

Manufacturing Imaginaries

A catalyst for reimagining Marshalltown

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Gabriel Storm O'Donovan
30 March 2023

Abstract

The inner city of Johannesburg oscillates between images of a vibrant city full of possibilities, and a dystopian city that has fallen into disrepair - illustrating the profound complexities of the city and its resilience, where spaces of dystopian desolation lie adjacent to dynamic spaces of ambition and hope.

Since Johannesburg's establishment various regimes of representation have sought to create a city in their image (Matsipa, 2014) – from visions of Johannesburg as a temporary mining camp with the sole purpose of extracting wealth, to the modernist images of a "New York in Africa" (Chipkin, 2008). This project explores how visions from a past epoch can be re-imagined and questions the role of the architect in facilitating new urban transformations.

This research report investigates the accumulated archive of abandoned buildings in the inner city and presents an architectural intervention that acts as a piece of urban infrastructure - facilitating the reinterpretation of these neglected structures. It draws inspiration from current examples of ad hoc spatial interventions that challenge the notions of permanent and purpose-made architecture.

The site forms part of an abandoned city block in Marshalltown, Johannesburg. This city block serves as symbol of urban decay and neglect, portraying feelings of desolation and abandonment (Bruwer, 2002) – making it the ideal site for the proposed architectural intervention as well as a source of inspiration.



Figure 1 - Collage of Abandonement (Author, 2022)

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Chapter 1

Positioning The Project

Contextualising the project and its authorship

This chapter serves an introduction to the research report, positioning the project and its authorship while providing a brief outline of the urban context and motivation for the architectural enquiry. It provides an overview of the documents structure – giving the reader a clear understanding of the document and the relationship between the various parts. It presents the projects theoretical unpinning's while acknowledging the existing and extensive body of knowledge available, while also providing brief notes on the research methodologies.

Preface

Almost 30 years after Apartheid, Johannesburg remains a profoundly complex city struggling to rid itself of a colonial-capitalist past. Murray (2008) frames Johannesburg as city of permanent temporality where an ‘every-changing metropolis’ is described as having many cities merged into one. He highlights the constant evolution of the city, where people, places and physical forms are in constant motion, creating a city-image difficult to grasp in its totality (Murray, 2008).

The repeated destruction of physical artefacts from the past have solidified the illusive urban character of Johannesburg. The living archive of abandoned buildings in the inner city are symbolic of the once future aspirations and ambitions for Johannesburg (Murray, 2008). These buildings are subjected to destruction and ruination either through passive neglect or active destruction. The desolation that lies in the wake of these decaying artefacts reveal an interesting story – they portray the failed utopian visions and modernist images, produced by successive regimes of representation that sought to subject their images on a city and its people.

The detailed richness embedded within Johannesburg, provides an endless source of inspiration for urban scholars and image-makers. As a student, studying architecture in Johannesburg, the inner city has been both a source for boundless inspiration and personal interrogation. The popular perceptions of Johannesburg as ‘a city in crisis’ have, until recently, dominated my experience and views of the inner city. As much as this exploration is intended to portray competence as a future architect, it has become something of a personal journey – where I’ve had the opportunity to assess and explore my own spatial subjectivities and urban perceptions.

Johannesburg, a vibrant city in continual motion – forever evolving and changing – is placed in stark contrast to the stagnant decaying buildings of a bygone era. These abandoned buildings lay dormant and leave holes within the urban fabric. With this understanding of the Johannesburg inner city this research report is interested in how the dynamic nature of the inner city and it’s people can be used as a tool in the (re) making of the decaying buildings.



Figure 2 - Digital collage of Marshalltown, Johannesburg (Author, 2022)

A City of Many Stories

Fictional Characters and the Beginnings of an Architectural Enquiry

Although urban perceptions, produced by well-established image categories, depict Johannesburg as a sprawling metropolis in crisis and in need of rejuvenation – the city continues to be considered the economic 'engine room' of Southern Africa and a city of economic opportunity (City of Johannesburg, 2021). According to the District Development Model for the City of Johannesburg the city continues to experience high levels of domestic migration, where people migrate from other provinces to Johannesburg in search of opportunities. Although the population growth rate has seen a decline since 2011 from 3,5% to 2,4%, Johannesburg remains an inward migration destination with population growth rates that are significantly higher than any other South African city and high above the national average (City of Johannesburg, 2021).

The city remains the financial capital of the African continent with a total wealth figure of $248 billion. The city is home to the Johannesburg stock exchange which is largest stock exchange in Africa and the city generates 16,5% of the country's wealth (City of Johannesburg, 2021).

Johannesburg is a city with undeniable issues, however, there seems to an undying reluctance to give up on the grand ambitions the city once had. The city continues to evoke images of an active economic hub and a migrant city controlled by the accumulation of capital and the production of opportunities. The far travelling perceptions of Johannesburg as a place of opportunity, portrayed by slogans such as 'the city of gold' have created a far-reaching collective image of Johannesburg - influencing the continuous and unrelenting inward migration.

The Merchant, the Maker & the Architect

These two contrasting perceptions of Johannesburg as 'a city in crisis' and 'a city of opportunity' have created a city with endless stories, characters, and narratives. The following storyboard is an exploration into the different ways the city is experienced and how urban perceptions can influence the lived experience of a city. Although the stories are fictional, they are based on true characters.

The Merchant

Its seven in the morning and Biruk drives his beloved new car into the back entrance of his newly established hardware store in the fashion district of the inner city. Meandering down into the deep subterranean basement under his shop, he parks his car and walks back up the steep ramp. Before opening the hardware store, he finds John – the security guard. John pulls up the heavy-duty security shutters while Biruk gets ready for the DIY builders already waiting outside.

When arriving in Johannesburg back in 2016 the network of Ethiopian traders and spaces became a platform from which he could extend. He began running a traditional Ethiopian shop owned by a close family relative and during that time developed a substantial network of personal connections and business opportunities. Extending on the entrepreneurial spirit of the trading spaces he took a risk and invested in a new opportunity – a small-scale hardware store in the bustling inner city.



Figure 3 - Trading spaces and hardware stores, digital collage (Author, 2022)

The Maker

Thomas is on his way to the city for work. He gets into a tightly packed taxi and begins his daily journey from the Ennerdale Taxi Rank to Marshalltown in the inner city. Having sat in front he was given the task of counting the money fellow travellers were paying – making quick calculations and giving back the correct change. “After robot” he says to the taxi driver as he sees Commissioner Street approaching. The taxi stops abruptly, he quickly jumps out and makes sure he has all his belongings. He gives the heavy taxi door a gutsy slam as the taxi shoots off wasting no time.

He now begins the short walk to the construction site where he is working as brick layer. He walks along the crowed pavements seeing the faces of countless strangers pass by. He arrives at the construction site ready for a long day’s work. He joins the other workers as they wait before the day begins. In a moment, he thinks back to when Johannesburg was just a perception in his mind – ‘the city of gold’ – ‘a city of opportunity’.



Figure 4 - Travelling by taxi - collage based on photograohs by Kgomotso Neto available at: https://www.okayafrica.com/south-african-photographer-exhibits-photos-at-taxi-rank/ (Author, 2022. Neto, 2021)

The Architect

Recently, Peter has developed an interest in the inner city. Having grown up in the suburbs just north of the city, the inner city has, until recently, seemed unattainable - just out of reach for someone without a definite need to make the journey. Going into the city was more of an occasion than an everyday practice. But having studied architecture in Johannesburg, the city has become something of an obsession. The oscillating ambivalence and complexities of the inner have taken hold of him.

Having just qualified as an architect Peter and his close friend start their own architecture studio – operating out of Marshalltown, Johannesburg. The studio has a keen focus on the redevelopment of the inner city, working on projects that (re)make the image of Johannesburg. His work is informed by his newfound admiration and curiosity of the city with an underlying desire to challenge the urban perceptions of Johannesburg as ‘city in crisis’.

Take aways

The three characters and their stories become important aspects in the development of an architectural argument. The three characters are kept as fictional narratives that justify the architectural developments that follow

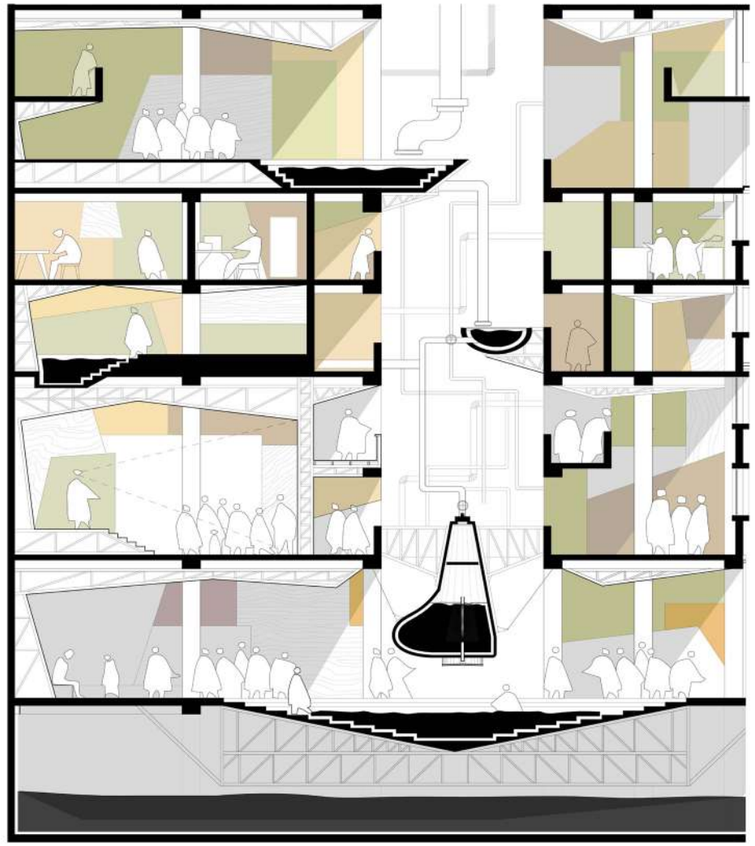


Figure 5 - Reimagining The New Library Hotel in Marshalltown, Johannesburg (Author, 2021)

Project Summary

The Project Summary offers the reader an overview of the proposal - presenting the focal points of the project and the project's intention. The summary is intended to be viewed as a concise explanation for the project and the design decisions that follow.

Research Question

How can an architectural intervention facilitate the emergence of new city visions through (re)making abandoned buildings in Marshalltown, Johannesburg?

Key Issues

• Urbanisation on the African continent is occurring at unprecedented rates - an increasing need for sustainable and resilient cities is becoming more prevalent.

• A free-market economy driven by a neoliberal ideology is unfair and unsustainable.

• The decentralisation of Johannesburg and the exit of capital investment from the Johannesburg inner city has produced a perception of ruin and decay.

• Current models of waste production and disposal are unsustainable and embody problematic ideologies of environmental degradation and disregard.

Project Proposition

To address these issues, this project explores the exploitation of Johannesburg's two most abundant and underutilised energy resources – human imagination and abandoned buildings. Located in the Johannesburg inner city, where despite extreme difficulties, emerging future visions are being created. The city and its people are in constant motion – physical forms, human networks and futures visions are constantly morphing and evolving (Simone, 2004). The permanent temporality of the city illustrates the unlimited imagination of its people and the physical resilience of the built environment.

Human Imagination

Simone (2004) discusses how amongst the ruins of the Johannesburg inner city a highly complex social infrastructure facilitates the emergence of new social, economic, and cultural conditions that assist residents in acts of everyday life. This complex network of economic collaboration between residents has allowed them to create entrepreneurial opportunities for themselves and escape the cycles of poverty – allowing them to create meaningful connections to the city. These social infrastructures illustrate residents' creativity and imagination – where spaces are appropriated and changed by individuals with relatively low economic capital (Simone, 2004).

Ruins as a Resource

This project views the abandoned buildings in the inner city as valuable structures for emerging urban visions to latch onto. The decaying buildings in the inner city become an energy resource ready for extraction.

Waste and the Act of Building

In a developing country like South Africa, the expansion of the construction industry is inevitable and portrays positives signs of a growing economy – providing jobs and attracting foreign investment. However, as the industry expands the waste produced by construction projects will increase. This will have a negative impact on the already pressing issues of sustainability and environmental degradation.

This project attempts to address and explore the issues associated with the waste production associated with building. The project argues that architecture should be viewed as a tool in promoting systemic change in the construction industry (BC Architects, 2019).

Site of Enquiry

An abandoned city block is Marshalltown was selected as the site of enquiry. Marshalltown, an active area in the inner city of Johannesburg was selected as the study area as there is an overwhelming presence of physical neglect – manifested in numerous abandoned buildings. The mapping of abandoned buildings in the inner city reveal that Marshalltown is home to a significant number of abandoned buildings that have not been hijacked and seem to portray structural integrity. In other words, the abandoned buildings in Marshalltown, although slowly decaying due to neglect, seem to show signs structural resilience.

Design Outcome

This project proposes an architectural intervention that inserts itself into a vacant site in Marshalltown. The intervention acts as a 'machine in the process' - (re) making the decaying buildings in the inner city. Through processes of reclaiming, processing, and producing the proposal enables the upgrading of abandoned buildings. The building is viewed a factory for producing building materials and future city visions.

The project investigates the possibilities of a circular material economy where the destruction and construction of buildings in the inner city feeds back into an energy system – reclaiming and recycling building materials for the remaking of Marshalltown. Rathan than presenting a simple proposal, that looks at the renovation of an abandoned building – this project seeks to provide a building that can facilitate the processes of (re)making. In this regard, the project operates at both an architectural scale and an urban scale, becoming the engine room for the (re)making of the accumulated archive of ruins.

Document Structure

The structure of the document attempts to provide the reader with a clear understanding of how the different modes of reading the city and the architectural research have produced an architectural argument.

Chapter 1 focuses on locating the project contextually and outlining the position the project takes. Chapter 2 provides a reading of the city – exploring current urban conditions of the city and presenting the frames of reference. Chapter 3 looks to the ways in which the city is being remade and explores the regimes of representation that have produced the city. Chapter 4 explores architectural concepts, case studies and theory while providing the early conceptual development of an architectural form. Chapter 5 presents the design development. Chapter 6 presents a preliminary design which will be developed further.Chapter 6 presents the reader with the final architectural proposal with a complete set of architectural drawings.

Theoretical Framework

People as Infrastructure

In the essay titled 'People as Infrastructure', AbdouMaliq Simone (2004) conducts an ethnographic study in the inner city of Johannesburg. The study describes the intricate social and economic networks of individuals in the city as *'people as infrastructure'* and proposes that urban scholarship should further develop the common understanding of infrastructure to include the social and economic networks of people. The common understandings of physical infrastructure, as the reticulation of services that facilitate the functioning of a productive city, are contrasted by Simone's (2004) proposal. The complex engagement of residents with objects, spaces, people, and practices are viewed as an infrastructural platform for the facilitation of everyday life in the city. These human networks are created by the reciprocal economic collaboration of people that allow individuals to escape the downward cycles of poverty through creating economic opportunities and livelihoods for themselves.

I propose - that through viewing 'people as infrastructure' - an approach to architecture within Johannesburg can more effectively facilitate socio-economic activities in the city.

The Right to the City

'The right to the city is not merely a right of access to what already exists, but a right to change it after our heart's desire'.

- David Harvey, 2003, International Journal of Urban and Regional Research

The notion of 'the right to the city' is a popular urban theory used to examine the development of cities grounded in a neoliberal ideology. The concept was original theorised by Henri Lefebvre and later discussed by David Harvey. As Harvey discusses, a capitalist society is built on a never-ending process of extraction and production. He creates the connection between urbanisation and the development of a free-market economy, where cities are created in an inherently unfair system which favours the rich. Those individuals or groups with larger capital accumulations can develop urban space in their visions. Harvey argues that we should imagine a more inclusive city – challenging the current economic models and ordering of rights. He states that 'if our urban world has been imagined and made then it can be re-imagined and re-made' (Harvey, 2003).

Taking the notion of 'the right to the city' further, Teresa Dirusweit (2009) discusses the concept of urban citizenship and how cities are developed to express urban citizenship in particular ways. A city governed by the capitalist need to privatise land and commodify space creates urban enclaves of private public space where space is envisioned by those with the capital to do so. These enclaves are carved out of the harsh urban cities and create a fragmented city that fractures along social and economic divides (Wang, 2019).

I view the free-market mechanisms of the global economy as unjust and unsustainable. Architecture can be a vehicle for urban mediation and give a sense of power back to those without the relative accumulated capital. The production of space in the Johannesburg inner city should draw inspiration of visions of an inclusive city.

Vernacular and the Modern City

Richard Sennet (1990) argues that contemporary ways of thinking in architecture should move away from a visual driven representation to a more compelling activity-driven architectural enquiry. Sennet explains how an activity-driven approach draws inspiration from the ways in which individuals use and appropriate space – celebrating the rituals of everyday life.

Critical vernacular is understood as the study of built forms and spatial practices that fall outside of normative architectural discourse. Space-making practices are fuelled by individual agency, material cultures and cultural identities – offering architects a large source of material that can inform a space-making process (Rapoport, 2008).

Mainstream architectural practices have an underlying desire for modern, formal, innovative, and contemporary spaces. These formalised spaces are favoured over spaces of the everyday - where vernacular spaces are categorised as traditional, archaic, and informal. Critical vernacular discourse rejects this binary understanding of the traditional vs the modern (Rapoport, 2008).

I argue that the production of space within the inner city of Johannesburg should move towards an approach that seeks to celebrate the rituals of everyday life. Rathan than attempting to create coherently ordered cities governed by Eurocentric subjectivities we should draw inspiration from the current ways in which people use and appropriate space.

Theoretical Framework

The Spatial Triad

Henri Lefebvre (1991) proposed the concept of a ‘spatial triad’ where space is explored through three conditions - conceived, perceived, and lived. The concept rejected the historical presumption that space is a singular condition – challenging a logical understanding of space where components are broken down and coherently ordered. Modernist planning habits tend to portray a desire for order and legibility which do not consider the inherent complexities associated with space and cities. Through the spatial triad, space is understood as more complex condition than previously thought. Lefebvre proposes that a singular space is a construct of multiple realities and changes according to an individual’s spatial subjectivities.

Approaches to creating space, in the Johannesburg inner city, should seek to understand the complexities associated with space and bypass a crude reductionist approach often embedded in western modes of urban planning and architectural production.

Spatial Branding

The relationship between representation and space is discussed in Framing Places by Kim Dovey (1999). She presents the relationship between an individual’s cultural capital and the symbolic capital they perceive in the world. She discusses how ‘the eye is a product of history reproduced by education’ - suggesting that specific spatial aesthetics appeal to people who have a corresponding cultural capital. Through creating spaces that appeal to a ‘legitimate taste’ one creates spaces for people who have the privilege of a ‘contemplative distance from everyday life’ (Dovey, 1999). These ideas reveal the potentials for building exclusionary cities - envisioned by the few and experienced by the many. Dovey (1999) extends these notions further by discusses how the representation of space is relatively meaningless without an applied function. Together with a spatial representation and enlisted functions a meaningful space is created (Dovey, 1999).

Operating within the Johannesburg inner city the project acknowledges the need for an architectural intervention that grapples with issues of urban inclusivity and spatial representation. The project attempts to deviate from current models of urban redevelopment that attempt to create urban enclaves for an affluent minority with a corresponding ‘cultural capital’. Rather the project views the architectural intervention as a machine that facilitates ad-hoc adaptations and reinterpretations of the inner city – with hopes of creating a more inclusive future city.

Imperial Debris and Ruination

In the book titled ‘Imperial Debris: On Ruins and Ruination’, Ann Laura Stoler (2008) explores remnants of colonialism and how they continue to shape societies long after formal colonisation has ended. She argues that the physical and social ruins left by colonialism have a profound impact on the psyche and politics of post-colonial nations, perpetuating unequal power dynamics and shaping national identities. Stoler (2008) explores the ways in which the erasure or romanticisation of these ruins serves to reinforce narratives of colonial history and justify ongoing imperialist practices. Ultimately, she calls for a critical engagement with the imperial debris as a necessary step towards decolonisation and building more equitable societies.

A critical engagement with the notions presented by Stoler (2008) provide an interesting vantage point for exploring the ruins that lay scattered throughout Marshalltown and the inner city. The project presents an architectural proposal that wishes to reimagine the abandoned buildings and use the imperial debris and colonial residues as a basis for future imagination.

Notes on Methodology

During the initial stages of the project a wide range of literature was used to develop an architectural framework for approaching Johannesburg as a city. Architectural theory was used to create a theorical framework in the beginning of the project. Desktop research was used throughout the process to explore spatial concepts.

Case studies were used during the development of the project to explore the extensive built archive of information available. The underpinning concepts were extracted from these case studies in hopes of developing a defensible architectural argument.

To avoid a crude reductionist approach to the urban conditions in the Johannesburg inner city (Murray, 2004) ethnographic studies inner city sites were conducted. These studies were conducted through site visits and fieldwork. The fieldwork comprised of taking photographs, sketching, informal conversations with inner city residents, and formal interviews with personal contacts. The material gathered during the fieldwork was later compiled and retrospectively analysed to extract information that could be used in the development of an architectural argument. The documentation of the fieldwork served just as important as the fieldwork itself. A retrospective exploration allowed for a contemplative distance from the city where thoughts could be organised and summarised.

Due to the nature of an architectural enquiry a creative research methodology was used. A non-linear process of thinking, observing, making, and documenting was used to develop a framework for thinking and making. A creative research methodology follows the non-linear process in architectural design where thinking and doing form part of a circular process – always moving between different mediums of design.

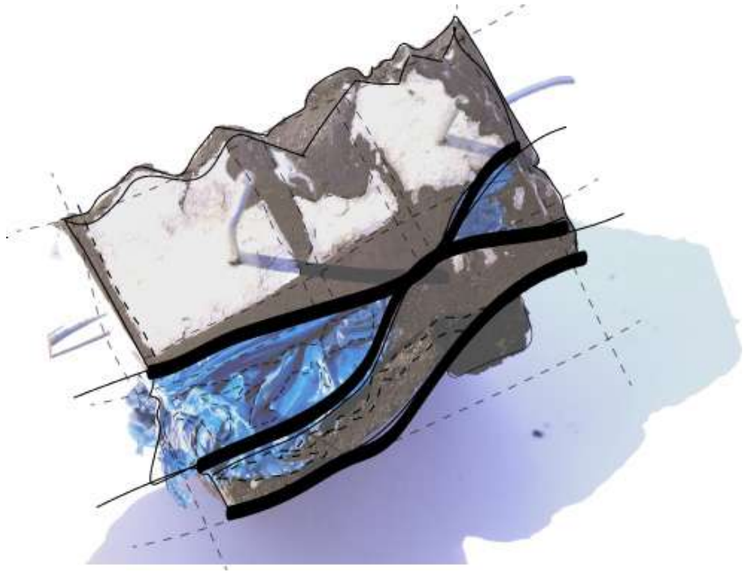


Figure 6 - A creative and non-linear research methodology (Author, 2021)

Troubleshooting

General Issue

Urban Inward Migration – In Search of a Sustainable Future City

Urbanisation of the African continent is unprecedent with an estimated 22 million people added to Africa's urban centres every year (Cartwright, 2015). According to Cartwright between 2011 and 2050 the urban population of Africa will triple going from 471 million to 1.34 billion and contribute 21% to the global population (UN-Habitat, 2014, in Cartwright, 2015).

The growing urban population in Africa reveals the potentials of an "urban dividend" where the quantity of jobseekers, employment opportunities and services in a city are aligned creating powerful urban cities. In developing counties an increasing urban population assists in creating a middle-income status – revealing the positive effects of urban population growth in South African cities (Pieterse, 2013 in Cartwright, 2015).

The rapid urbanisation of African cities shows the immense pressure for municipalities to provide infrastructural improvements. However, the relatively low development of infrastructure and services in African cities offer a unique opportunity for African urbanism. Amongst growing concerns for creating sustainable cities, African cities can avoid being locked into a fossil fuel economy and rather look to more sustainable energy resources – starting from scratch and bypassing the problems many developed cities are currently facing. Many African cities are yet to be fully built and serviced giving them the opportunity to become leaders in sustainable low-carbon urban centres (Cartwright, 2015).

According to Statistics South Africa the Gauteng area had a total population of over 15 million in 2021, which increased from 12 million in 2011 (GCRO, 2021). As we see rapid increase in inward urban migration there is an overwhelming need to envision Johannesburg as sustainable and resilient city.

Although, these issues are generally handled at an urban scale through urban planning and policy implementation, architecture has the possibility to embody a sustainable and resilient ideology. This project presents an architectural thinking connected to ideas of future resilience and sustainability.

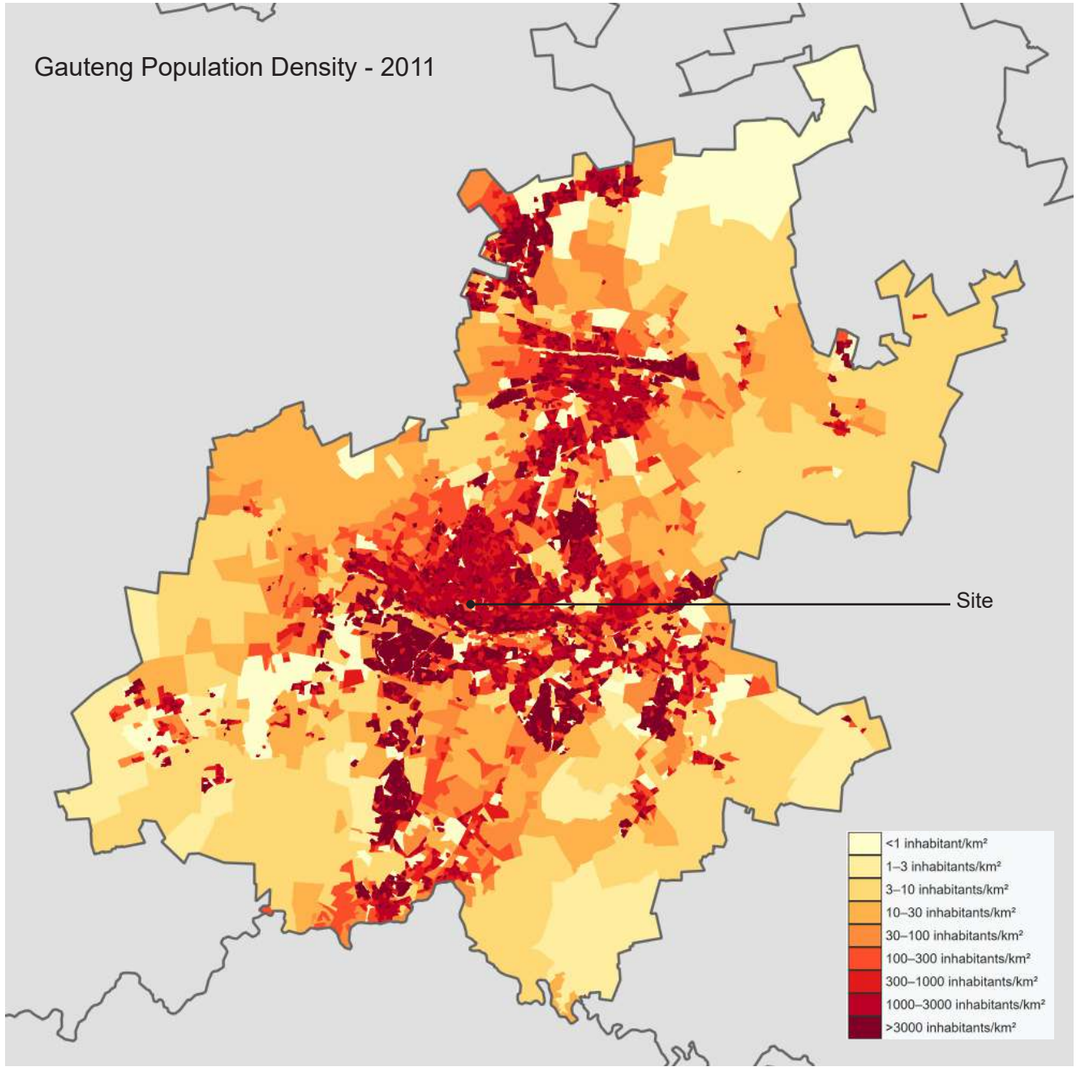


Figure 7 - Gauteng 2011 Population Density. (Statistics South Africa's Census, 2011)

Urban Issue

In Search of a Compact Future City

Currently, the city of Johannesburg displays the inverse of the compact polycentric urban model. This decentralised urban pattern creates difficult everyday realities for people who live in the high-density residential areas which are cut off from the economic hubs and transport structures, creating high environmental, economic, and social costs (Johannesburg Integrated Development Plan, 2021).

The vision of a compact polycentric pattern is used as the premise for creating a spatially just city. To address issues of equity, justice, sustainability, efficiency, and resilience in the city the Spatial Development Framework (City of Johannesburg, 2021) seeks to re-establish Johannesburg as compact polycentric city. The notion of a compact polycentric pattern is based on a city-vision that has a strong primary economic core and is connected to secondary economic hubs by well-established transport structures.

