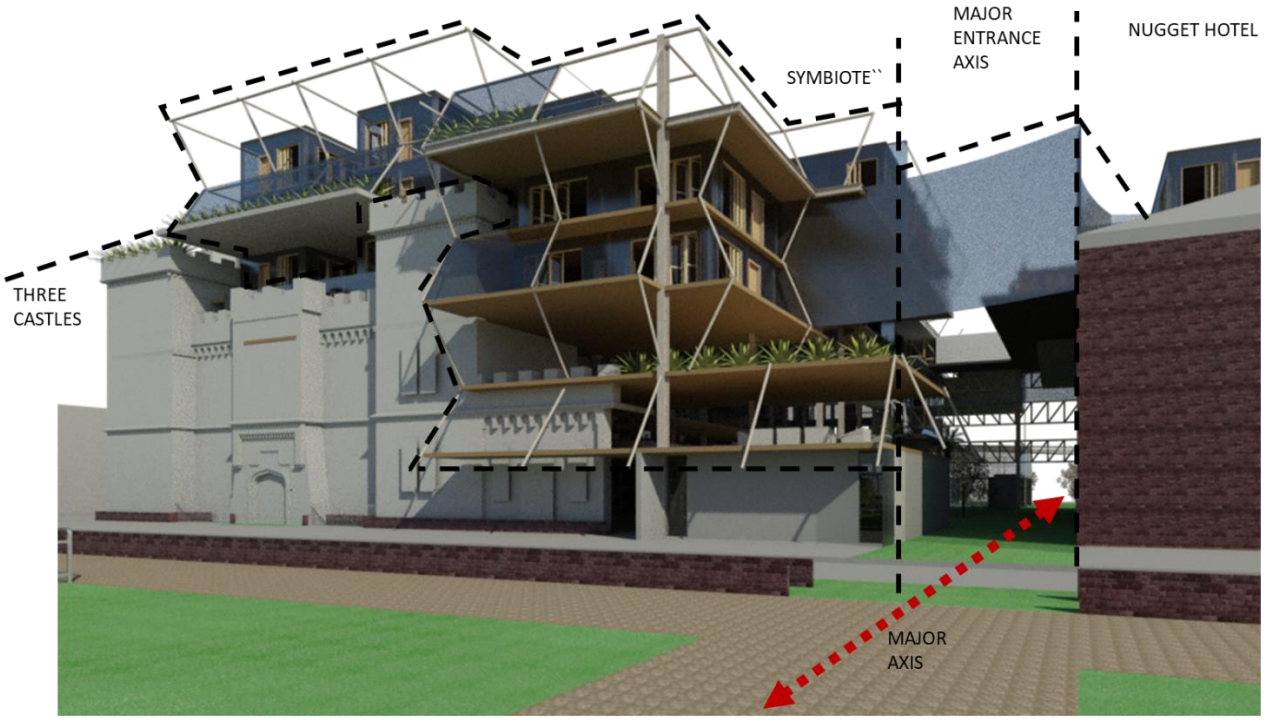


Figure 82: 3D Render- The innovation of lightweight construction and textiles allow the architect to articulate exactly what they want, in this case on the front façade with shading, defining entrances and creating an aesthetic façade and building system that does not impose on existing aesthetics (Author, 2022)

Figure 83: 3D Render- The major axis cuts through from the park to trickle down to the smaller courtyards between the retailers and textile innovation hub (Author, 2022)

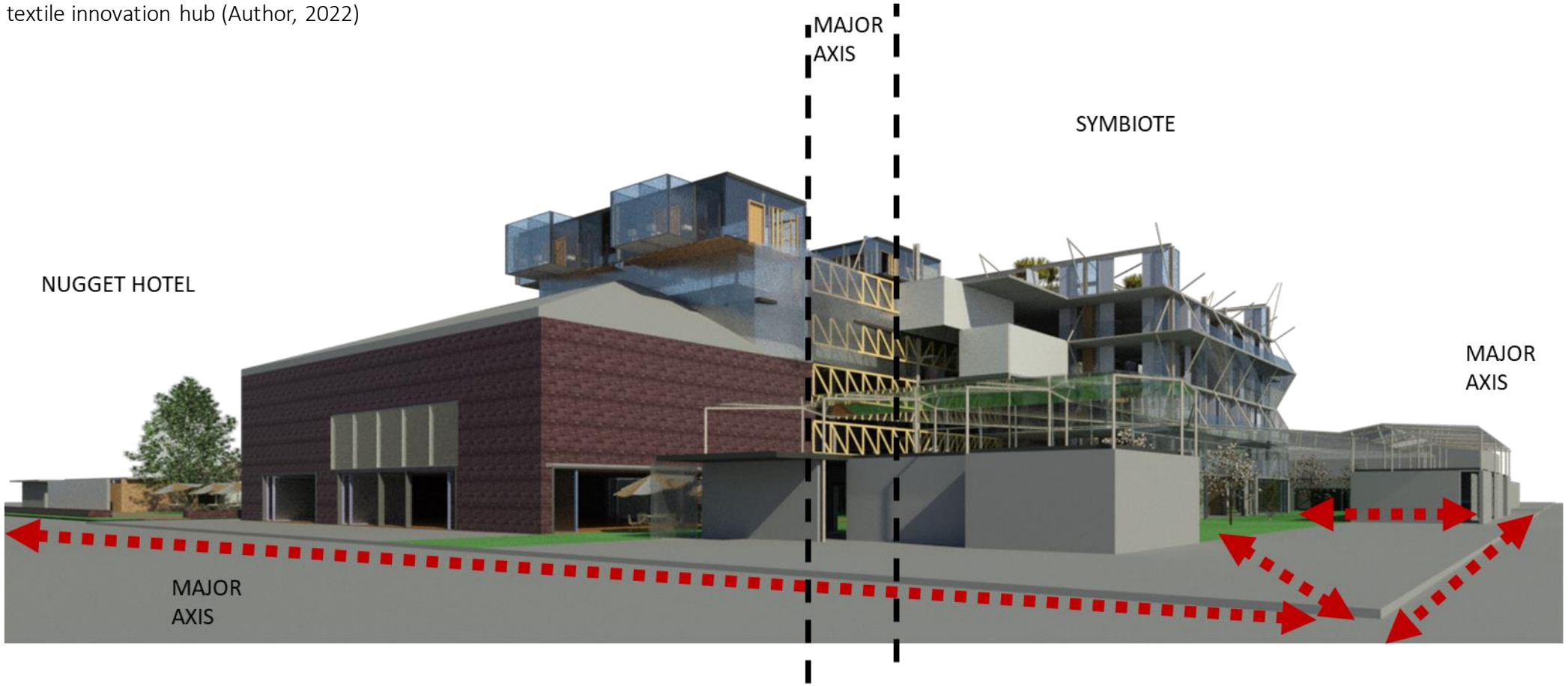
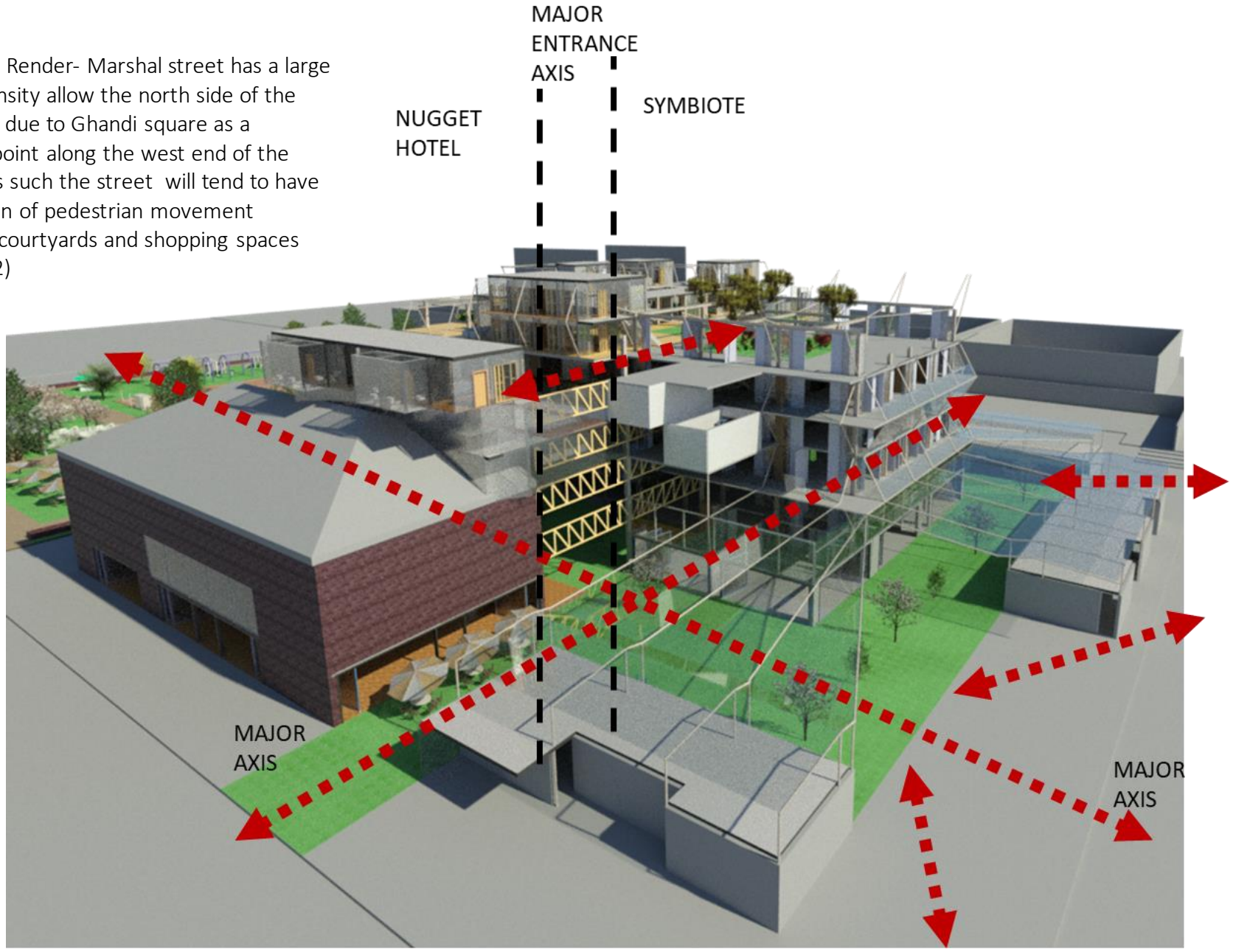


Figure 84: 3D Render- Marshal street has a large degree of density allow the north side of the Three castles due to Ghandi square as a terminating point along the west end of the street, and as such the street will tend to have a large portion of pedestrian movement entering the courtyards and shopping spaces (Author, 2022)



ENTRACES DEFINED BY RHYTHM, SYMMETRY AND PROPORTION OF EXISTING THREE CASTLE FAÇADE ALONG THE PERIMETERS OF THE SITE

Figure 85: 3D Render (Author, 2022)

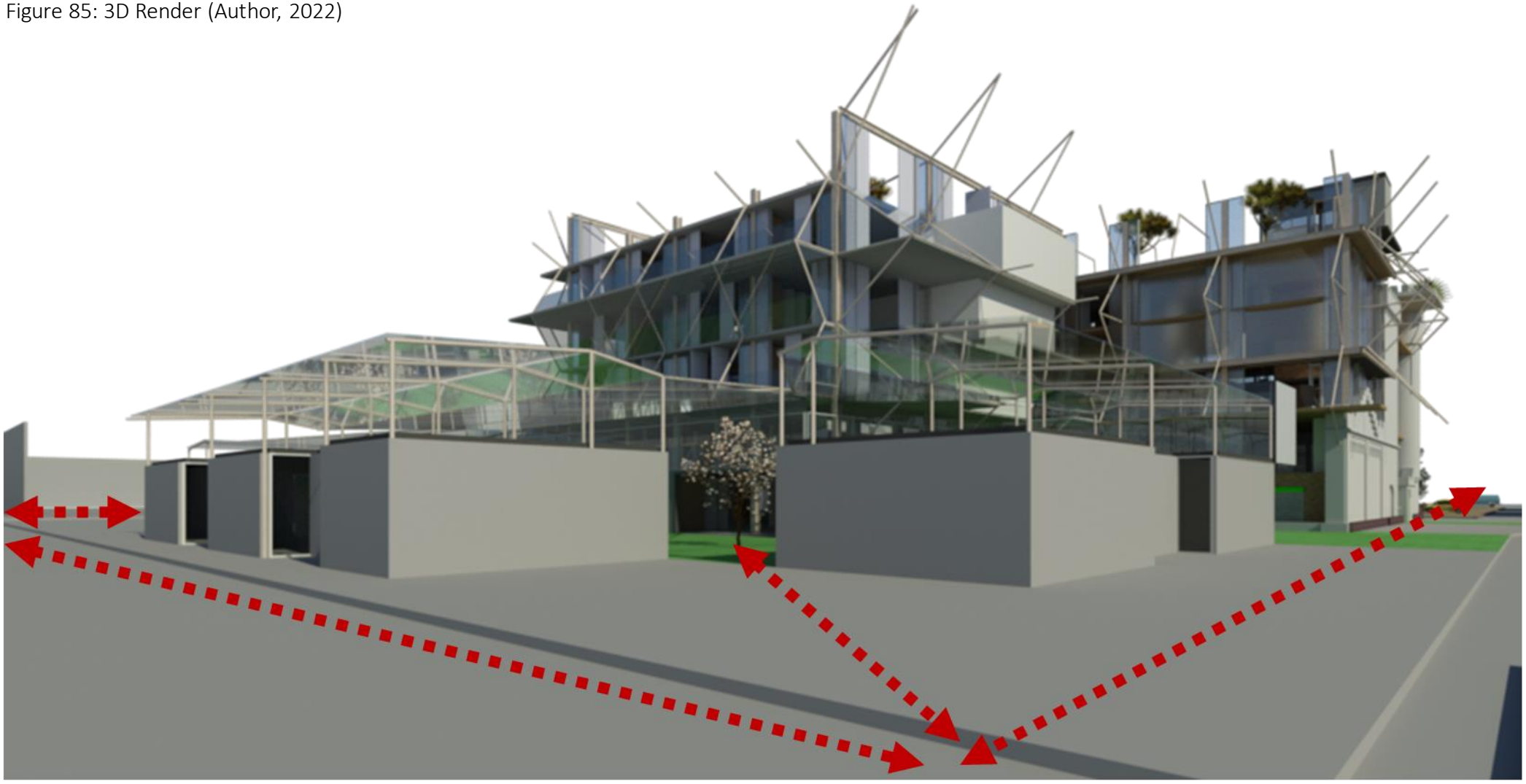
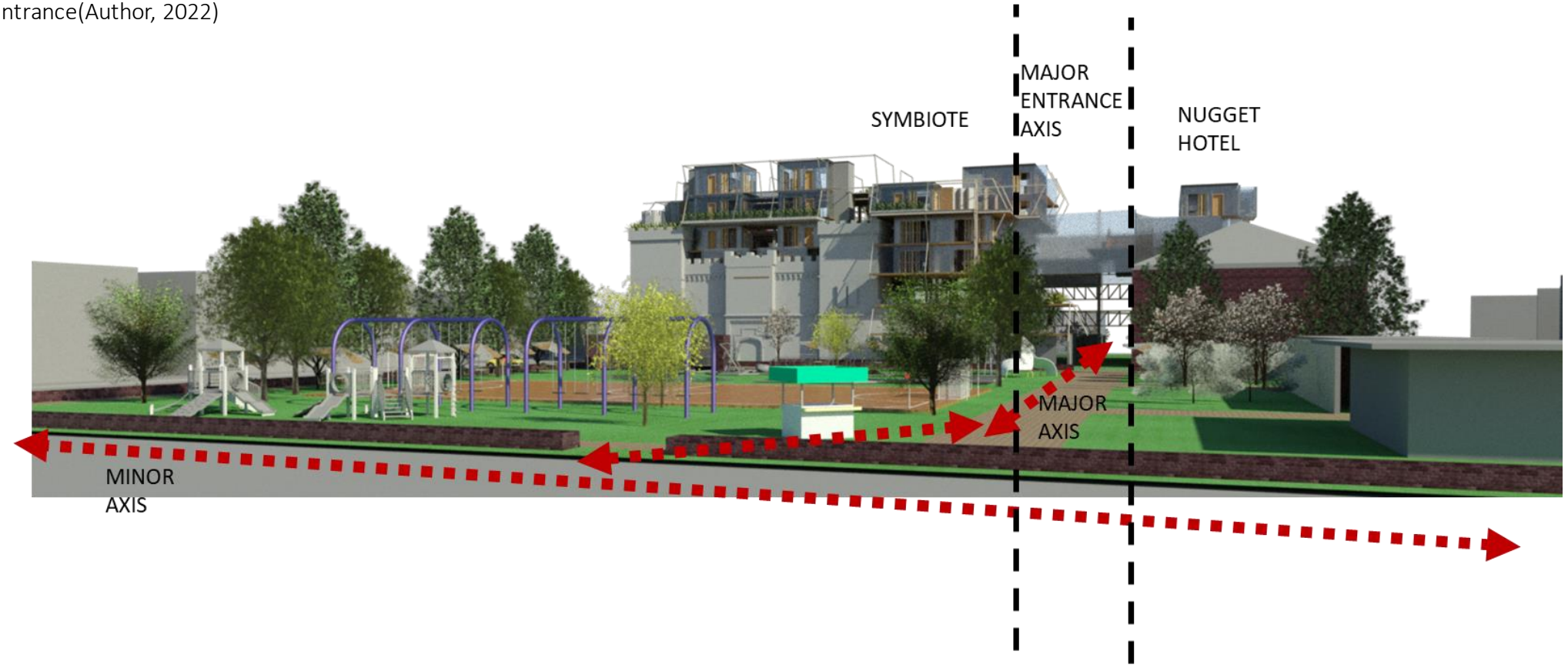


Figure 86: 3D Render- Portplein park as a rejuvenated public space will feel people into the building from the South between the Three castles and Nugget hotel to form a major entrance(Author, 2022)



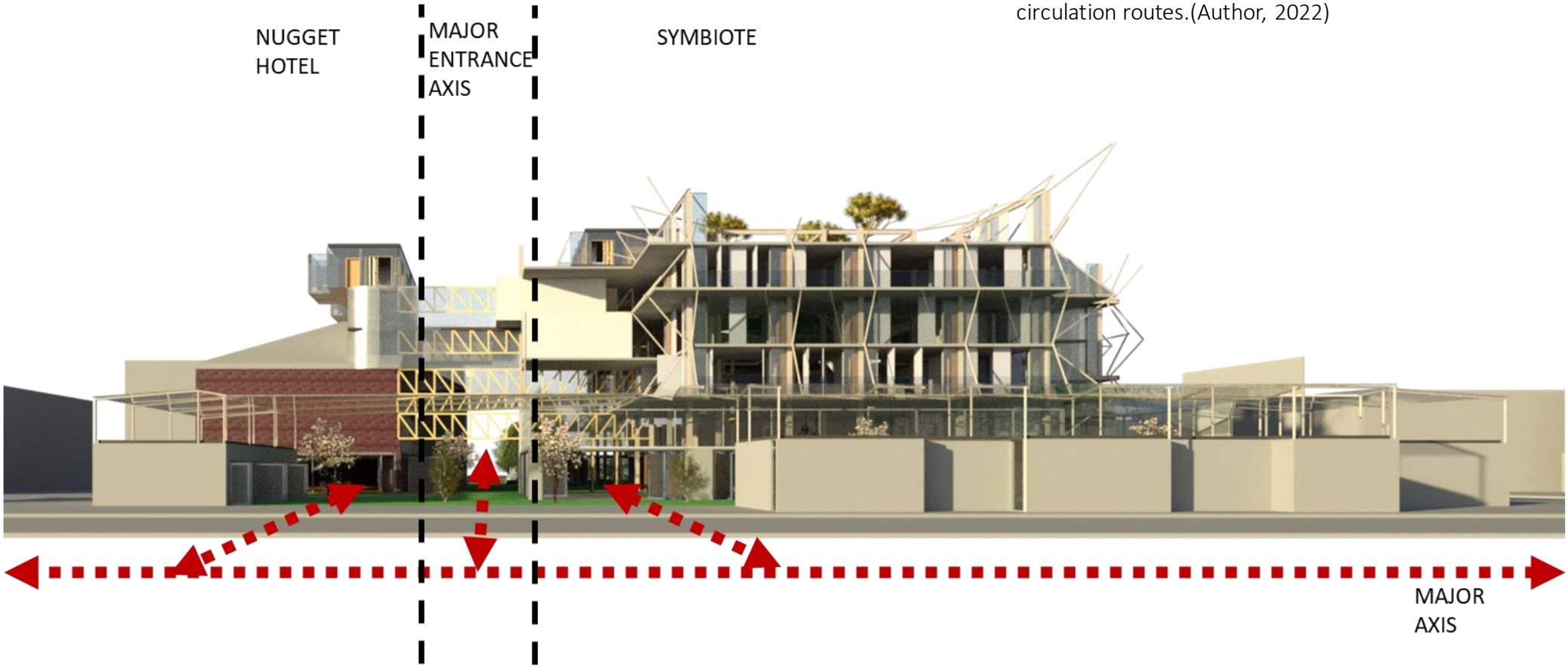


Figure 87: 3D Render-Large entrances will be further articulated when entering the structures, with entrances to old, existing and new being highlighted and proportioned along circulation routes.(Author, 2022)

4.7 Research Conclusions

Heritage conservation through Adaptive Reuse- Particularly in the context of South Africa, heritage is contested, and the city represents a space that does not fully allow the public space, the pedestrian, or the street to breathe freely within the clusters of freestanding towers.

Given the present economic downturn, adaptive reuse is becoming more popular as investors search for methods to stretch rather than spend their money. South Africa offers several opportunities for this.