Currently the inner city of Johannesburg does not operate as the strong economic and structural core that it should. The framework attempts to use the existing structure of Johannesburg and adapt it to resemble a more compact polycentric urban model. In doing so creating a more efficient,

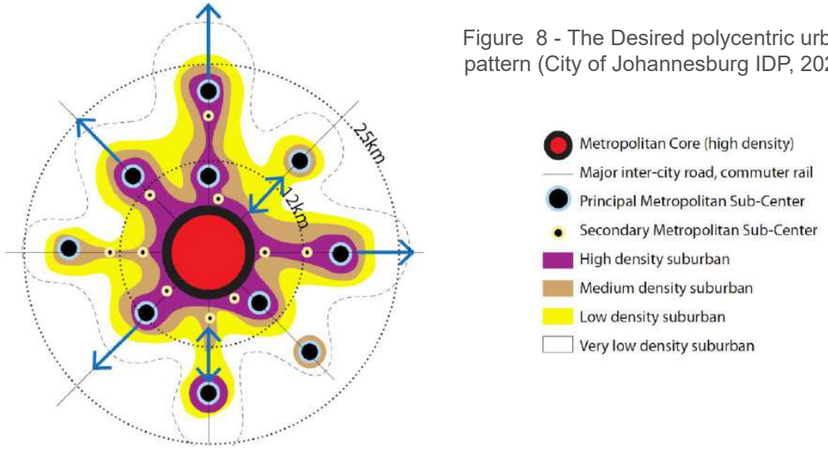
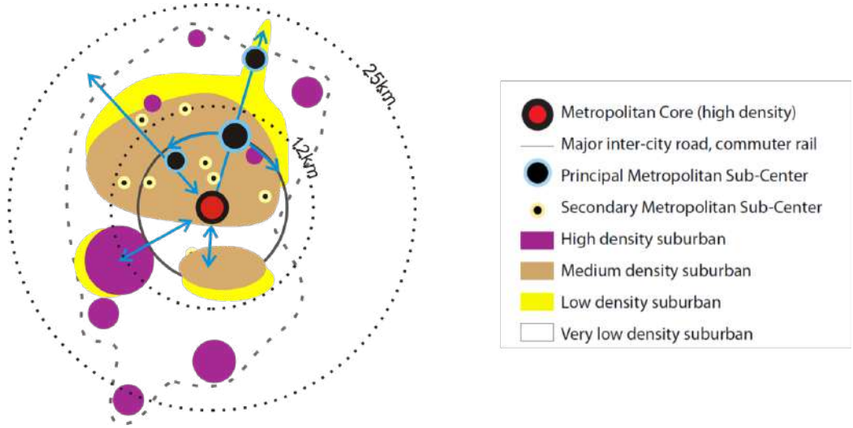


Figure 8 - The Desired polycentric urban pattern (City of Johannesburg IDP, 2021)



equitable, environmentally sustainable, and economically active city.

The future visions of Johannesburg as a compact polycentric city will create housing opportunities in economic cores and bring jobs to residential areas. The Spatial Development Frameworks aims to create city nodes where residents can live, work, and play. (City of Johannesburg, 2021).

The decentralisation of Johannesburg has allowed the CBD to weaken as the primary economic core – with business centres such as Rosebank and Sandton emerging in the 1970s. Approaching an architectural enquiry, in the inner city, requires an understanding of the urban issues facing the city and the City of Johannesburg's future visions. This project seeks to establish itself as an actor in the (re)making of Johannesburg as a compact polycentric city. The project looks to plug-into the city's vision of providing housing in the inner city and strengthening economic activities. This project attempts to address these issues by developing a building that produces building materials for the upgrading of abandoned buildings (providing housing) and providing spaces for individuals to tackle entrepreneurial ventures centred around the recycling of construction waste (providing jobs).

Figure 9 - Current urban pattern of Johannesburg, an inverted polycentric pattern (City of Johannesburg IDP, 2021)

Architectural Issue

Urban Ruins in Search of New Visions

During the 1970s, a public resistance against the Apartheid regime was growing. The Soweto uprising, of 16 June 1976, marked the changing collective visions for the future of South Africa. Due to growing resistance, the character of the Johannesburg CBD was also changing. The public was unhappy with the vision of Johannesburg as a white dominated space that negated the experiences of the black population (Bremner, 2000).

During this time, the Johannesburg inner city saw a rapid change in urban demographics, with a large inward migration of a black population. Hillbrow – a previously white dominated neighbourhood in the inner city is an example of the rapid demographic change. In 1986 the neighbourhood was roughly 80% white and by 1996 85% of the residents were black (Morris, 1996, in Brenmer, 2000). Landlords used the illegal status of the new black tenants to raise rental prices while simultaneously lowering maintenance expenses on the buildings (Morris, 1996, in Brenmer, 2000). These conditions allowed for many of the buildings in the inner city to decay due to low maintenance and exploitation of black tenants.

These conditions, where the inward migration of a black population signalled urban decay and chaos, has become a prevalent urban stereotype associated with the inner city. This urban stereotyped, grounded in racial prejudices, illustrates a problematic romanticism of the inner city before the arrival of black residents.

During the 1980s the economy of the inner city declined rapidly. With an exodus of major businesses from the inner city to the newer business nodes of Sandton and Rosebank, the inner city weakened as an economic hub. Almost all the business sectors (finance, commerce, manufacturing etc) saw a massive decline expect for retail (Bremner, 2000). The relocation of major businesses can be attributed to many different factors – but a clear image of capital flight from the inner city emerged (Bremner, 2000).

The conditions created by capital flight and racial stereotypes of the new residents occupying the city have produced an image of Johannesburg as a city of decay, chaos, and abandonment. I argue that these urban conditions provide opportunities for reimaging and (re)making the inner city – the abandoned buildings are left underutilized and have the potential to house the city's future visions.

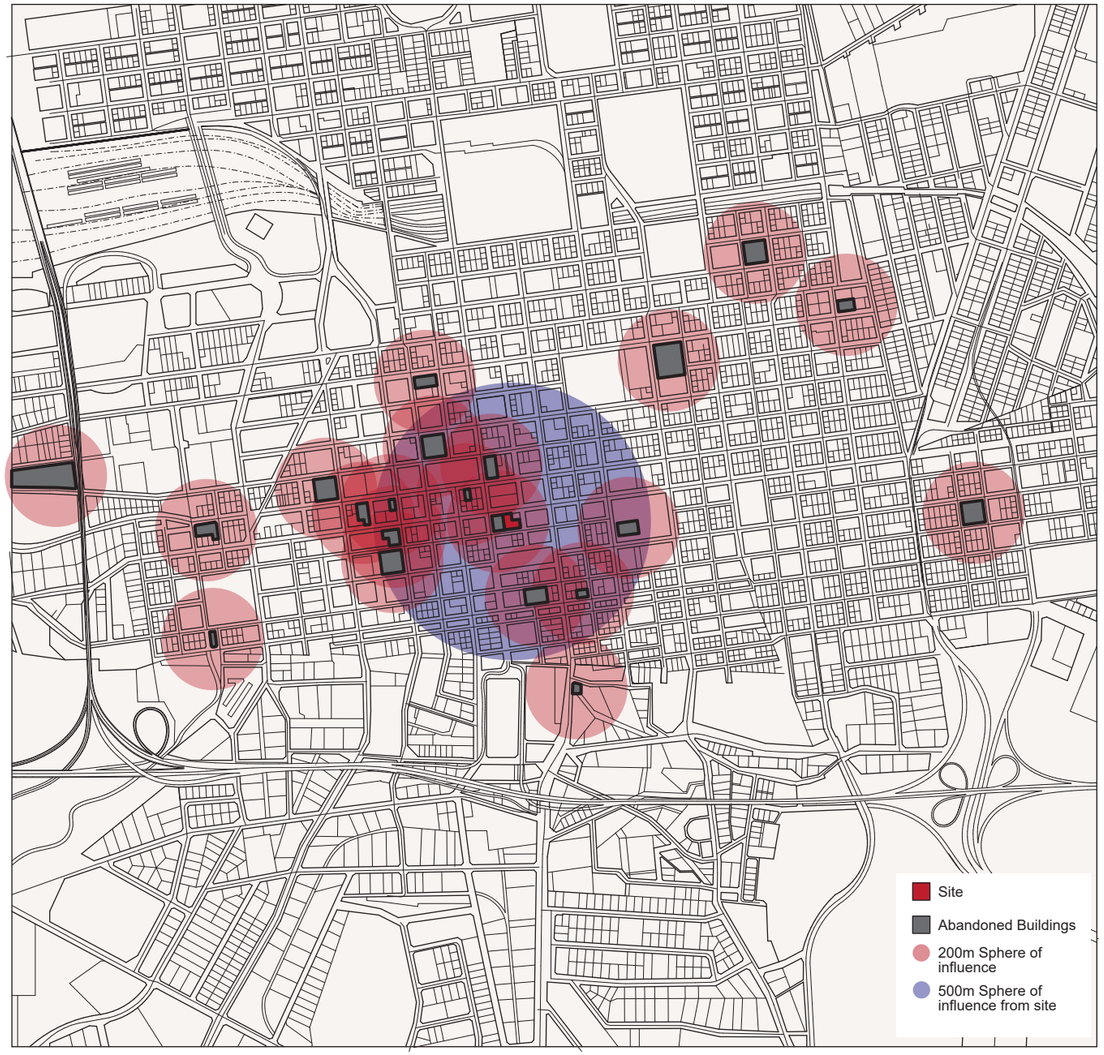


Figure 10 - Mapping abandoned buildings in the inner city (author, 2022)

The Library as a Source of Inspiration

While in the early stages of the project, the library became an important source of inspiration for the development of an architectural framework. Two case studies stood out during the early days of the project - Renzo Piano's 'UNESCO Neighbourhood Workshop' and Urban Think Tank's book titled, 'Torre David: Informal Vertical Communities'.

Although, these case studies explore contextual conditions that are not directly translatable to a South African context, they illustrate a conceptual thinking that can be interpreted and translated.

Figure 11 - Edited image of 'Torre David: Informal Vertical Communities by Urban Think Tank' (author, 2022)



Torre David

Urban Think Tank

Figure 12 - Images of Torre David. available at: https://www.metalocus.es/en/news/torre-david (Iwan Baan, 2015)



The book titled ‘Torre David: Informal Vertical Communities’ by Urban Think Tank presents an investigation into the 47-story building in Caracas, Venezuela. Due to the Venezuelan economic collapse in 1994 and the death of buildings developer, Torre David was never fully completed and stood as a structural ruin. Since then, the building has been informally occupied by over 750 families. Urban Think Tank provides a detailed description of the how the informal community has reorganised themselves and appropriated space in the absence of formal structures. Spaces are reorganised according to resident’s needs - assisting the rituals everyday life within the tenuous and illegal squat (Brillembourg & Klumpner, 2013).

The book provides an evocative investigating into informal vertical communities, the appropriation of space and the infrastructure that supports it. It illustrates the agency of individuals to change and organise space in their image – revealing the potentials of human imagination and the resilience of architecture acting as a support system. Torre David portrays an extreme example of individuals reclaiming their right to the city.







UNESCO Neighbourhood Workshop

Renzo Piano

The UNESCO Neighbourhood Workshop resembled Renzo Piano's early preoccupations with architecture and the act of making. The project was commissioned by UNESCO, with the intention of investigating an architectural approach that would assist with the redevelopment of declining historical towns in Italy. The previous processes of urban redevelopment in these historical towns saw a destruction of meaningful architectural artefacts and social conditions. The idea for the experiment was to develop an alternative redevelopment approach and conduct live experiments in Otranto, Italy (Buchanan, 1993).

The participation of local artisans was a focal point of the project. Instead of following a common method of community involvement, where community members were asked to give input during the early stages and later side-lined for the design and construction, the Neighbourhood Workshop sought to instigate an ongoing involvement with the local community. The experiment favoured a physical collaboration with the community over a purely intellectual collaboration.
A physical involvement of the local community was achieved through the introduction of new building tools that could be mastered by local artisans in a short time. The project was successful in that it created a connection between the tool and the product. The introduction to new ways of building allowed the local community to shape their urban environment and the future visions. The Neighbourhood Workshop was viewed as a toolbox for the upgrading of the town.

The workshop was a steel box transported by truck and placed in a central public square in Otranto. The cube was made up of four sides dedicated to different activities (surveying, strategizing, documenting, and building). The four sides were unfolded and covered by a tent - creating an open public area where the community could discuss and debate. Unfortunately, the experiment only lasted a week - illustrating the exciting potentials of this redevelopment model – but showing no substation effect on the physical transformation of the town (Buchanan, 1993).

Piano's architectural approach to issues of urban decay illustrate an interesting relationship between intellectual and physical collaboration – where a simple temporary structure facilitates the development of new urban visions layered on an existing context. The project resembles an interest in a creating a building that assists in urban redevelopment without completely changing the context.

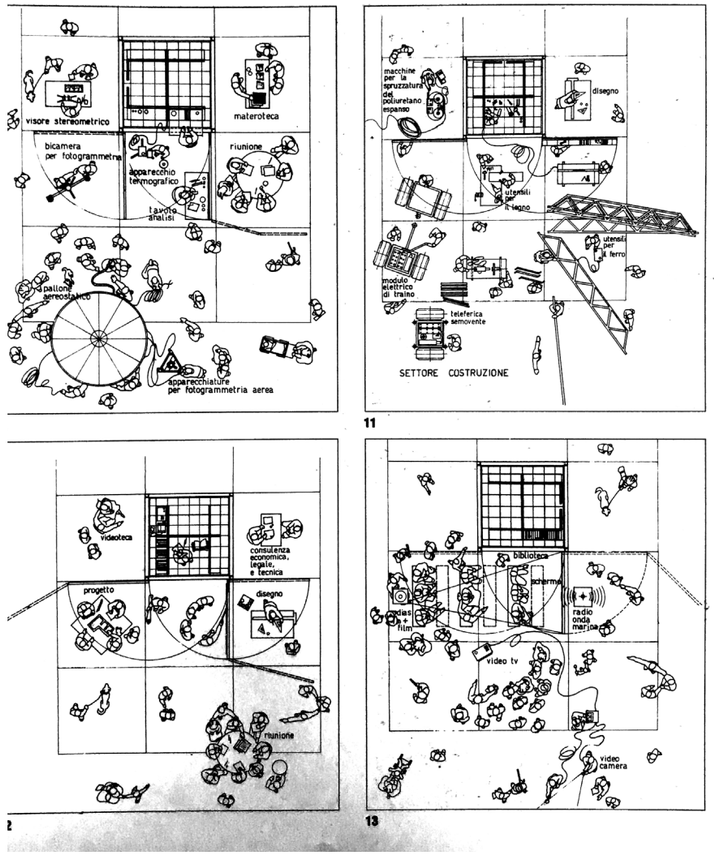


Figure 13 - Scan of Renzo Pianos UNESCO Neigbourhood Workshop (Renzo Piano, 1979)

Narrowing in on the Site

The Larger Context

The project locates itself in Marshalltown, Johannesburg – an active suburb in the inner city. The study area was originally chosen because of the overwhelming number of abandoned buildings in Marshalltown.

The mapping (figure 14) locates the site within the larger urban context. The map emphasises the CBD as the focal point - where multiple urban conditions converge. Roads, railways, mining infrastructure and residential areas seem to emanate from the Johannesburg inner city. To view the inner city once again as the future of Johannesburg - the mapping attempts to emphasise the importance of the inner city at an urban scale.

Mapping was used a tool to illustrate some of the unique urban conditions that have created Johannesburg, as it stands today. The lack of water in Johannesburg, the mining belt just south of inner city and the establishment of townships far away from economic activities, are purposefully portrayed in the mapping in attempt to understand the makings of Johannesburg as a complex city

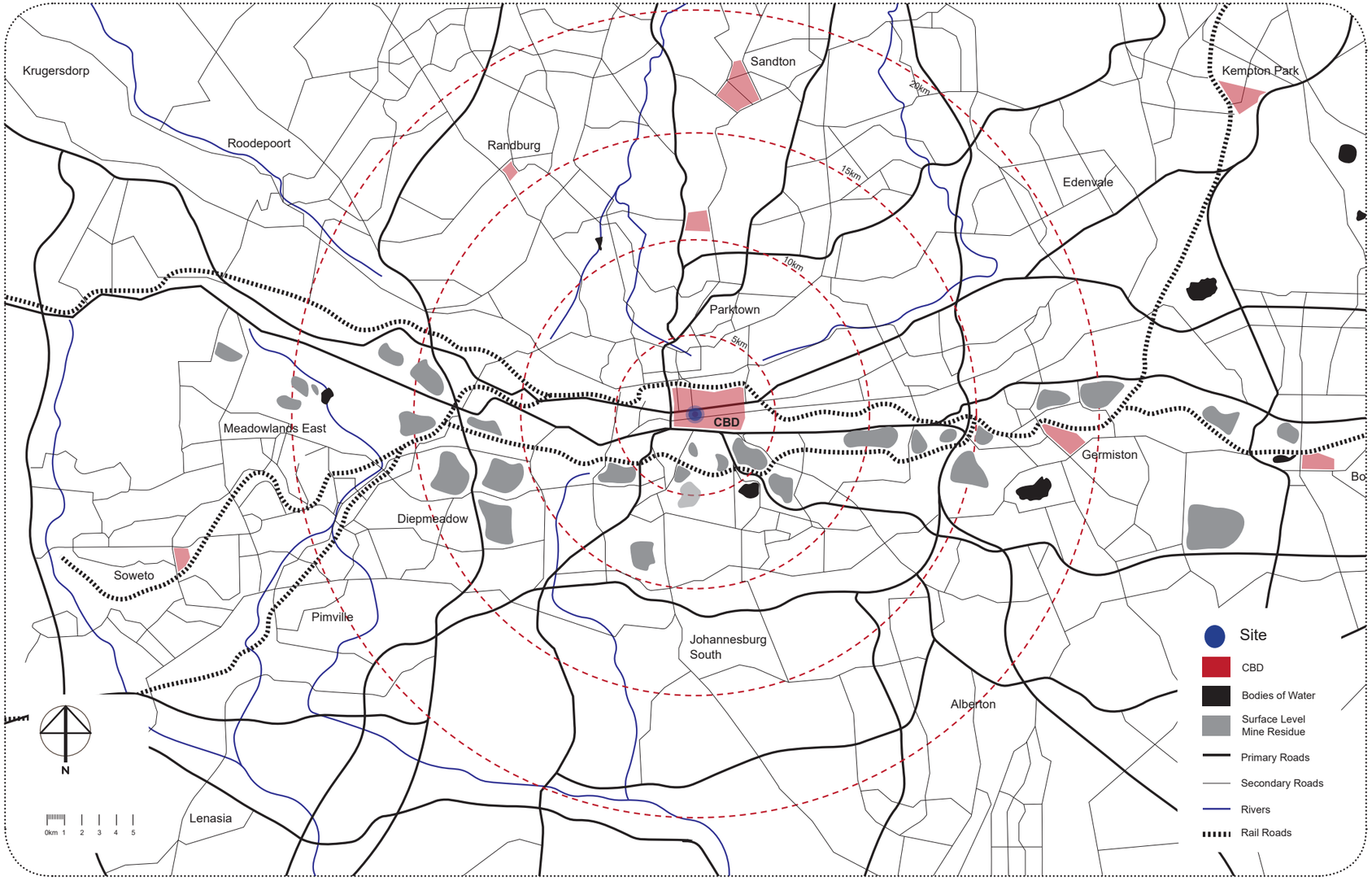


Figure 14 - Locating the Project in it's larger context (author, 2022)

Locating the Site

The site forms part of the city block in Marshalltown home to three abandoned buildings, the CNA building, The Shakespeare House, The New Kempsey building, and a vacant site wedged between them. The proposal wishes to use the vacant site and the New Kempsey building. The site is serviced by two main roads, Fox Street and Commissioner Street, that connect the east and west parts of the inner city. The site is located just north of Gandhi Square - a prominent public space in the inner city, west of the Carlton centre - a symbol of Johannesburg's grand modernist visions and South of the Library Gardens.

Figure 15 - Locating the Site - Marshalltown, Johannesburg (author, 2022)

Site - 01
Carlton Centre - 02
Gandhi Square - 03
Bank City - 04
Standad Bank Hanging Building - 05
Library Gardens - 06
Johannesburg City Hall - 07
Johannesburg Barracks - 08

Main Roads -
Secondary Roads -
Open Public Space -
Site -



Three Landmarks of Decay

'A Sense of utter desolation and abandonment surrounds this city bock. The open wounds left by the demolition of once proud buildings signifies an irreplaceable loss; the bricked-up windows and broken window panes – exposed unfinished lateral walls – facades that were never proposed to imprint on the quality of the streetscapes, shrouding the city block into a crevice of total depression'.
- Catharina JM Bruwer, 2004.

The three landmarks of decay, that make up the city block, resemble images of Johannesburg as a city of decay and neglect. Bruwer's (2004, 2002, 2003, 2000) heritage surveys are used as a source of vital information to provide an investigation into the three abandoned buildings.



Figure 16 - Collage of Shakespeare House, New Kempsey Building, CNA Building (author, 2022)

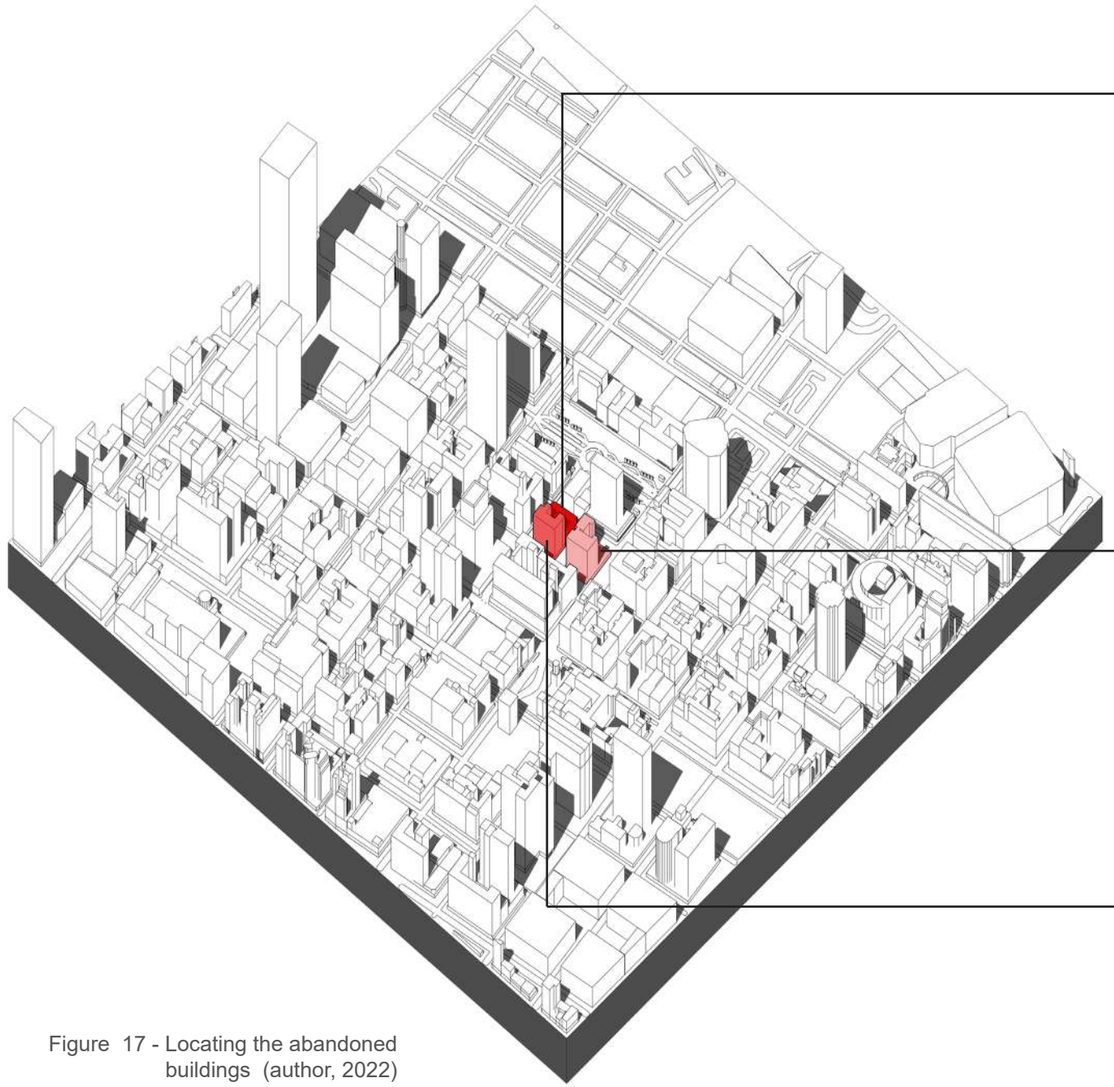


Figure 17 - Locating the abandoned buildings (author, 2022)



New Kempsey Building

Architect: JC Cook
Street address: Corner Fox and Joubert (113, 115 Fox Street) Marshalltown
Building Style: Stripped Neo-Classic style indicative of the 1920s
Number of levels above ground: Five
Condition: Vacant

Construction Materials
Walls: Steel frame construction with plastered brick walls.
Roof: Corrugated Iron Pitched roof.
Windows: Steel frame windows.



Central News Agency Building

Architect: Originally designed by John Waterson with the final design being produced by JC Cook and Cowen.
Street address: 108, 110 Commissioner Street Marshalltown
Building Style: Art Deco – Exhibition Style of the 1930s
Number of levels above ground: Eleven
Date completed: 1935

Construction Materials
Walls: Reinforced concrete frame construction with plastered brick walls
Roof: Reinforced concrete roof with asphalt damp proof course.
Windows: Steel frame windows.



Shakespeare House

Architect: JC Cook and Cowen
Street address: 116 Commissioner Street Marshalltown (1
Building Style: Art Deco – Exhibition Style 1930
Number of levels above ground: Eleven
Date completed: 20 January 1938
Condition: Vancant with clear signs of neglect

Construction Materials
Walls: Reinforced concrete walls, brick infill and plastered brock to exterior.
Roof: Reinforced concrete roof with asphalt damp proof course.
Windows: Steel frame windows.

Site

Vacant Site + New Kempsey Building

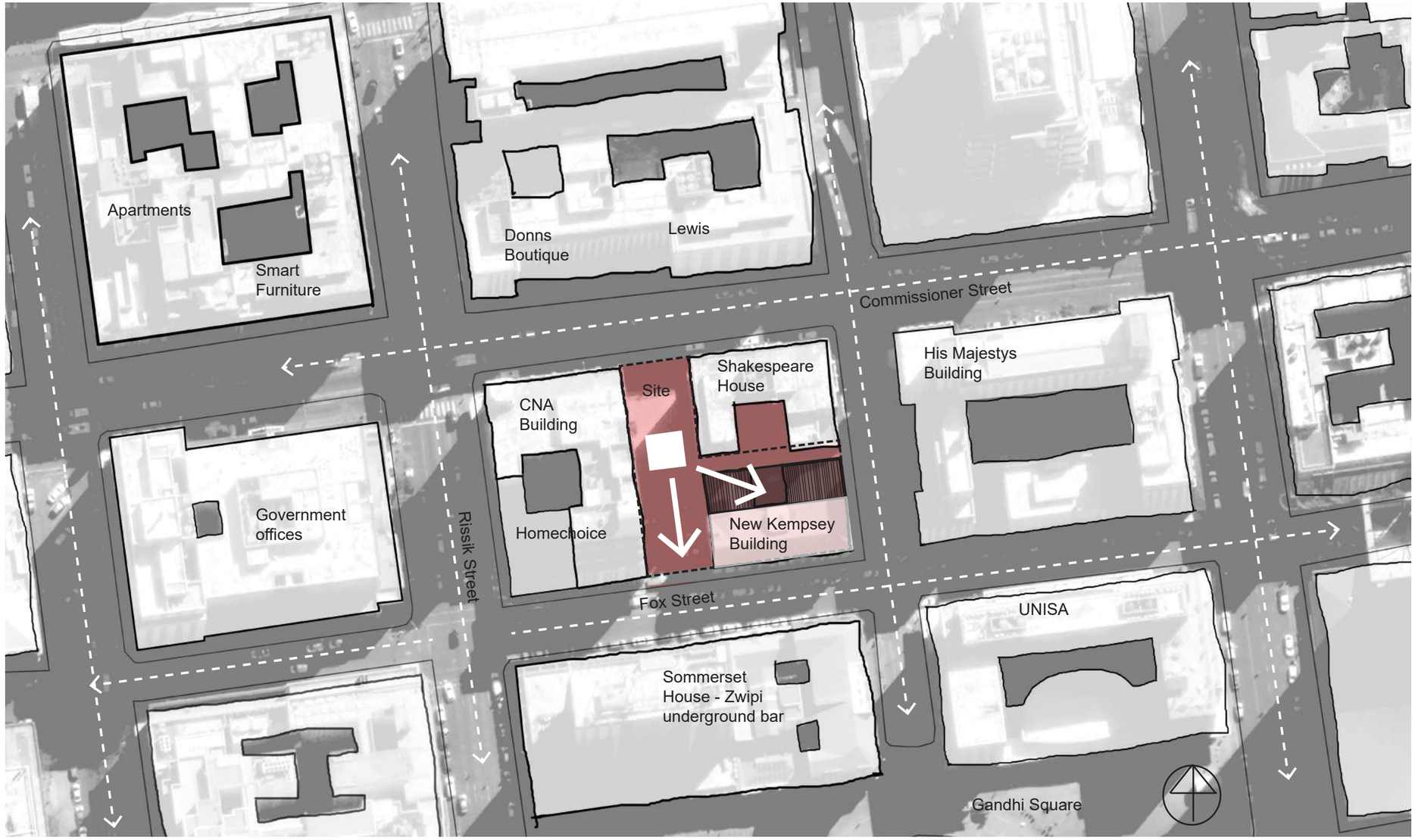


Figure 18 - Site image (author, 2022)

Site Vision

This project presents a new building inserted into the vacant site and an adaptive reuse of the existing new Kempsey Building. Part of the New Kempsey building will be demolished making room for a new structure behind the façade – acknowledging the value of the existing building. The other buildings, The Shakespeare House, and the Central News Agency Building, are left as is. A discission was made to avoid the two buildings as the proposal could be achieved without changing these buildings. The building is intended to assist in the remaking of abandoned buildings. By leaving these buildings vacant the proposal attempts to attract attention to the building in hopes of attracting keen investors. The white core of the building represents a functional core that assists with the movement of materials within the building.

Figure 19 - Site Vision (author, 2022)



Urban Vision

At an urban scale the building is intended to function as a piece of infrastructure – facilitating the (re)making of the abandoned buildings. The mapping (figure 20) attempts to illustrate this intention.

Architectural Visions

In the early stages of the design process an intuitive decision was made to lift the building above ground leaving the ground floor open and ready to receive reclaimed materials. The spaces above are assisted by a structural core that transports materials and people – connecting the different programs (figure 21).

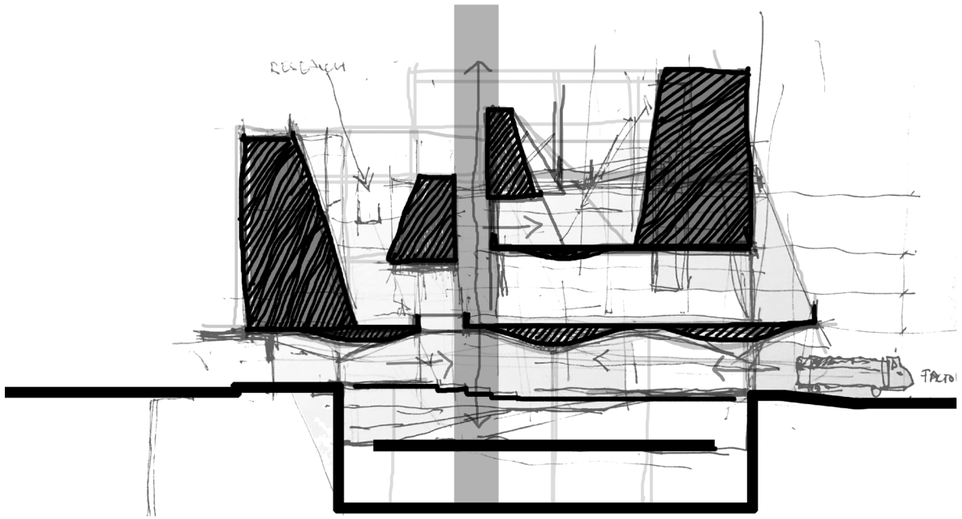


Figure 21 - Architectural Vision (author, 2022)

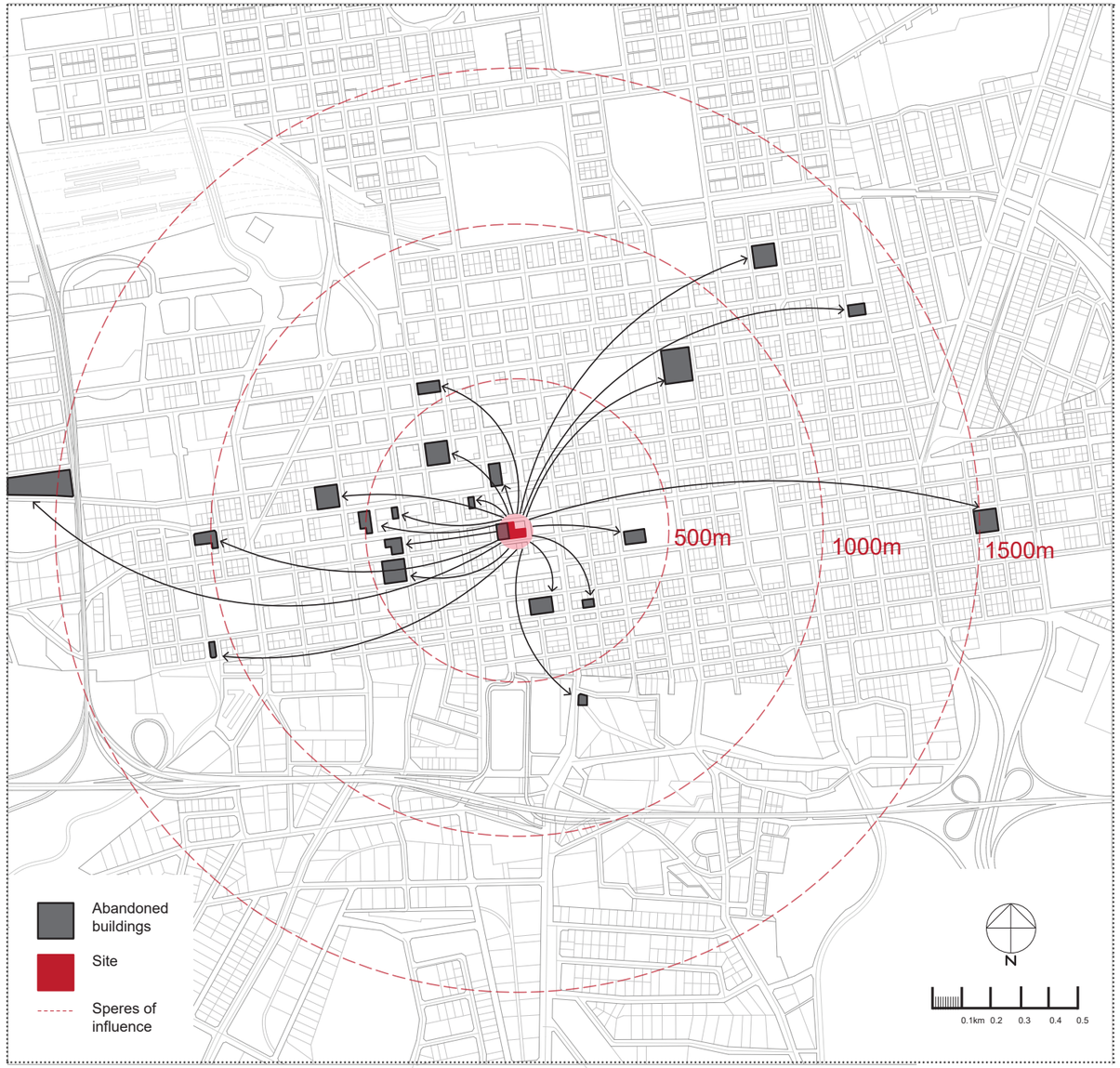


Figure 20 - Urban Vision (author, 2022)

Chapter 2

A Reading of the City

The unique historical development of Johannesburg, fueled by exploitative environmental and social processes, has produced a city with profound social divides. These processes of extraction and domination have left long lasting residues that continue to influence the city and its people. When approaching an architectural enquiry in Johannesburg, it seems pertinent to find inspiration and direction from the forces that have created the city. This chapter seeks to provide a reading of the city that explores Johannesburg's urban character through three theorical lenses – extraction, domination, and abonnement.

A City of Extraction

"Here in Johannesburg, it is the mines, he said, everything is the mines. These high buildings, this wonderful City Hall, this beautiful Parktown with its beautiful houses, all this built with the gold from the mines … built on our backs, our sweat, on our labour. Every factory, every theatre, every beautiful house, they are built by us"

- Cry, the Beloved Country (Paton 2003, p.33).

Processes of resource extraction have structurally shaped the development of Johannesburg and been responsible for the making of a city entrenched in social divides, processes of environmental degradation, and economic inequalities (Trangos, 2018). The landscape of Johannesburg remains a city influenced by the gold mining industry with extraction legacies imprinted on towns, people, and landscapes that continue to influence its future development as a post-industrial city.

Extraction as a tool for Segregation

The legacy of Johannesburg as a city built on resource extraction has created a spatially segregated and socially unequal city. During Apartheid mine dumps were used as buffer zones between settlements, separating different racial groups and placing high density townships on the peripheries of urban development (Trangos, 2018). Mines dumps, industrial wastelands and urban infrastructures were used as tools for establishing physical divides between different racial groups – prompting the development of a highly segregated city. These man-made landscapes of domination and extraction have left long lastly geographical divides superimposed on the landscape, creating on going challenges for creating a spatially integrated city (Trangos, 2018).

During the beginning of the 20th century an increase in mining activity to the south of Johannesburg created a need for low-cost and readily available labour. According to Trangos (2018), policies for suburban expansion assisted the mining industry in attracting a rural black labour force into Johannesburg. The labour force was forced to live in segregated high density townships and were expected to commute long distances to and from work each day. The availability of a large and cheap labour force in Johannesburg allowed the mining industry grow rapidly and accumulated vast

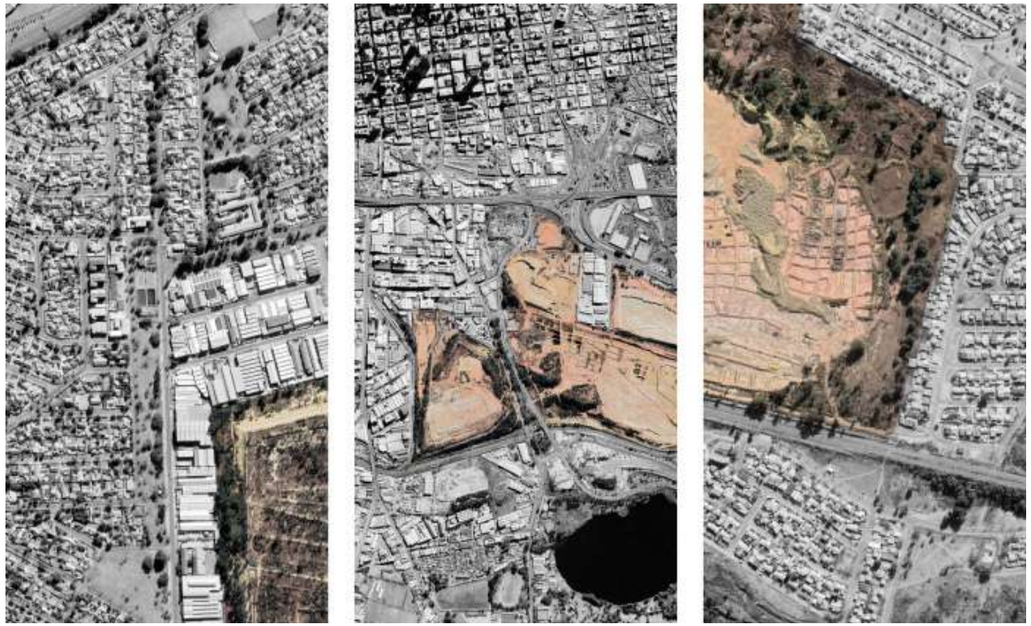


Figure 22 - Living amongst mine dumps - google maps photomontage (author and Google Maps, 2022)



amounts of capital while further developing Johannesburg as a city with a strong identity of segregation, inequality, and exploitation.

Extraction and the Environment

Resource extraction is an inherently destructive process with potentials for toxic contamination of both the landscape and human inhabitants. The mine waste and residues from the mining industry along the Witwatersrand have created long-term impacts on the Johannesburg landscape (Trangos, 2018). Johannesburg continues to face challenges of acid mine drainage and contamination of water.

The proximity of mine waste to urban area has created the need for the City of Johannesburg to establish buffer zones around the mine dumps. These buffer zones provide guidelines for urban development around mine residue areas. The map (figure 23) illustrates the far-reaching effect of the mining industry on Johannesburg's landscape.

- Mine Dumps
- Extraction Belt
- Curated City Planning
- Infrustructure for Extraction
- Townships

Figure 23 - City of Extraction - Production, Pleasure and Emprty Wastelands (author, 2022)

Production, Pleasure and Empty Wastelands

The proximity of urban areas to mining activity is a unique characteristic of Johannesburg. With an underground river of gold running along the gold reef urban settlements, infrastructure for production, empty wastelands and spaces of extraction lie in anxious closeness, creating a juxtaposing mesh of urban realities and narratives. The duality of the landscape is illustrated in the development of rich suburbs in the north and spaces for production in the south – and what lies in between these polarising spaces are empty wastelands left over from processes of extraction. The map (figure 23) attempts to provide an urban illustration of a city built on resource extraction.

As explained by Trangos (2018) the development of rich suburbs in the north were viewed as *'landscapes of pleasure'* where wealthy residents escaped the bad air quality produced by the mines with dramatic views of the picturesque highveld. These areas had a concentration of wealth which created a suburban utopia placed away from the 'landscape of production' to the south.

South of the suburban utopia, a '*landscape of production'* was established. The civic spaces created in the northern suburbs were substituted and contrasted by industrial mining spaces, which were characterised by dust, dirty, large empty fields, environmental degradation, and labour exploitation.

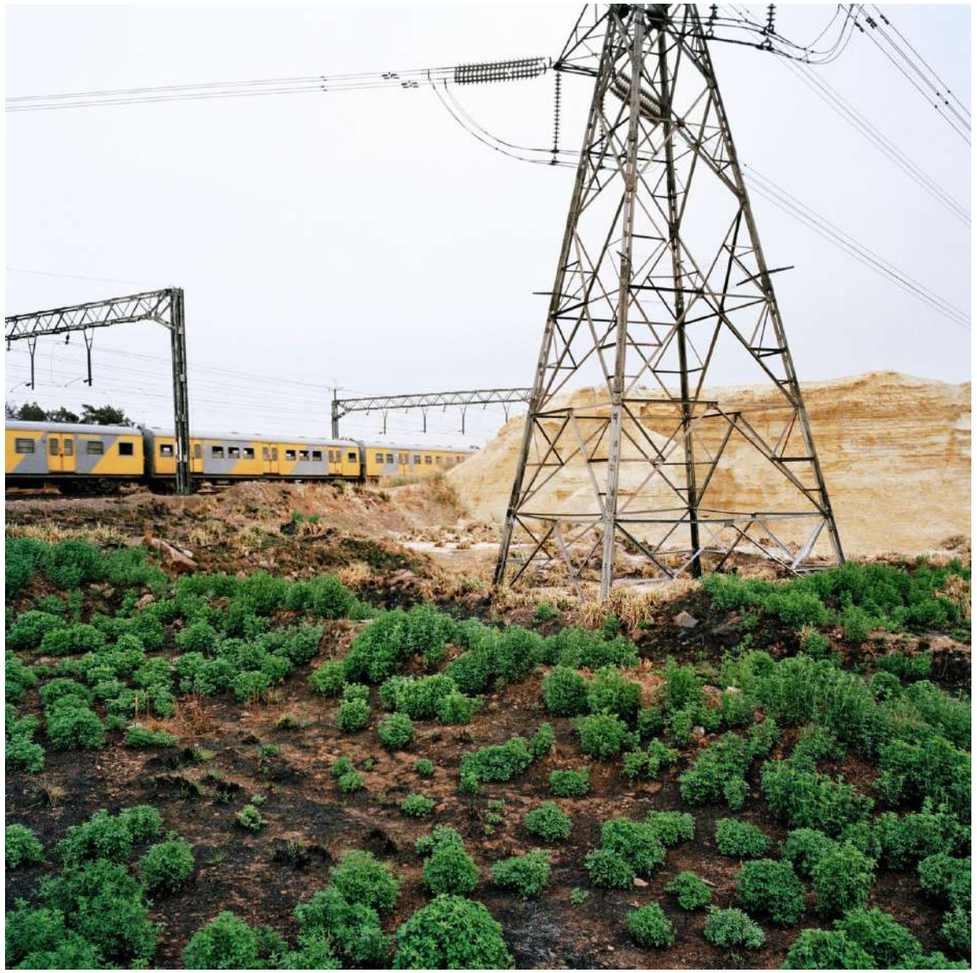


Figure 24 - 'Metrorail' (Larkin, 2010) available at: https://www.newyorker.com/culture/photo-booth/tales-from-the-city-of-gold

A City of Domination

"In Johannesburg, the Venice of the South, the backdrop is always a man-made one. We have planted a forest the birds endorse. For hills, we have mine dumps covered with grass. We do not wait for time and the elements to weather us, we change the scenery ourselves, to suit our moods. Nature is for other people, in other places."

- Portrait with keys, Joburg and what-what (Ivan Vladislavic, 2006)

Since the establishment of Johannesburg, the city was envisioned to conform to images of modernity (Bremner, 2000). In the early stages of Johannesburg's development, a clear vision for Johannesburg as European industrial city was created. The development of a clear and easily commodified landscaped was prioritised over visions of a civic city, and the landscape was viewed as an infrastructural hurdle rather than a design informant.

The defining character of Johannesburg, in many ways, can be attributed to the clear vision of Johannesburg as an urban city geared towards the accumulation of wealth. The early imposition of a city-grid, inspired by modernist urban thinking, was indicative of western cities such as New York and Chicago. The lack of a dominating topography in the inner city allowed for the establishment of Cartesian grid – where the landscape could be dominated - it was. Due to unregulated real estate speculations and the rapid development of the city, portions of land were sold off quickly resulting in a civic city becoming an afterthought.

The mapping of the site (figure 25) illustrates the domination of the landscape with the imposition of an ordered cartesian city grid. Rather than looking to the landscape for inspiration the visions of the city imported a western ideology and simply superimposed it on the existing typography.

Continuing the ideologies of resource extraction that governed the development of Johannesburg, the landscape and its people were subjected to continued domination by the imperial powers. Creating a harsh and dominating urban condition.

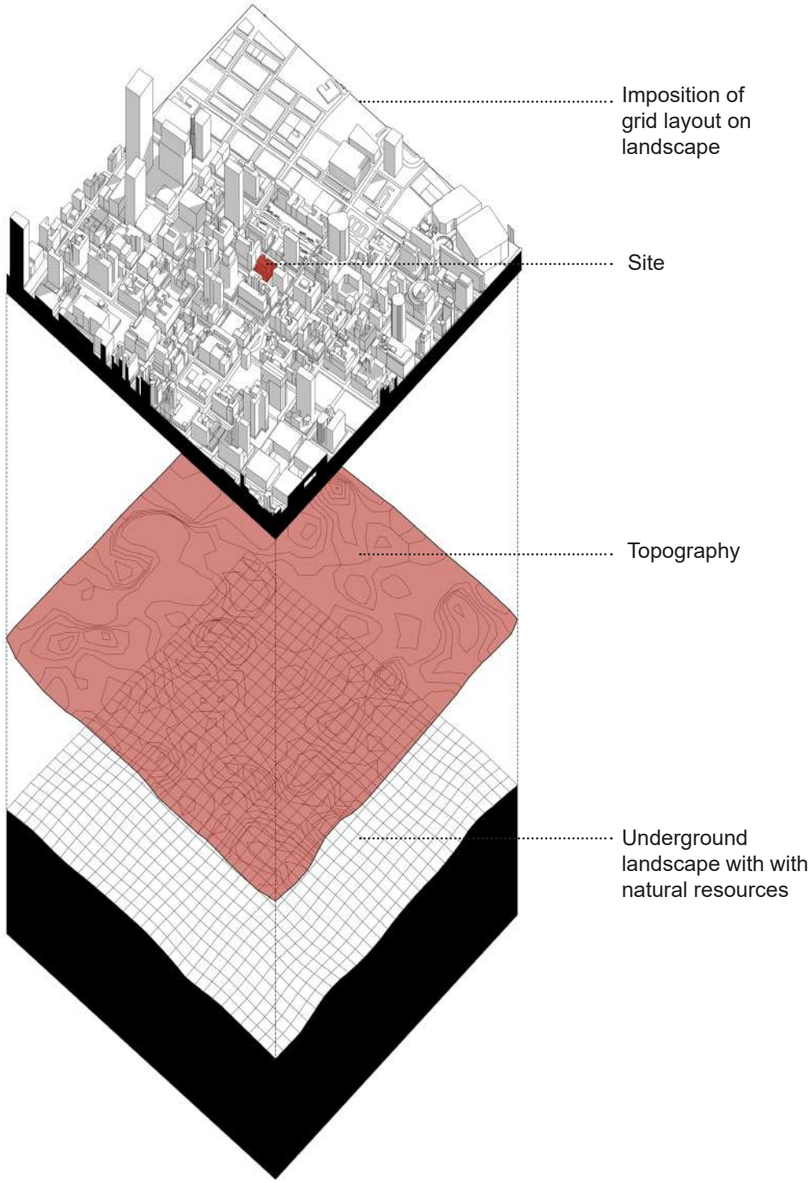


Figure 25 - A City of Domination (author, 2022)

City of Abandonment and Decay

Murray (2008) discusses how cities are spatial manifestations of the past. He explains how ‘cities are always experienced in space but studied in time’ – creating an argument that cities serve as symbolic accumulations of spaces from past visions. The current physical make-up of a city provides a glimpse into the past. The accumulated archive, of abandoned buildings in the Johannesburg inner city, reveal the dreams, hopes and aspirations of their builders.

Due to the historical development of Johannesburg that led to the relocation of major businesses to Sandton and Rosebank, the city has experienced significant processes of urban decay and neglect. Landmark buildings that signal decay and ruin are scattered throughout the inner city – creating a strong held perception of the inner city as a site of abandonment and decay.

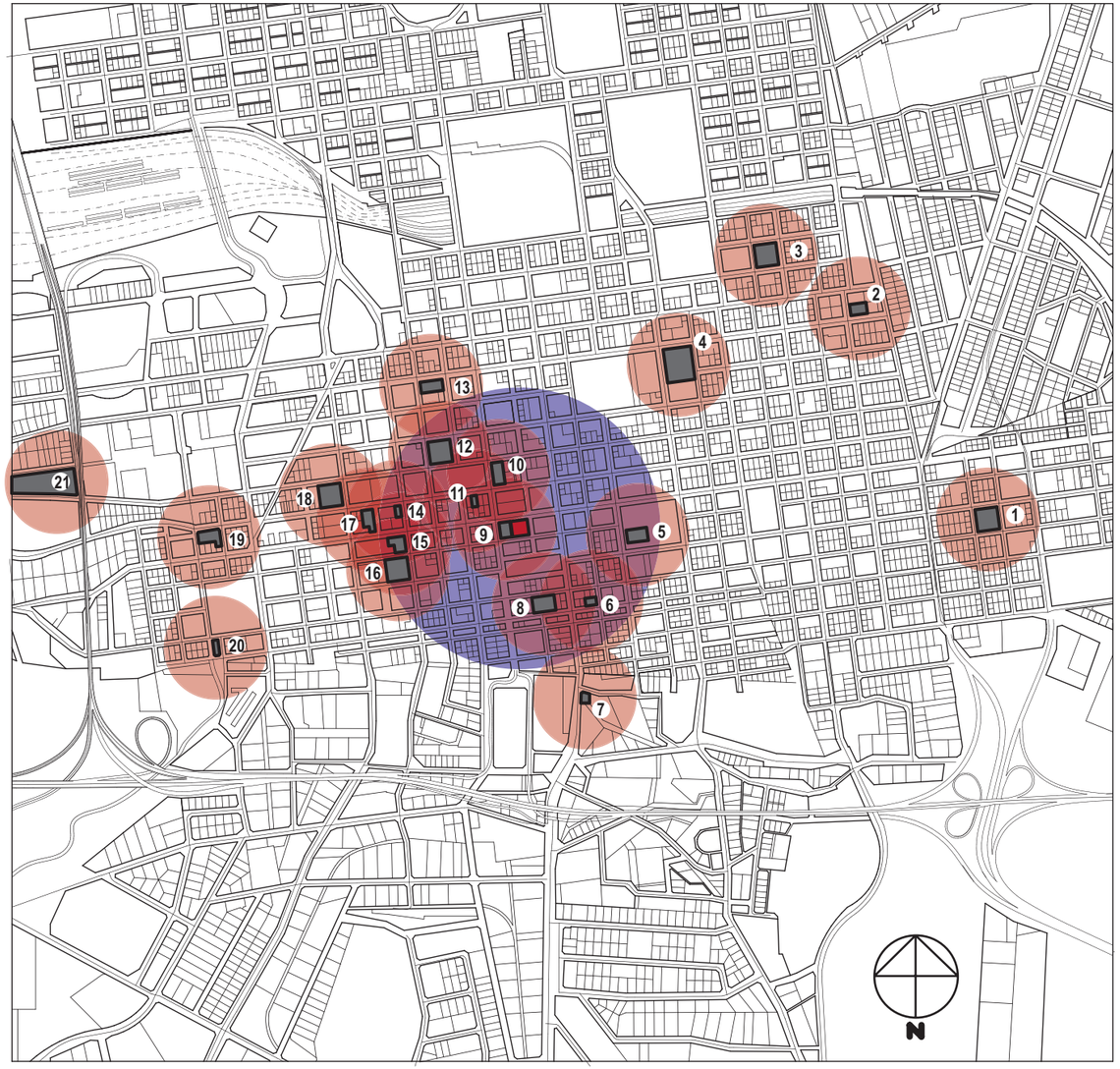
Ruination

Ann Laura Stoler’s introduction to the book ‘Imperial Debris: On Ruins and Ruination’ provides a personal manifesto – where she suggests post-colonial theorists ought to expand on current approaches and examine the toxic residues that lie in the wake of colonial movements. Stoler (2008) redirects the focus of urban scholarship and post-colonial theory, which looks at ruins as evidence of the past, to rather explore the act of ‘ruination’ and the traces of imperial power left behind. She suggests ruination is a process in which imperial powers have the capacity to occupy and influence the present, leaving lasting corrosions and toxic residues on the physical environment and on the people that inhabitant them.

Stoler’s (2008) notion of ruination builds on pervious frameworks that look at ruins as evidence of the past. This framework contrasts the ideas previously discussed by Murray (2008) – offering a further developed insight into the processes embedded in ruins. An investigation into the ruined buildings in the Johannesburg inner city should avoid examining the ruins as stagnant reminders of the past but rather seek to understand the continual processes of imperial residues infecting the present.



Figure 26 - Abandonement image (author, 2022)




01 - 2700msq


02 - 1500msq


03 - 4050msq


04 - 5800msq


05 - 1500msq


06 - 680msq


07 - 620msq


08 - 2800msq


09 - 1400msq


10 - 2000msq


11 - 500msq


12 - 4000msq


13 - 2000msq


14 - 500msq


15 - 1750msq


16 - 1700msq


17 - 700msq


18 - 4000msq


19 - 1700msq


20 - 610msq


16 - 15 000msq

Accumulated Ruins

The abandoned buildings in the inner city have accumulated over time leaving a large resource unused.