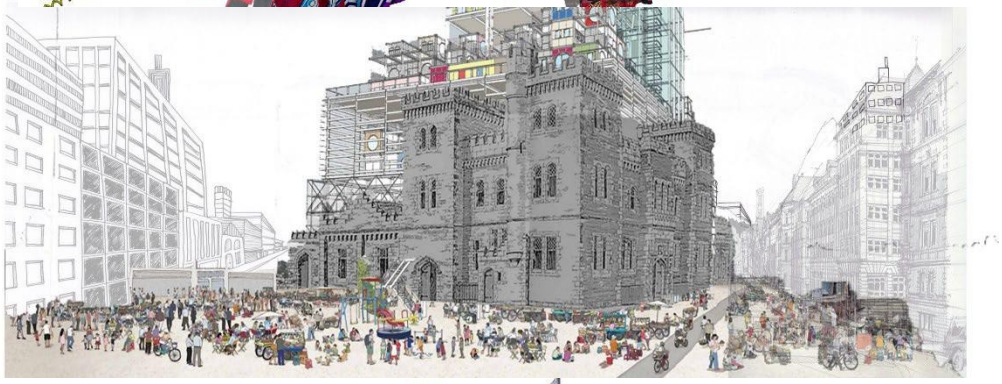
There are several opportunities for adaptive development, from abandoned and half-finished buildings to developments that need require maintenance.

It's important to keep in mind that not all reuse initiatives are as economical as they might first appear to be.

Prior to starting, it's crucial to be practical; the project must make financial sense. It is important to keep an eye out for chances in places where redevelopment is being promoted and supported, such as urban renewal projects like Newtown or Maboneng, or where zoning laws may have just been changed to facilitate reuse

5 Sustainability- Cohesion between textiles and adaptive reuse







5.1 Material Catalogue of Textiles:

Cotton

Cotton was one of the earliest materials used as an architectural fabric, and is still in use today. It is relatively inexpensive and is available in a wide range of colours, but it has a lower tensile strength than some more modern materials, and is prone to staining and shrinkage. It has a relatively short life expectancy, but can flex repeatedly without cracking, and so tends to be used for small-scale, temporary structures.



Figure 88

PVC polyester

PVC coated polyester is the most used architectural fabric. It is relatively inexpensive, has reasonable structural strength and translucency, can be joined relatively easily at seams by welding, and has an reasonable life expectancy.

Structurally, PVC polyester can last in excess of 20 years, however, it becomes more difficult to clean as the plasticisers used to make the PVC flexible leach to the surface, and so it is generally expected to last 10 to 15 years.

It is often manufactured with a topcoat such as PVDF (polyvinylidene fluoride), which improves its cleanability, but generally reduces its weldability, and so must be removed in the region of welded seams. Topcoats can increase the lifespan of PVC polyester to 15 to 20 years.



Figure 89

PVC nylon

The less common PVC nylon is similar to, but has a higher elasticity than PVC polyester, and so has been used for the fabrication of air-supported and air-inflated structures.

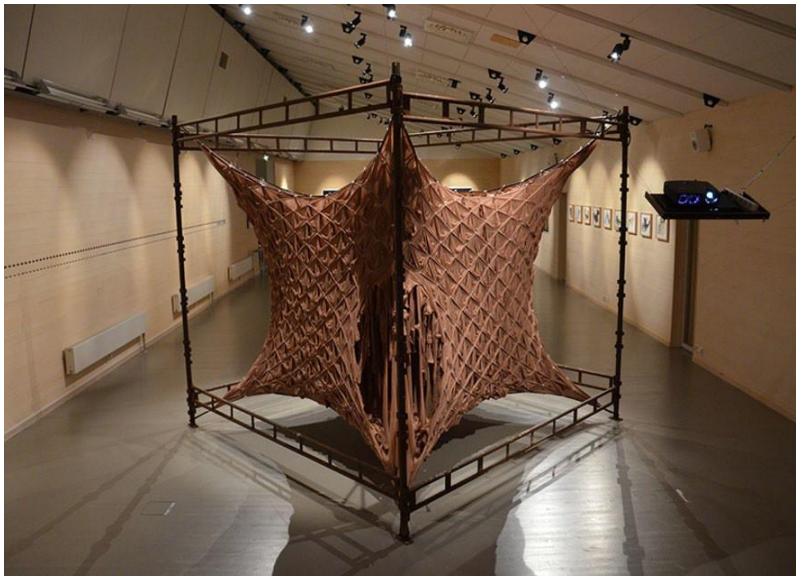


Figure 90

PTFE glass

PTFE (polytetrafluoroethylene or 'Teflon') coated glass can be stronger than PVC polyester, and is longer lasting, with a life in excess of 30 years. However, it is more expensive and is relatively inelastic, and so requires more accurate patterning.

PTFE is a cream colour when new, but bleaches white in sunlight and is generally self-cleaning if regularly exposed to sunlight.



Figure 91

Silicone glass

Whereas PTFE is translucent, silicone is transparent, and silicone coated glass has an anticipated life of up to 50 years. It has good fire resistance and low toxicity, but is not weldable, and so the seaming process requires an adhesive, and silicone can be difficult to keep clean.



Figure 92

EFTE foil

Ethylene tetrafluoroethylene (ETFE) is a relatively transparent foil that can be used as a lightweight alternative to glass. It can be used as a single layer, or in multiple layers of up to 5 layers, inflated to form large cushions.



Figure 93

5.2 Possibilities of Function, adaptability, and Sustainability:

The prospect of this could really mean something in the world of the built environment. The fact that we can take plastics, synthetic fibres and traditional textile fibres and recycle them in a way that minimizes the standard high energy intensive manufacturing process. Partitions, insulation, and finishes are basic examples of how materials like this are used in the construction industry.

Lightweight application to sensitive existing structures, pop up homeless shelters, easy to assemble or disassemble residential pods that are capable of movement, canopies and enclosures that are capable of movement and manipulation of light and ventilation are the greater capacities and possibilities of these 'tensile textile' ideologies.

Play, spaces, exhibitions and pop-up spaces are always possible due to the flexible nature and variety that come from synthetic materials and textiles. The dynamic of stretching, compressing, and inflating these materials through natural or man-made processes create structures that are interactable and interchangeable based on the needs of the user and is hence a true exploration of 'flexible architecture'.

The low maintenance and recyclability of the materials, the application in construction and the ability to tap into a trhiving industry within Marshalltown is what makes textiles worthwhile investigating.



Figure 94: An experimental spatial design test- Reeding and Dykstra were the designers of an inflatable pop-up space for a Seattle design festival. The designer designed a collaboration called 'gas trap' and used layers of polymers to trap exhaust fumes and distribute them between the layers to create a three-dimensional volume and effective space. Industrial facilities create waste through air pollutants in many manufacturing processes. With an industrial program and membrane structures, there can possibly be ways to use waste from carbon emissions to create spaces.

5.3 Masculine vs Feminine in textiles, art and architecture: A case study on the Design principles of Nicholas Hlobo

Nicholas Hlobo Biography

South African artist Nicholas Hlobo creates works on paper, sculptures, and performances that activate the associative potential of materials such as ribbon, leather, and rubber. Laden with innuendo and wordplay, Hlobo's works fluidly traverse topics related to identity—including gender, sexuality, and ethnicity—anchored in the artist's position as a descendent of Xhosa, one of South Africa's largest indigenous communities, to challenge prescribed perceptions of his country.

The following analysis is from the author’s perception of Nicholas Hlobo’s work:

Medium for artwork: Paper, Sculptures, and

Performances Material for Artwork: Rubber

(Masculine), Leather (Masculine), and ribbon(feminine). Materials can vary based on the concept of the artwork. Leather, another recurring material in Hlobo's practice, references the economic, social, political, and spiritual significance of cattle to Xhosa culture. The materials used in Hlobo's practice are often playfully juxtaposed to enhance their masculine or feminine properties, drawing attention to gender binaries. Rubber, for instance, references automobiles and their emblem in South Africa as a masculine status symbol, along with condoms, and 'gender subculture in the context of sadomasochism'.

Ribbons and embroidery flicker through his stitched works, bringing a contrast of warmth and softness generally associated with female handiwork. Copper was added to Hlobo's material repertoire in 2017, recurring in the form of bundles of spindly industrial tubing to take hold of

surrounding space in novel ways. At the Maitland Institute in Cape Town in 2018, for instance, the artist paired with Cinga Samson for Umthamo, an exhibition for which these copper sculptures took up one of Maitland Institute's airy, industrial spaces. Short sections of tubing were occasionally entangled in tight masses, and in other cases sprawled across the floor, their swirling forms resembling live organisms moving through the space, generating an ecstatic energy. In later works, the artist has added further objects to the copper tubing to layer meaning, as in the case of Mphephethe uthe cwaka (2017), which translates to 'blowing them in silence', and refers to oral sex, but also the power of music and sound, with trumpets added to the end of the copper tubing that is assembled into a loose bundle. In another example of one of these works, Dyumpu, which translates to 'splash', a mass of copper tubes is fitted with shoe-like forms, which 'represents the imagery of a person diving into water.

Together, the works create a complex visual narrative that reflects the cultural dichotomies of Hlobo's native South Africa as well as those that exist around the world. His evocative, anthropomorphic imagery and metaphorically charged materials elucidate the artist's own multifaceted identity within the context of his South African heritage.



Figure 95: Nicholas Hlobo sculpture.





Figure 96: Spatial exhibitions of Nicholas Hlobo's work.)

At the core of Hlobo's practice is the exploration of his own identity, as he attempts to ascertain qualities that exist outside of codifying labels associated with gender, sexuality, and ethnicity. In order to challenge the restrictive terminology typically used surrounding identity, Hlobo incorporates visual tropes that relate to his ethnic and cultural background, while also questioning the shifting and subjective nature inherent in these signifiers. Language and narrative specifically play both a formal and conceptual role in Hlobo's work. As a descendent of one of South Africa's largest indigenous communities, the Xhosa, Hlobo always titles his work in the Xhosa language, imbuing the piece with a subtle personal narrative about his experience of creating, which he often references in his titles. Hlobo titles his work in Xhosa as a way to challenge the generic term of "South African" from being used to describe his work, and also to assert the potency of his cultural identity. Moreover, this is a strategy to engage his audience in the act of cultural translation, which initiates the excavation of the works' layered meanings.

Narrative Structure

Central to his work is the theme of exploring his own identity, he strives to perceive characteristics that exist beyond systemic perceptions related to aspects such as ethnicity, gender, and sexuality. In his attempt of provocation towards restrictive classifications typically regarding identity, Hlobo includes visible indication in his work that relate to his ethnicity and cultural background, he does this through use of materials that create evocative imagery and perceivable metaphors which illuminate Hlobo's own multifaceted identity and his challenge towards the subjective characteristics in the aspects of ethnicity, gender and sexuality. Strength, vulnerability, masculinity, femininity, pain, and healing are all components translated through materiality collectively layered with the artist's cultural identity that suggests a personal narrative regarding his experience of creating, as often referred in his titles typically named in Xhosa to assert cultural identity and again speak to the personal narrative of being a gay, black, Xhosa man and what it means in the surrounding reality that is rooted in restrictive terminologies.

Hlobo creates visual and figurative suggestions to formulate a narrative derived from his personal connection to his Language and Culture

DESIGN PRINCIPLES

Materiality

Hlobo's choice of materiality is almost a compensation for the elusiveness of his work. He uses materials that intrinsically have genders, belongings and narratives of their own. Some of these are more apparent than others. He uses materials that have intended effects at different scales. Using materials like rubber and leather expresses masculinity in his narratives of gender. While referencing stereotypes of masculinity at a large scale, he uses ribbon and thread intricately and sensitively to express femininity and its realities. The example of large rubber forms carefully joined and mended with pink ribbon expresses the role women play in society. Within these, he expresses Xhosa culture, and ethnicity in the South African context. Hlobo's use of material can be seen as an honest expression of his own feelings. The use of large white canvas creates a sense of loneliness without crying for help, but rather evoking a sense of pride. He re explores narratives using new materials like copper that have different qualities and potentials to re-enact already told narratives.

He does this through use of materials that create evocative imagery and perceivable metaphors which illuminate Hlobo's own multifaceted identity and his challenge towards the subjective characteristics in the aspects of ethnicity, gender and sexuality. Strength, vulnerability, masculinity, femininity, pain, and healing are all components translated through materiality collectively layered with the artist's cultural identity that suggests a personal narrative regarding his experience of creating. He uses materials that have intended effects at different scales. Using materials like rubber and leather expresses masculinity in his narratives of gender. While referencing stereotypes of masculinity at a large scale, he uses ribbon and thread intricately and sensitively to express femininity and its realities. Hlobo's use of material can be seen as an honest expression of his own feelings. The use of large white canvas creates a sense of loneliness without crying for help, but rather evoking a sense of pride. The weaving, mending and stitching is crucial to express his narrative of acceptance. He gracefully mends the flaws and breaks, emphasising his hopeful personality.

His use of materials is to create evocative imagery and perceivable metaphors that highlight Hlobo's own multifaceted identity and his challenge on subjective characteristics in the aspects of ethnicity, gender, and sexuality. Factors such as Strength, vulnerability, masculinity, femininity, pain, and healing are all constituents translated through materials that are collectively layered with the artist's cultural identity that indicates his own narrative relevant to his experience of creating. The materials speak at different scales, with use of materials like rubber and leather expressing a narrative of sexuality and gender regarding masculinity, and by contrast using materials such as ribbon to thread intricately and sensitively to express narratives of sexuality and gender regarding femininity. These materials weaved, stitched and gracefully mended illuminate a sense of ambiguity and challenge towards societal subjective stereotypes and apparent norms being cognizant of a context regarding an apartheid and post-apartheid society. Hlobo's new artwork explores the materiality of copper piping, as both sculptural and linear drawing in space. This is a different take on the aspects and themes Hlobo addresses whilst still creating symbolism and ambiguity to express narratives.

Taking the reference of tumbleweed as a metaphor, Hlobo's new artwork explores the materiality of copper piping, as both sculptural and linear drawing in space. Small, recognizable objects are attached to larger entangled shapes, which shift the original function and meaning to a place outside of immediate comprehension.

Masculine vs feminine – Textiles can break gender barriers. In style, texture, or colour. This is seen in Nichollas Hlobo's work where the very contrast of two materials is necessary to formulate the entire sculpture or artform.

Material Cataloguing -A material study done on textiles like cotton, silk, and yarn as well as synthetic fibres like nylon, polyurethane and silicone can be applied as architectural construction materials at a variety of levels, from temporary to permanent, or as an act of facadism that simultaneously accommodates form and function. Kevlar can be used in tensions to suspend or hold and object in place, cotton forms temporary exhibitions or a way finding system through use of colour, Polyurethane and nylon can be used as tensile membranes that form canopies or can act as protective transparent layers as each of these aspects and materials used can differentiate temperature, ventilation, light, endurance, and structural integrity in a variety of ways.

Adaptive reuse- Through material cataloguing and precedent studies, textiles will be used in their full capacity in double skin facades, partitions, inflatable spaces, insulation, exhibitions, and living spaces or shelters. Textiles allow for a sense of a light application that can be removed, added, adjusted, or replaced easily. The contrast of soft textiles and textures to the very prevalent Brutalist, Victorian, Edwardian and art deco identities of the city. Strong amd sturdy architecture that implemented control during the era of apartheid now comes into contact with, light, soft and transparent materials that can consistently be reused or reformatted to an existing building, this plays back into the idea of masculine vs feminine and redefining architectural identities so that built forms are more welcoming to demographics they may have not welcomed before.

Textiles -have an opportunity to act as thermal and ventilation efficient facades, they have an opportunity to be used as partitions. Even other industrial waste like silicon and rubber can be used for vertical tracks, and for sliding partitions.

5.4 Sketch Charette : Application of Textile Design principles to architectural form

Warp knitting and weft knitting have been found to strengthen the tensile capacity even more than weaving, the elasticity is still there and hence the fabric is still flexible but not as flexible as weaving, although the bond is far stronger. This starts to give an indication of the different properties due to different bonds with different materials.

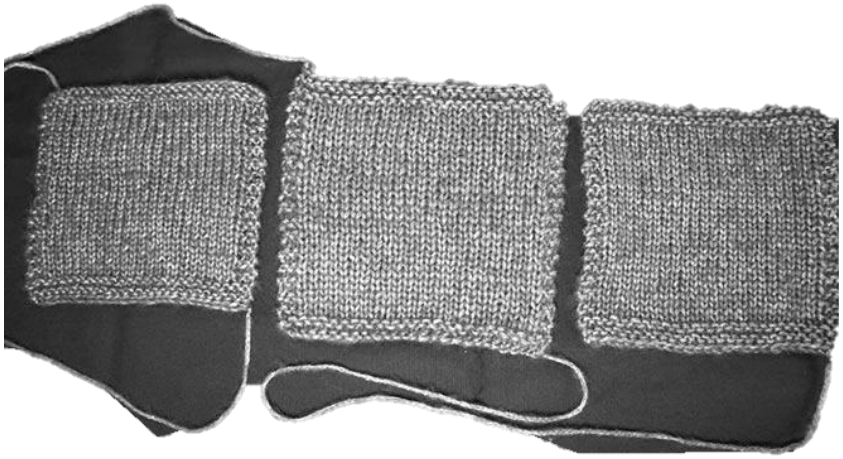


Figure 97: Sketch Charette (Author 2022)

Fabric Charette:

Knitting

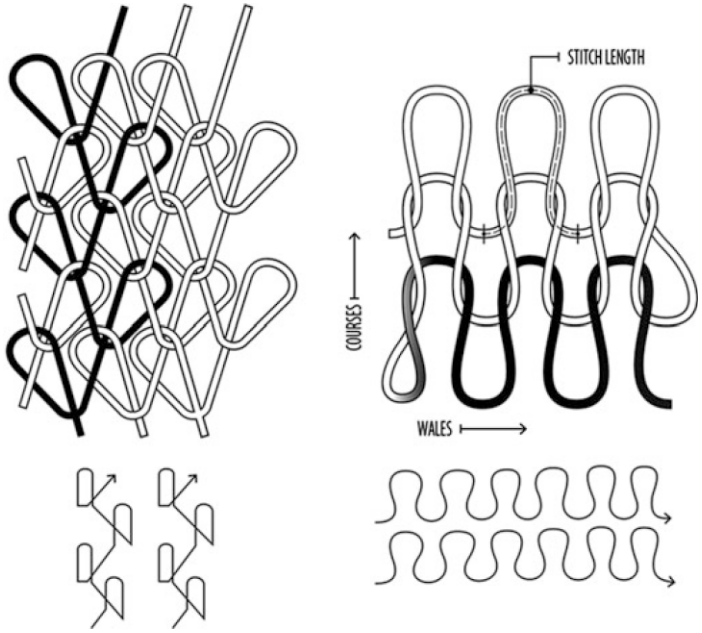


Figure 98: Warp knitting and weft knitting. (Ahlquist, 2015)



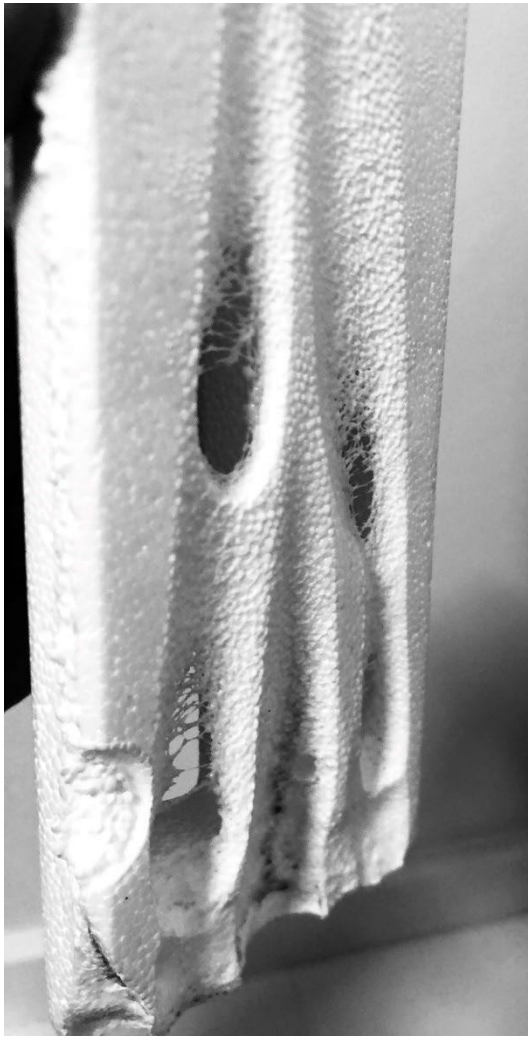
Figure 99: Sketch Charette (Author 2022)

Fabric Charette:

Polymers in tension

Polymers and plastics can be extracted from textile waste.
The aim is to find out what opportunities do these extracted materials have in lightweight structural tension.
What are the limits of these materials as they will be exposed to the elements?
Can these materials start to be looked at as permanent materials instead of temporary ones?





Material Charette:

Carving into a polymer

Aim:

To play and experiment with the possibility of compacted materials such as polymers and concrete.

Relevance:

Burning, cutting, carving. These are methods used in textiles to reshape and reuse them. The same should follow for the extracted materials from textiles such as polymers or even with materials such as concrete which can be crushed, and carved and cast into different shapes and it then becomes a possibility to start looking at closed loop systems relevant to the lifespan of concrete.

Figure 100: Sketch Charette (Author 2022)

Material Charette:

Pragmatic Tension

Aim:

By creating a series of frames, we experiment how we can achieve forms programmatically with fabric

Relevance:

By only working off existing grids and quadrilateral frames that most buildings in the city adhere to can create a chance to produce organic forms through rhythm, symmetry and proportion- aspects of most heritage buildings and older South African architecture.