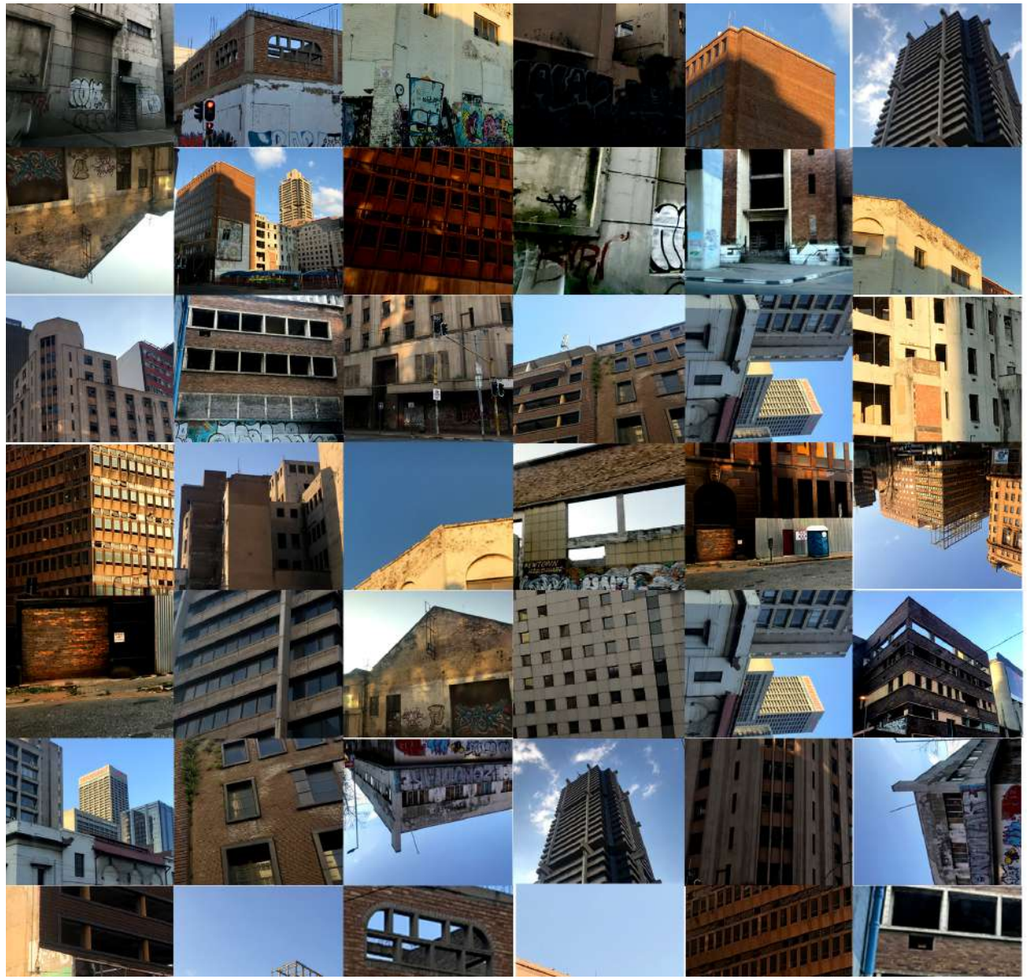
Total Floor Area: 50 110msq

Site

200m Sphere of inluence

500m sphere of influence

Abandoned Buildings



Anatomy of Abandonment

Using Stoler's notions of ruination and imperial debris a mapping of the abandoned buildings and spaces scattered throughout the inner city was conducted.

The abstraction of these spaces creates a textured illustration of the abandoned identity. This mapping has become a symbolic illustration of the projects intention – offering a graphic justification for designing a building that explores the act of making and (re)making.

During the mapping of abandoned buildings in the inner city it was observed that the decay of many of the buildings seemed to follow a similar process. Although the processes may not occur in a linear fashion, it was noticed that four main processes occurred – the ground floor was bricked up, the windows were broken or removed, graffiti lined the ground floor and lastly the buildings began to show signs of natural reclamation.

Figure 27 - mapping of accumulated abandoned buildings (author, 2022)

Figure 28 - decaying textures (author, 2022)

Façade Destruction

The windows of abandoned buildings are broken or removed signaling to the surrounding context that the building is vacant, allowing the process of decay to begin.





Bricked-up Ground Floor

The ground floor is boarded up and prevents access from the street – an attempt to prevent illegal squatters. This has a substantial effect on the street condition where previously the ground floor would act as the intermediate space between a public edge and private building above. The brick-up ground floor signals to pedestrians that the building is vacant.

Graffiti

The bricked-up ground floor is subjected to graffiti and vandalism – illustrating an attempt by city residents to reclaim the abandoned buildings. In a way the graffiti reveals a process of reclamation where residents exercise their right to the city. Generally, the reclamation process starts with small induvial letters and tags and relatively quickly turns into whole buildings being engulfed in rogue artworks.





Natural Reclamation

Processes of material decay and natural reclamation were observed. Although buildings are relatively resilient against the natural environment, material decay is inevitable. Over time buildings begin to show signs of neglect where the natural environment reclaims the building.

Figure 29 - anatomy of abandonement (author, 2022)

Consolidation of Mappings

Extraction, Domination and Decay: Searching for a Way Forward

Ultimately, the processes of extraction and domination throughout Johannesburg's development have resulted in the current city image of abandonment. A consolidation of the mappings attempts to illustrate the social, spatial, and environmental repercussions of these urban processes on which Johannesburg was built.

Photographs by Jason Larkin, which provide striking illustrations of Johannesburg as a post-industrial city, are used as tools to extract architectural concepts. Johannesburg's historical obsession with resource extraction and the subterranean are used as frames of reference for the development of an architectural argument. Larkins photographs provide evidence of the vast wastelands that lie in the wake of resource extraction and landscape domination, where inhabitants attempt to make-do with the conditions they find themselves in. The residues of imperial powers that viewed the landscape and its people as resources are shown to continually influence the present.

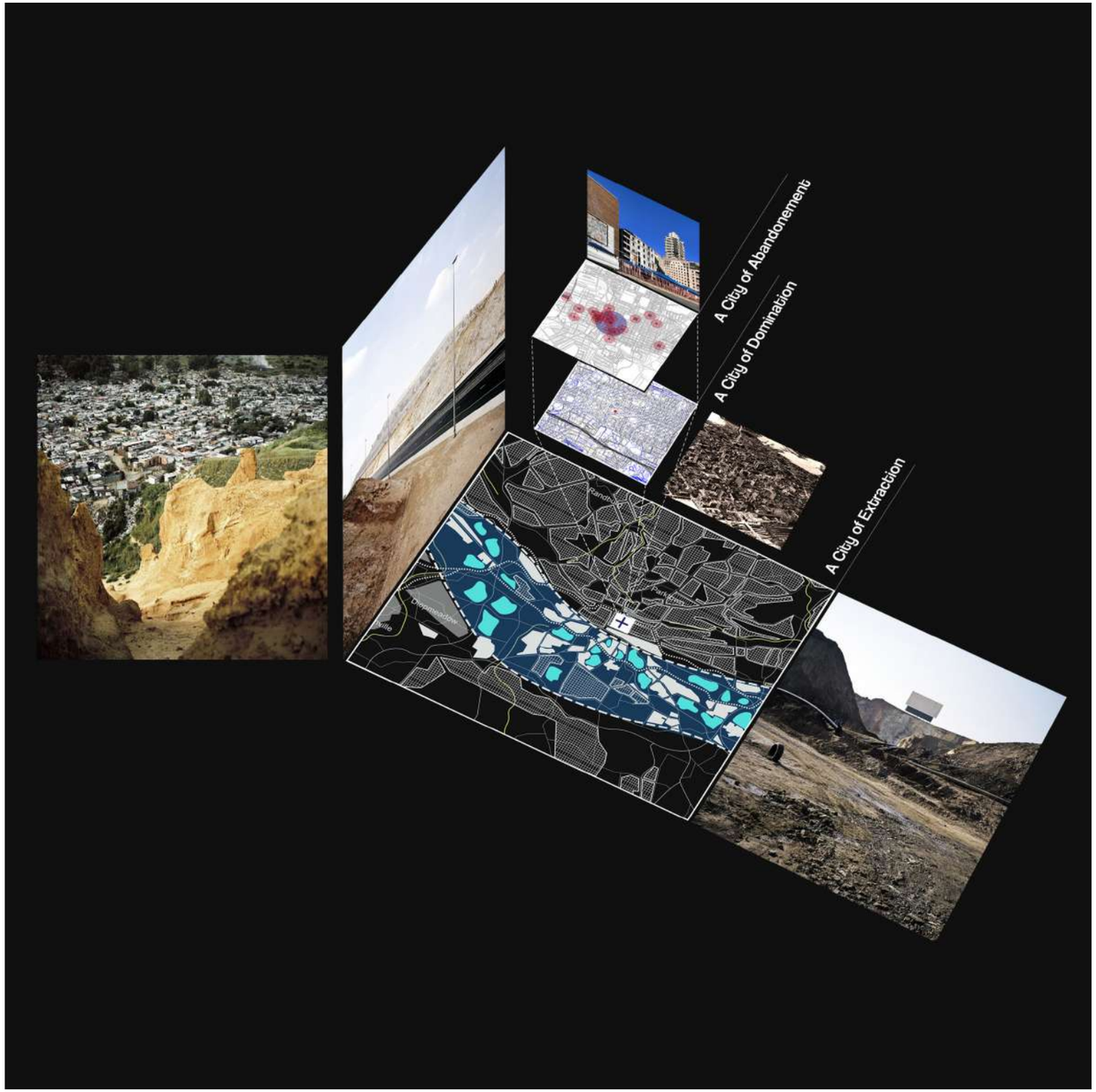


Figure 30 - Extraction, Domination and Decay_ Searching for a Way Forward (author, 2022) images by Jason Larkin (2010 - 2013) Available at https://www.bloomberg.com/news/photo-essays/2013-09-25/after-johannesburgs-gold-rush-mine-dumps?leadSource=uverify%20wall



Figure 31 - ‘TOP STAR’, Boysens, Johannesburg (Larkin, 2010)



Figure 32 - RDP HOUSING, Riverlea, Johannesburg (Larkin, 2010)



Figure 33 - Sketch over ‘TOP STAR’, Boysens, Johannesburg (author, 2022)



Figure 34 - sketch over RDP HOUSING, Riverlea, Johannesburg (author, 2022)

Chapter 3

The Making of Johannesburg

[A City of Extremes]

This chapter explores the making and (re)making of Johannesburg - from the regimes of representation that forced their image on the city to the urban stereotypes that influence spatial perceptions. The (re) making of the city is explored through spatial interventions that have reimagined architectural artefacts from the past. These acts of (re) making illustrate emerging visions of the inner city - fuelled by rituals of everyday life.

This chapter seeks to explore spatial and social processes - where architectural ruins left by a colonial-capitalist past are reimagined and imperial residues continuing to infect the city are reclaimed. The Chapter explores the ways in which image categories have influenced perceptions of Johannesburg and how these perceptions have the power to influence experiences in the city.

The making of the City

Approaching African Urbanism

The inherent difficulties when attempting to understand African urbanism are discussed by Pieterse (2013) in 'Rogue Urbanism: Emerging African Cities'. He argues that the study of African cities ought to move away from methods that simply attempt to extract order and legibility from cities which function through seemingly chaotic means. Similarly, to Murray (2008), Pieterse (2013) argues that approaching African 'cityness' (Pieterse, 2013) needs to bypass a crude reductionist methodology and search for a more compelling framework that attempts to get to grips with the profound complexities of African cities.

Pieterse (2013) argues that African urban scholarship over the last two decades, has focused on the collection and study of idiosyncratic case studies and micro examples, which does not provide a fully realised conceptualisation of the specificity of African urbanism. Pieterse's explanation provides a compelling argument and presents a way forward for studying African urbanism - where he suggests we look to macro trends in Africa in the hopes of providing a clear knowledge agenda. However, I argue that the study of micro examples and case studies have the potential to bring forward nuanced, textured, and contingent source material (Pieterse, 2013) that can be translated into an architectural argument. In other words, this project attempts to use micro examples in the Johannesburg inner city as a tool to explore social processes of reciprocal economic collaboration, in the hopes of developing an architectural argument.

Figure 35 - "A view in the town of Litakun." Engraved from a drawing by William John Burchell. Travels in the Interior of Southern Africa. v. 2 (1824). available at: http://biodiversitylibrary.org/page/48905971. Digitized by: University of Pretoria.

Regimes of Representation

Regimes of representation, that imposed their image on the landscape and its people, have produced a contemporary inner city with profound social and economic inequalities. These representations of Johannesburg have changed over time - illustrating the preoccupations of the various image-makers. An historical study of Johannesburg, through this theoretical lens, attempts to provide an overview of the making of Johannesburg.

The Highveld Before Gold

Before the establishment of Johannesburg as a mining capital, the highveld was a large stretch of grassland with dispersed micro settlements of Sotho and Tswana-speaking people (Chipkin, 1993). According to archaeological evidence, Magaliesberg was an area of early Sotho occupation dating back to AD 400. This Sotho population later dispersed from Magaliesberg to the Witwatersrand hills - creating a thin pattern of scattered settlements around the Witwatersrand area (Chipkin, 1993). Colonial travellers such as William Burchell created images of the South African interior – telling a story of the pastoral settlements before the explosive boom of a Victorian mining town (Chipkin, 1993).



Real-estate Speculations

After the discovery of gold along the Witwatersrand reef, by George Harrison in 1886, Johannesburg exploded and quickly became the economic capital of Southern African (Bremner, 2000). The city was governed by the gold mining industry - with urban representations corresponding directly to the highs and lows of the gold mining industry. Agricultural farms were divided along a Cartesian grid and sold off in portions – giving property speculators a clear and legible method to commodify the landscape. The land speculation models were indicative of western modes of urban planning that sought to create legible urban cities - which assisted in creating fewer land disputes and creating sellable portions of land. The grid layout of the inner city was governed by unregulated real-estate speculation - making visions of Johannesburg as civic city an afterthought (Matsipa, 2014). The portioned-off farm, known as Randjeslaagte, would soon become the bustling metropolis of Johannesburg.

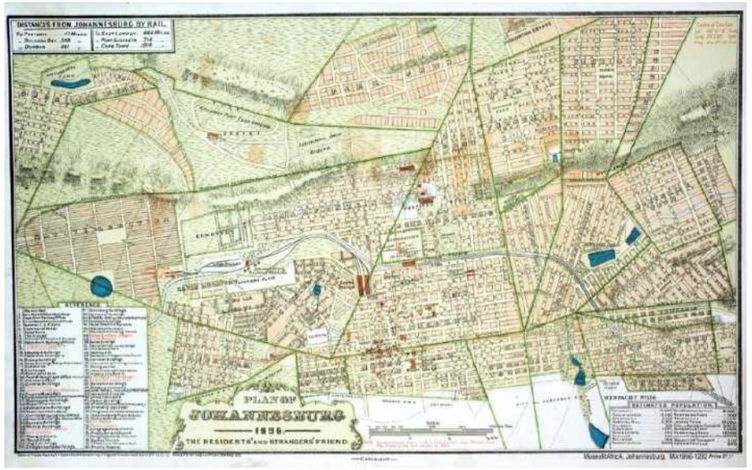


Figure 36 - Map of early Johannesburg showing brickfields and the coolie location (1896) - Museum Africa Archive. Available at https://www.theheritageportal.co.za/article/census-1896-making-johannesburg



Figure 37 - Market Square in 1896 - From the Barnnet Collection, 1996 (Chipkin, 1993)

Victorian Mining Town

With a large influx of people, migrating to Johannesburg in hopes of striking gold, the development of a capitalist city was born. Within a short period of time the streets were lined with financial institutions, shops, homes, and mining headquarters. The architectural representation drew inspiration from Victorian architecture in Europe (Chipkin, 1993). The first decade of Johannesburg's establishment saw a desire to create an image of Johannesburg as a working city. Infrastructural projects were developed with the aim of assisting the making of Johannesburg as a colonial-capitalist city. The Johannesburg Lighting Company was formed in 1888, in 1891 a 6km tramway track was constructed in Johannesburg with a terminal in Forsberg and in 1892 the Johannesburg Gas works were built in the inner city. The rapid development was characterised by fast construction methods - where building components were designed and fabricated in Europe and transported to Johannesburg (Chipkin, 1993).

Visions of a European City in Africa

During the late 1890s, Johannesburg experienced a building boom which saw the production of buildings that represented the popular European architectural style of the time known as Fin de Siecle. However, after the Boer war in 1902, a monumental imperial vision for Johannesburg was created resulting in an Edwardian architecture identity to grow (Chipkin, 1993). These visions consolidated Johannesburg as a major economic centre. Johannesburg was envisioned to uphold the ideals of western modernity. Buildings such as the Rand Club, built in 1904, symbolise the visions of a European city in Africa.

Figure 38 - Rand Club bult in 1904 - (image ,unkown) available at: https://www.news24.com/channel/arts/photo-essay-inside-the-rand-club-where-old-johannesburgs-elite-would-meet-20210514



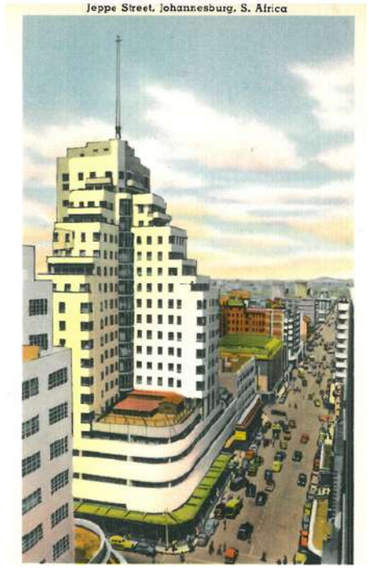


Figure 39 - Postcard of the Ansteys building built in 1935 (image, unknown) avaialbel at : https://www.lizatlancaster.co.za/blog/art-deco-in-johannesburg

1930's Nation building

The depression of the 1930s saw the abandonment of the gold standard, which prompted a large flood of foreign investment into Johannesburg. This allowed Johannesburg to rapidly evolve into a major financial hub – being compared to cities such as Chicago or New York (Chipkin, 1993). Towards the end of the 1930's Johannesburg became a city dominated by a dense inner city with towering skyscrapers that became emblems of South African nation building (Chipkin, 1933). The representation of the city continued to exhibit renewed ideas of western modernity with the development of buildings that followed international movements such as Art Deco. The mobilisation of an authoritarian nationalism through architectural representations revealed the romantic ideas of a 'civilised people in a barbaric land' (Chipkin, 1993 in Matsipa, 2014).

Segregation, Brazilian Modernism and Capital Flight

Apartheid was officially legislated in 1948, which propelled an already racially divided Johannesburg to become a city envisioned for a majority white population. Johannesburg continued to grow - with the development of highways connecting white suburbs to the north and large sprawling townships for people of colour. The enforced segregation in Johannesburg meant that people of colour living in mixed demographic areas were relocated to the peripheries of the urban centres. Black inhabitants in areas like Sophiatown were relocated to new sprawling neighbourhoods in Soweto and Indian inhabitants in Vrededorp were relocated to suburbs in Lenasia.

During the 1950's the inner city was developing rapidly with a newly adjusted vision of modernity. According to Chipkin (1993), Brazilian modernism and Oscar Niemeyer's architectural representation became an important influence on the development of Johannesburg. Matsipa (2014) argues that the modernist architectural representation of the 1950's became a bureaucratic tool for the Apartheid government.

The 1970's were marked by growing resistance to the Apartheid regime. On 16 June 1976 the Soweto uprising marked the changing collective vision for South Africa. Since the 1990's one of the most noticeable changes of the CBD has been the rapid growth of informal trading. This growth was linked to the dismantling of Apartheid visions for Johannesburg and the lifting of influx control measures enforced by Apartheid legislation. By 1993 around 15 000 residents were making a living from the informal trading sector (Bremner, 2000).

Between 1970 and 1990 large scale capital flight from the inner city took place, with overarching anxieties about the presence of a black population in the inner city and conditions of urban decay, many businesses relocated to the new economic centres of Sandton and Rosebank. These conditions have created an inner-city representation of decay and ruin. Images of Rosebank and Sandton as the new economic hubs of Johannesburg became a prevalent representation of Johannesburg – where a glitzy urban centre could be experienced away from the decaying inner city.



Figure 40 - The catalyst for Sandton's dramatic growth was Sandton City shopping centre, which opened in 1973. (unknown) available at: http://www.sacommercialpropnews.co.za/south-africa-provincial-news/gauteng/8533-the-history-and-legacy-of-sandton-central.html

A World Class African City

After the demise of the Apartheid regime in 1994, the City of Johannesburg attempted to reimagine Johannesburg as global city – ridding itself of an Apartheid identity. In the past decade the city has seen increased investment from government as well as private developers, with the goal of renewing parts of the CBD. In 2000 the vision of Johannesburg as 'World Class African City' was born. This slogan has since become an important tool in the remaking of Johannesburg and producing a new representation of the inner city.

Through the implementation of City Improvement Districts (CIDs), the City of Johannesburg has attempted to create themed precincts. This model has seen the development of the Newtown precinct, the Braamfontein precinct, the Maboneng precinct and many more – with an underlining goal of creating legible and ordered precincts. The notion of themed precincts has allowed the city to create manageable areas of focus - creating seemingly coherent visions for each precinct.

The representations, enlisted in projects such as the Newtown precinct and the visions of Johannesburg as a 'World Class African City', attempt subject the city to ideas of order and legibility. Using the theorical framework provided by David Harvey (2008) one should question the role of representation in the making of Johannesburg - who decides what the future visions of the city are? What is the individual's role in the implementation of these visions? (Harvey, 2008).



Figure 41 - Photograph of Johannesburg a World Class African City (unknown) available at: https://www.joburg.org.za/about_/Pages/About%20the%20City/About%20Joburg/Facts-about-Joburg.aspx



Figure 42 - Maboneng (Past Port and Piano, 2015) available at: https://passportandpiano.com/things-to-do-in-maboneng/

CIDs and Urban Redevelopment

In 2003, the City of Johannesburg legislated the Urban Development Zone tax incentive in the hopes of attracting private capital back into the inner city (City of Johannesburg, 2022). The tax incentive gives developers the possibility to claim tax benefits, when refurbishing existing buildings or creating new developments. The inner city of Johannesburg is the largest UDZ in South Africa – reflecting the ambitious goals for reestablishing the inner city as the economic powerhouse of Southern Africa.

Since 2003, the UDZ tax incentive has assisted in numerous urban redevelopment projects in the inner city. One example is the development of the Maboneng Precinct. The development began when developer and entrepreneur Jonathan Liebman created the Arts on Main development – where he refurbished a cluster of abandoned warehouses in the inner city. After finding success in the Arts on Main project, Liebman began to buy up abandoned real estate between Jeppestown, New Doornfontein, and City and Suburbia.

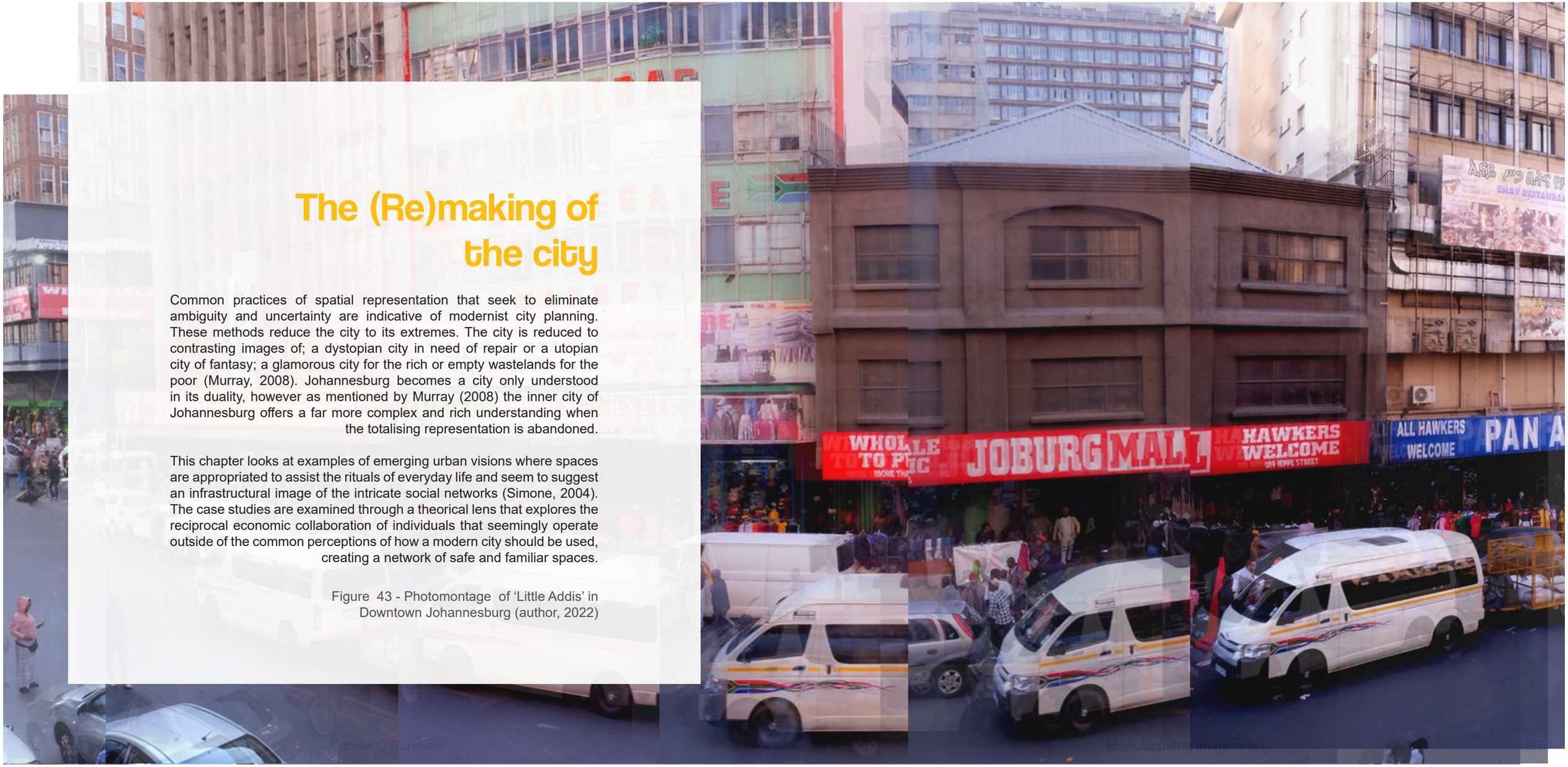
Due to the introduction of the UDZ tax incentive urban redevelopment was financially more viable. The tax incentive allowed Liebman to reclaim 30% of the property purchase price from taxable profit in the first five years of the developments. More recently, other projects have emerged and taken advantage of the UDZ tax incentive – these developments include, but not limited to the Jewel City Project and Victoria Yards project.

The (Re)making of the city

Common practices of spatial representation that seek to eliminate ambiguity and uncertainty are indicative of modernist city planning. These methods reduce the city to its extremes. The city is reduced to contrasting images of; a dystopian city in need of repair or a utopian city of fantasy; a glamorous city for the rich or empty wastelands for the poor (Murray, 2008). Johannesburg becomes a city only understood in its duality, however as mentioned by Murray (2008) the inner city of Johannesburg offers a far more complex and rich understanding when the totalising representation is abandoned.

This chapter looks at examples of emerging urban visions where spaces are appropriated to assist the rituals of everyday life and seem to suggest an infrastructural image of the intricate social networks (Simone, 2004). The case studies are examined through a theorical lens that explores the reciprocal economic collaboration of individuals that seemingly operate outside of the common perceptions of how a modern city should be used, creating a network of safe and familiar spaces.

Figure 43 - Photomontage of 'Little Addis' in Downtown Johannesburg (author, 2022)



Ethiopian Vertical Market

Reconfiguring a fractured city through community infrastructures

222 Rahima Moosa Street, Johannesburg, Gauteng

In a busy part of the Johannesburg inner city, Ethiopian traders have occupied and reimagined vacant modernist buildings, appropriating the empty shells of a bygone era and creating a rich vertical market. The empty structure has supported a community led transformation of space – facilitating the economic and social collaboration of individuals through a series of complex and networked spaces (Le Roux, 2017). The dynamic and ambivalent reordering of space presents an alternative to current models of urban redevelopment and contrasts the harsh immediate context of the inner city (Le Roux, 2017). The rich network of people and spaces have produced a safe and familiar space in the otherwise harsh inner city for the Ethiopian community.

Through observing these spaces, which seem to reconfigure a fractured society through acts of reusing and remaking, concepts of a circular material economy emerge (Le Roux, 2017). These processes deviate from the unsustainable linear processes of new building and rather look to processes of reconfiguring – contrasting



Figure 44 - A Quick Coffee Break? A Cafe in the Ethiopean Vertical Market with Soloman and James (author, 2022)

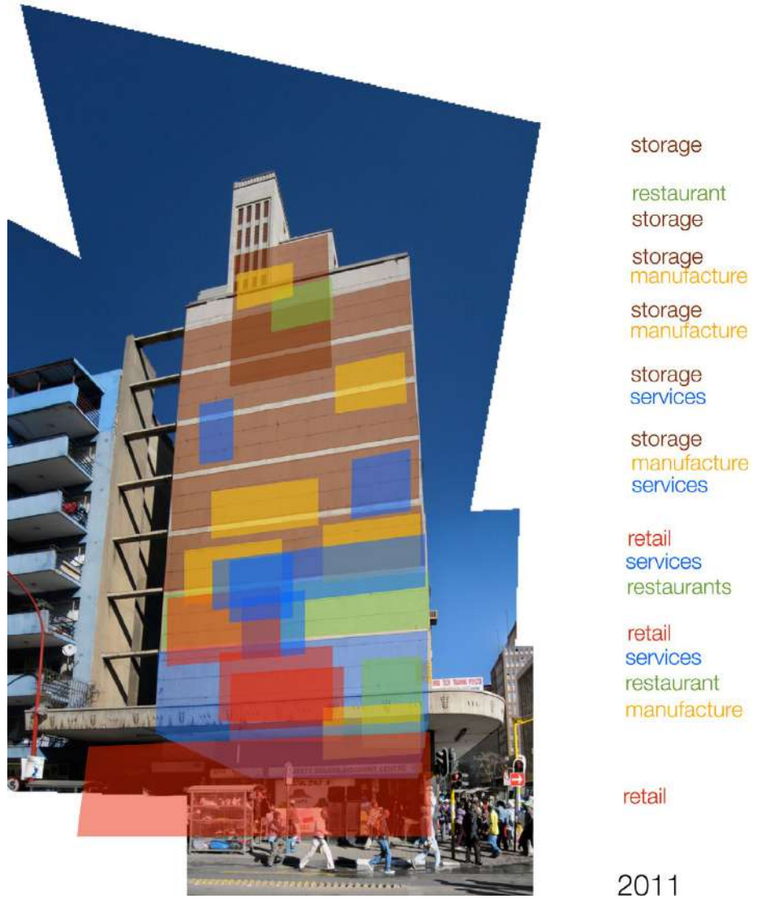


Figure 45 - Uses of the former medical suites building in Jepper (Le Roux, 2011)







the modernist ideologies of extraction and exploitation. What becomes apparent form Le Roux's study (2017), is the development of a conceptual framework that directly contrasts the common processes imbedded in modernist cities. These notions create an interesting image of Johannesburg – where unknowingly, the Ethiopian traders and their spaces become actors in a producing new material and social economies.

When looking at the Ethiopian urban market, as a micro example of emerging urban transformations in the inner city, it was important to explore the appropriation of spaces and how a modernist building supports a new form of life in the inner city. It was observed that the structure supported large open spaces. The concrete frame construction allowed tenants to partition and divide the spaces according to their needs. The four lifts have been categorised according to use – where two lifts are designated for pedestrian use, one lift is used for rubbish and the last lift is used to transport goods. The ground floor conditions have facilitated a street market condition which flows into the building evoking feelings of an arcade. The last few floors have been used as storage units for traders within the building and neighbouring buildings.

Figure 46 - Photographs of the former medical suites building in Jepper (Author, 2022)



Salena Hardware Store

A catalogue of building parts for the (re)making a decaying city

255 Rahima Moosa Street, Johannesburg, Gauteng

If you walk just a few blocks down from the Ethiopian urban market, you will arrive at Salena Hardware Store – located on the Corner of Rahima Moosa Street and Nugget Street. Like the Ethiopian market the hardware store has occupied and spatially reordered an empty modernist building.



The hardware store is located on the ground floor, while the landlord has transformed the previous offices spaces on the upper floors into student accommodation. The Hardware store is serviced by a back entrance and an underground parking lot. The store opens out onto the street attracting local DIY builders in the area.

Salena Hardware Store resembles an extension of the social and economic networks prevalent in the Ethiopian urban market. In an interview with the store owner, he mentioned that he began running a family-owned tradition Ethiopian shop in the urban market but wanted to extend on the economic networks and enter a new consumer market – avoiding the common business model in the Fashion District (fast fashion retail) and provide a space where small-scale builders could buy their products. The success of the hardware store reveals the need for small scale building supplies in the inner city. Most importantly, the case study illustrates the

Figure 47 - Photographs of Salena Hardware in part of the former officee building in Jepper (Author, 2022)





Figure 48 - Photographs of Salena Hardware in part of the former officee building in Jepper (Author, 2022)

influence of economic collaboration within the Ethiopian community – where the urban market becomes the platform from which new economic ventures are explored. The urban market serves an entry point into the inner city and provides the necessary human networks for further economic and social endeavors.

While visiting the site over a period, the hardware store was continually changing – evoking an image of incompleteness. Due to the distance from other Ethiopian trading spaces the hardware store is relatively isolated from the network of Ethiopian spaces - and sits amongst the harsh inner city. The network of familiar and safe spaces observed in the urban market are missing in the hardware store. These conditions have created the need for safety measures – prompting the construction of a dividing wall in the middle of the hardware store.



Bike Hospital

A repertoire of motorcycle parts and a circular material economy

7 End Ext St, City and Suburban, Johannesburg, 2001

Located towards the western edge of the inner city sits a motorcycle store and workshop known as Bike Hospital. Differing from the previous two case studies, the motorcycle shop has occupied an industrial warehouse – offering little source material for an investigation of spatial appropriation. However, Bike Hospital does not operate on the tradition consumer led understanding of a motorcycle shop, but rather looks to ideas of a circular material economy.

The shop is made-up of a vast accumulation of second-hand motorcycle parts that have been reclaimed from existing motorcycles and carefully reordered. The shop provides an extensive and seemingly endless repertoire of motorcycle engines, frames, fenders, electrical components, wheels and so on. The parts have been delicately reordered and categorised, providing a large source of material for DIY motorcycle mechanics. At a first glance the categorisation of parts seems chaotic and messy but, from experience, there is an underlying logic that allows individuals to find the parts they need.

Like the Ethiopian Market, Bike Hospital contrasts the linear energy processes embedded in modernist cities that seek to provide new and innovative buildings. What becomes important is how the process of reclamation and reordering of motorcycle parts can be translated into remaking the Johannesburg inner city.

king of ruined buildings in the inner city can embody processes inspired by Bike Hospital – prompting the notion of building deconstruction. We generally think of buildings as single entities, but they are in fact a combination of many small parts – making a whole. According to Greene (2018), the concept of building deconstruction is a pre-demolition process of salvaging and reclaiming materials which are valuable and reusable.

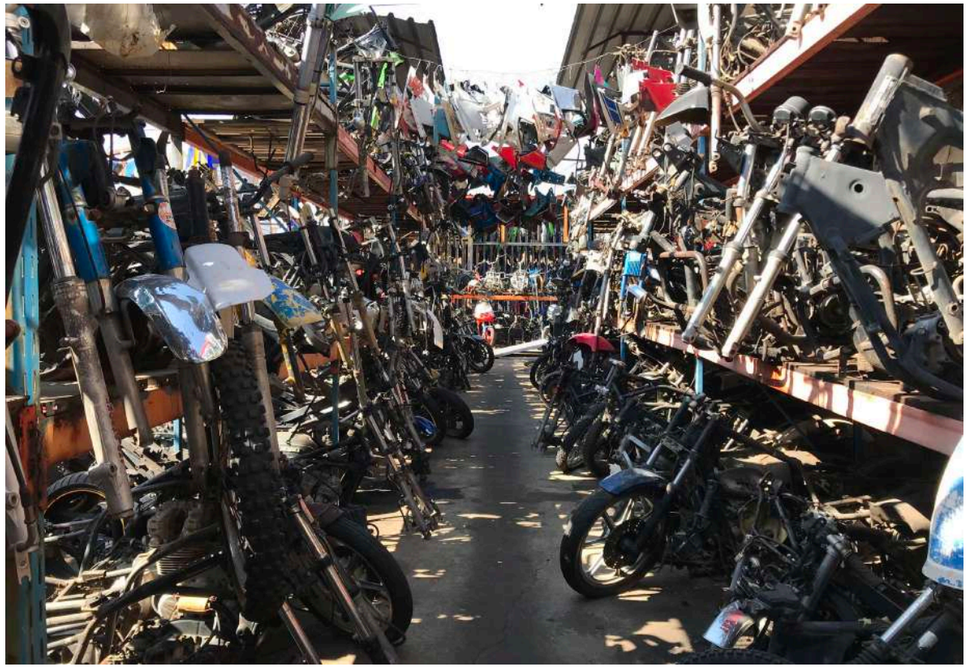


Figure 49 - Photographs of Bike Hospital In City and Suburbia (Author, 2022)

The benefits of salvaging building materials are twofold, it prevents useful materials from being sent to landfills and it lowers the demand for new materials – presenting a clear argument for deconstruction processes in a world with pressing environmental concerns. The idea is to create a circular material economy - lowering energy expenditure and assisting in more affordable urban transformations.

Items for Reclamation

According to Greene (2018) the most common building components that can be salvaged and reused are:

- Appliances and Furniture
- Plumbing Fixtures
- Doors
- Windows
- Timber
- Bricks
- Electrical fittings
- Roof tiles

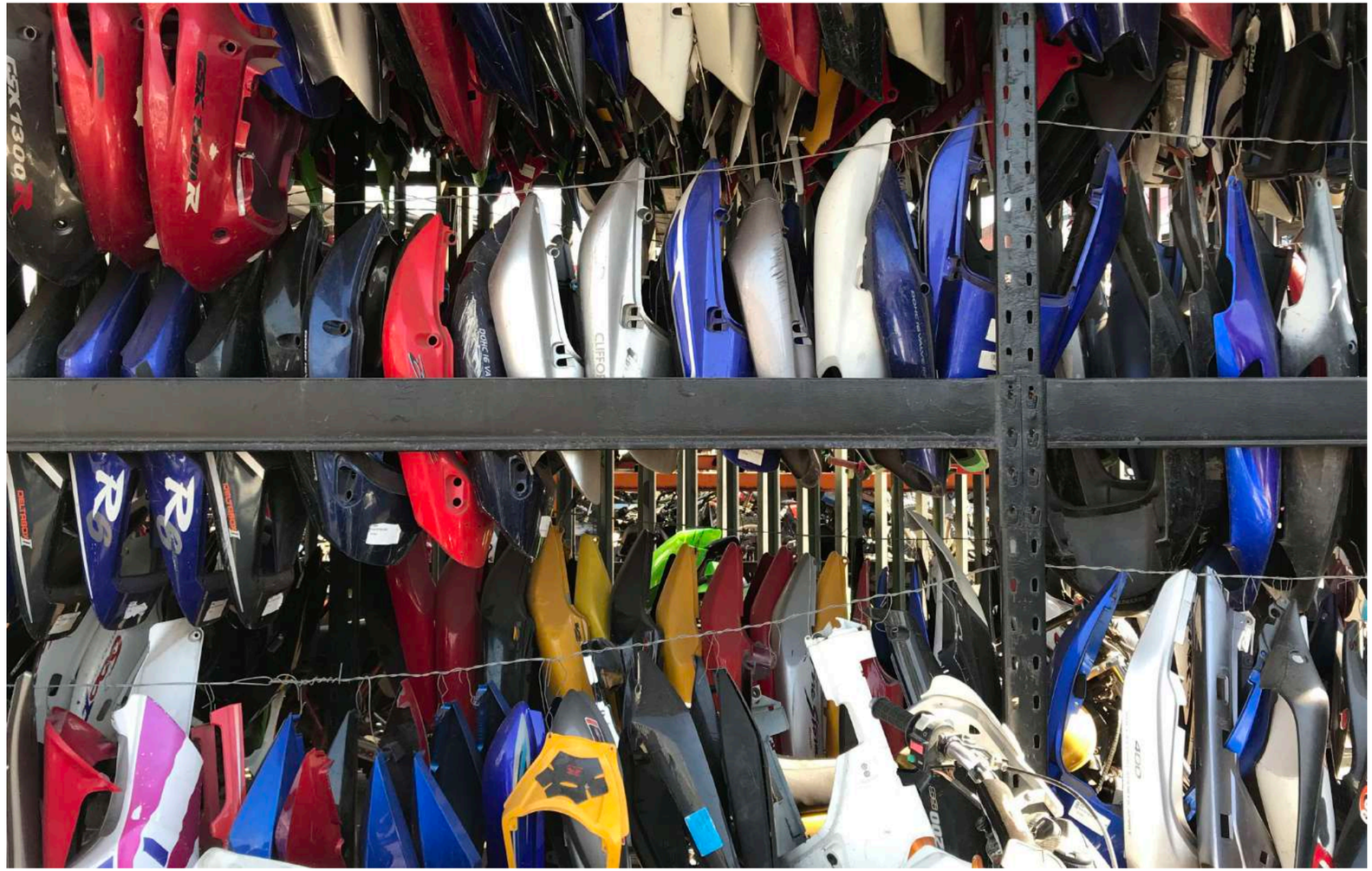


Figure 50 - Photographs of Bike Hospital In City and Suburbia - Catalogue of Parts (Author, 2022)

Stereotypes and City Perceptions

Towards the end of Apartheid, well-established image categories began creating far-reaching public images of the inner city. Image categories such as journalism, films, popular media, and urban scholarship, have portrayed Johannesburg as a sprawling city in constant flux with an overarching urban character of illegibility. The city has been illustrated as an edgy city on the brink of dystopia with image makers drawing inspiration from the inherent complexities (Murray, 2013).

Using Lefebvre's ideas of the spatial triad where space is constructed from three dimensions (perceived, conceived and lived), I argue these image categories have the power to influence space. With this framing, urban stereotypes, and narratives of the inner-city can control the lived experience of the city.

Figure 51 - New Arrivals looking over Johannesburg to their abandoned spacecraft in District 9 (District 9, 2009) available at : https://reelrundown.com/movies/Apartheid-From-Outer-Space-District-9-Movie-Review



Figure 52 - “Wewon’t move!”, Sophiatown in defence, 1955 (Schadeberg, 1995) available at: https://digitalcollections.lib.uct.ac.za/collection/islandora-7455

A City in Crisis and a Site for Reclamation

The large-scale migration of an African population into the Johannesburg inner city, coupled with simultaneous processes of decaying buildings, created the dominant urban stereotyped of Johannesburg as a city in crisis. Mpho Matsipa (2014) argues that this public perception was indicative of an anxiety about the ‘presence of impoverished and raced bodies’ within the previously white dominated inner city.

I argue that the public perceptions of post-apartheid Johannesburg as a ‘city in crisis’ have prompted a new generation of urban redevelopment projects that view the inner city as a site of reclamation. These projects seek to carve out urban enclaves within the inner city and establish small pockets of private-public space – and in doing so wish to impose a sense of order and legibility.
In the article title ‘We Won’t Move: The Suburbs take back the Centre in Urban Johannesburg’ Walsh (2013) discusses how a move to reclaim the inner city by middle-class suburbanites is governed by a muddled interpretation of *‘the right to the city’*. Walsh discusses how the words *‘We Won’t Move’*, that were written on the Revolutionary House in Maboneng, tell an interesting story of the forces-at-play in urban development practices.

The problematic narrative of the displacement of a white middle-class from the inner city after the dismantling of Apartheid, and a misguided interpretation of the ‘*right to the city*’, are embedded in the words *‘We Won’t Move’*. This narrative provides a warped and problematic appropriation of the same phrase that originally became famous during the Apartheid led forced removals of 1952 in Sophiatown.

This narrative is indicative of a nostalgia of Johannesburg before the so-called *‘greying’* of the inner city. A notion of *‘return to the city*’ is portrayed in this use of language - which often refers to the *‘reclaiming’* of the city. This results in visions of a future Johannesburg to be filled with residues of the past. Residues of exclusion, segregation, and displacement.

Sci-fi Speculations

Alexandra Parker (2017) explains how spatial stereotyping of Johannesburg, evident in films of Johannesburg, contribute to the construction of a city image. The deeply fragmented conditions of the post-apartheid city are used to produce spatial categorisations and stereotypes (Parker, 2017). Fictional films and narratives are used as tools in the making of a Johannesburg image – exploring social, economic, and ideological issues grounded in the real world but pushed to their extremes.

Science fiction is commonly understood as a film genre based on speculative and science-based depictions of conditions and phenomena outside of mainstream acceptance. These films are used as tool to bring public awareness to social and political issues. Current issues are taken to their extremes by placing them within a speculative world void of real-world constraints. Providing a contemplative distance from current issues allows the film to produce a clear narrative and insight into current issues effecting society.

The film District 9, directed by Neill Blomkamp and released in August 2009, is a science fiction film that depicts the arrival of extra-terrestrials in Johannesburg and explores issues of post-apartheid racism, politics of a neoliberal city, and intense economic inequalities. District 9 substitutes the arrival of extra-terrestrials in Johannesburg with the real-world arrival of black foreigners in the city – focusing on the contentious issues of xenophobia effecting black foreigners in the inner city (Wright, 2018).

The film depicts the arrival of an abandoned alien spacecraft that hangs above the Johannesburg inner city, with its inhabitants having to live in the slum-like conditions below (Wright, 2018). The film depicts Johannesburg restored to its former apartheid modernist image during the 1970's with various spatial references to the making of Johannesburg. The title *'District 9"* refers to Johannesburg's racial segregation and forced removals, while the mine dumps in the foreground allude to the historical processes of extraction that built the city (Wright, 2017).

District 9 reveals the power of using a fictional narrative in addressing current issues. The film has created a fictional representation of Johannesburg that attempts to abstract, mash-up and disjoint the conditions of the city – contributing to the construction of a Johannesburg city image.

Due to Johannesburg's complexities and urban richness, it has become something of a sci-fi muse – where image-makers seeking an edgy and exiting urban narrative draw inspiration from the city's extreme conditions. The music video titled 'Ragga Bomb' by Skrillex and directed by Terence Neale, is an example. Image-makers do not draw inspiration from the city solely because of its post-apocalyptic aesthetic, but rather the ways in which people operate in the city produce evocative images of human imagination and resilience.



Figure 53 - An abandoned spacecraft hangs above Johannesburg (District 9, 2009) available at: https://wondersinthedark.wordpress.com/2016/07/18/89-district-9/

Chapter 4

Form Finding Concepts

Conceptual thinking - In Search of an Architectural Form

This chapter looks at the non-linear process of form finding in architecture and how a conceptual thinking is translated into the making of a building. It introduces the key concepts that govern the project and uses case studies to explore the spatialisation of these concepts. The aim of this chapter is to extract ways of thinking about architecture and the production of space.

This chapter provides a merging of different modes of architectural exploration. Case studies are examined using the theoretical frameworks explained earlier and useful information is extracted - proving a way forward for the project and gives a glimps into the early stages of design development are presented.

What is Form finding in Architecture?

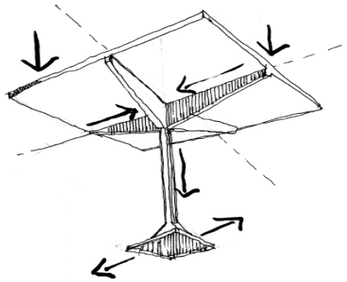
Shape finding vs form finding

In the journal article Shape Finding or Form Finding, Nicholas Goldsmith (2014) discusses the two design strategies of 'form finding' and 'shape finding'. He creates a clear distinction between the two strategies, by looking at the different motivations each design process embodies.

Form finding is categorised as a design strategy that takes ques from the natural world – where seemingly chaotic components are reordered into defined mathematical forms. This strategy is framed as an objective process, where natural systems are observed to uncover efficient and adaptable physical formations. This process is grounded in the notion that design should emerge out of observation rather than being created and conceptualised by the designer (Goldsmith, 2014).

Goldsmith uses Felix Candela's High Life Textile Factory as a case study of a form finding approach. The use of hyperbolic parabolas and an 'umbrella' system of four straight-edged parabolic shapes which are supported by sleek concrete columns allow for large spans and uninterrupted floor plans while still achieving structural efficiency. This example, where the production of space emerges out of observing the natural forces at play shows the immense value and potentials in a form finding approach.

On the other hand, shape finding is discussed by Goldsmith as a subjective process that draws on the designers' spatial subjectivities to generate physical forms. This design process is critiqued for the subjective realisation of physical forms, which are generated purely from the designers' visions rather than the translation of a natural system.



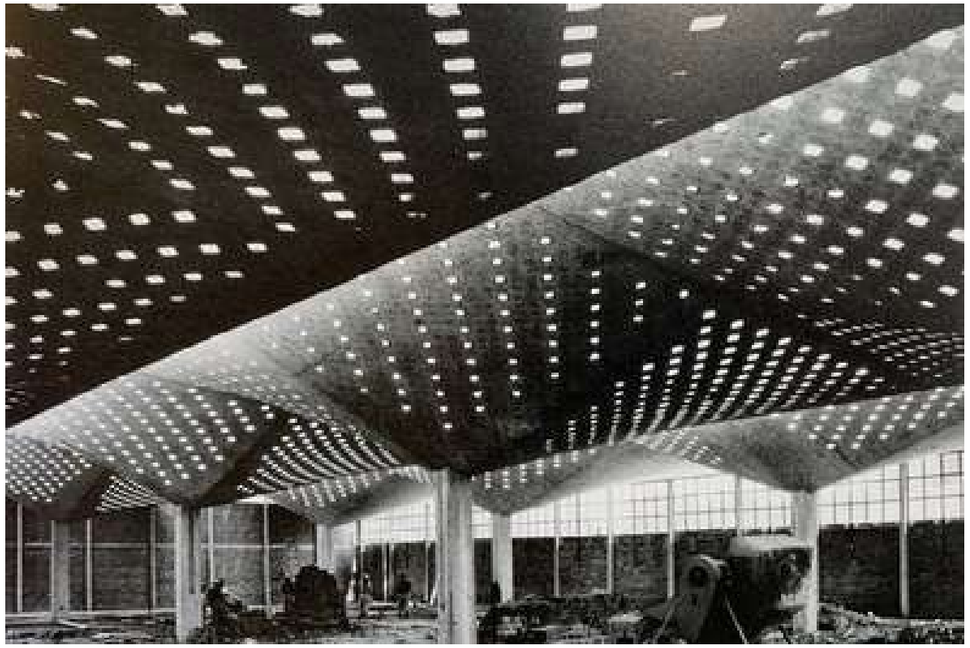


Figure 54 - Photograph of High Life Textile Factory (Candela, 1955) available at: https://www.re-thinkingthefuture.com/design-studio/a2163-felix-candela-15-iconic-projects/

Figure 55 - Sketch of High Life Textile Factory (author, 2022)

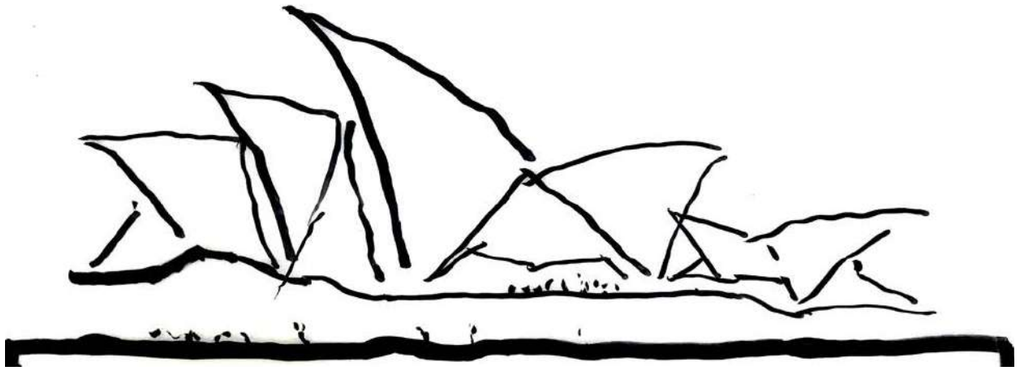


Figure 56 - Sketch of Sydney Opera House - a shape finding approach (author, 2022)
Utzon,J (1957) *Section Model of Sydney Opera House* [online] Available at: https://drawingmatter.org/mogens-prip-buus-utzon/ [Accessed 12 August 2022]

The Sydney Opera House is used as an example of how the curved concrete forms, that define the Opera House, were developed through a shape finding process. The large forms, at a first glance may seem to portray engineering efficiency but they required huge amounts of engineering adjustments. The design revealed how a shape-finding process, according to Goldsmith, relies on the designer's intuition rather than a process of observation and translation (Goldsmith, 2014). This process creates the typical designer-engineer relationship - where the structural design is seen as problem that needs to be solved rather than an informant from where the design can emerge.

Taking a Position

I argue that although the argument Goldsmith (2014) provides is convincing in many regards, the design process is often more complex. The non-linear design process that dominates the production of architectural space cannot be simplified into this binary way of thinking. Rather, the production of architecture is influenced by various forces and these forces should not be placed within a hierarchy of importance as Goldsmith attempts. The forces present in nature should be considered no more important, during the design process, than other influences such as social, economic, or political forces.

This chapter frames the forces-of-influence as factors that influence the architectural design process. These forces, however, are not seen solely as physical forces, but rather as parameters, constraints and possibilities that impact how architects operate and think. These forces can be identified as anything from socio-economic issues to technological advancements.

Although there is undoubtably great value in extracting inspiration from the natural world, this design process should not be viewed as the foremost strategy for design. In contexts that require unique architectural responses the forces-of-influence will vary according to the requirements of the specific project – making the forces that govern a project linked more closely to context and specific principles that the project deems most important.

The case studies that follow are explored through this framing of form finding – each project is examined for the forces-of-influence that govern the project and how these forces are used as form-finding tools for the realisation of an architectural object. By doing this, defined areas of the project are examined rather than looking at the project. Allows for clear and defined architectural extractions.

Form Finding and the Desire for Innovation

"Each epoch dreams the one to follow … what emerges in these wish images is the resolute effort to distance oneself from all that is antiquated – which includes, however, the recent past"

- Walter Benjamin (1999)

The way in which we, as architects, produce space is highly influenced by the way we experience the world – what we find important and how we perceive space. These subjectivities are fostered throughout our lifetimes - from our education as spatial practitioners where we develop personal architectural opinions, to our personal upbringings where we have been conditioned to perceive the world in a particular way.

The quote by Walter Benjamin (1999) shows how the visions created during a particular time have the possibility to control or influence the following architectural visions. Form finding strategies, are very quickly considered old fashioned. This results in the rejection of past values and the need to create new visions. Architecture and the practice of envisioning physical spaces is constantly changing and evolving with a never-ending need for innovation and change. Each epoch builds on the next – and architecture uses past movements to define the forces-of-influence that the new movement finds most important. In most instances, this results in a rejection of the recent past, but in some instances, it allows for the translation of past notions into a contemporary context.

This framing of the development of architecture and space-making is used to examine how case studies are used within architecture and particularly within a theoretical exploration such as this. The case studies that follow were not developed within a vacuum but were developed within specific contextual scenarios, social conditions and political environments – similarly, this project acknowledges the wealth of knowledge currently available and attempts to use these projects as building blocks for the development of space and concepts

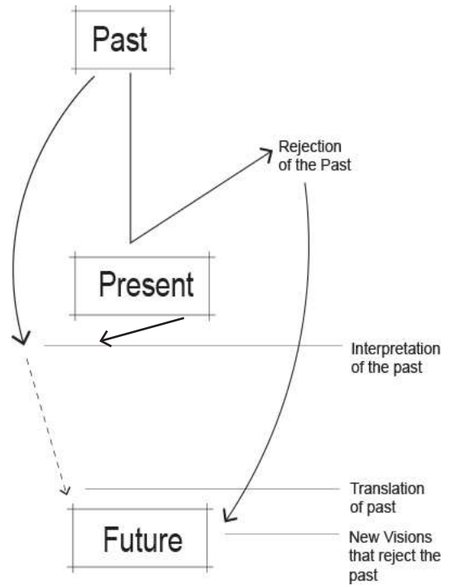


Figure 57 - Diagram (author, 2022)

Architecture as Infrastructure

Infrastructure
/ˈɪnfrəstrʌktʃə/

The basic systems and services that are necessary for a country or an organization to run smoothly, for example buildings, transport and water and power supplies.

- Oxford Learners Dictionary (online, 2022)

This portion of the chapter explores a research agenda into the idea of architecture as infrastructure. Architecture is viewed as device for the liberation of the individual - that's taps into human resources of imagination and resilience. The following case studies look at how architecture can become infrastructure and in doing so enhance the individual's capacity to reclaim a right to the city.

When one thinks of infrastructure, the initial images that come to mind are visions of overhead motorways that bypass dense urban cities, extensive networks of power lines that supply individual homes with the necessary services, and industrial buildings that produce energy resources necessary for a functioning city.

Fundamentally infrastructure is seen as the basic framework for a working city – facilitating the delivery of services, and the transport of people and goods.

This project builds on the premise that infrastructure is designed for the facilitation of a working city. Now, having a clear understanding of what infrastructure is, and setting it aside for moment, we look to Marshalltown and the abandoned buildings for how a building acting as infrastructure can play a role in the remaking of the neglected structures.

The project views the abandoned carcasses as resources ready for extraction and the proposed building as a tool in the process. By reinterpreting infrastructure, the proposed architectural object taps into existing resources of human imagination, resilience, construction waste and abandoned buildings to facilitate the workings of a city rebuilding itself. The project seeks to explore architecture as infrastructure with an optimistic outlook on the city's current resilience and potential future visions.



Figure 58 - Architecture as Infrastructure - Wits University, Johannesburg (author, 2022)

Nakagin Capsule Tower

Kisho Kurokawa Architects - Tokyo, Japan

The Nakagin Capsule Tower, built in 1972, was designed by Japanese architect Kisho Kurokawa. The building is a product of the Metabolist movement – an architectural ideology indicative of Japan's post-war architectural resurgence. The Metabolism movement viewed society as a living organism – creating buildings that mimicked the arrangement of natural systems. Extending on similar ideas developed by conceptual groups like Archigram, the Metabolist movement sought to create living buildings with infrastructure that provided the potential for change (Kisho Kurokawa Architects, 1972).