Figure 101: Sketch Charette (Author 2022)



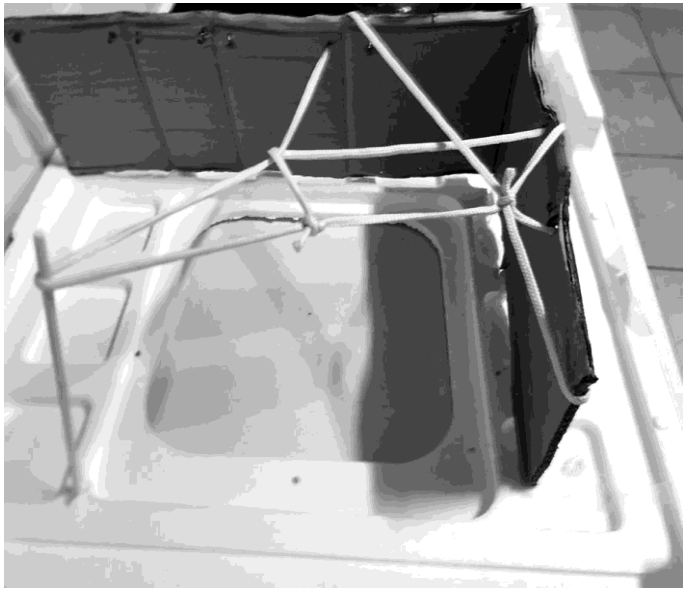


Figure 102: Sketch Charette (Author 2022)

Aim:

Using lightweight tensile structure that weave through the existing body to create flexibility and strength

Relevance:

The model above emulates the free-standing façades of the site being the three castles building in Marshalltown. The tensile structural fabric experiment tests how lightweight tensile components strengthen the existing building while creating possibilities for flexibility.

Form model Charette:

Structural Tension

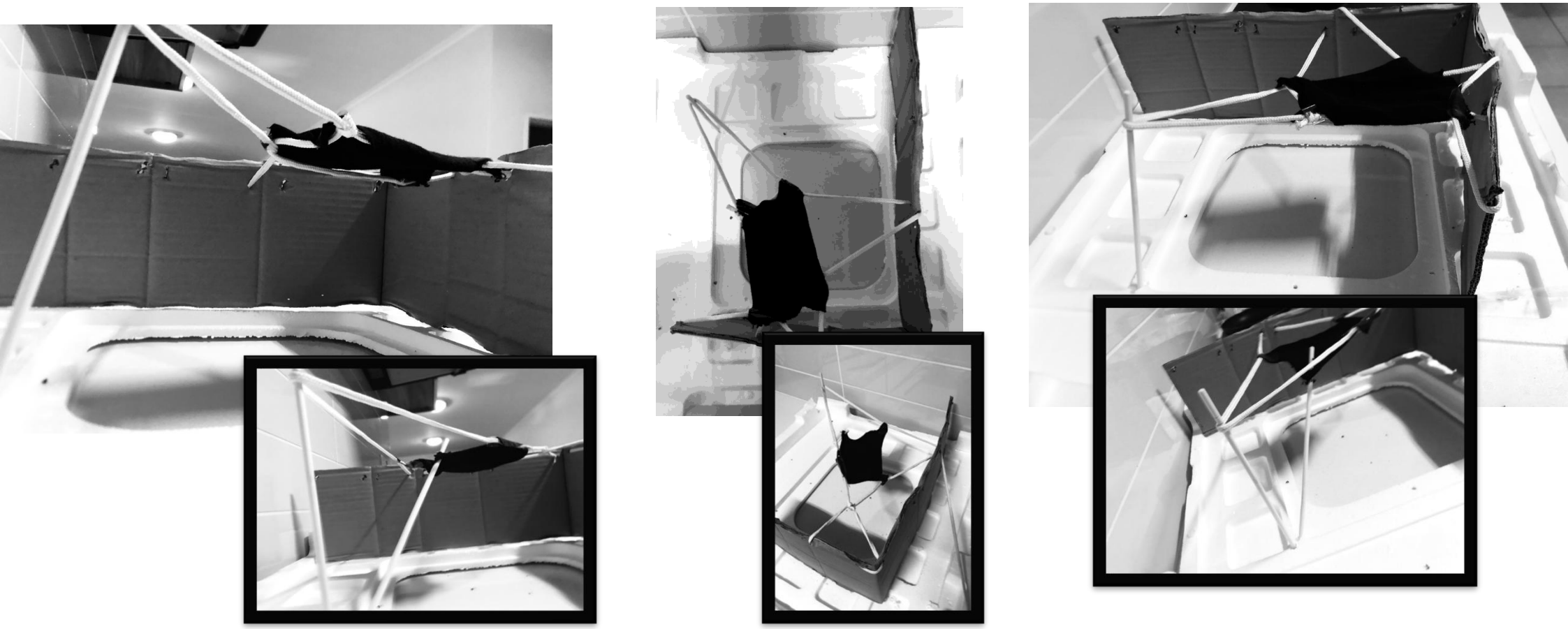


Figure 103: Sketch Charette (Author 2022)

Aim:

Integrating a fabric onto tensile structure and using the pivot point keeping the structure in tension to change the form and shape of the fabric.

Relevance:

Creating a lightweight moving skeleton opens possibilities over typical steel and concrete based grids that encourage permanence over temporality, and for a deteriorating heritage building, assessing, and strengthening weak points through tensions is a passive way of enhancing the existing structure while adding something new.

Form model Charette:

Structural+ Fabric Tension

5.5 Textile architecture through Adaptive Re-use- Design Development

Introduction

Over the past few decades, the sustainability debate has dominated both political and scholarly discourse. Politicians involved in the sustainability movement prioritize addressing climate change and fossil fuel emissions. Additionally, urban development shifted attention to sustainable development, which is described as "improving the quality of life in a city, including ecological, cultural, political, institutional, social, and economic components without burdening future generations, for example, as a result of a reduced natural capital and an excessive local debt"(Yihitcanlar & Teriman,2015, p. 341)

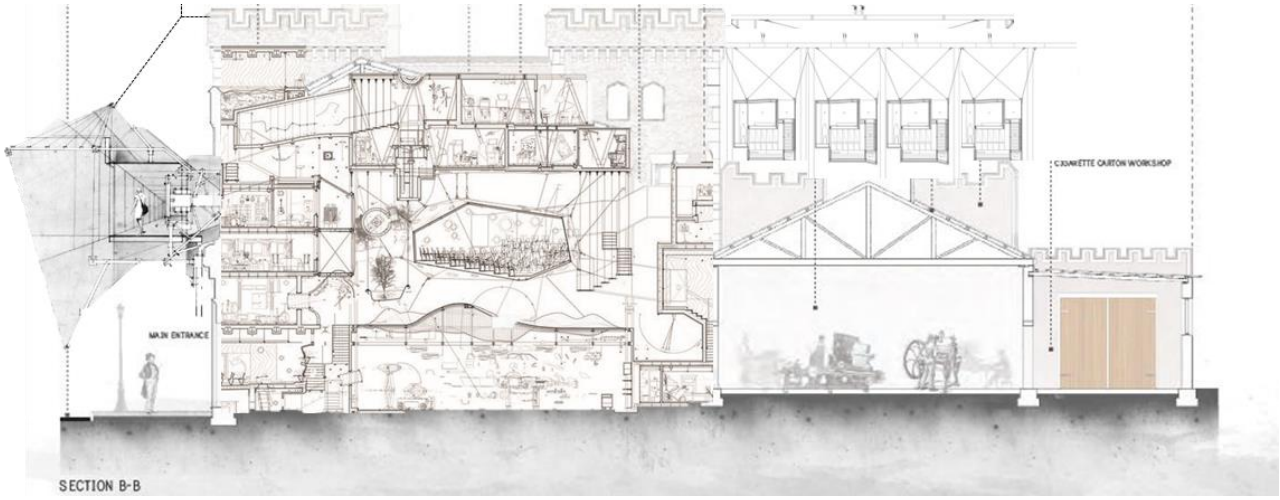


Figure 104: Conceptual Section drawings (Author, 2022)

Textiles are supposed to hang, stretch, and drape across thew skeletal structure embedding itself within the façade framework. Spaces can be sporadically created; the intention though is to allow the user a direct relationship with the tectonics and textiles. The aim is to create a frame, and within that framework, allow people to animate their own space.



Figure 105: Conceptual Section drawings (Author, 2022)

The skin or envelope is integral to the design, The intention of a thermal and ventilation control barrier that can act as a screen or canopy creates a relationship between user and the building. The frame and structural gird encased with cavity walls are meant to create a fluid flexible space for iterations such as the one above to be made my innovators in the field of textile and architecture. Canopies, pop up spaces, art installations. A textile innovation centre that allows students and professionals to work and flourish together through the architecture.

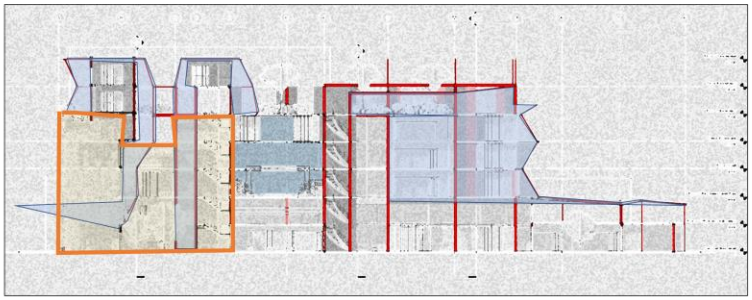


Figure 106: Concept drawing- Applyng the design principles of Nicholas Hblobo- Feminine vs Masculine, the strong rugged structure facilitating the softer and more vibrant form(Author, 2022)











Adaptive Reuse and embodied energy-

One of the main principles of adaptive reuse, which more efficiently makes use of an existing constructed structure by finding a new and acceptable purpose, is to enhance quality of life without burdening (future generations) the environment. By maximizing resource reuse, this approach lowers the amount of resources required while also enhancing the environment by lowering abandonment and damage.

However, there are additional advantages besides the reduced emissions and use of resources, such as geographical or financial advantages. Thus, adaptive reuse may be a key component of the sustainable urban development idea and contributes to it. Adaptive reuse concentrates on existing structures and safeguards their associated histories, even if many solutions are intended for new construction. Old industrial districts and communities with a strong history can benefit greatly from this.



Figure 105: Elevations- illustrating relationship of textile architecture as an adaptive reuse intervention(Author, 2022)



Figure 107: Elevations and sections- The interface of old structures and their relationships to public spaces are important for building communities, the new form needs to compliment the public spaces within and around it to rejuvenate the existing structure(Author, 2022)

5.6 Sustainable communities:

The special mixed-use program will capitalize of an economically viable industry and create strong links to the fashion district and the re-commerce market. In the case of implementing a mixed-use program into a building, the contrasts of implementing industrial to commercial and residential programs together can be challenging. Ideally, one program can fund another. In a project with a light industrial component, you can minimize risks due to scale and programs can start to benefit each other relative to commercial and retail. In my case, with the adaptive reuse of the Three Castle's Building in Marshalltown which will implement a mixed-use program. The commercial and retail components will be supported by the industrial component (being a textile manufacturing centre), which in turn will fund the housing/residential component.

5.7 Sustainability in buildings & cities:

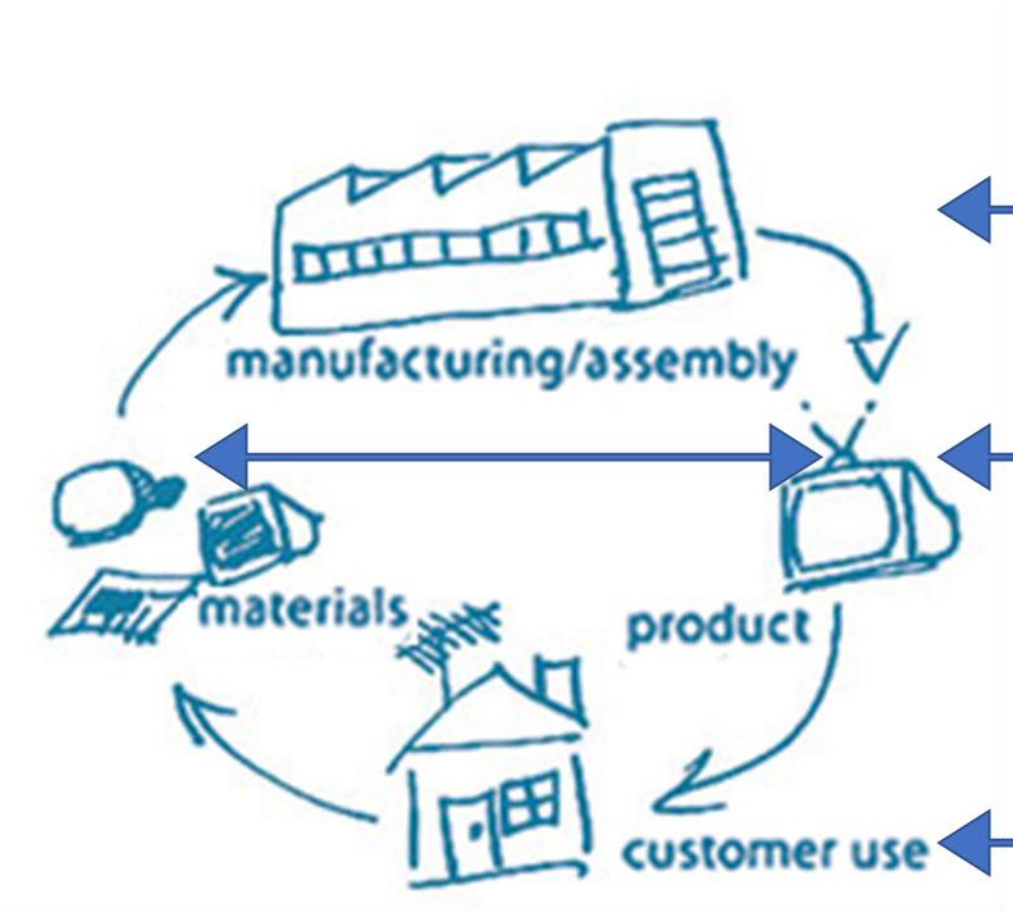
Despite only making up a small portion of the world, metropolitan areas have a significant economic and environmental impact (0.51 percent of total land area globally).

In terms of percentages, cities produced more than 80% of global GDP in 2014, more than 70% of greenhouse gas emissions, and more than 80% of global energy consumption.

Experts predict that metropolitan centres will grow significantly over the next 20 to 30 years, doubling in size to reach 1.2 million square kilometres by 2030. (Almusaed & Almssad, 2018)

To fulfil the needs of 9 billion people by 2040, the global energy system should be improved, public transportation should be improved, pollution should be eliminated, and natural resources should be managed responsibly. (Almusaed & Almssad, 2018)

5.8 The closed loop system:



INDUSTRIAL COMPONENT- FACTORY AND ADAPTBALEWORKSHOPS

TEXTILES- PRODUCTION OF CLOTHING AND REUSE SECOND HAND CLOTHING TO FACILITATE REDESIGNING, RECYCLING AND RETAIL AS JOB OPPORTUNITIES AS WELL AS A FLOURISHING MARKET AND STABLE ECONOMY IN THE CIY

EDUCATION AND ECONOMY- CUSTOMER USE TO PROMOTE ACTIVITY IN THE CITY, LOCAL ECONOMIC OPPORTUNITY AND DEVELOPMENT, ON SIT SKILLS EDUCATION TO YOUNG LEARNERS ENTRPRENUERS AND SEASON ENTREPRENUERS IN THE TEXTILEINDUSTRY

Figure 108: Cradle to Crade diagram(Author, 2022)

The site of the Three Castle's and Portplein park consist of every factor wrong with not just the city of Johannesburg but many other developing cities around the world; this being the urban decay which is (neglected, abandoned, ruined) buildings afflicted by damage/ contamination or were left in stagnancy (many of which were heritage buildings relative to the collapse of apartheid) and due to suburban flight, people moved in the 20th century and became a part of repetitious suburbs and estates to only much later leave the city development to hungry capitalists; the other being the freestanding high rise and the miniscule sidewalk, as buildings like the ABSA banking district tower dominate the landscape with their height, they make the city feel unwelcoming in relevance to the small sidewalks that play host continuous crowds.

The midrise and public square that would usually form relief in the dense city space is minimal; the last point is the public square itself, there needs to be a comfortable containment and this can refer to heights of surrounding buildings and the size of the square itself, the Three castles has the fortune of not having intense high rises all around it, and the size offers opportunity but the square itself is unwelcoming, underused and fenced off while the homeless are the only ones that use it to sleep during the day.

The urban kit of parts will attempt to use textile recycling to manufacture tensile membranes to be used as light flexible structures that form a symbiosis with the host derelict structure to create three-dimensional spaces to be used in various typologies of function and in the case of heritage transparency is a possibility to sort of have 'veil' over the heritage building to accommodate a double skin facade ; the kit of parts will implement in and out parallel parking but extend and focus on pedestrian space enough for informal trades and comfortable circulation; the square will have links to the sidewalk and visual connections from surrounding buildings and the street constantly to ensure safety and activity



Figure 109: 3D Section and axonometric- illustrating relationship of textile architecture as an adaptive reuse intervention and relation to spaces formed with new intervention(Author, 2022)

GROUND FLOOR- LOCAL RETAILER SPACE, MUSUEM EXHIBITION, RECYCLING AND TEXTILE PRODUCTION HUB, NUGET HOTEL RESTUARANT

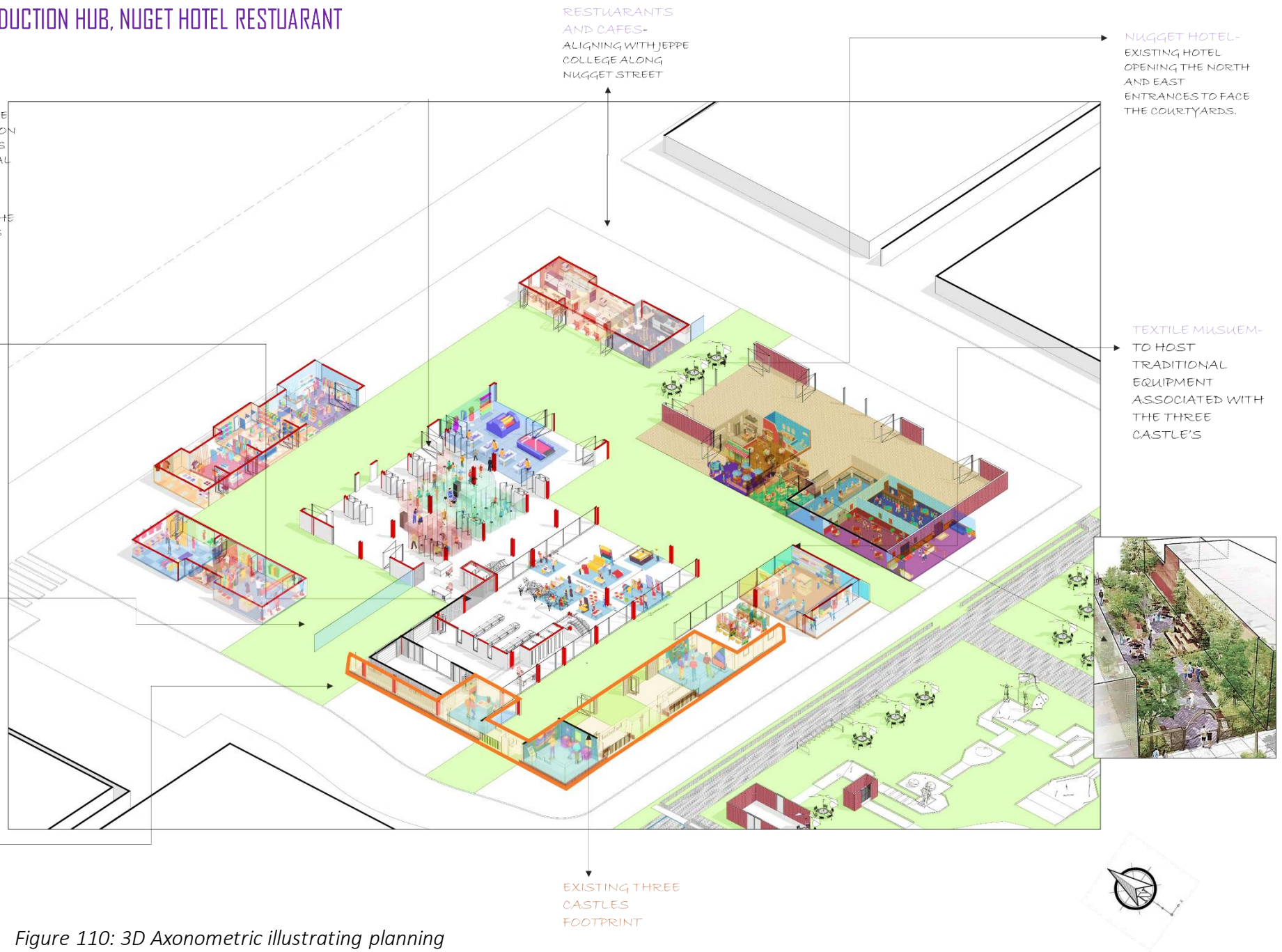
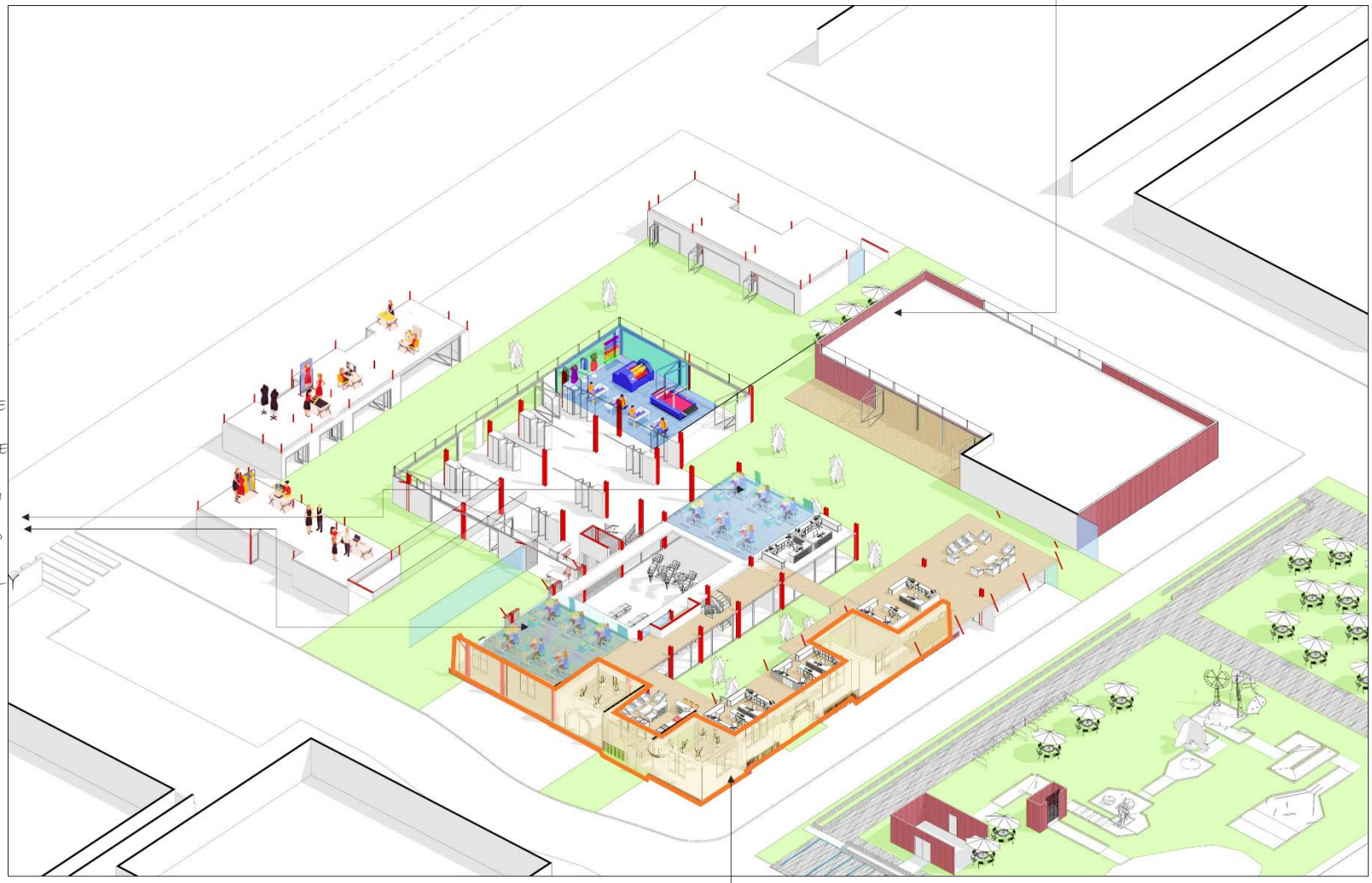


Figure 110: 3D Axonometric illustrating planning and experience (Author,2022)

FIRST FLOOR- OFFICES, STUDENT STALLS AND DESIGN STUDIOS

NUGGET HOTEL- EXISTING HOTEL OPENING THE NORTH AND EAST ENTRANCES TO FACE THE COURTYARDS.

DESIGN STUDIOS- THESE FACILITATE A RELATIONSHIP WITH THE LARGE AMOUNTS OF TEXTILE WASTE COMING IN ON THE GROUND FLOOR, MATERIALS AND TEMPLATES ARE CONVEYERED VERTICALLY TO THIS LEVEL FOR THE APPROPRITE USE



EXISTING THREE CASTLES FOOTPRINT

Figure 111: 3D Axonometric illustrating planning and experience (Author,2022)

SECOND FLOOR- MULTI-PURPOSE HALL, FLEXIBLE MARKET/ WORKSHOP OR CRAFTSPACES AND TEXTILE LIBRARY

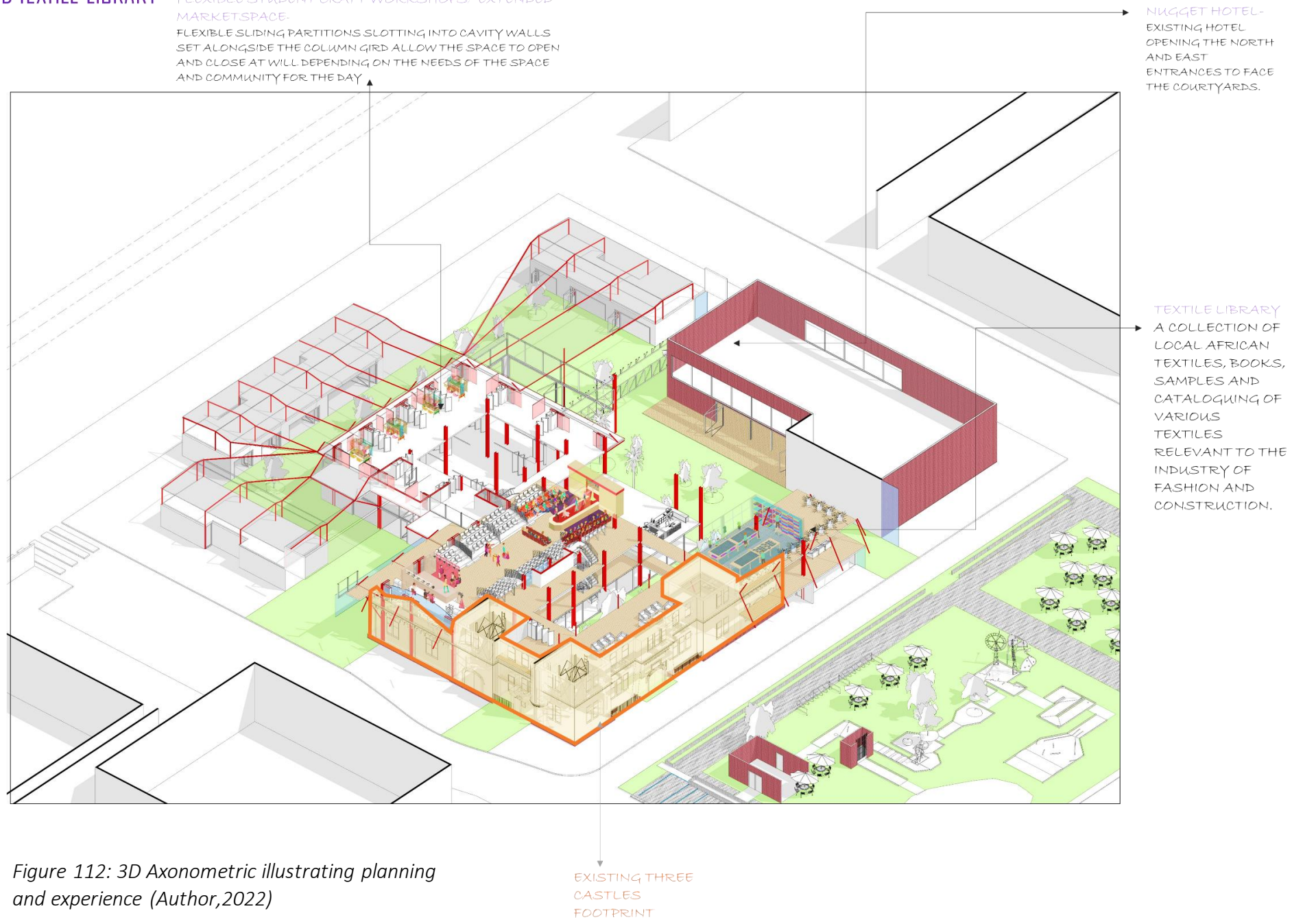


Figure 112: 3D Axonometric illustrating planning and experience (Author,2022)

THIRD FLOOR- ATRIUMS AND RESIDENCES

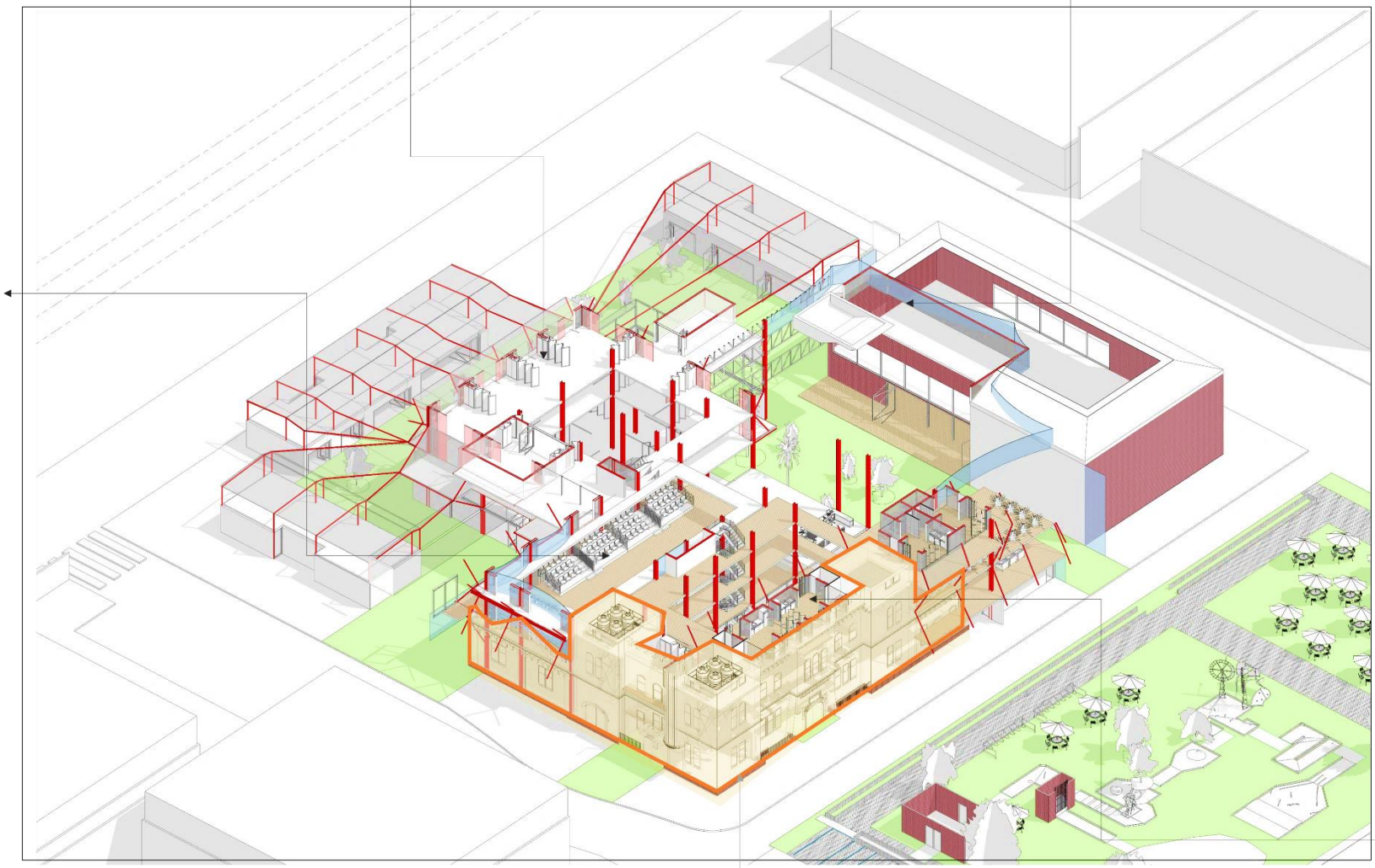
FLEXIBLE STUDENT CRAFT WORKSHOPS/ EXTENDED MARKETSPACE-
FLEXIBLE SLIDING PARTITIONS SLOTTING INTO CAVITY WALLS SET ALONGSIDE THE COLUMN GIRD ALLOW THE SPACE TO OPEN AND CLOSE AT WILL DEPENDING ON THE NEEDS OF THE SPACE AND COMMUNITY FOR THE DAY

NUGGET HOTEL-
EXISTING HOTEL OPENING THE NORTH AND EAST ENTRANCES TO FACE THE COURTYARDS.

MULTIPURPOSE HALL-
AN ASSEMBLY POINT FOR LOCAL STUDENTS

A COMMUNITY CENTRE

A RUNWAY OR FASHION SHOW EXHIBITION SPACE.



FLEXIBLE BLOCK APARTMENTS,
DESIGNED WITH THE CAVITY WALL AND SLIDING PARTITION SYSTEM, THESE VARIETY OF APARTMENTS CAN FACILITATE STUDENT, FAMILY OR IDNIVIDUAL LIVING DEPENDING ON WHAT THE USER INTENDS TO PAY FOR.. THE SYSTEM GIVES OPPORTUNITY FOR EXTENDED SPACES AND SHARED SPACES.

EXISTING THREE CASTLES FOOTPRINT

Figure 113: 3D Axonometric illustrating planning and experience (Author,2022)

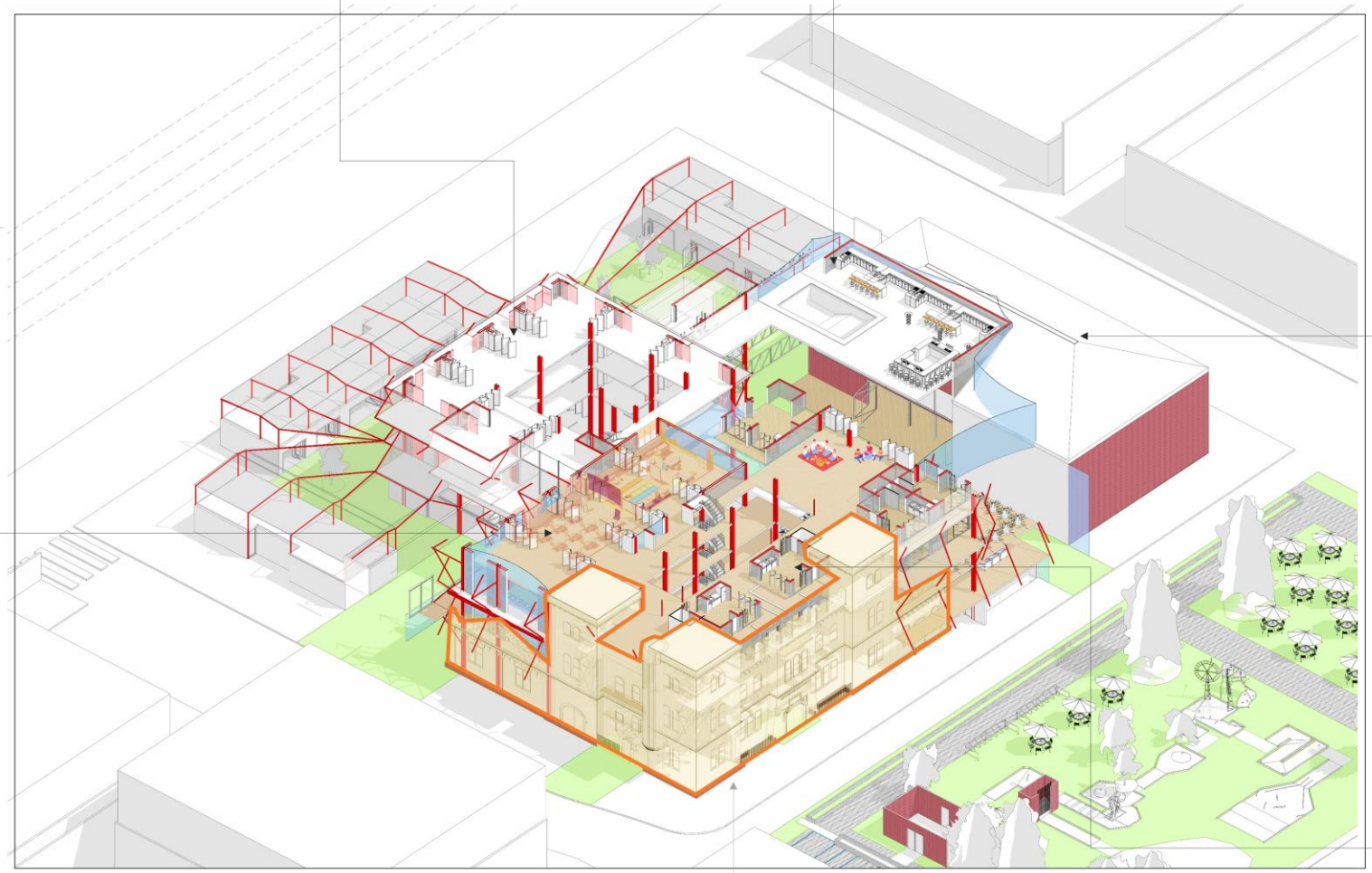
FOURTH FLOOR- RESIDENCES, DAYCARE AND ENTERTAINMENT

FLEXIBLE STUDENT CRAFT WORKSHOPS/ EXTENDED MARKETSPACE-
FLEXIBLE SLIDING PARTITIONS SLOTTING INTO CAVITY WALLS SET ALONGSIDE THE COLUMN GIRD ALLOW THE SPACE TO OPEN AND CLOSE AT WILL DEPENDING ON THE NEEDS OF THE SPACE AND COMMUNITY FOR THE DAY

ROOF TOP ENTERTAINMENT AREA-
TO ACT IN CONJUCTION WITH NUGGET HOTEL RESIDENTS AND HTREE CASTLE'S RESIDENTS

NUGGET HOTEL-
EXISTING HOTEL OPENING THE NORTH AND EAST ENTRANCES TO FACE THE COURTYARDS.

CHILD DAYCARE CENTERE-
TO ACCOMMODATE WORKING CLASS PARENTS IN THE COMMUITY, THE FLEXBLE PARTITIONS ARE USED AGAIN TO OPEN THE SPACE FOR TALENT SHOWS AND PERFORMANCES OR SPLIT THE SPACE INTO 5 DISTINCT CLASSROOMS FOR DIFFERENT AGES



FLEXIBLE BLOCK APARTMENTS,
DESIGNED WITH THE CAVITY WALL AND SLIDING PARTITION SYSTEM, THESE VARIETY OF APARTMENTS CAN FACILITATE STUDENT, FAMILY OR IDNIVIDUAL LIVING DEPENDING ON WHAT THE USER INTENDS TO PAY FOR.. THE SYSTEM GIVES OPPORTUNITY FOR EXTENDED SPACES AND SHARED SPACES.

EXISTING THREE CASTLES FOOTPRINT

Figure 114: 3D Axonometric illustrating planning and experience (Author,2022)

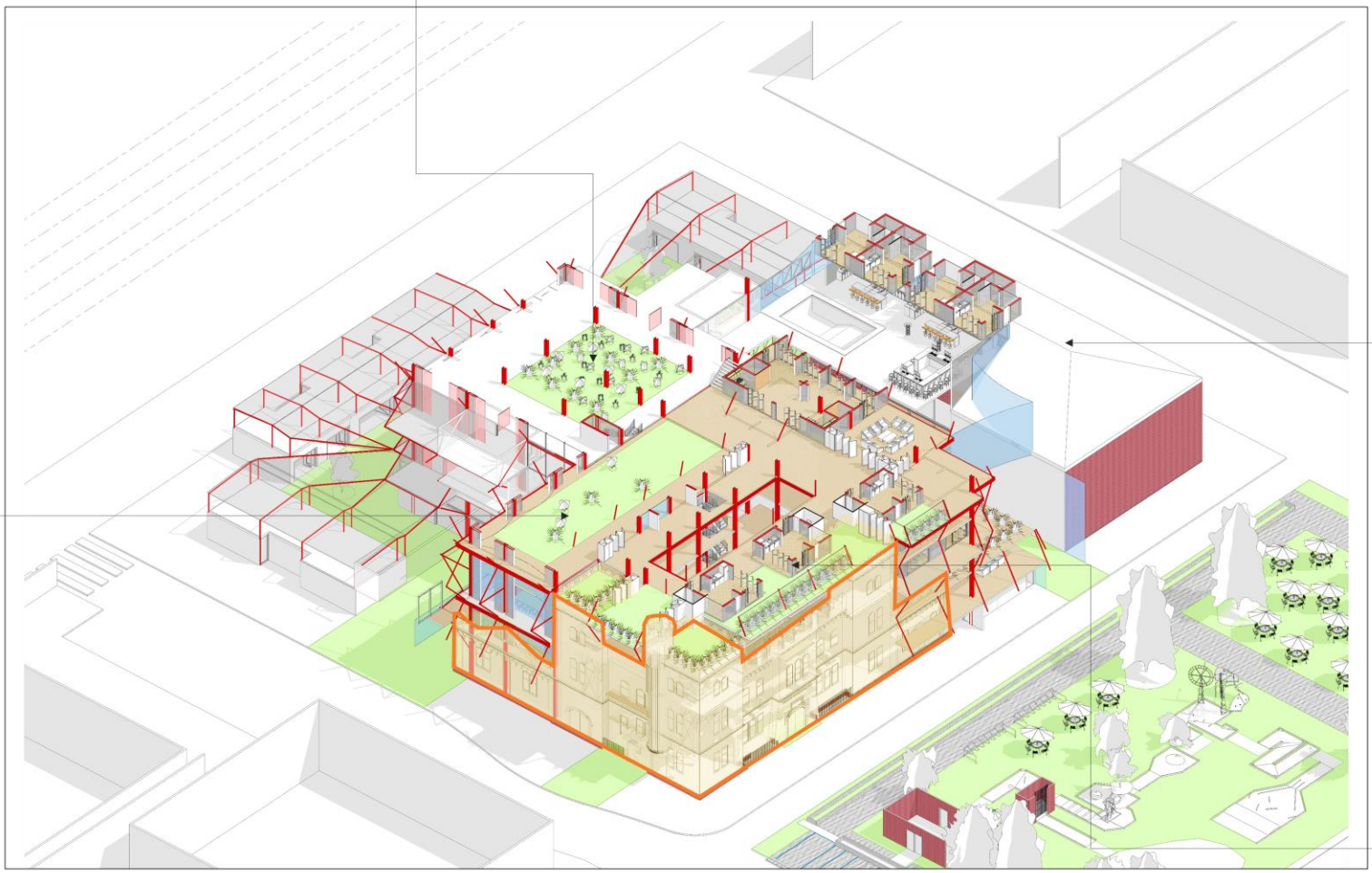
FIFTH FLOOR-RESIDENCES ANND ROOF GARDENS

FIFTH FLOOR PLAN 1:100

ROOF GARDEN-
STORMWATER TO DRIP DOWN DRAPING TEXTILE INTO GARDEN SPACE AS THE FINAL DETAIL OF THE "COLLAR"

NUGGET HOTEL-
EXISTING HOTEL OPENING THE NORTH AND EAST ENTRANCES TO FACE THE COURTYARDS.