The Capsule tower is made up of two interconnected towers of 140 self-contained prefabricated capsules. Each capsule is individually attached to a robust concrete with four high tension bolts with the intention of replacing individual units every 25 years. Although the units were intended to be replaced, since the construction of the building no capsules have been changed. The identical capsules were assembled off-site and transported to Tokyo by truck. Each cell contained a bath unit, a micro kitchen unit, a bed, and an air conditioning system (Kisho Kurokawa Architects, 1972). The capsules were intended as a second home or small office for businesspeople working in Tokyo but unfortunately due to issues of governance, maintenance, and structural concerns the building was demolished in early 2022

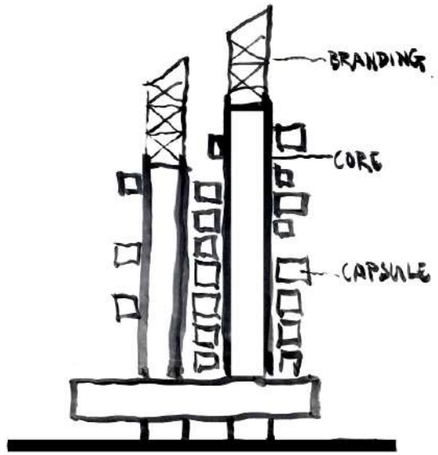
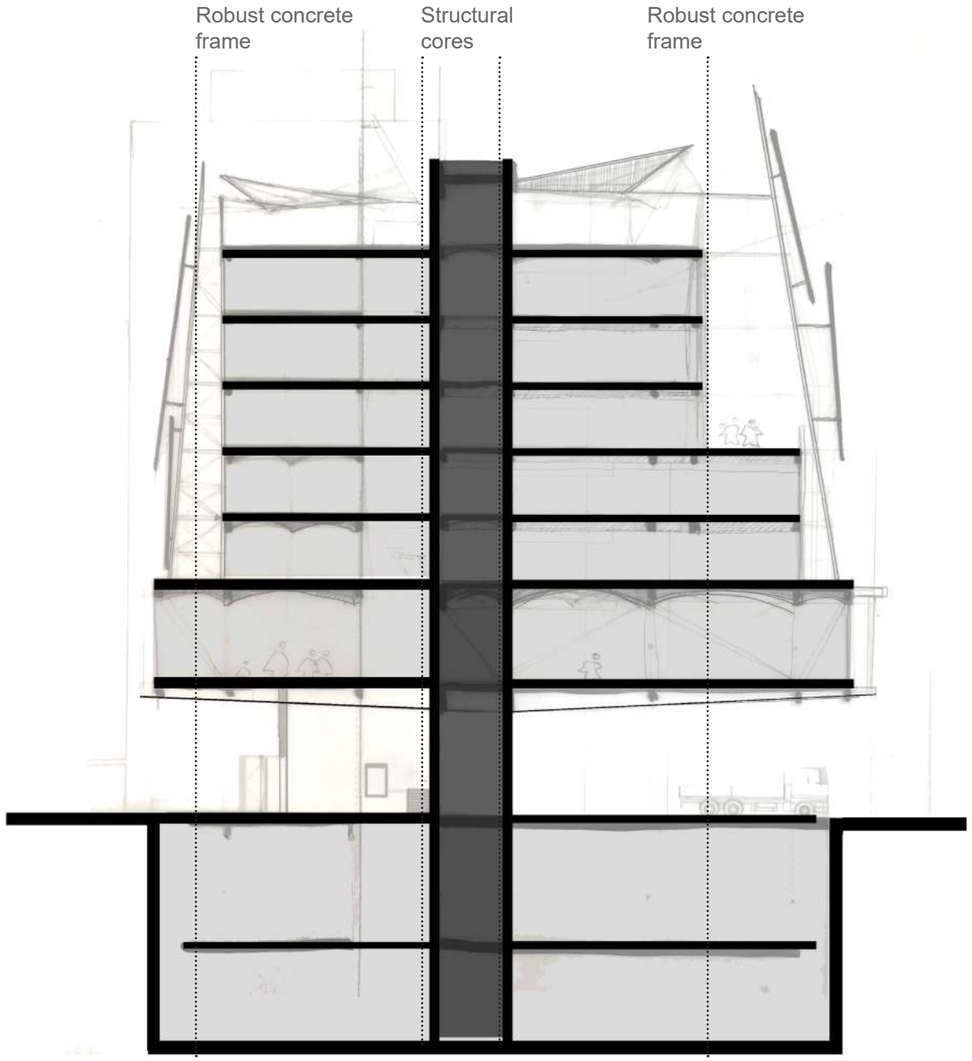




Figure 59 - Photograph of the Capsule Tower by Kisho Kuwakawa Architecture, 1972 (unkown) available at: https://designtaxi.com/news/419991/Tokyo-s-Famous-Capsule-Tower-To-Make-A-Comeback-In-Both-Real-Virtual-Worlds/

Figure 60 - Sketch Analysis (author, 2022)



Extractions

The idea of a building that can evolve and change over time is a compelling architectural expression for a fast passed city in constant motion. Inspired by Johannesburg's ad hoc spatial interventions, this project proposes a similar conceptual thinking - however instead of creating capsules that hang from a structural core, I propose the development of a robust concrete frame, which provides the possibilities for incremental change. This structural approach attempts to mimic the conceptual thinking present in the Capsule Tower but provide a more appropriate solution for a building in the Johannesburg inner city.

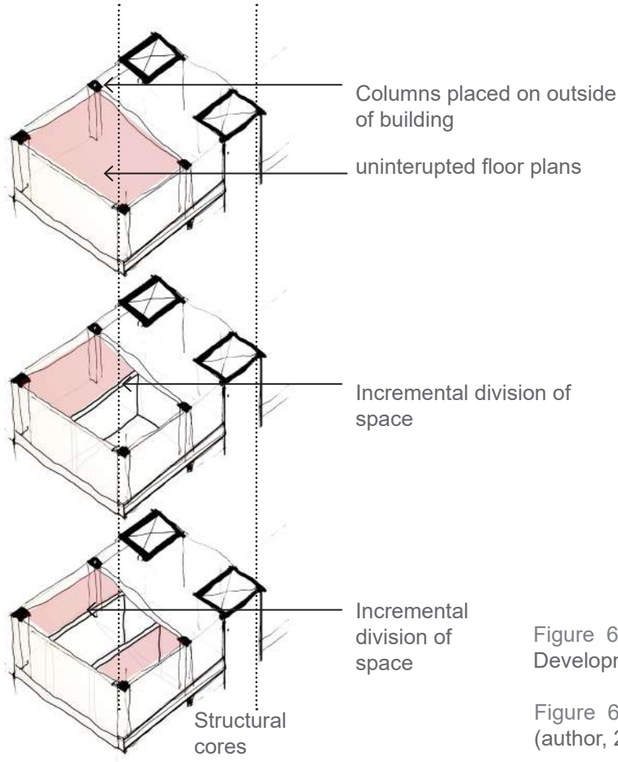


Figure 61 - Incremental Development (author, 2022)

Figure 62 - Sketch Section (author, 2022)

Productive (Re)public

Noero Architects - Cape Town, South Africa

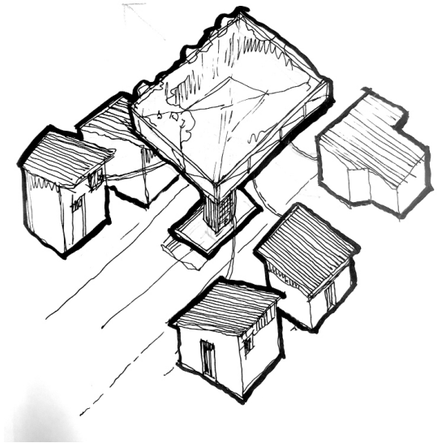
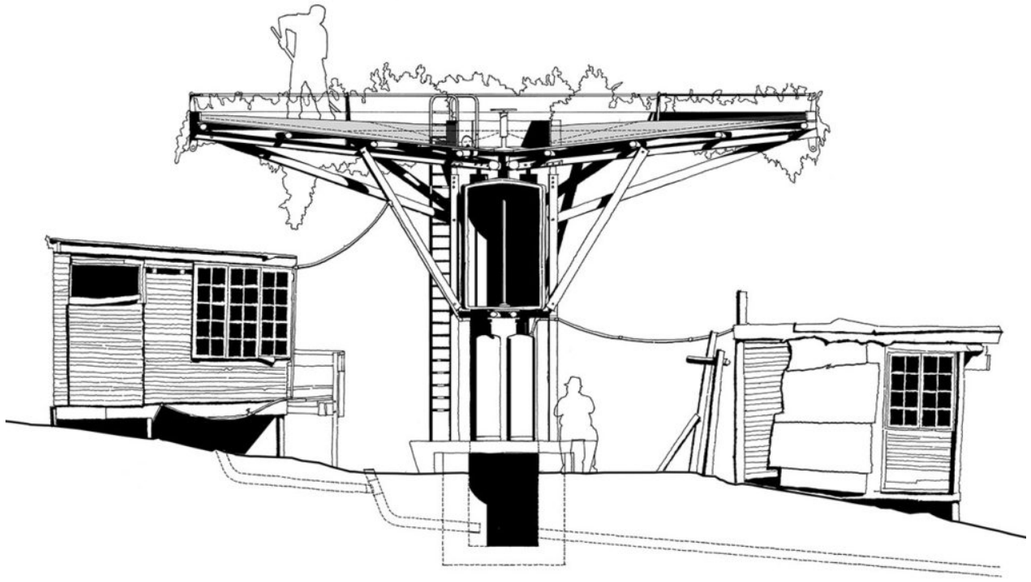


Figure 63 - Sketch analysis of Productive republic (author, 2022)

Figure 64 - Productive (Re)public drawing (Noero Architects, 2013) available at: https://www.noeroarchitects.com/project/productive-republic/

As part of the exhibition titled ‘Energy: Oil and Post Oil Architecture and Grid’, exhibited at the Maxxi Museum in Rome, Neoro Architects presented their project titled ‘Productive (Re) public’. The exhibition tasked the participants to produce a research and spatial outcome that dealt with the theme of energy, architecture, and landscape (Noero Architects, 2013).

Productive (Re)public explored an infrastructural insertion that dealt with energy self-sufficiency and interrelated spatial conditions within the Hangberg settlement. Drawing inspiration from the network of overhead power lines that supply the settlement with electricity – the project presented a tree-like machine that would create an energy network distributed between the existing houses, while having little effect on the ground floor conditions. The machine is intended to function using biogas production, while providing space for rainwater harvesting and food production. The proposal presented an architectural object that acts as infrastructure producing energy and creating new opportunities (Noero Architects, 2013).

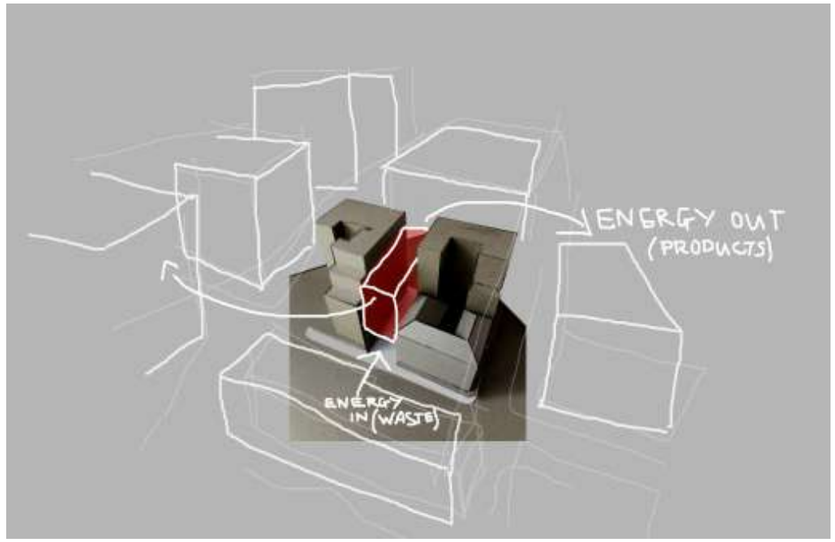


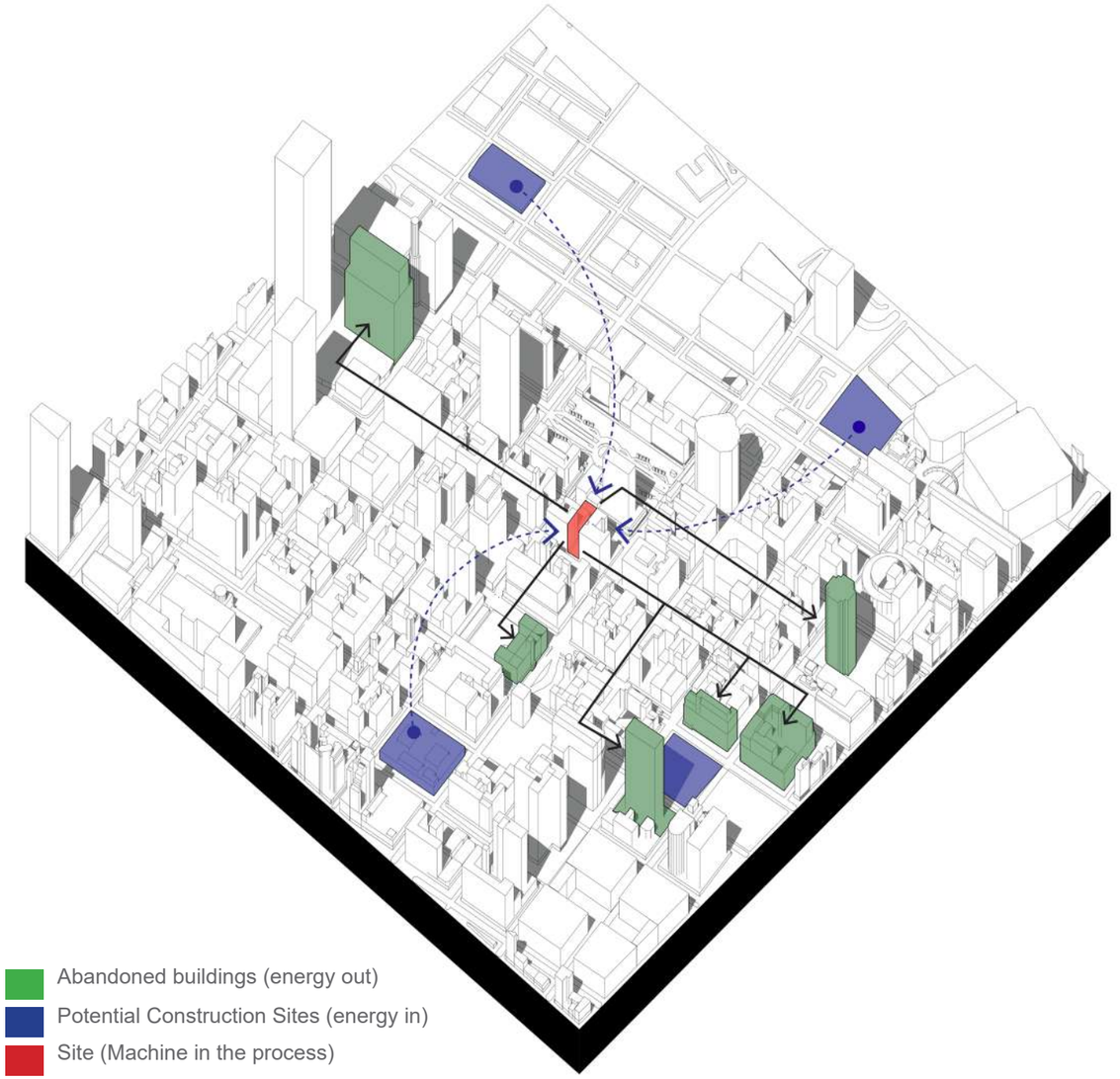
Extractions

Interested in the remaking of neglected structures in Marshalltown, this project explores the idea of architecture as infrastructure where the building becomes a mechanism in the process. The production of building materials are explored in a similar way – creating a machine-like architectural object that plugs into the city's energy resource of human and urban resilience to create opportunities and transform the city's neglected structures.

Figure 65 - Sketch dawing (author, 2022)

Figure 66 - Axo dawing (author, 2022)





Tomigaya

Richard Rogers - Tokyo, Japan

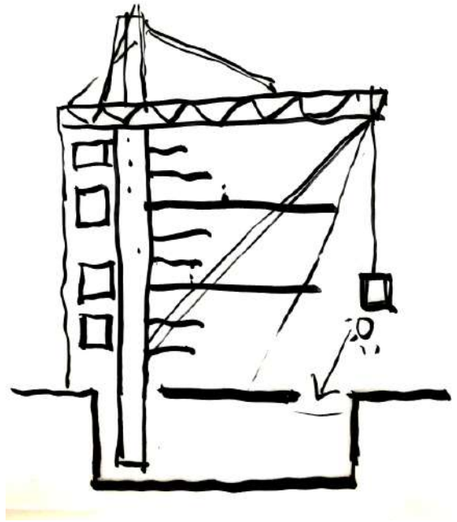


Figure 67 - Sketch dawing of Tomigaya (author, 2022)

Emerging out of modernism, High-tech architecture is considered a late modernist movement that was dominated by the representation of architecture as high-tech-industrial and the incorporation of new technology into buildings. This architecture was concerned with lightness and transparency which was fuelled by the emergence of new material technologies.

With Tokyo's property boom in the late 1980s developers saw land prices rise exponentially – giving previously undesirable sites newfound value. The Tomigaya project was developed within this contextual setting. The small triangular site, surrounded by low-rise buildings was envisioned to be a landmark structure that would house large exhibition spaces.

An anomaly in the local building regulations, that restricted the total number of floors to three but allowed for a height of 45 meters, was taken advantage of. The design of the building saw a vertical exhibition space rise high above the immediate context while working within the regulations. Steel trusses hang from the larger steel towers that house circulation cores and services. The steel trusses that define the triangular shape of the site support the cranes that move large floor plates when changes in exhibitions are needed.

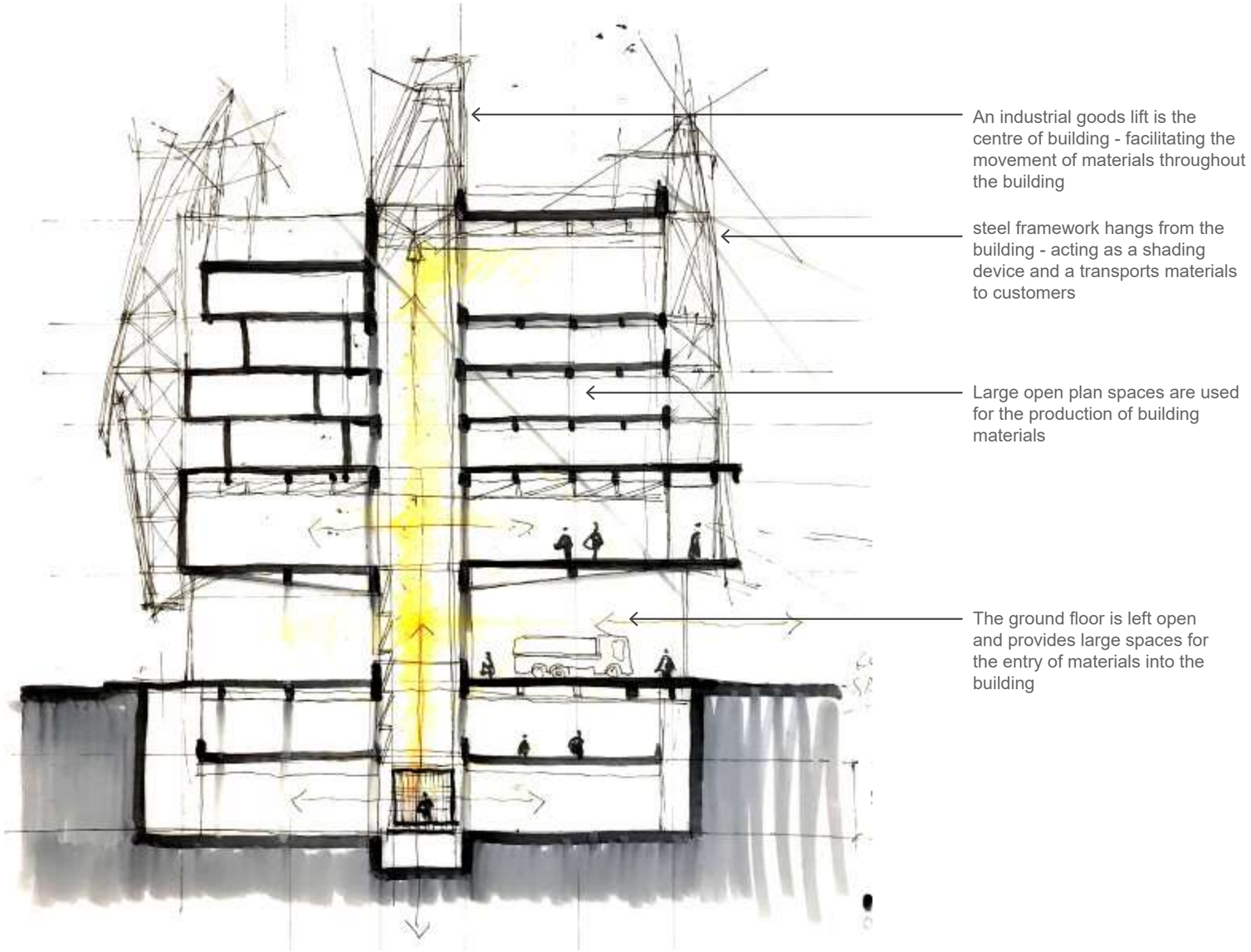


Figure 68 - Model of Tomigaya Tower
(RSHP, 1992) available at: https://rshp.com/projects/culture-and-leisure/tomigaya/

Extractions

The structural realisation of the project, that exploited the anomaly in local buildings regulations, offers an interesting architectural solution to a challenging site. The celebration of the structure becomes an important aspect in this project. How can the parts of the building that facilitate its function become more than bland examples of utilitarian machinery. This project explores a celebration of an industrial architectural expression and explores spatial possibilities within a process driven architectural enquiry.

Figure 69 - Section drawing (author, 2022)



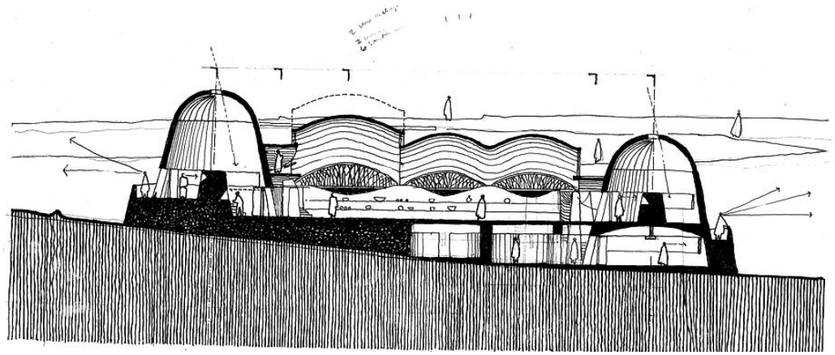
Labour and Architecture

Mapungubwe Interpretation Centre

Peter Rich Architects - Limpopo, South Africa

The social, political, and economic challenges that face South African architects can be used as tools in the form finding process. The Mapungubwe Interpretation Centre, by Peter Rich Architects, and the work of Anne Fitchett illustrate how architecture can address these issues.

According to Anne Fitchett (2001), high levels of poverty and unemployment in rural areas are intensified by a lack of infrastructure. The government has attempted to address these issues through engineering projects – but these issues have not yet been addressed through construction projects (Fitchett, 2001). The Mapungubwe Interpretation Centre, located just south of Great Zimbabwe, used labour intensive construction methodologies and skills transfer programs to address high levels of unemployment in the area. The vault system that was used in the project responded to a climatic context while using a labour-intensive construction process that would transfer skills to a local workforce and provide jobs.



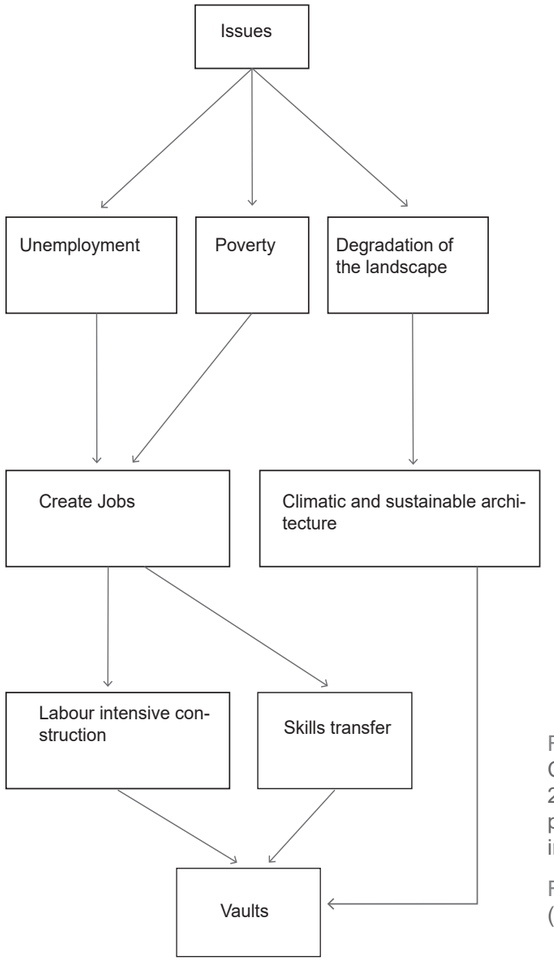


Figure 70 - Mapunbugwe Interpretation Centre section (Peter Rich Architects, 2009) available at: https://www.peterricharchitects.com/mapungubwe-interpretation-centre

Figure 71 - Issues Diagram (author, 2022)

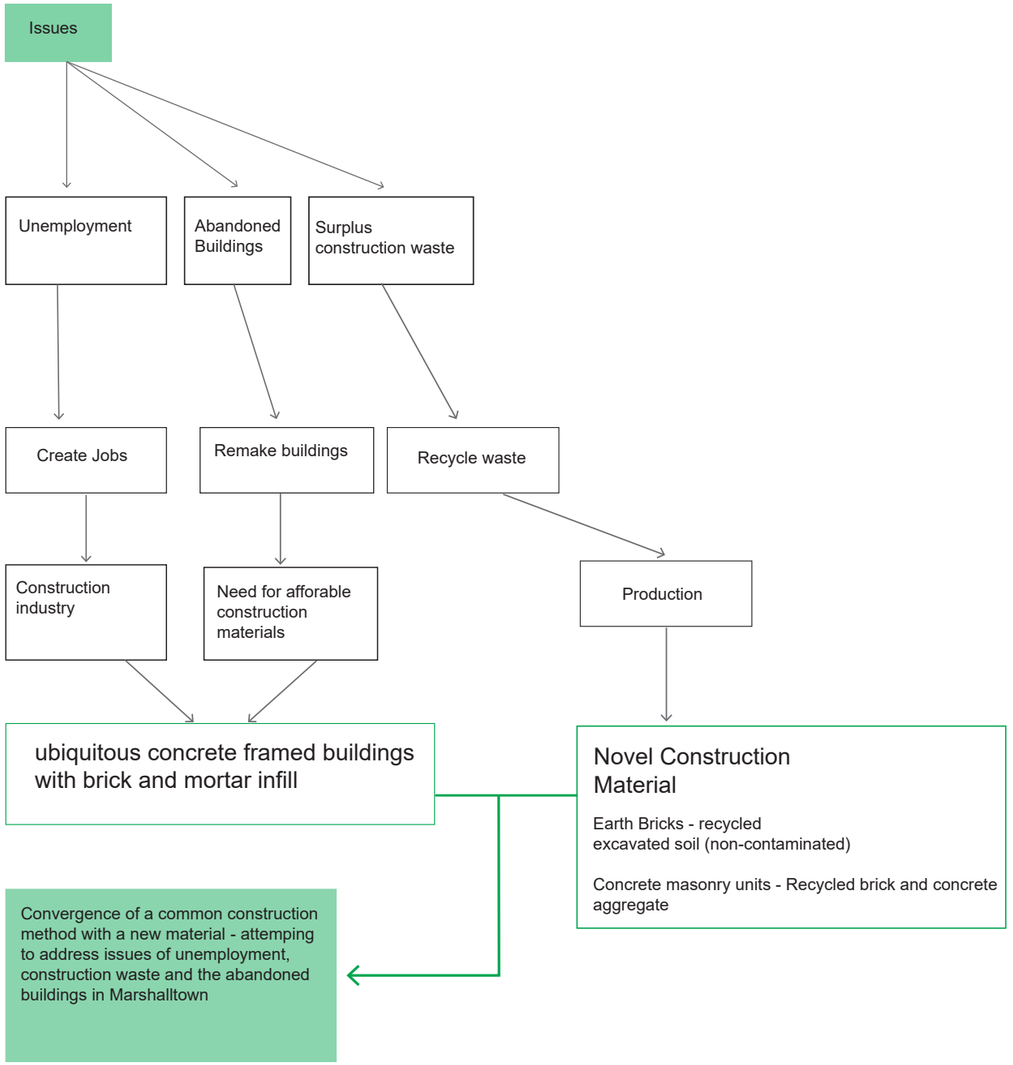
Extractions

The convergence of a novel construction material and a normative labour-intensive construction methodology is an interesting concept that I wish to explore. The building materials produced by the project can be plugged into the ubiquitous construction methods in South Africa which focus on a concrete framed construction with brick-and-mortar infill. In doing this the project will create employment and transfer new skills of building with a new material.