ROOF GARDEN-
STORMWATER TO DRIP DOWN DRAPING TEXTILE INTO GARDEN SPACE AS THE FINAL DETAIL OF THE "COLLAR"



FLEXIBLE BLOCK APARTMENTS,
DESIGNED WITH THE CAVITY WALL AND SLIDING PARTITION SYSTEM, THESE VARIETY OF APARTMENTS CAN FACILITATE STUDENT, FAMILY OR IDNIVIDUAL LIVING DEPENDING ON WHAT THE USER INTENDS TO PAY FOR.. THE SYSTEM GIVES OPPORTUNITY FOR EXTENDED SPACES AND SHARED SPACES.

Figure 115: 3D Axonometric illustrating planning and experience (Author,2022)

FIFTH FLOOR-RESIDENCES AND ROOF GARDENS

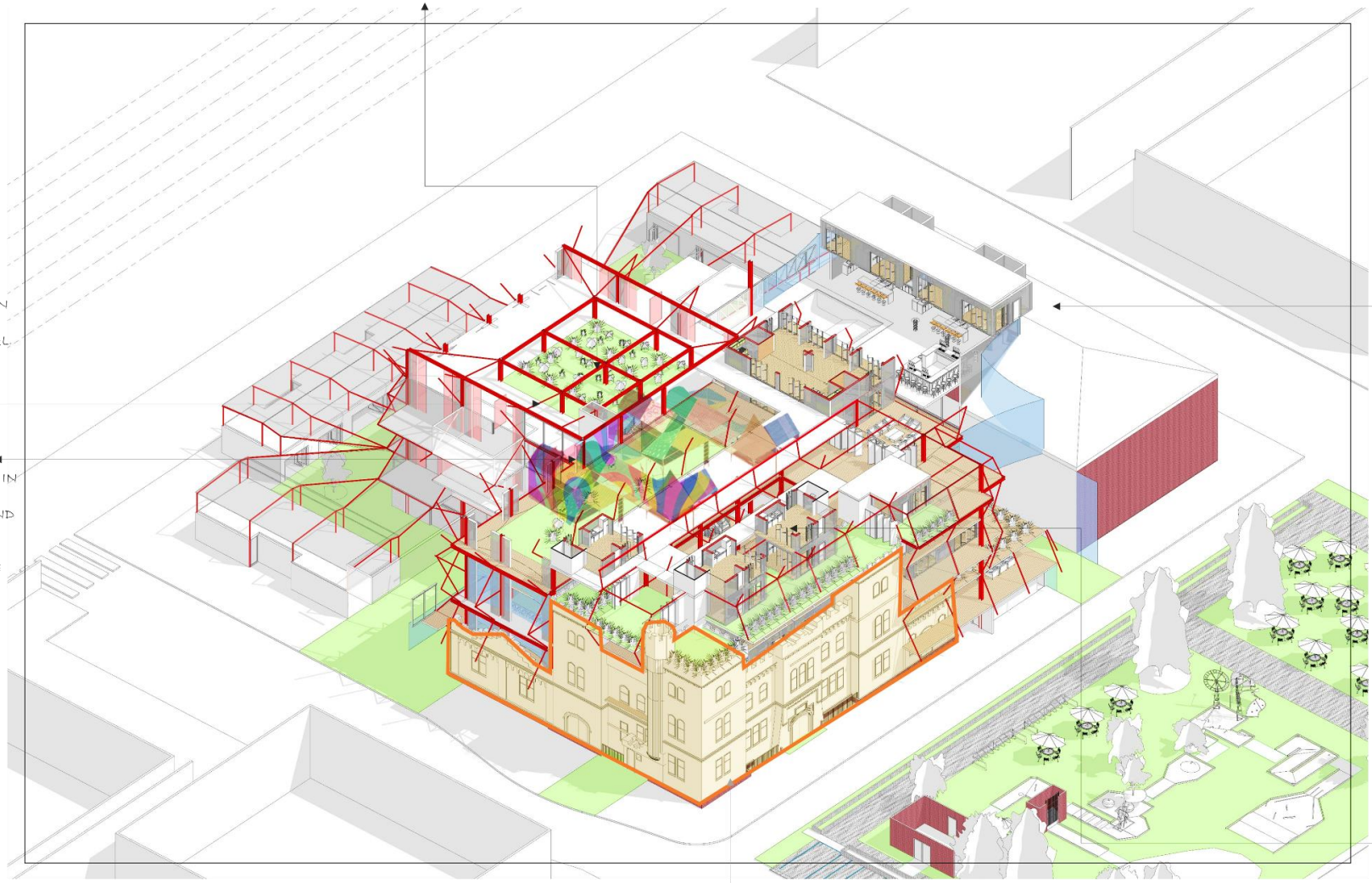


Figure 116: 3D Axonometric illustrating planning and experience (Author,2022)

5.9 Textile Tech

Textiles as an application

- industrial recycling of plastics, and clothes- Program- Recycling/upcycling .
The collection of polymers, polyeurathane, silicone as well as traditional textiles like cotton and silk as seen in the material catalogue have the abilities to allow young designers, crafters, learners and entrepreneurs the opportunity to design, make, repair and recreate cheap to produce designer clothing.

The beauty of this upcycling from what we saw in the material catalogue, is that they have the ability to also create exhibition pieces, screens, Canopies, drapes, curtains, sliding screens and partitions that consists of properties such as great for ventilation and thermal control

Community interaction can be facilitated through consistent aesthetic. The easy maintenance of textiles in terms of replacement and fitting ensures aesthetic change as well as consistent engagement to suite exhibitions, market places (which can happen through advertisement using textile screens), on site education and skills development.



A main design approach was orientating spaces towards the street along the main existing facades, using the existing facades purely as facades to preserve the ornamentation and decoration.

Using the northern part of the site was important to facilitate a warehouse/factory function within the building as a core element.

Figure 117: 3D Axonometric illustrating program and reuse within textile innovation center(Author,2022)

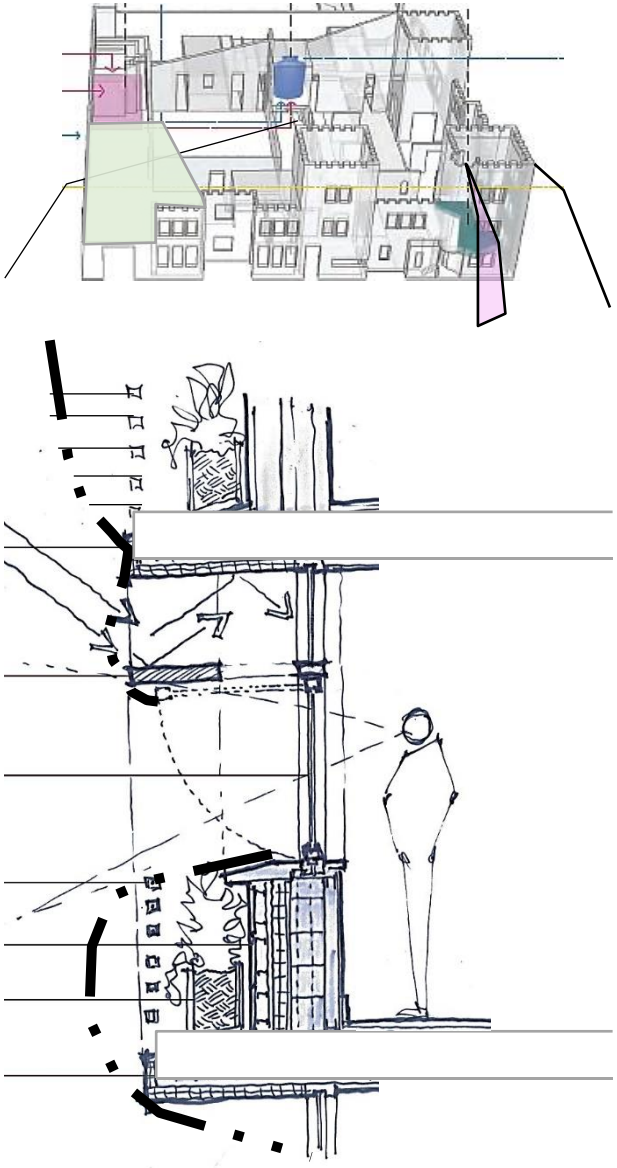
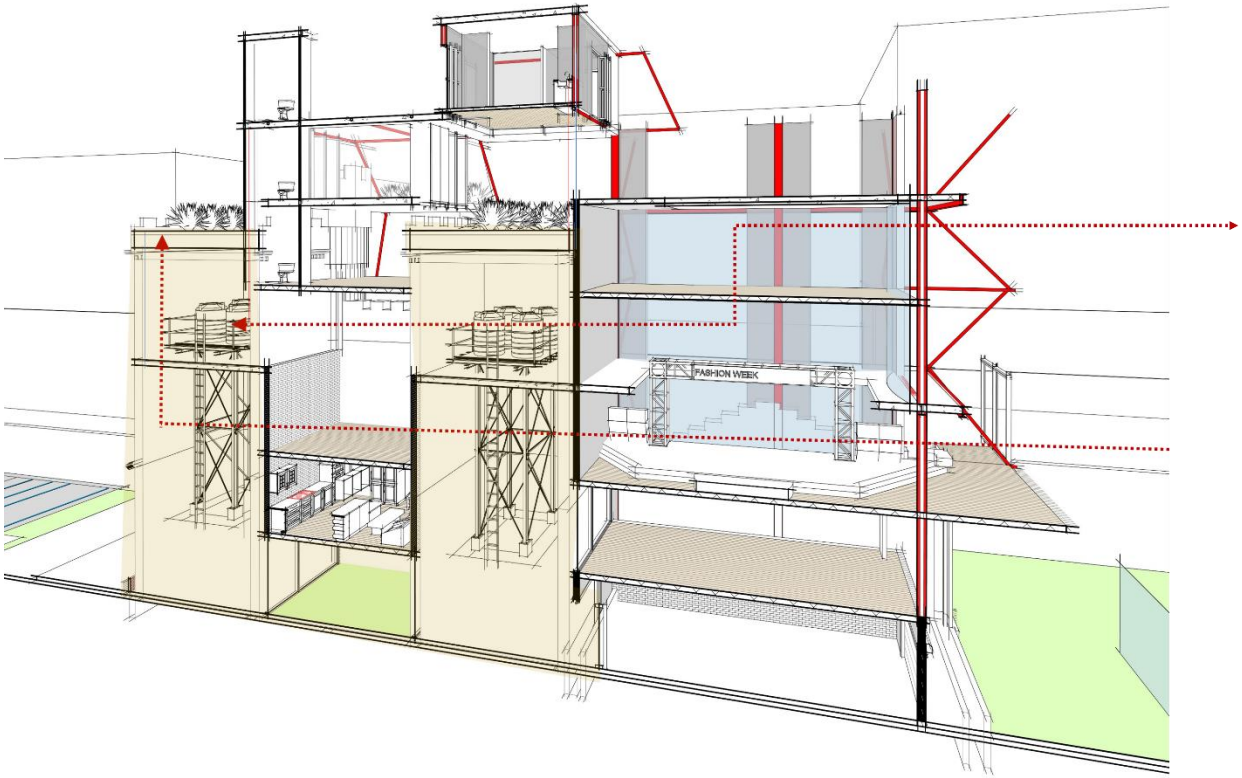
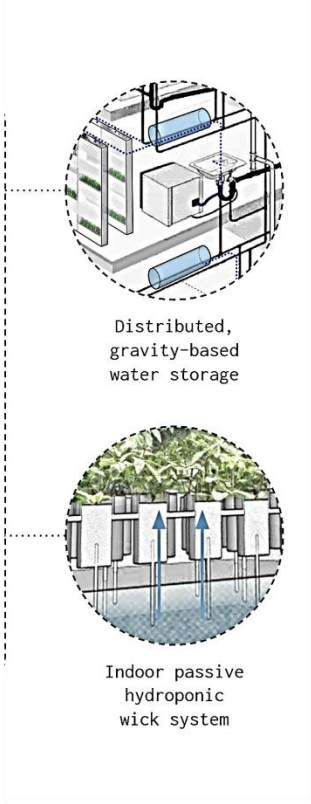
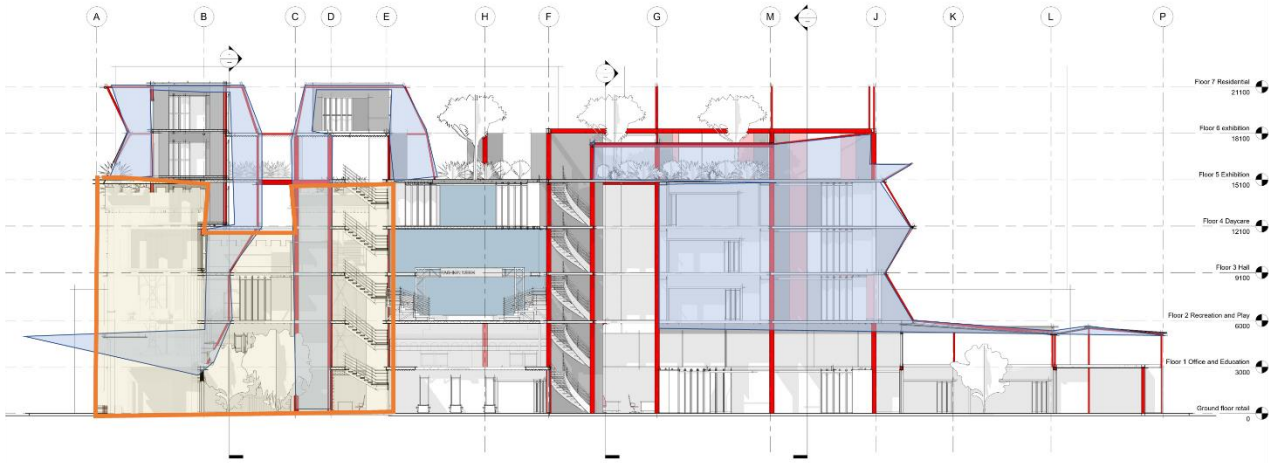


Figure 118: Axonometric and sketch section.

On the upper levels the screen/canopies act as a moving cohesive element with the existing facade, controlling view, temperature, and lighting for the residents above.







an extension to adaptive reuse is the storage and embedding of services within the structural framework and existing building, to retain identity and capitalize on minimal amounts of lost space

Figure 119: 3D section illustrating service configuration (Author,2022)

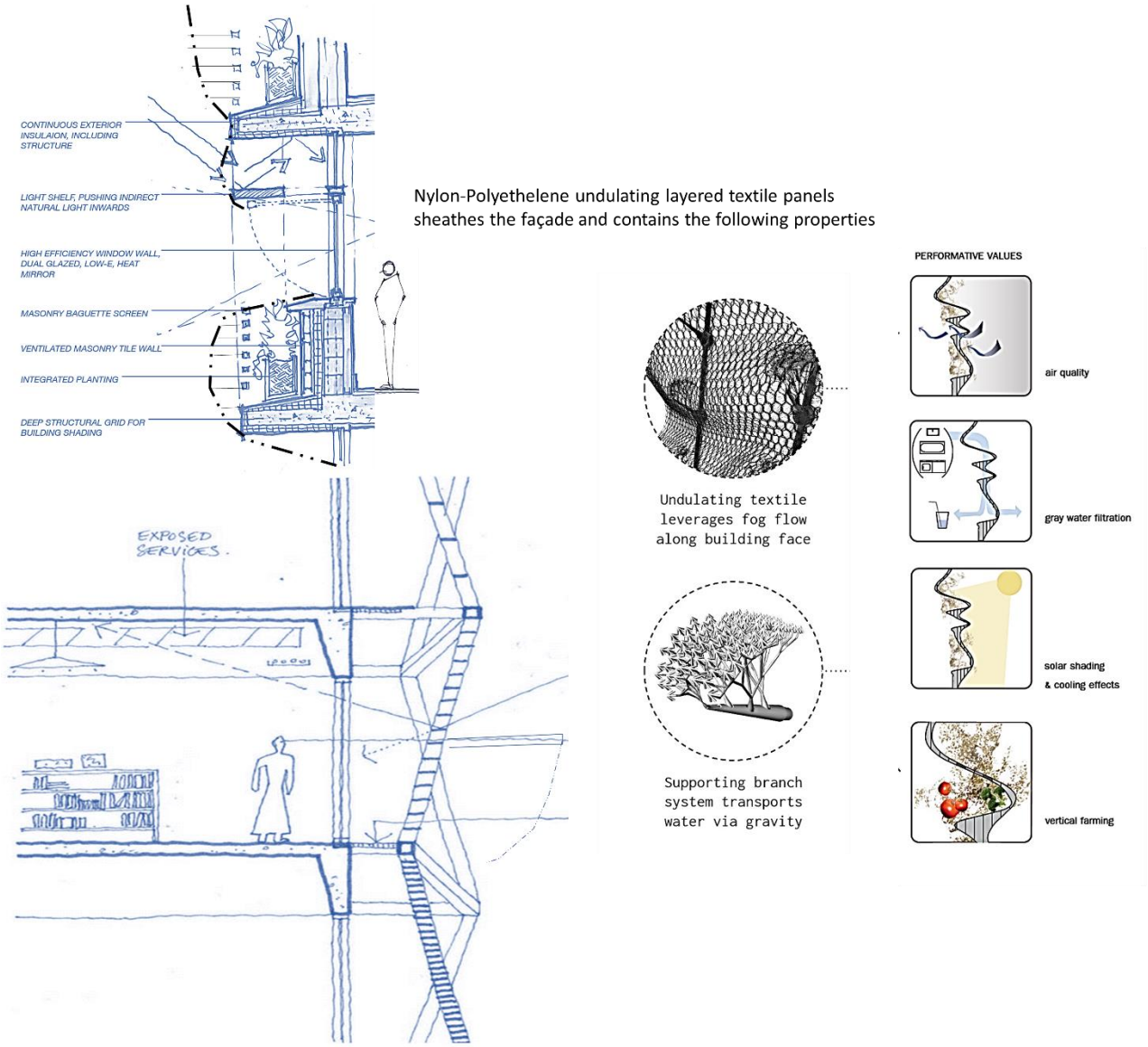


Figure 120: 3D section illustrating screen detailing (Author,2022)

Technical

A technical exploration of textiles in relationship s with facades and spaces create multiple opportunities for ergonomics and urban farming which is not central to the adaptive reuse, through textiles, but does however create an interesting by-product that constitutes water storage, vegetation growth, air, sunlight and water filtration as well as framing for storage or vertical gardens. Weaved undulating textile facades are intended to be used to create transparency of the three castles existing façade forming a veil over the building. This retains heritage while punctures in the façade highlight entrances and public spaces that almost essentially act as a wayfinding system,

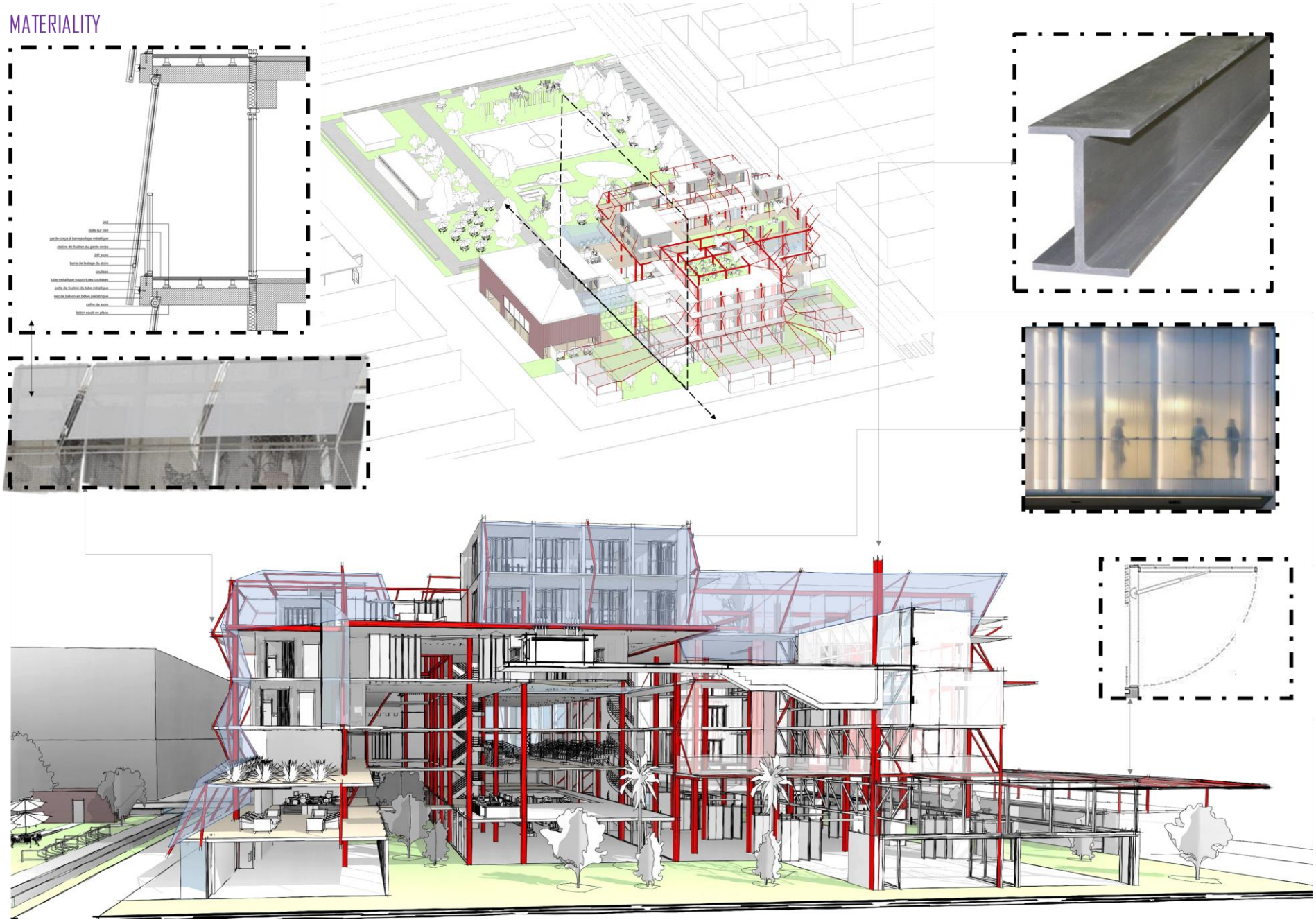


Figure 121: 3D Section illustrating materiality and detailing(Author,2022)