Figure 72 - MapunbugweInterpretation Centre photograph (Peter Rich Architects, 2009) available at: https://www.peterricharchitects.com/mapungubwe-interpretation-centre



Figure 73 - Project Issues (author, 2022)



Vernacular and the Modern City

Vernacular architecture can be described as spaces built by individual agency, cultures, identities, and the rituals of everyday life. Franco Frescura's explains how vernacular architecture should be understood as a signifier of a group's identity – where the making of space is closely linked to a material culture, a period, or a contextual setting (Frescura, 2018). The production of architecture, void of architectural practitioners, offers architects and thinkers a large source of material that can inform and inspire contemporary architectural design processes.

These forces of influence – cultural identities, material aesthetics, rituals of everyday life and an immediate context (Frescura, 2018) – are the vehicles for the development of vernacular architecture. These aspects define how the architecture is produced and heavily influence the design process of form finding.

Translation of Vernacular architecture

What I find interesting is how we as architects can use the vernacular spatial conditions to inform how we think about architecture and how we design for people. The ad hoc spatial interventions, governed by micro economies, entrepreneurial desires and everyday life reveal the agency and resilience of individuals with relatively low capital power. The question then becomes how these spatial cues can be translated into a formalised architecture through notions of architectural mimicry.

After being chosen to design the 2021 Serpentine Pavilion, Counterspace a Johannesburg base studio Counterspace led by Sumayya Vally, sought to create an architectural expression inspired by spaces of and rituals everyday life. The project meshed a multitude of spatial extractions of everyday spaces scattered throughout London.



Spaces, such as hair salons, prayer spaces and small-scale production spaces, which generally outside of what is considered 'high architecture' were observed, mimicked, and morphed in a compelling exploration of contemporary vernacular architecture. Although, this project illustrates interesting ways in which modern spaces of everyday life can inspire new ways of thinking – the project remains within the realm of experimental architecture and cannot be used to formulate a spatial argument grounded in real-world constraints. Rather than looking to provide spatial solutions this project presents a way of thinking about everyday spaces that seemingly get left out of architectural discourse.

Figure 74 - Photograph of 2021 Serptine Pavilion by counter Space(Iwaan Baan, 2021) available at: https://www.serpentinegalleries.org/whats-on/serpentine-pavilion-2021-designed-by-counterspace/

Extractions

Through viewing spaces of everyday life as informants for design this project seeks to explore the processes of remaking that evoke resilience and agency. The case studies in the previous chapter (The Ethiopian Vertical Market, Salena Hardware Store and Bike Hospital) reveal interesting ways in which individuals and groups transform spaces. This project explores a mash-up of different programs creating spatial relationships between seemingly contradictory functions.

.



Figure 75 - Section Sketch with photomontage of rituals of everyday observed in previous chapter (author, 2022)

Representation: A Tool-in-the-process

The following case studies explore provocative architectural visions – that challenge the notions of urban life and the possibilities of architecture in a world without constraints. They are focused on the interwoven relationship between architecture and representation, where the representation of spaces is as important as the architectural object itself. In some ways, the case studies are less concerned with providing architectural solutions as they are with creating a discourse that challenges the perceptions and practice of architecture

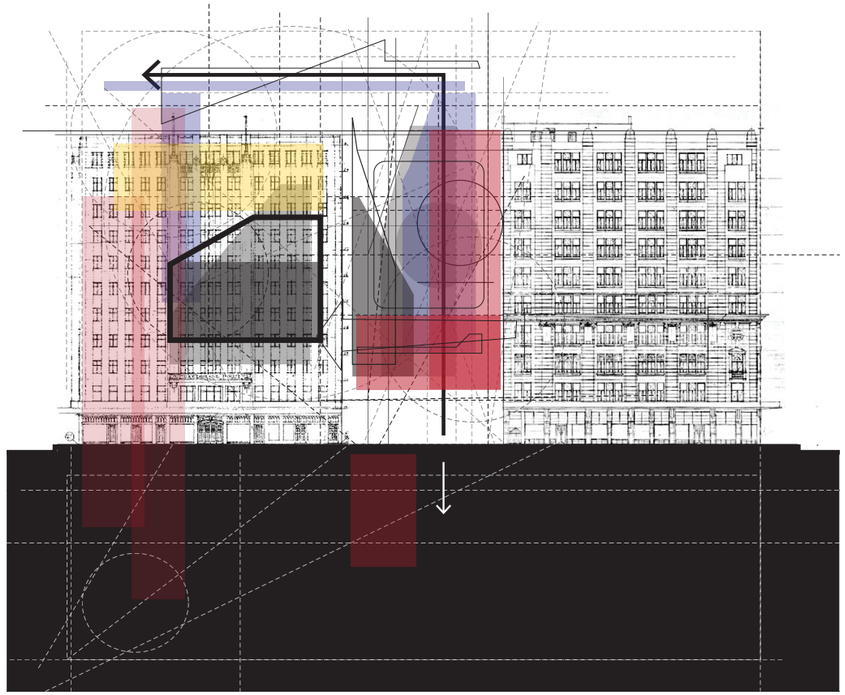


Figure 76 - Creative representation elevation sketch (author, 2022)

Archigram

A new generation of architecture must arise – with forms and spaces which seem to reject the precepts of 'modern'

- Main spread of Archigram no. 1, 1961

Archigram - Architecture Without Architecture', written by Simon Sadler (2005), provides an interesting insight into the Archigram group and how they influenced the trajectory of modernism within Great Britain and internationally. Archigram began as an informal group of young architects, operating out of London, who presented seductive visions for a new way of urban life. These representations propelled the ideas licensed in modernism to their extremes – pushing the limits and potentials of architecture. The Archigram newsletter, published between 1961 and 1970, quickly became the epitome of avant-garde architecture and a focal point for the development of a new radical architecture (Sadler, 2005).

Within the short time that Archigram was active the group produced an extensive body of work that sought to re-evaluate the practice of architecture and redefine what architecture was (Sadler, 2005). This production, however, remained primarily on paper – producing architectural images that were grounded in unrestrained creativity rather than within real-world constraints. Although, this inability or reluctance, to realise their work questions Archigrams importance, the work produced by the group continues to a pivotal play a role in the development of young architects looking to re-interpret the practice of architecture and the role of architecture in a changing world.



Figure 77 - Archigram Poster (Archigram, 1961) available at: https://www.archigram.net/portfolio.html

Plug-In City

The Plug-In City by Peter Cook embodies the early preoccupations of the Archigram group and encapsulates the grand scale of the group's visions. The plug in City was governed by two key notions: firstly, that of the megastructure - where interconnectivity, interchangeable building parts and streamlined transport links facilitate the functioning of a city in a time of rapid change; and secondly the notion of 'architecture-of-becoming' – which focused on creating architecture that enhanced the individual's everyday life (Sadler, 2005).

The aesthetic of incompleteness, evident in the Plug-In City reveal an interest in a new form of architecture that was endless and unfinished. This aesthetic, according to Sadler (2005), was inspired by the construction sites during the building boom after the economic reconstruction of Europe. Cook represented large steel cranes that were secured onto the megastructures – the cranes were viewed as tools for the replacement of parts and the continued extension of the urban vision.

Extractions

The ideas of an incomplete architecture – where the act of living and building are merged into one becomes a focal point of this project. This project views the existing built reality in Marshalltown as the megastructure – and the proposed architectural intervention as the 'architecture-of-becoming' that facilitates the building of new visions. Unlike Archigram's visions that seemed to provide a completely new vision for future cities, this project does not rely on a complete rejection of the past but rather a merging of the new with the old.

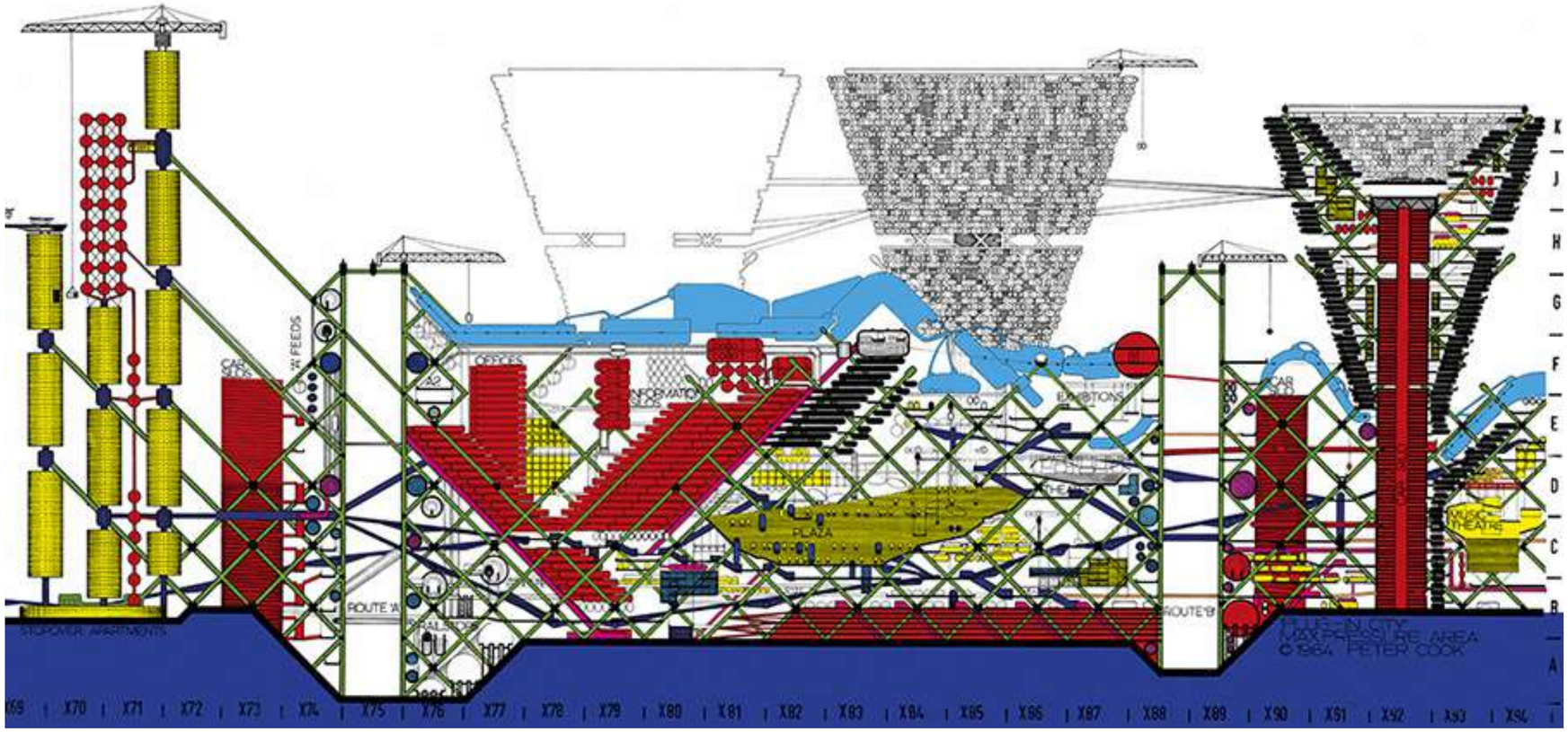
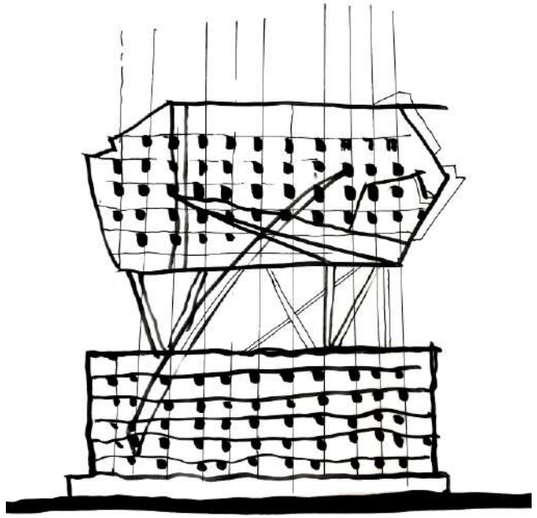


Figure 78 - Plug-in City (Peter Cook, 1961) available at: https://www.archigram.net/portfolio.html

The Meta-Institute

Lebbeus Woods



As described by Lebbeus Woods (2009) the Tatlin Tower project, which he later named the Meta-institute, was the representation of a new type of building – a building designed to house an institution that would explore the very idea of an “institution” (Woods, 2009) The building was an exploration into the role of architecture in breaking familiar models of thinking and becoming a tool-in-the-process (Woods, 2009). As much as the futuristic spatial identity of the building challenges the conceived ideas of architecture and its potentials, it also places an emphasis on how a space designated for discussion and debate can foster new ways of thinking about societal principals and laws. He discusses how the Meta-institute links the intellectual to the physical – presenting a spatial solution which, in turn, reflects an ideological one (Woods, 2009).

Figure 79 - Sketch of Meta-insitute (author, 2022)

Figure 80 - Model of Meta-insitute (Woods, 1962) available at: https://lebbeuswoods.wordpress.com/2009/08/01/meta-institutes/



Extractions

I find the notion of proposing a building that challenges the very idea of the proposal an intriguing conceptual framework. This project is interested in the re-imagining of neglected structures in Marshalltown and how this can be achieved through the facilitation of the act of building. With this statement, I use Woods notions to develop a spatial solution that reflects an ideological one – where the architectural intervention houses programs that facilitate the rebuilding of abandoned buildings while also housing functions that discuss and debate this very act of urban redevelopment. In other words, the material transformation factory and reclaimed material market facilitate the rebuilding of Marshalltown while the research and education facilities interrogate the very idea of rebuilding – creating a dialogue between a spatial solution and an ideological discourse.

The contrast between Woods proposal and the existing building reveals an interesting spatial translation of his conceptual thinking. There is a clear distinction between the old and the new, however he does use aspects of the existing building as references. A provocative contrast between the modernist buildings and the futuristic form creates a compelling representation of an already provocative idea. I argue, that in exploring an architectural idea that is grounded in pushing the boundaries of what architecture is – requires the production of an imaginative spatial arrangement. The proposal is ever more compelling with an architecture that matches. Although this project presents an argument based in reality, framing the project as a speculative exercise allows for a certain level of unrestrained possibilities.

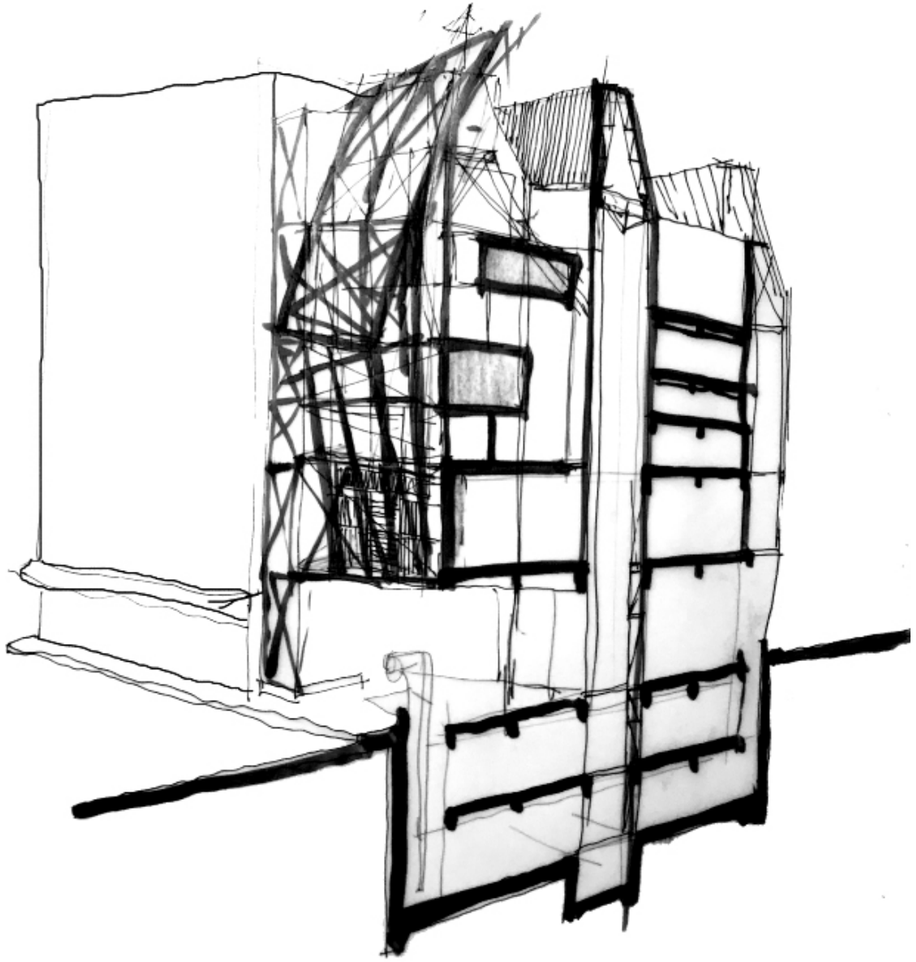


Figure 81 - Section sketch (author, 2022)

Research and Education Facilities
- Research and discuss construction waste and the redevelopment of Johanessburg

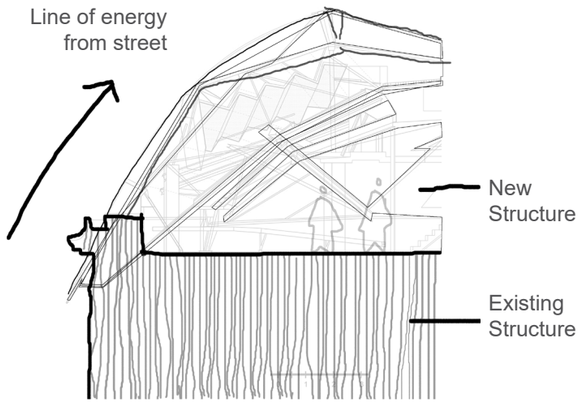
Production Spaces
- Produce materials for the redevelopment of the inner city

Delivery and Collection
- Facilitate the making of new visions

The spatial solution prompts an urban and architectural discourse

Rooftop Remodelling

Coop-Himmelb(l)aue - Vienna, Austria



LONGITUDINAL SECTION

Much like Archigram, Woods' work remains mainly on paper and within the realm of experimental architecture – focusing on pushing the boundaries of the way we view architecture instead of how we build it. The Rooftop Remodelling by Coop-Himmelb(l) aue can be argued to be the realisation of the spaces Woods represented.

The Rooftop Remodelling, completed in 1988, is an office extension to an existing building in the inner-city of Vienna. The rooftop extension is the first deconstructivist project that was built – gaining international attention for a new kind of architecture and illustrating the true possibilities of architecture (Coop-Himmelb(l) aue, 1988). The building resembles a futuristic spacecraft that crash-landed on the roof of a traditional Viennese building. Rather than looking to the immediate context the project sought to translate the 'visualised line of energy' (Coop-Himmelb(l)aue, 1988) from the street – creating a provocative expression.

Figure 82 - Section sketch (author, 2022)

Figure 83 - Rooftop Remodeling model (Coop Himmelblaue, 1988) available at: https://coop-himmelblau.at/projects/falkestrasse/



Dirty Geometries + Mechanical Imperfections

Bryan Cantley



Bryan Cantley's exhibition titled 'Dirty Geometries + Mechanical Imperfections' challenges the normative building practices within architecture and presents an alternative architectural and spatial discourse. There is a sort of alien atmosphere present in Cantley's work (Spiller,2008) that presents the viewer with a mutation and transformation of mechanical objects. The experimental drawings and models presented in the exhibition are grounded in two key conditions – experimental architectural representation and the mechanical object. The work creates a dialogue between the imperfect machine-like objects in pursuit of perfect architectural moments. The work rejects preconceived ideas of mechanical precision providing striking images and portraying the potentials of architecture. The drawings are seen as tools-in-the-process rather than finished products that provide more questions than answers - attempting to prompt a discourse around architectural enquiry, the role of architectural representation and the medium for which architectural dialogue is delivered.

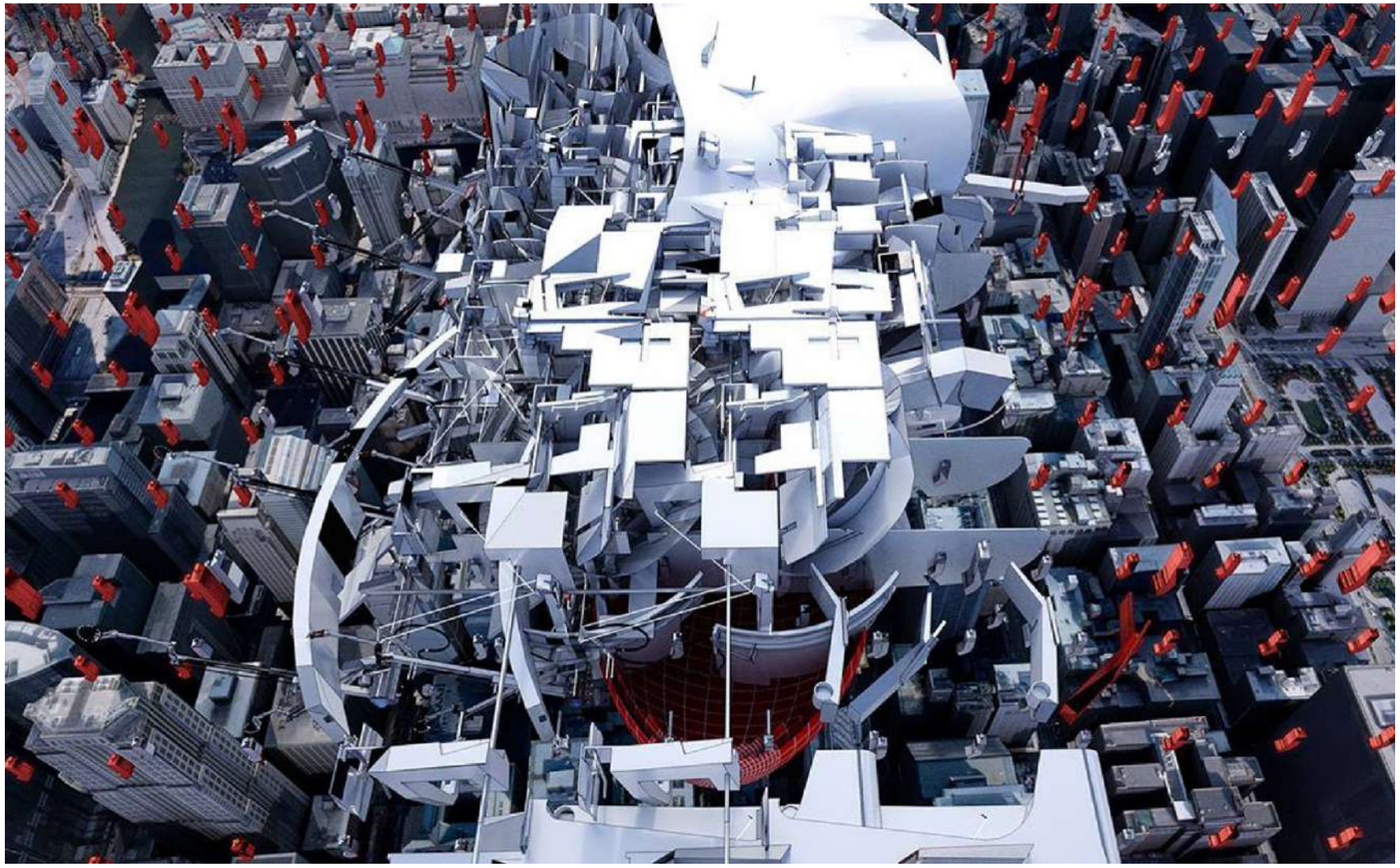
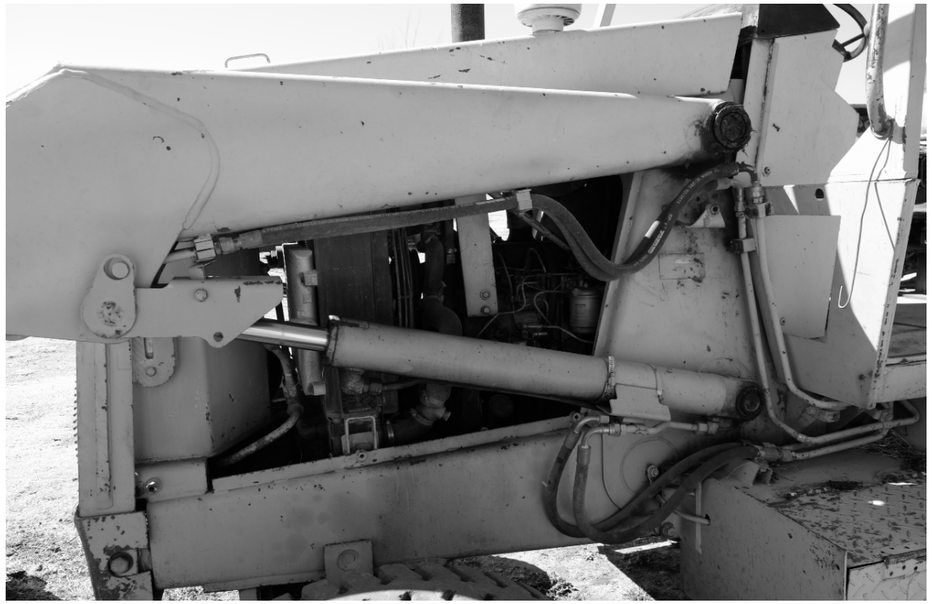


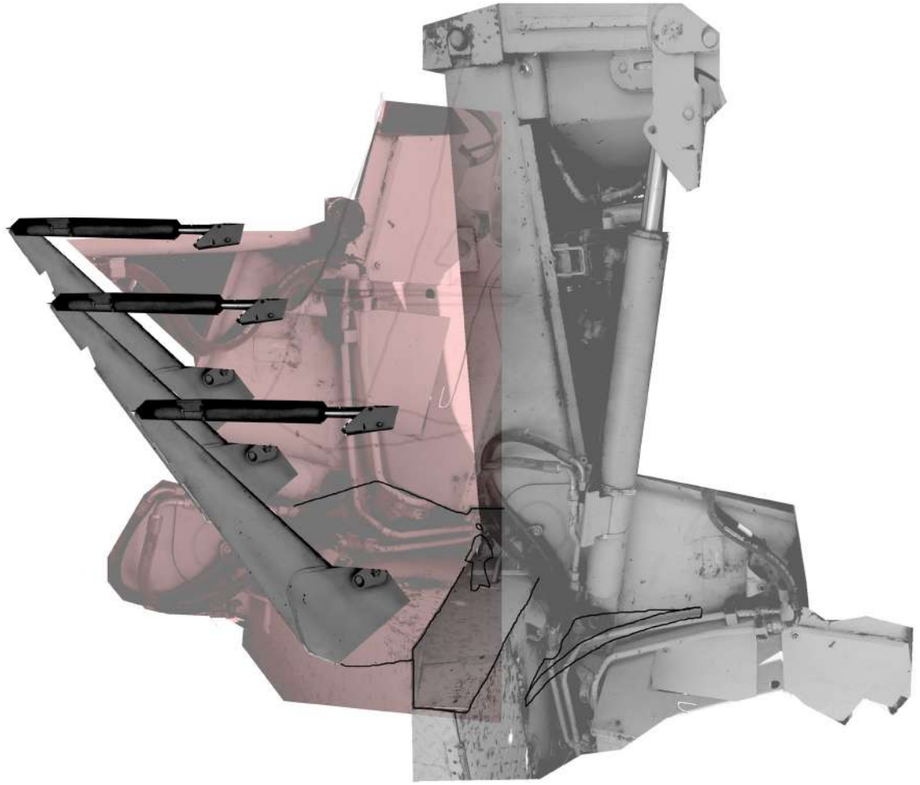
Figure 84 - Dirty Geometries + Mechanical Imperfections (Cantley, 2008 available at: https://www.metalocus.es/en/news/bryan-cantley-dirty-geometries-mechanical-imperfections

Extractions

Cantley's exploration of an imperfect architecture governed by machine-like objects reveals the potentials for viewing architecture within this frame of reference. Considering the position this project takes, through viewing the building as a tool that facilitates the emergence of new vision, the spatial expression can be explored similarly to Cantley - where the building is viewed as a machine that facilitates everyday life and within the harsh mechanical objects interesting architectural moments can be produced.

Figure 85 - Mechanical Abstractions (author, 2022)





Parasitic Architecture and Adaptive Reuse

Adaptive reuse is commonly understood as a building process that regenerates an existing building through transforming the building for a new use while maintaining its historic characteristics, and in doing so, saving the building (Rutcosky, 2007). Although, this process poses great challenges for the designer and developers, there are clear environmental, economic, and social benefits which contribute to the continued interest in an adaptive reuse architecture (Fisher-Gewirtzman, 2016).