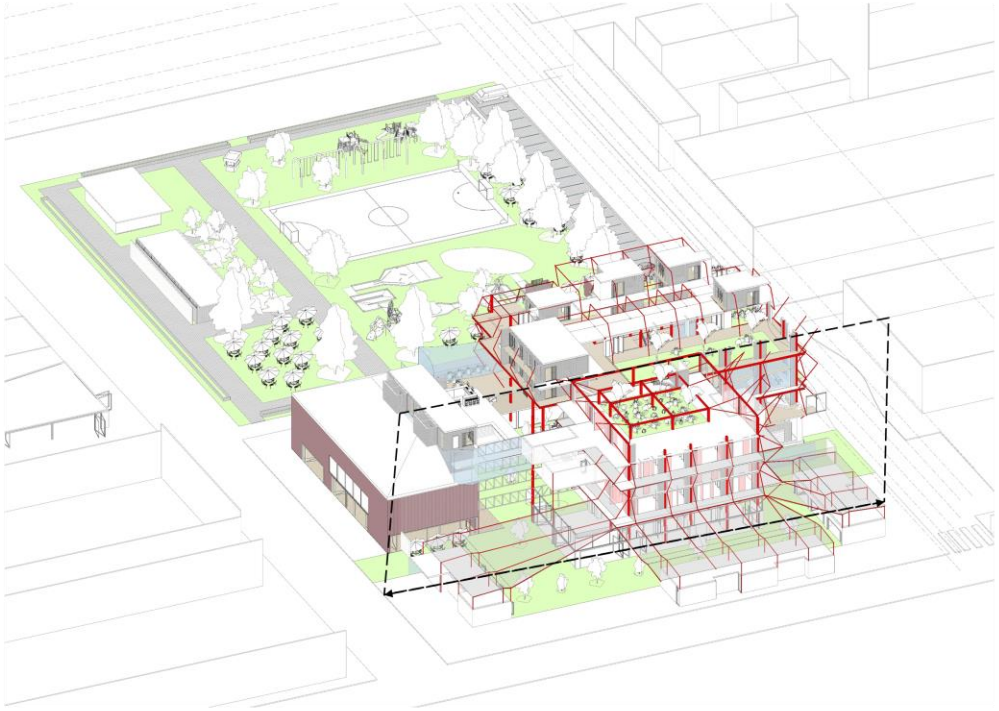


Figure 122: 3D Section and Axonometric illustrating column structural grid to show tectonic nature of structure in defining, the exhibition, lecture venues and market space(Author,2022)



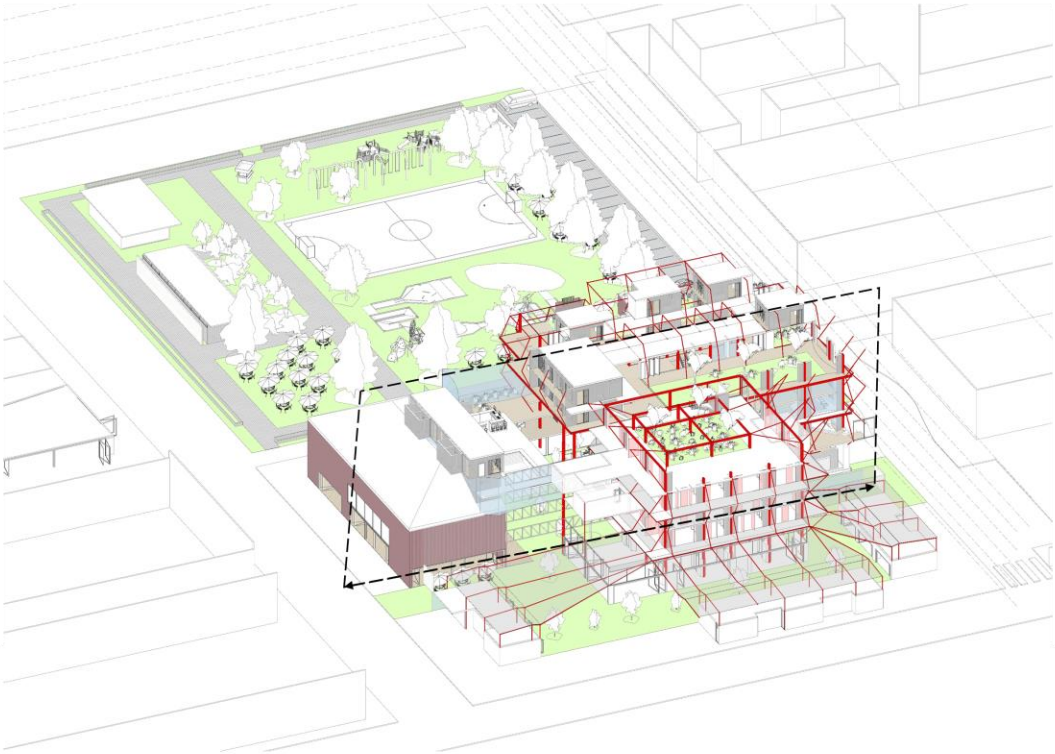


Figure 123: 3D Section illustration main circulation route and turrets hosting bracing for column grid and water storage tanks for energy efficient water reticulation. (Author,2022)

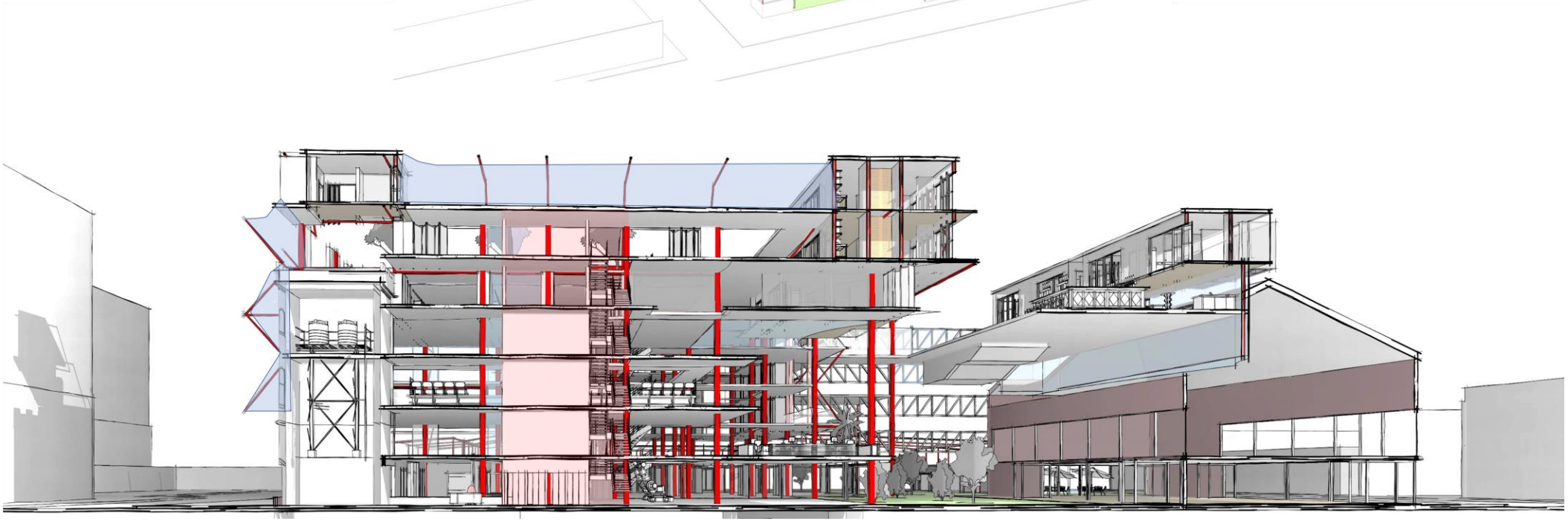
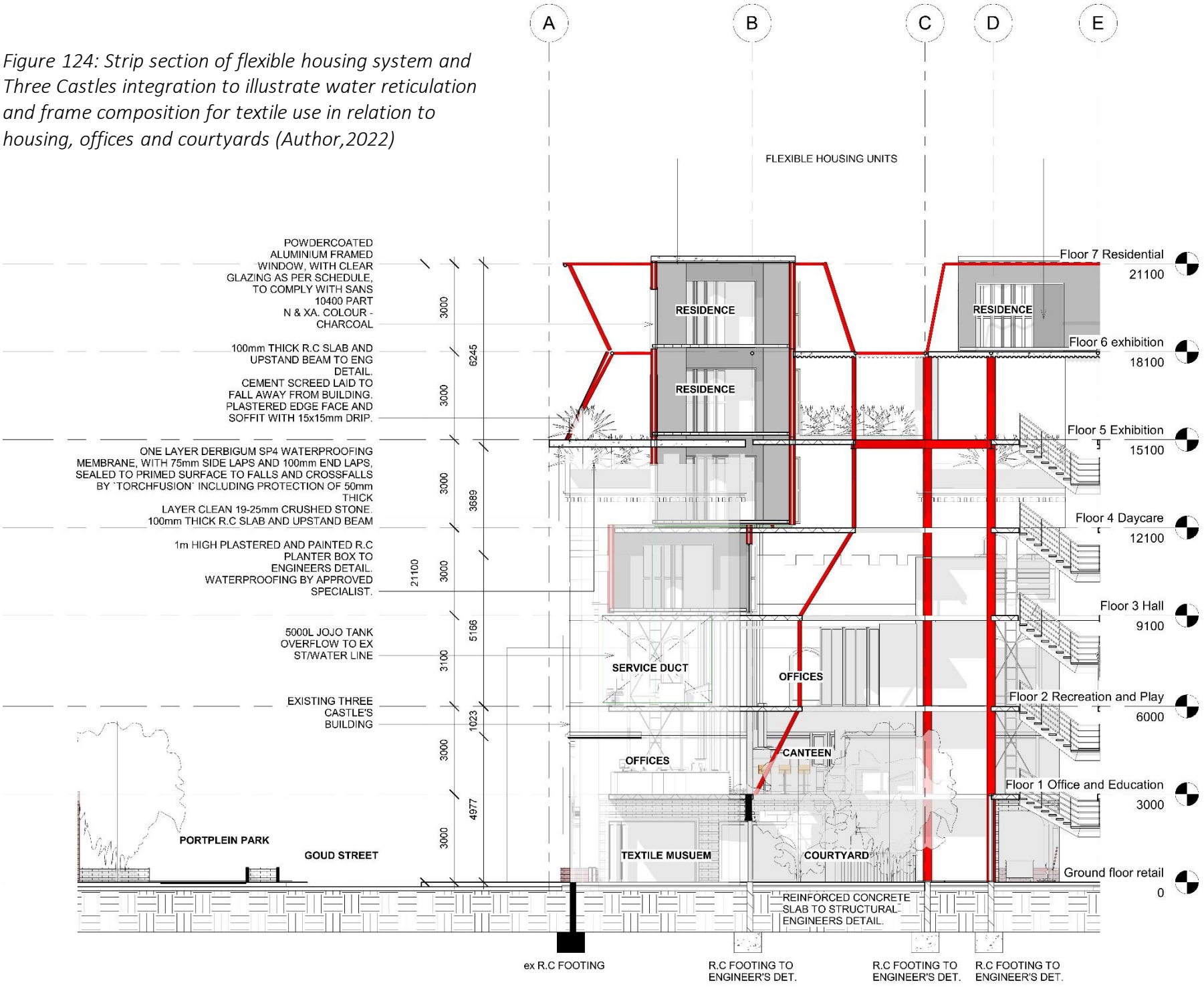


Figure 124: Strip section of flexible housing system and Three Castles integration to illustrate water reticulation and frame composition for textile use in relation to housing, offices and courtyards (Author,2022)



5.9 Design Drawings

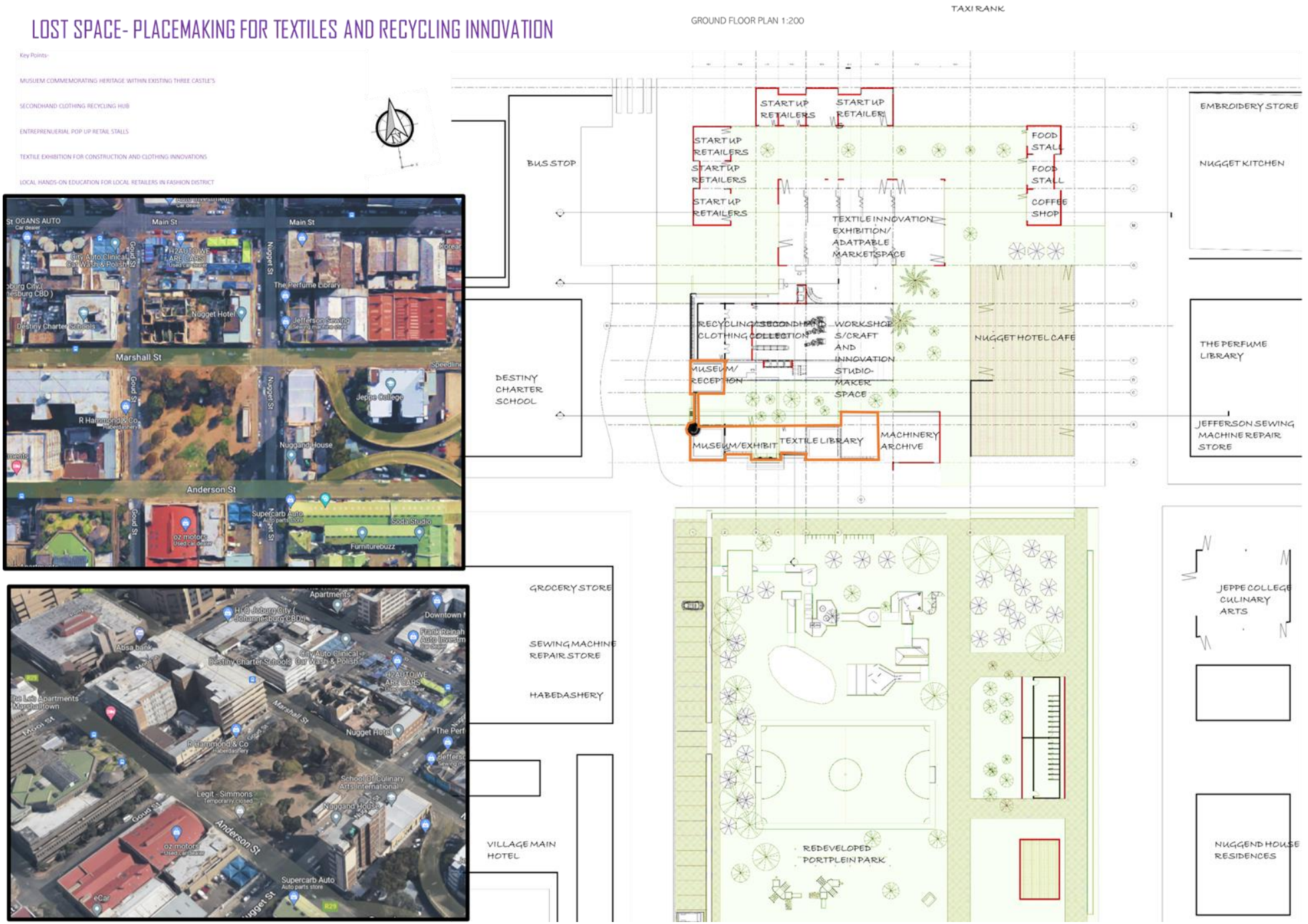
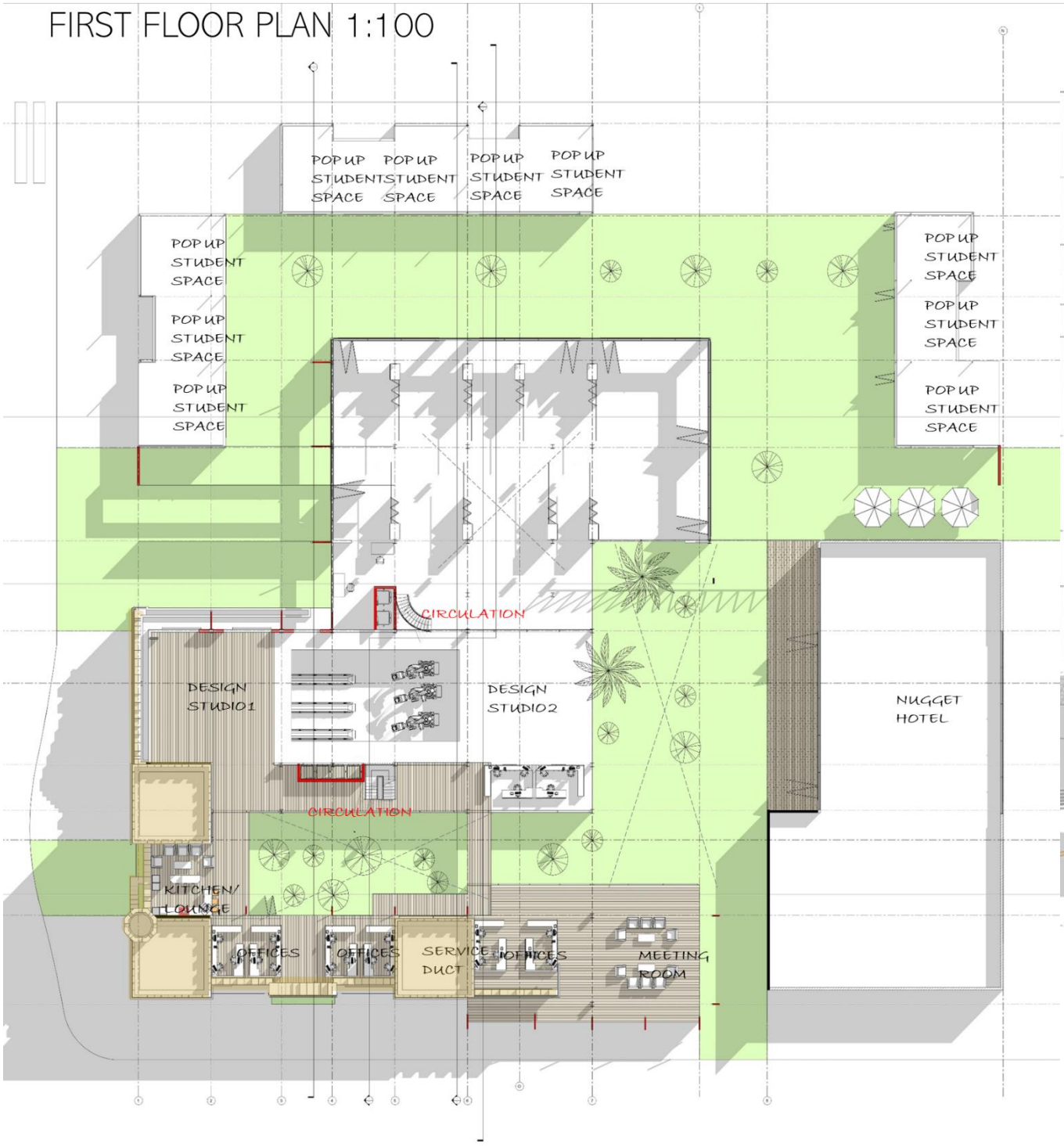
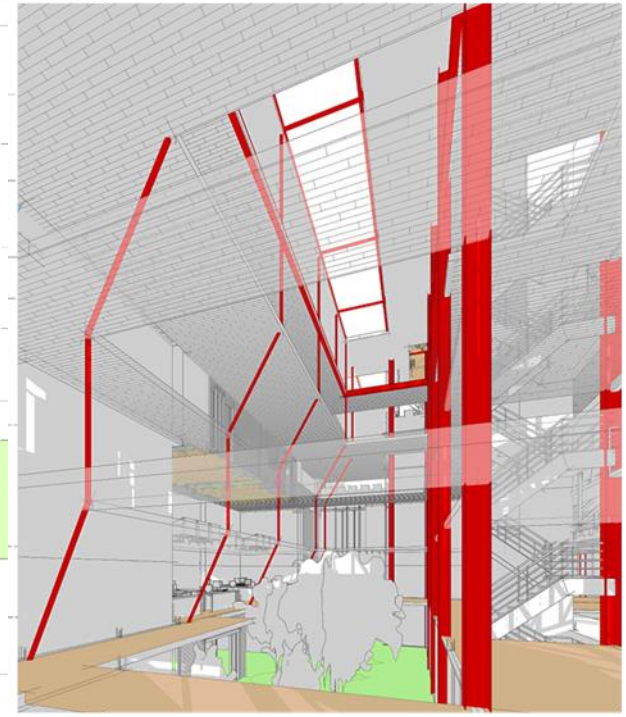
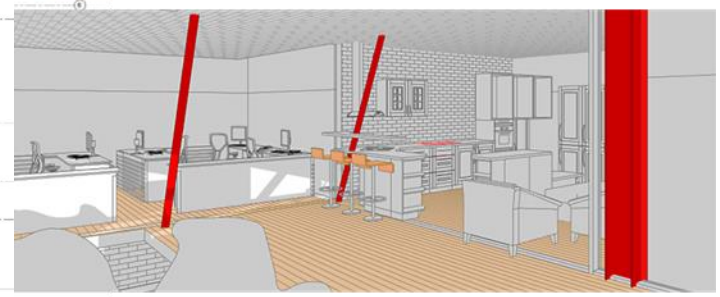


Figure 125: Plan drawings (Author,2022)







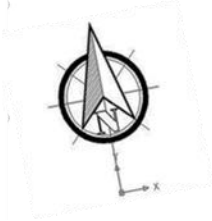


Figure 126: Plan drawings (Author,2022)

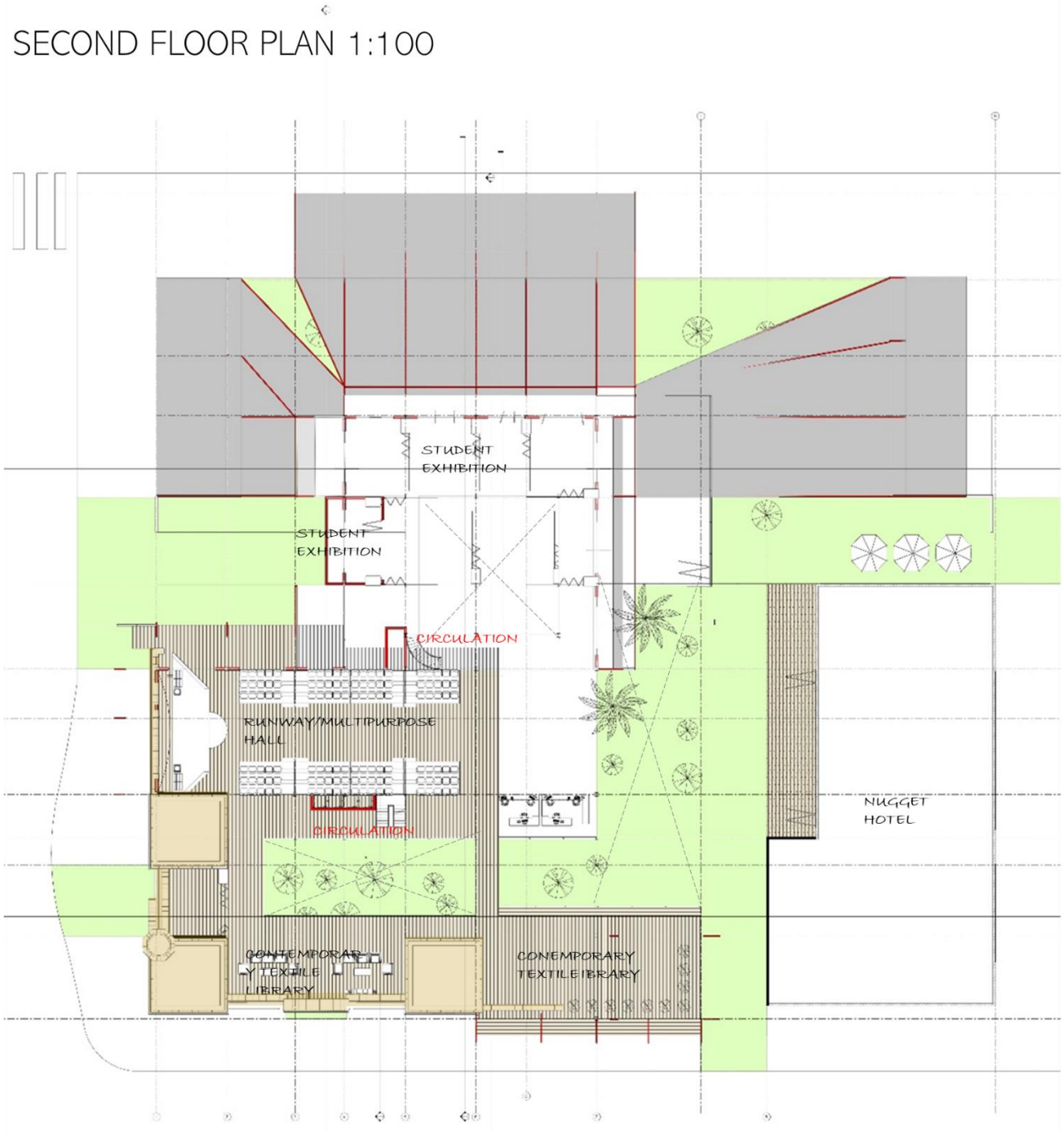
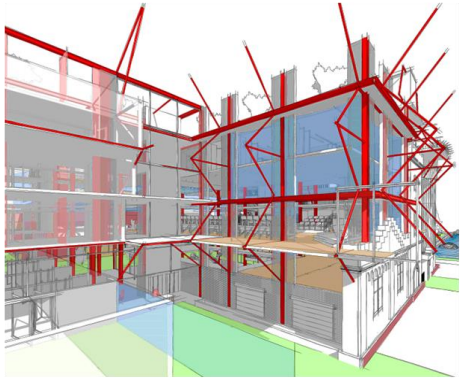
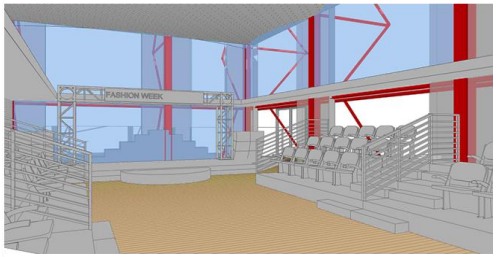
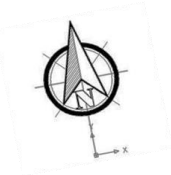


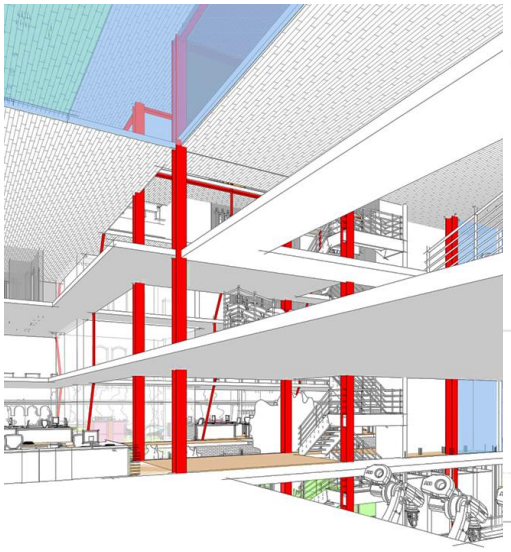
Figure 127: Plan Drawings. (Author,2022)













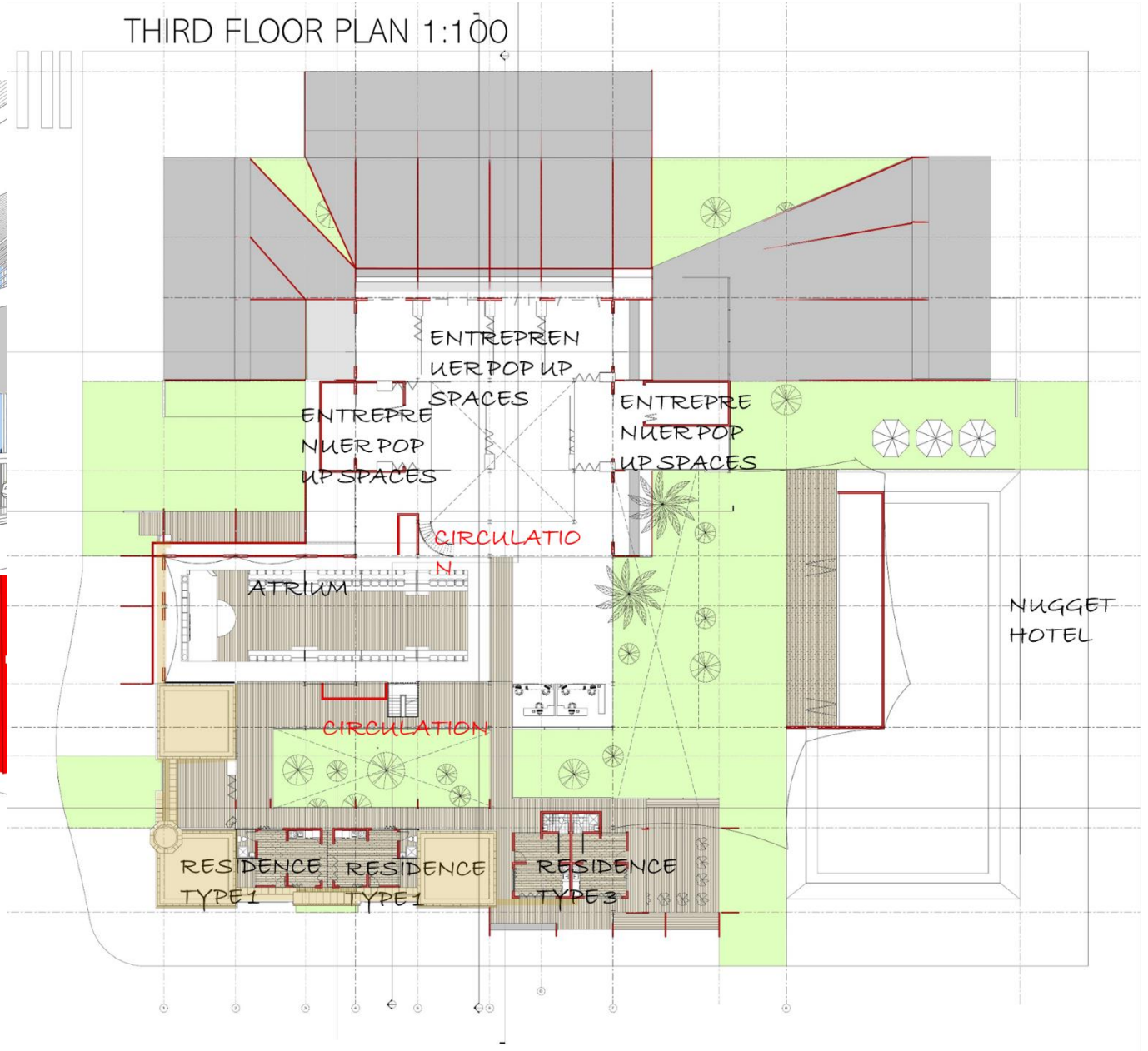
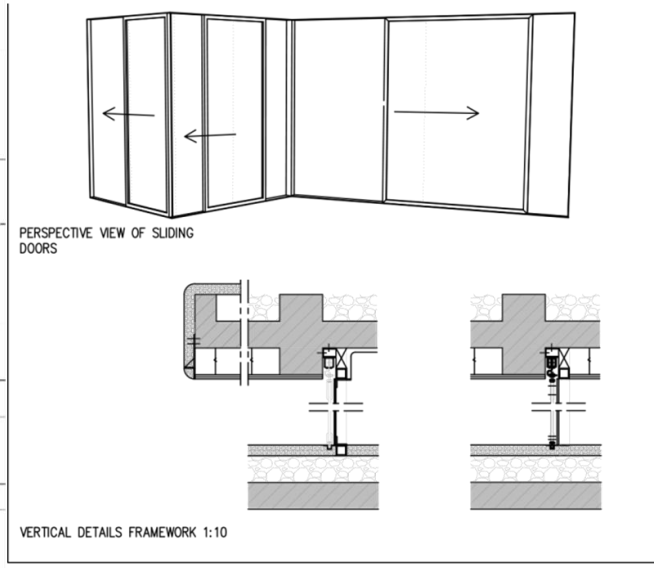
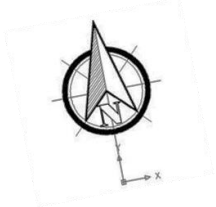


Figure 128: Plan drawings (Author,2022)

Figure 129: Plan drawings (Author,2022)







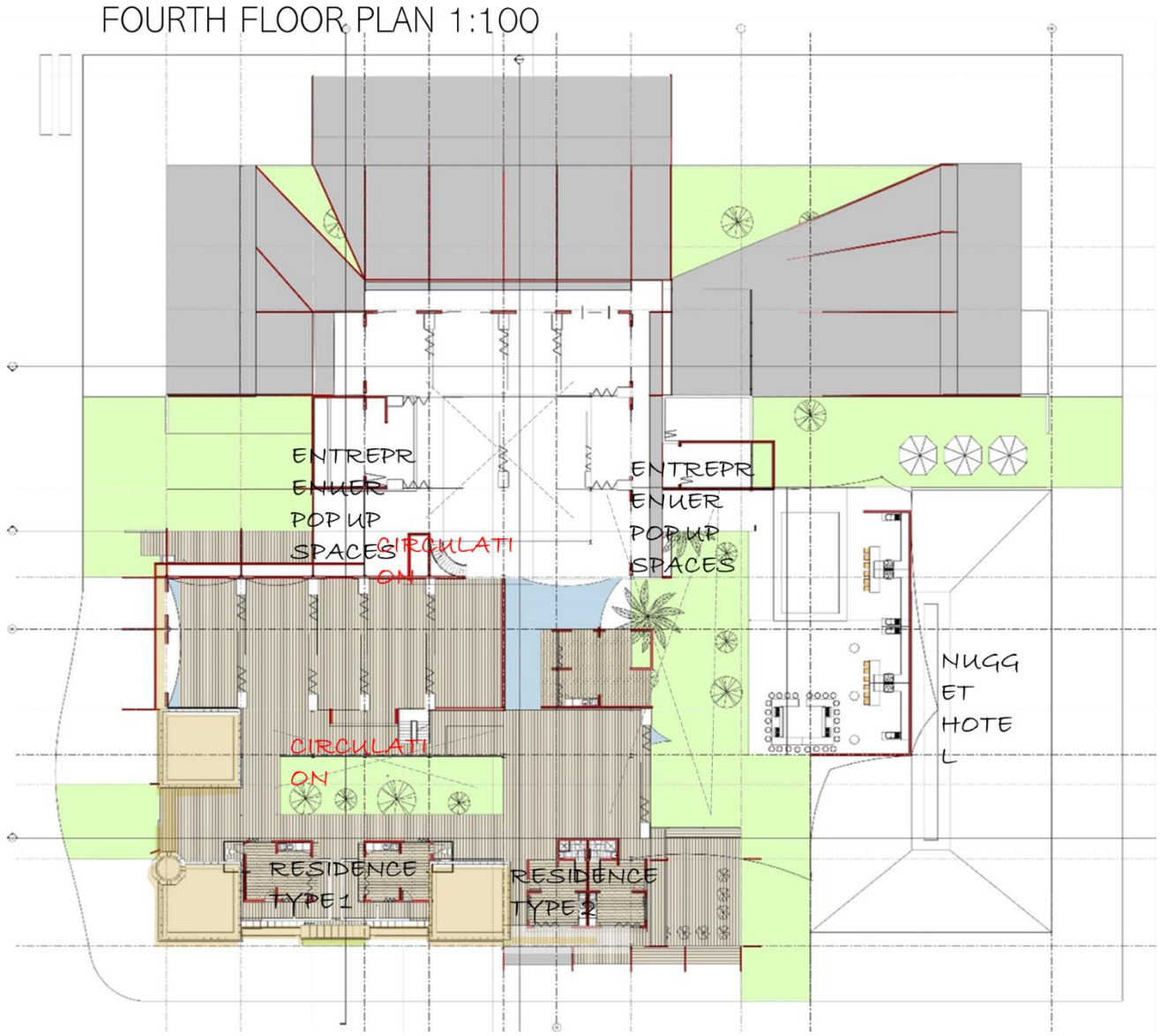
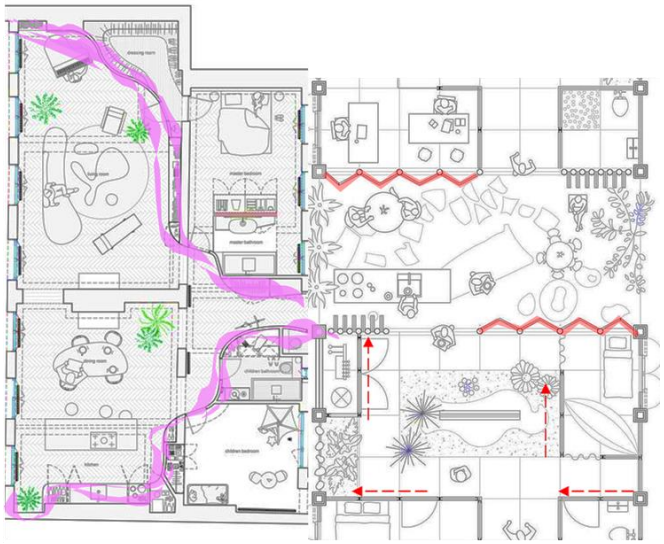


Figure 130: Plan drawings (Author,2022)





Conceptual Planning

Textiles are meant to be used as used with the façade and technical systems. The more permanent structures play host to fabrics that lead you to public spaces or openings in the building. The adjustable folding partitions and flexible materials are intended to create a variation of experiences in the residential spaces based on the needs of the user, whether it be opening your home to accommodate a social event, or partially opening it for a close family event, or perhaps closing everything up for the leisure of privacy while still maintaining the richness of material from the textile that spread throughout and inform the spaces on the exterior and in-between.

FIFTH FLOOR PLAN 1:100

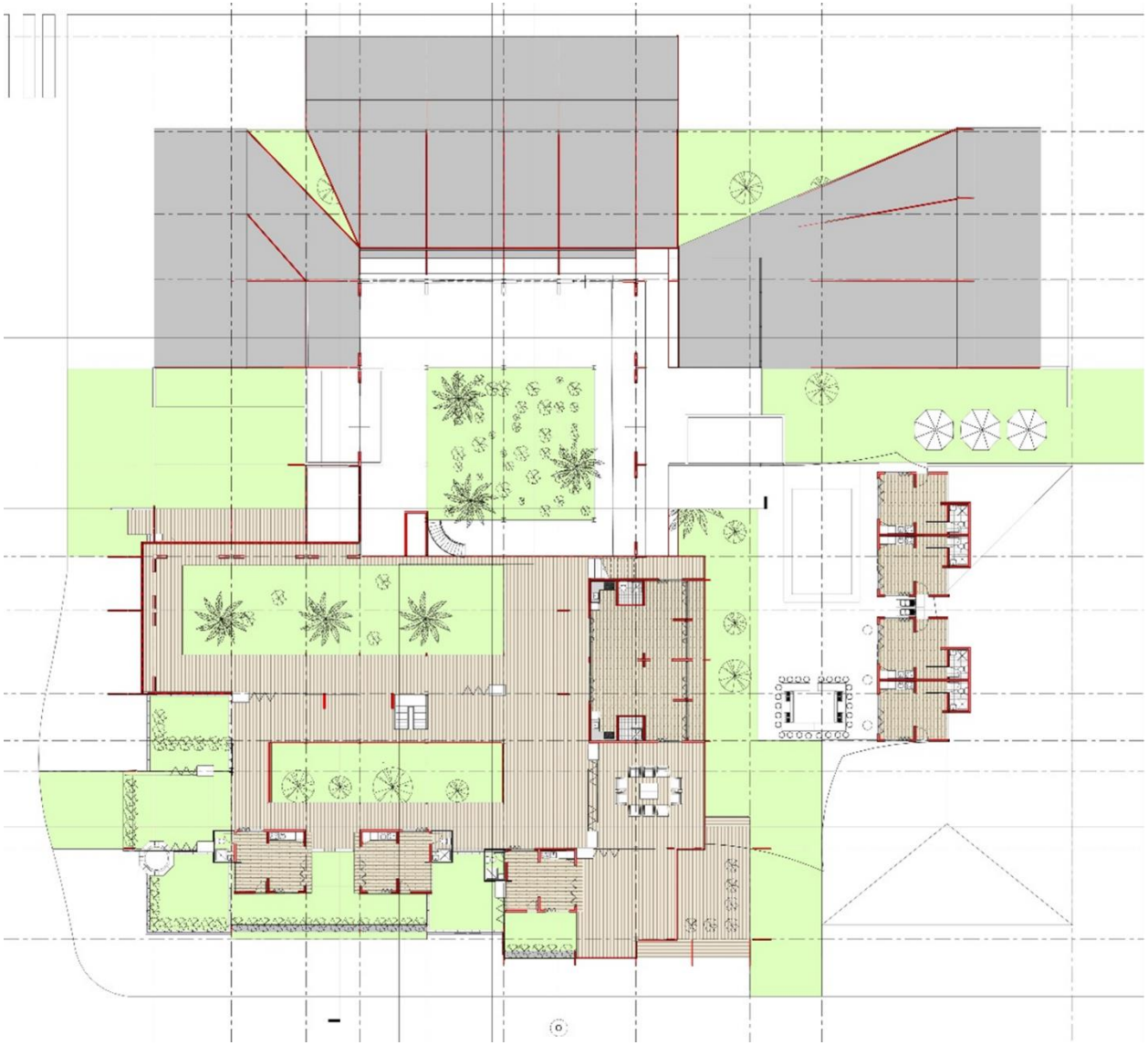
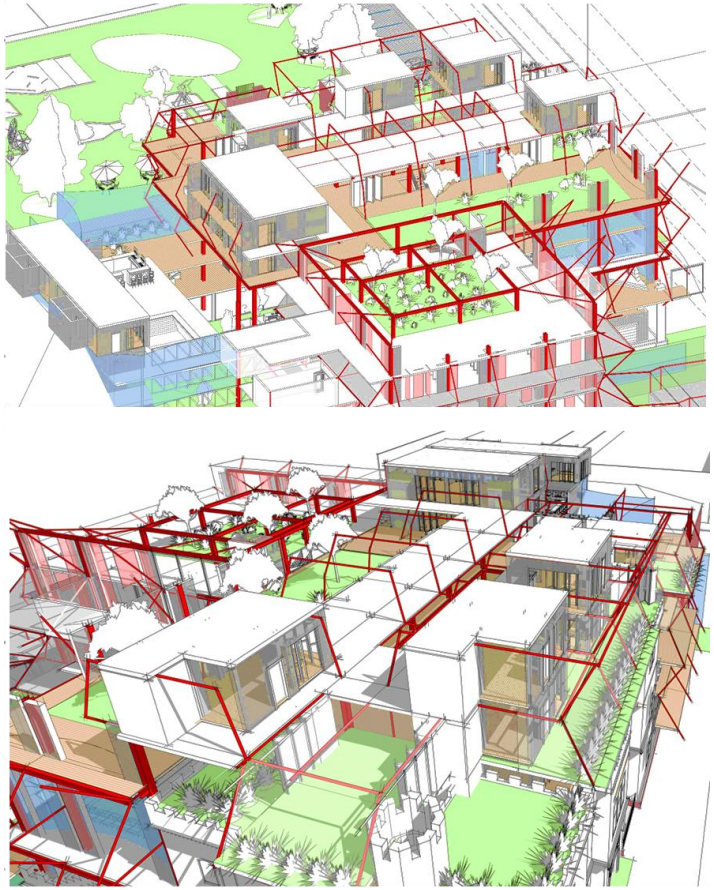


Figure 131: Plan drawings (Author,2022)



SIXTH FLOOR PLAN 1:100

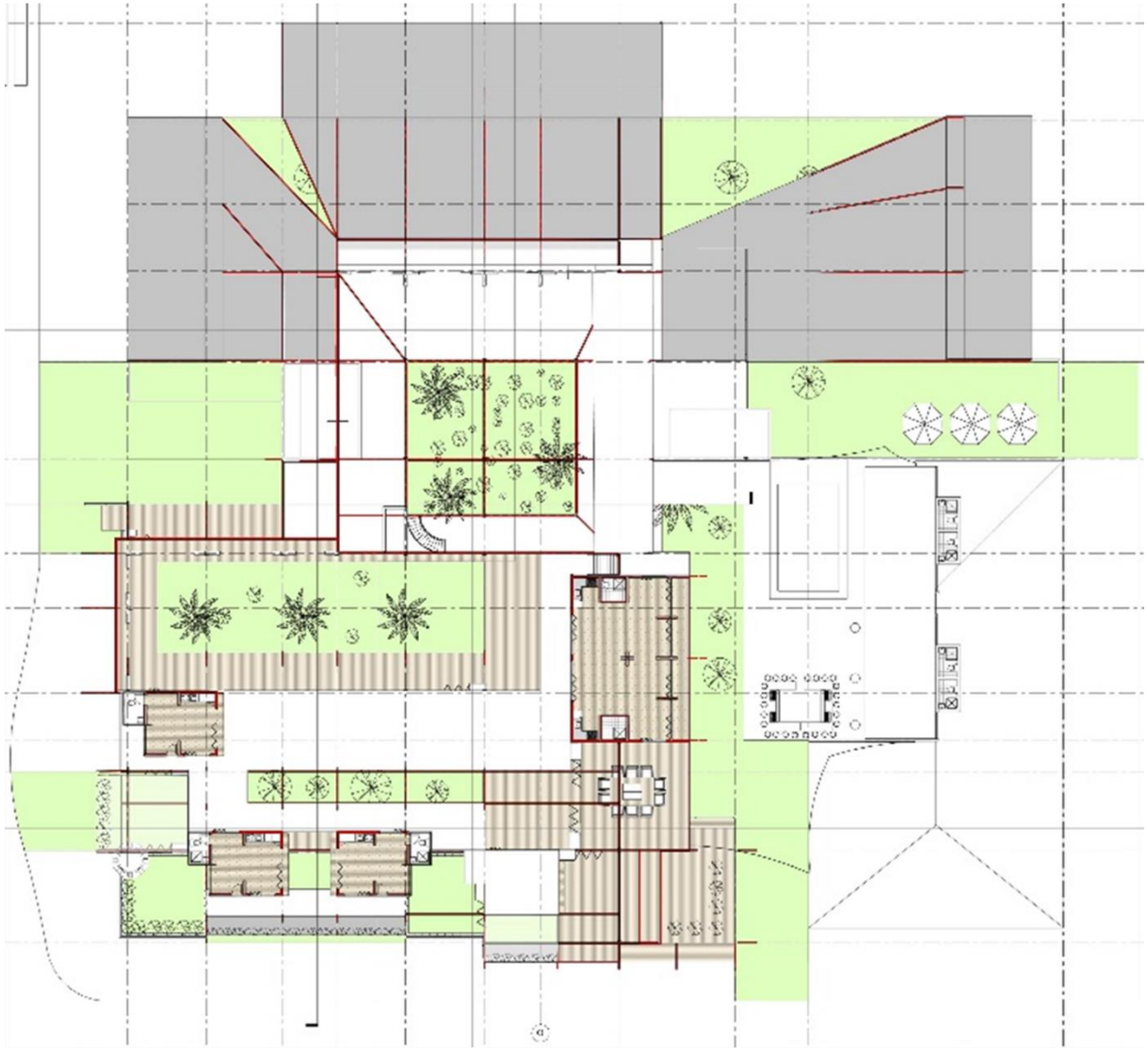
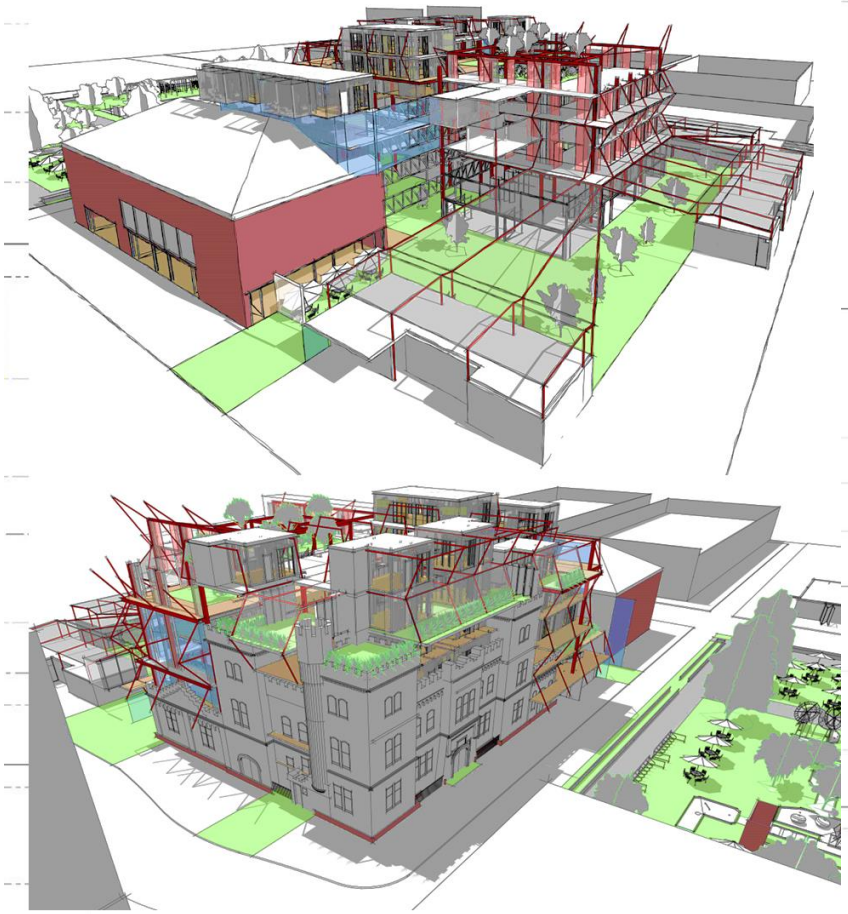


Figure 132: Plan drawings (Author,2022)



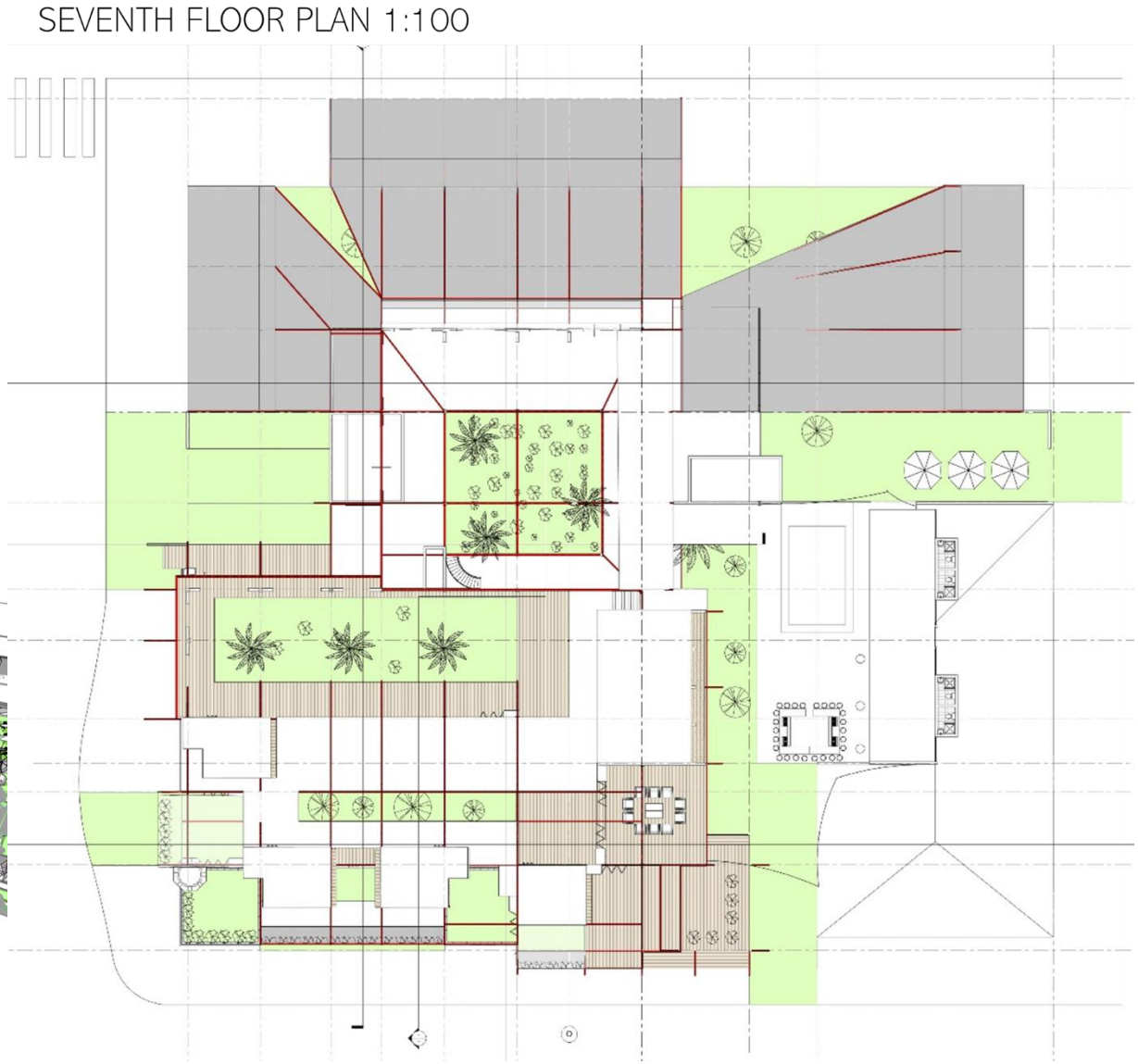


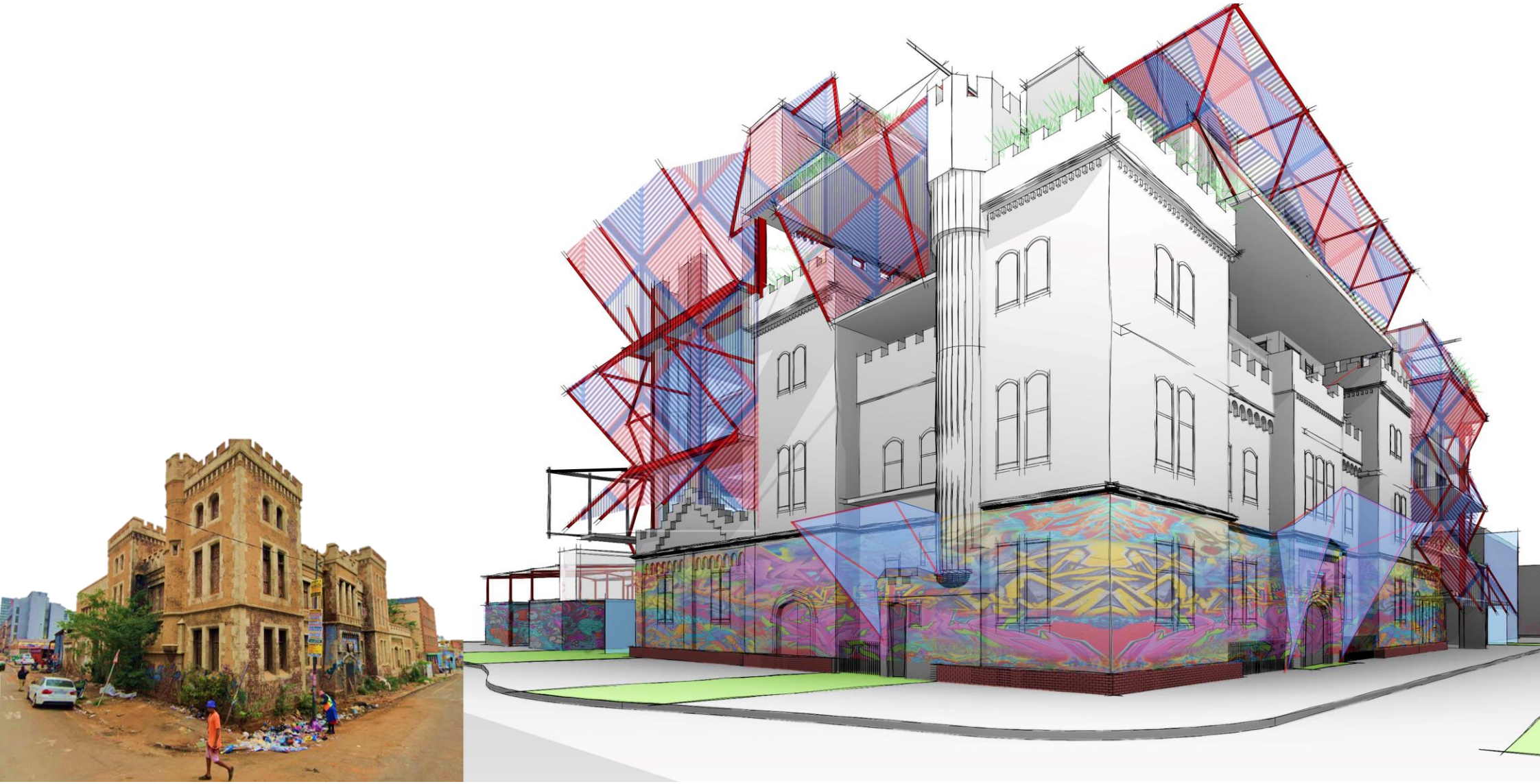


Figure 133: 3D Render (Author,2022)



Figure 134: 3D Render (Author,2022)

Figure 135: 3D Render (Author,2022)



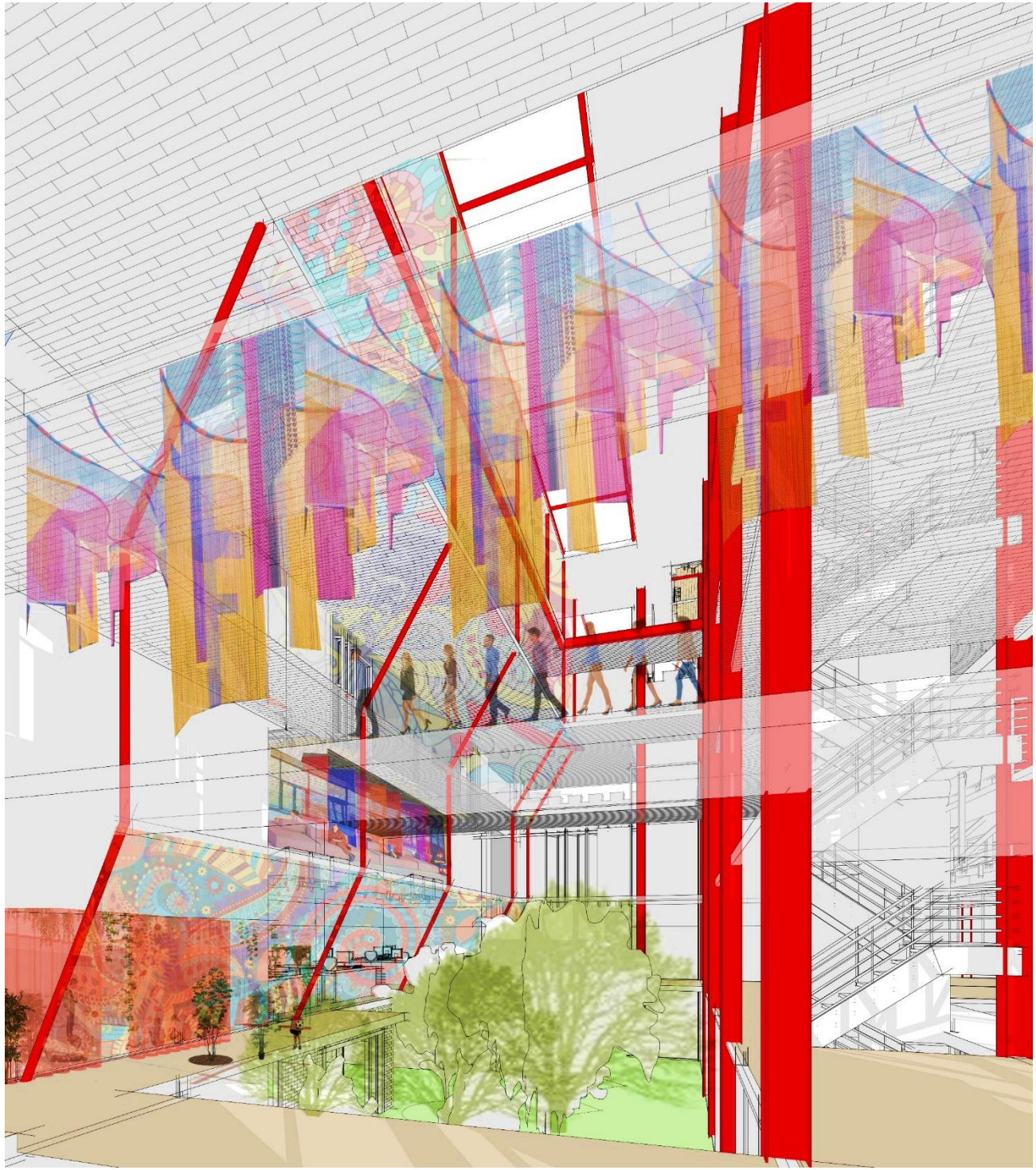


Figure 136: 3D Render (Author,2022)

Figure 137: 3D Render (Author,2022)



6. Research Conclusions

South Africa and the cities that shape it have a long-complicated history, of division and unfairness. One can argue that the government body in the country of South Africa has never had the needs of all people considered South African in mind, whether it was the racial inequality and injustice from the past or corruption and greed in the post-apartheid era. The division and corruption have left a landscape that can be considered remnants of battlefields, a landscape that is scarred, that is neglected. The agendas of the apartheid era and agendas of the post-apartheid era have both played their roles in the decay of the built environment.

Through this research, the Issues of suburban flight, conflict of architectural identity and representation, identity, and memory, as well as modernism and its affect through treating buildings as freestanding objects and treating streets as spaces prioritized for vehicles more than people, has had a direct affliction to the functioning of South African cities like Johannesburg. The division of then and the corruption of now speak vividly and visually through the built environment of Johannesburg. There is a relationship between colonial heritage buildings and abandonment, there is also a relationship between lack of maintenance and the general city infrastructure. One could say there is neglect from the people, and there is neglect from the people in charge.

Many buildings of character and diversity range from Victorian, Edwardian, and Georgian as colonial styles, the more contemporary western and Eurocentric styles such as brutalism, neoclassic and art deco styles add to the urban landscape of Johannesburg as well, although, there are also a range of bland, conventional and purely functional buildings conceived with the modern principles of the freestanding object and the vehicle orientated street, and these buildings are technically ordained as heritage and preserved purely based on the age of the building being over 60 years old.
What can be drawn from that is that we have a city populated with diversity and character, diversity and character that has to change its meaning because what it represented before it cannot represent now, the older function is lost, there are buildings that serve no purpose and are being preserved with no character to preserve. Architects and developers need to find a way of dealing with these buildings that benefit the context of Johannesburg holistically.

Holistically how? Through industry upliftment and provision of education, the context needs to learn and grown so that the people can learn and grow instead of being stuck in a stagnant environment ripped apart by social injustices. These buildings need to be reused, adaptively reused, with functions that people are actively doing in the city in current time, and they should have the ability to adapt and change so that if a change in function is necessary to suite the city, it is possible without demolition and \ energy wasted. It is imperative in South Africa's poor economic state, to use what we have instead of destroying it and starting again, we have neither the time nor the money to act in that manner.

The solution has always been adaptive reuse, the specificity is far more imperative. It is the specificity that defines the feasibility, as well as the success of the design approach. The site of the Three Castle's as an abandoned heritage building in the city centre is located on the perimeter of the fashion district, as well as the perimeter of the industrial and commercial banking district of Marshalltown, the site is exemplary of every issue being addressed in the city relevant to this investigation.

The local industries are textiles and car manufacturers, these are the industries that need to be tapped into in the case of the Three Castle's. Reusing is a key concept, and this scarred urban fabric needs to be stitched together. This is where the use of textile and other plastic waste comes into full effect, in another scenario with a difference of industry, the program of reusing materials might be different, but in this scenario, textiles are key and through the course of the investigation, one can see how readily available textiles can be in lightweight, flexible construction applications, how they can create color, patterns, resonate a new identity on a building with an old identity, building a cohesive relationship.

When it comes to people using this building long term, Industry, educational, and economic development need to be the priority for South Africans in general in my opinion. In relevance to the context, what is a market to tap into? How does this market help elevate social, cultural, and economic standards through the built environment? In terms of students, entrepreneurs, and working-class people, how do we redevelop the decaying-built environment to accommodate the functions thriving in the city to help people like this grow? and again in this scenario, it is the textile industry that is the market as well, reuse as discovered can take place on a large scale through the building, recycling of wasted plastics and textiles can be used to develop new applications and recycling of clothes can provide a platform for designers, both students and professionals to collaborate consistently on at low cost and at a high markup that is beneficial to them and their businesses.

In conclusion, the hope is that this blue print of reusing old buildings, waste, materials and accentuating an existing industry, is a shot at finding a way of healing our wounded country and its cities, in turn developing new and thriving South African communities.

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