While acknowledging the logical and monetary benefits of an adaptive reuse architecture and setting it aside for a moment – the notion of a spatial expression engulfing and transforming an architectural artifact from a bygone era offers architects a captivating vision of a future merged with the past. With an interest in the visions of Johannesburg and the potentials for reimagining the neglected structures, this project is interested in the power of an architecture that layers the past with visions of an active future.

Parasitic architecture, while like adaptive reuse, it is more focused on a tectonic addition to an already functioning building. (Bonenberg-Bardzinska, 2018). Rather than adapting the entire building to facilitate the new use, parasitic architecture offers a spatial condition where the new space is attached to an existing building and uses the existing building as a host.

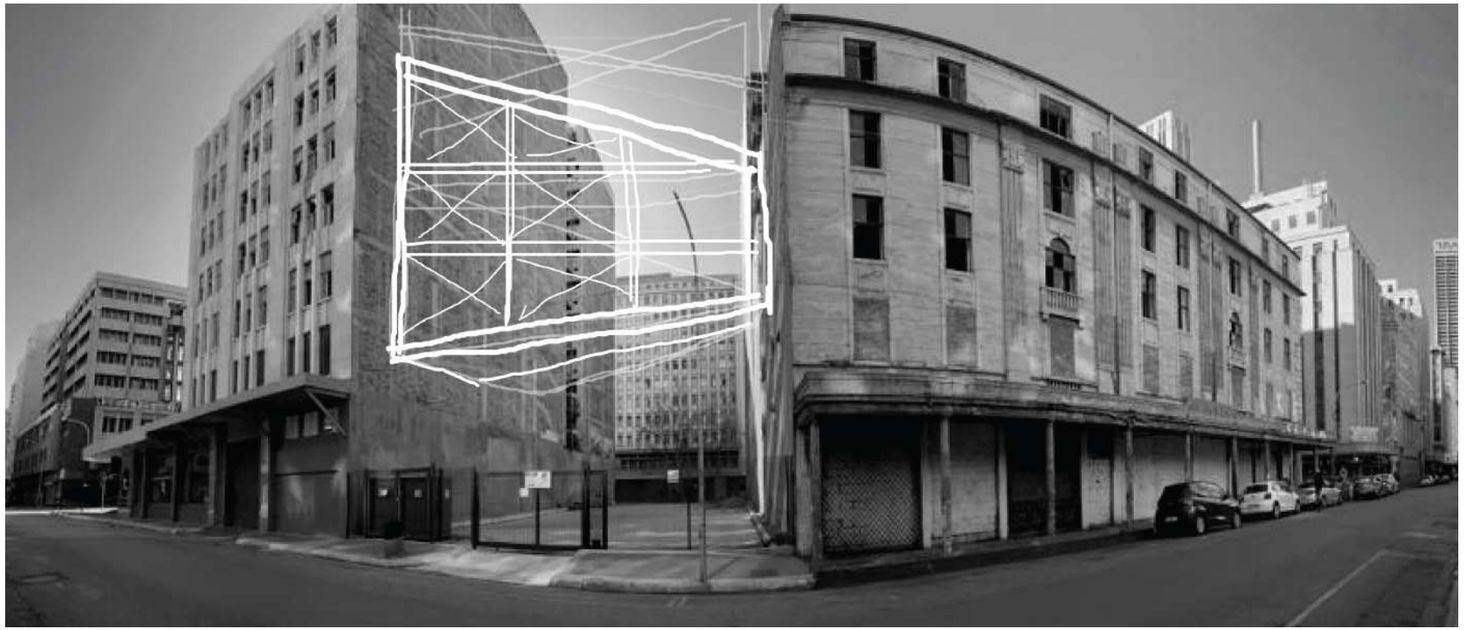


Figure 86 - Parasitic architecture exploration (author, 2022)

Parasitic Office Space

Local Studio - Hillbrow, Johannesburg

Completed in 2015, this project by Local Studio project saw a new office space placed on an existing building in extremely dense residential neighbourhood of Hillbrow in the Johannesburg inner city. The project used a lightweight steel frame to create the forms that define the project. As discussed by Local Studio (2020) the project explores the ideas of a parasitic architecture that attaches itself to an existing building – creating a clear distinction while maintaining the architectural proportion and scale.

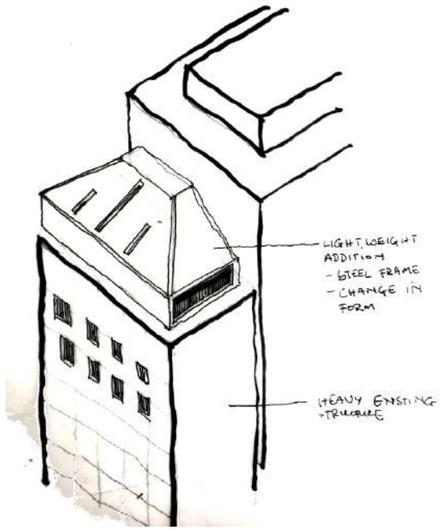


Figure 87 - Sketch of Local Studo's Project (author, 2022)



Figure 88 - Study Model (Local Studio, 2015)



Figure 89 - Office extension
(David Southwood, 2015)

Extractions

Local Studio spatialises their argument using contrasting materials and spatial referencing. The heavy materials of the exiting building are purposefully contrasted by the new lighter materials while the proportions and scale of the existing building are used as guidelines to create the form. I propose a similar exploration in this project. The heavy material aesthetics of the existing buildings will be contrasted by a lighter transparent architectural expression. The scale and proportion of the existing buildings will be used as a reference to both contrast and mimic.

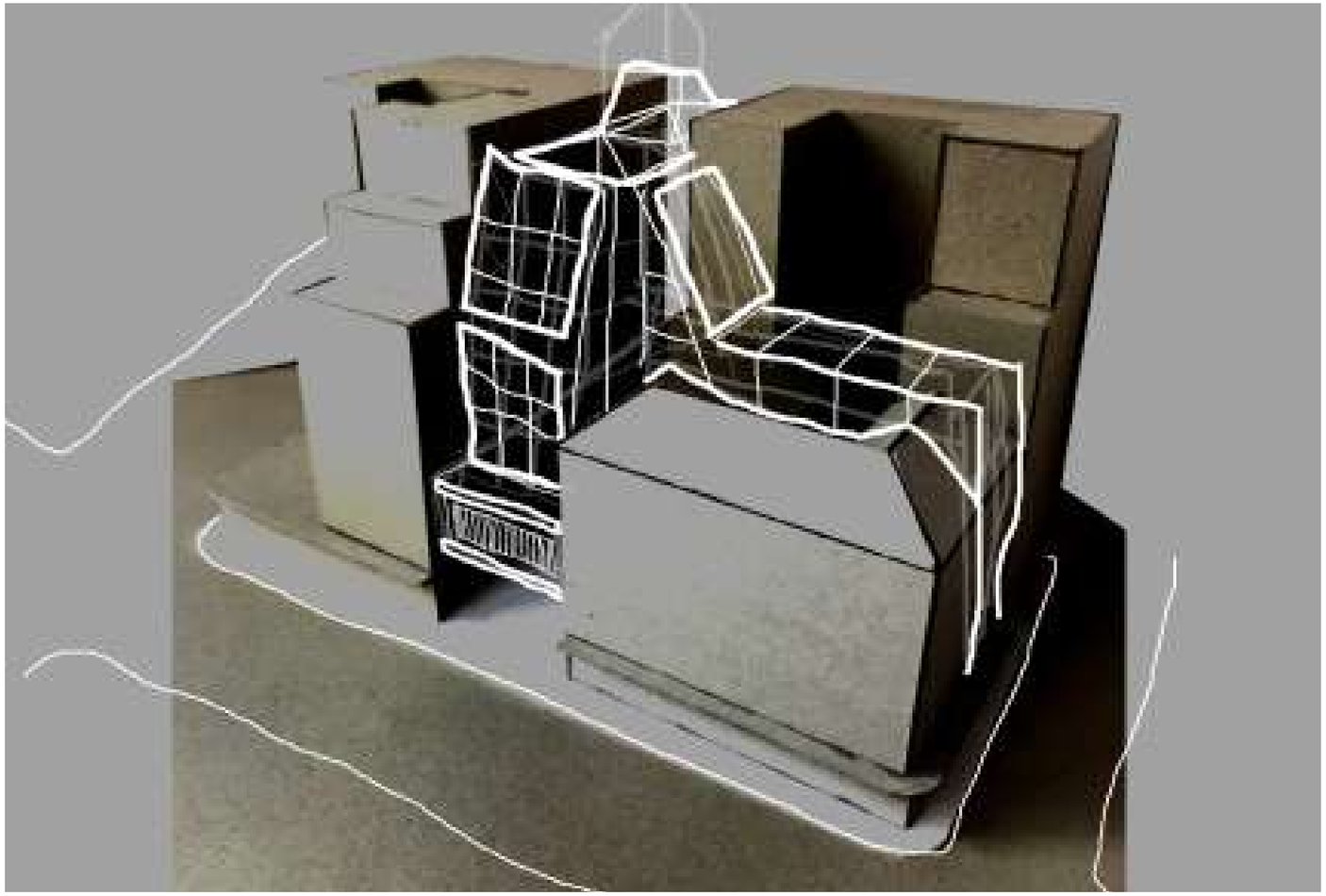


Figure 90 - Perspective Sketch (author, 2022)

Construction Waste and the City

The expansion of the South African construction industry contributes significantly to the growth of economy and gives architects an optimistic outlook on the profession, however as the industry expands the amount of construction waste produced will inevitably grow – having a negative impact on the environment (Fitchett, 2022). Much of the waste produced by the construction industry ends up in landfills. This is not a sustainable urban practice and embodies a problematic ideology of environmental degradation and a disregard for the consequences of urban development.

Construction Waste

According to Anne Fitchett (2022), in a study that looked at a defined set of construction sites, the most prevalent waste material produced was concrete and brick, which was attributed to use of unskilled subcontractors. The construction case studies examined the construction waste produced during the construction process rather than the demolition or excavation process. Fitchett (2022) concluded that, during the construction process, a large amount of waste production was due to over estimation of materials, delays in the project and project management issues. Although the logical solution for the reduction in the waste material would be better project management, I argue that construction waste is inevitable, and we should turn our attention to providing ways in which architecture can become a vehicle for the recycling of construction waste

.

Excavated Soil

The making of buildings (demolition and construction) produces large amounts of surplus excavated soils that normally end up in landfills (Hale, 2021). According to an article written by Frédéric Simon (2021), excavated soils in Europe are the largest waste product – accounting for five times the amount of household waste. Although this statement accounts for waste production in Europe and may not fully translate to a South African context, the statement illustrates the importance of diverting excavated soil from landfills. Sustainable solutions for the use of surplus excavated soil usually tend towards repurposing the soil for the construction of embankments, roads, and landscaping (Hale, 2021). These solutions, however, rely on the presumption that the construction sites have ample enough space to use the excavated soil and do not consider dense urban environments like the Johannesburg inner city. This lack of space would most likely require the soil be sent to landfill. This is where my proposal inserts itself – the project presents a building that reclaims the excavated soil as a construction material, attempting to create a circular economy and providing a convenient solution for the disposal of surplus excavated soil within the inner city.



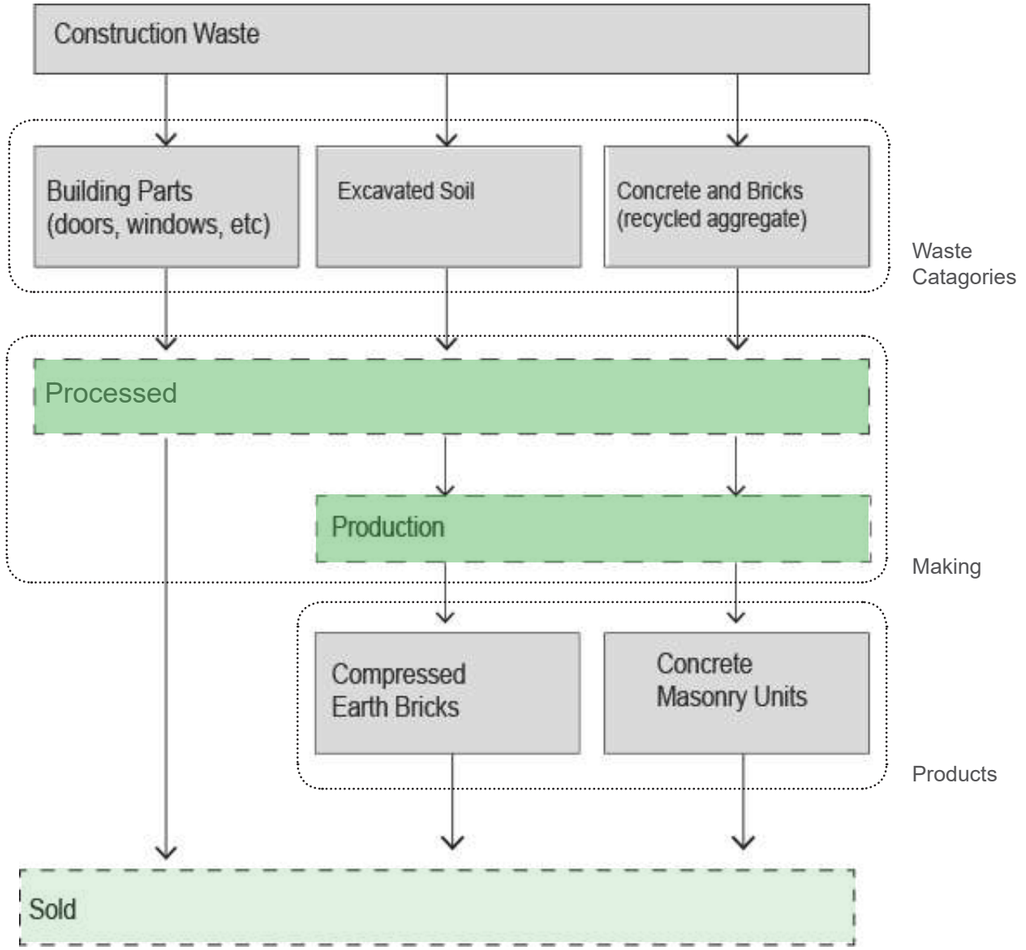
Figure 91 - Construction rubble, John Moffat Extension, Wits univeristy (author, 2022)

The proposal

Much like Johannesburg's historical fixation on resource extraction and the commodification of the landscape's resources – this project proposes that we continue this process of extraction but in a profoundly different capacity. I propose that, by challenging normative building practices, construction waste can be viewed as a resource worth extracting. This project explores the notion of a circular economy where the production of space is connected to the recycling of the waste materials produced when building these spaces.

I explore three conditions for the recycling of construction waste. Firstly, the excavated soil (non-contaminated) from construction sites will be used in the manufacturing of compressed earth bricks, replacing the virgin soil normally used. Secondly, during the demolition of existing buildings, recycled concrete aggregate will be used in the manufacturing of larger concrete masonry units. Thirdly, reclaimed building parts (windows, doors, sanitary fitting etc) from demolition sites and gutted buildings will be reprocessed and sold though the reclaimed material market.

The delivery of building waste (non-contaminated excavated soil, recycled concrete and reclaimed building parts) by individuals and construction companies to the site will be incentivised by placing a monetary value on the recycled material – attempting to create an attractive desire for recycling the material that would otherwise be sent to landfill. The price of the reclaimed materials is expected to be below the standard price of similar raw materials, creating a desirable scenario for all parties involved.

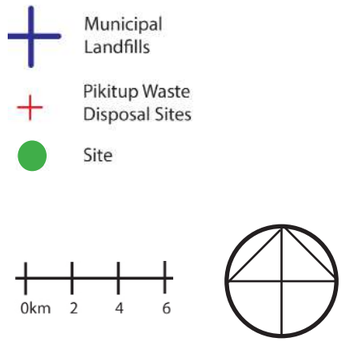


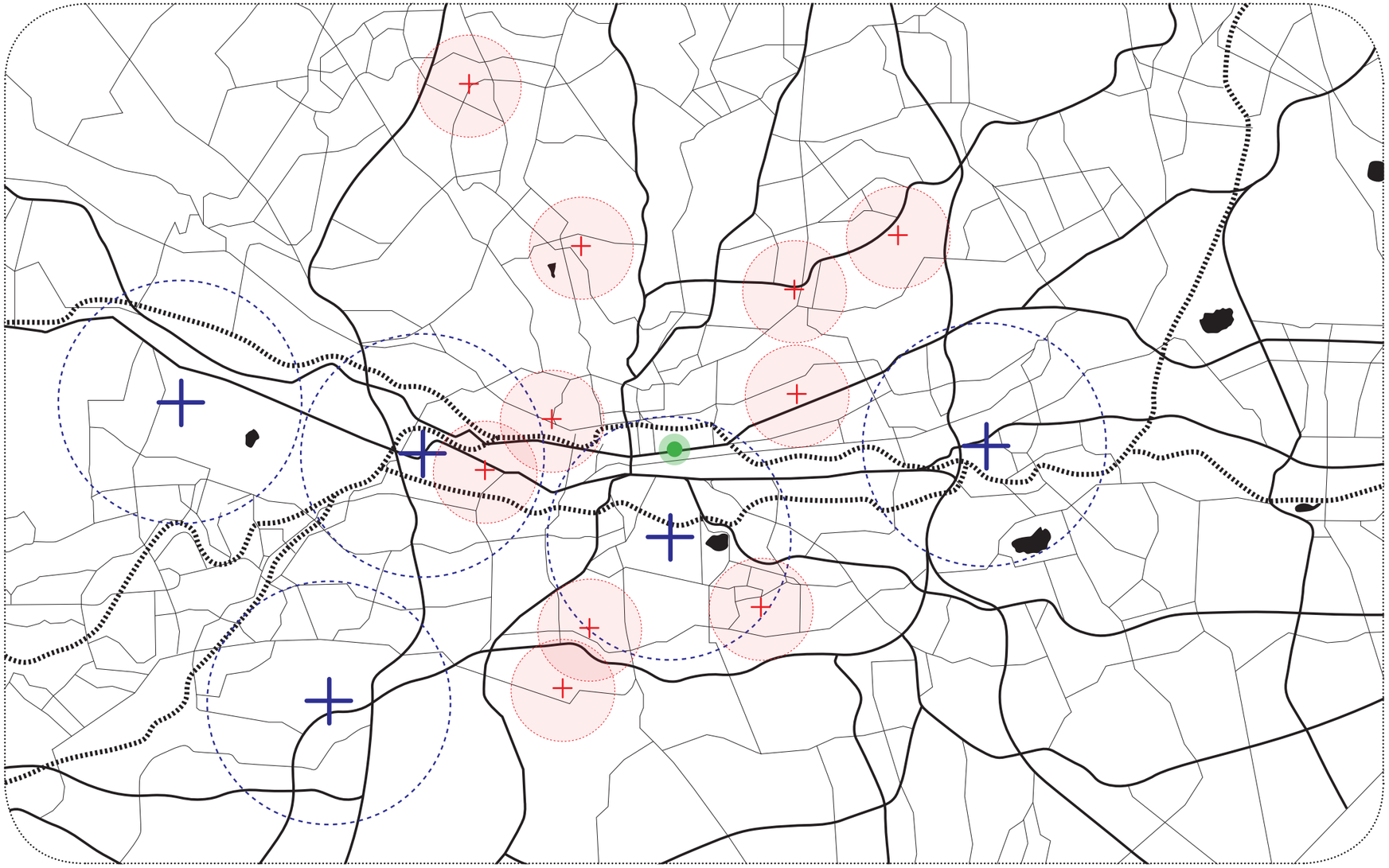
Locating Landfills

Using google maps as a research tool, landfills surrounding Johannesburg were located. The landfills are broken down according to scale. The first category locates small scale waste disposal sites that provide dumping sites for relatively small amounts of waste. The second category locates large scale landfills which operate at an increased capacity – providing waste disposal spaces for large construction projects. The larger landfills act as permanent sites for waste, whereas the smaller sites act as temporary spaces for the storage of waste.

Locating the landfills within Johannesburg offers a justification for the proposal where the delivery of waste from construction and demolition sites within the CBD will be a more compelling option than having the waste sent to landfills.

Figure 92 - Map of Johannesburg locating landfills (author, 2022)





Open Production Hall for BC Materials

Brussels Cooperation Architects, Materials and Studies - Brussels, Belgium

Brussel Cooperation, known more commonly known as BC Architects is group consisting of architects, builders, and educators. The organisation operates within three legal entities: BC architects – an architecture studio, BC studies – a non-profit that operate through knowledge and skill transfer program, and BC materials – a material cooperative which focuses on the production of sustainable building materials and sustainable construction methods.

The studio is interested in exploring “acts of building” with the aim of creating systemic change within the construction industry (BC architects, 2020). Working across these three entities the studio can explore the production of architecture in an enhanced capacity. Like the Meta Institute, by Lebbeus Woods, BC architects have set up an organisation that explores spatial solutions that are grounded in the exploration of intellectual ideas. In other words – BC architects, which have an interest in the act of building, design proposals that embody and facilitate the very act of building. The project becomes the example, as well as the facilitator in creating change within the construction industry.

The production hall is a production space for BC Materials. The hall was designed as a dismountable structure that could be transported to other parts of the city – embodying the organisations ideas of an architecture that changes the way we build. Large precast concrete blocks, that provide designated material storage spaces, are built using dry construction methods which allows for the possibility of adaptation. The roof is constructed using demountable connections. The project is an example for a way to provide quick production spaces with the idea that the building could be transported every five years. The building encapsulates the organisations desire for a new way of building with a focus on sustainable solutions in densifying urban settings (BC Architects, 2019).

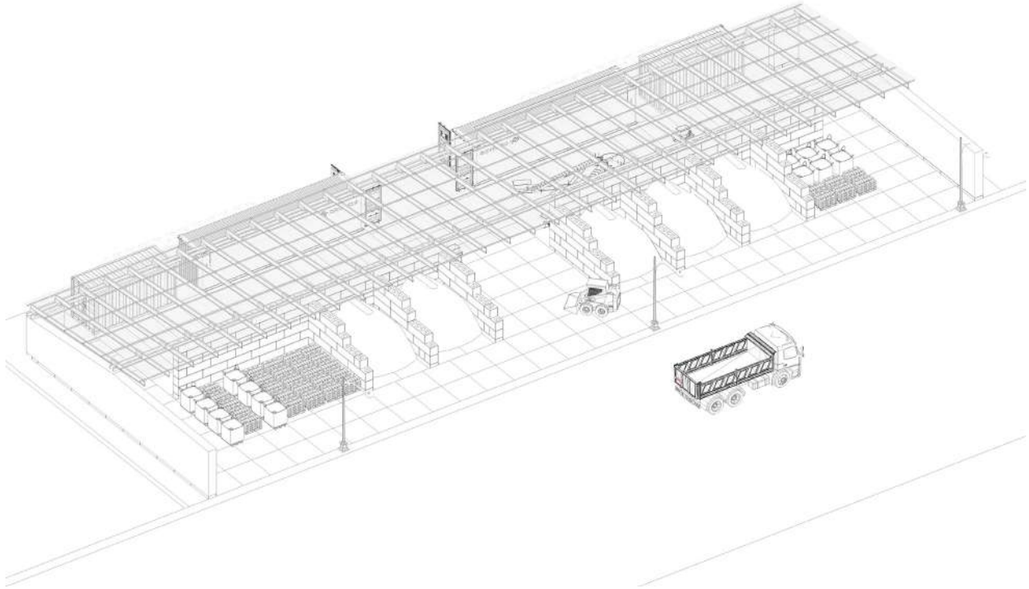




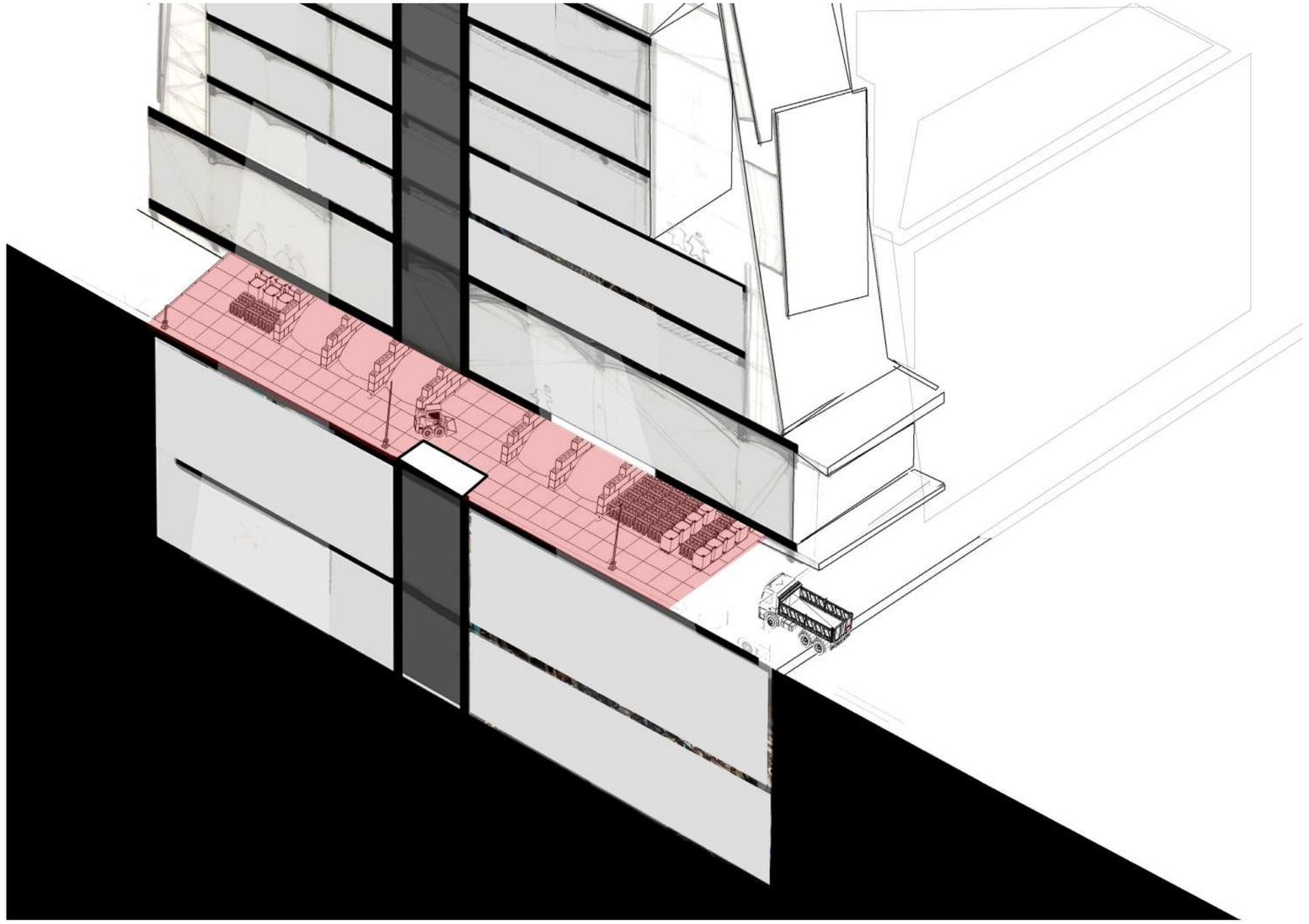


Figure 93 - BC Material Hall
(BC Architects, 2019) available at:
http://architects.bc-as.org/BC-Materials

Extractions

The production hall provides spaces for the making of building materials. The spatialisation of a temporary architecture is created through delicate construction methodologies - where temporary connections are carefully thought out. The large precast concrete blocks offer the possibility of change – this project explores a similar approach

Figure 94 - Collage of BC architects with sketch section (author, 2022)



Builders Express

Craighall Park, Johannesburg







Figure 95 - Photographs of buildings warehouse (author, 2022)

The Builders Express in Craighall, Johannesburg, was used as a case study to examine the ubiquitous hardware store typology, with the aim of extracting spatial solutions that could be used in the development of this project.

The building is constructed using a typical steel frame warehouse construction that provides large uninterrupted floor plans with high ceilings. The building is void of any significant architectural expression and viewed as utilitarian architectural object. What stands out is the functional aspects of the building. There are two entrances for the building – one designated for DIY customers working on small projects, and the second entrance is for large deliveries, storage, and contractor collections. This occurs on the basement level and serves as the entry point for goods.

A discussed by Dovey, in Framing Places (1999), the relationship between spatial representation and function. Spatial representation and the programmatic function are interrelated conditions. The representation of space is empty without an applied function, and in the same way spatial branding is the “coercion” that facilitates the workings of a building. The corporate branding used in the Builders Express reveal the need for spatial branding in a building geared towards pure functionality. Not only is the spatial branding a marketing tool but it is works as a functional tool directing goods and people.



DIY customers entrance

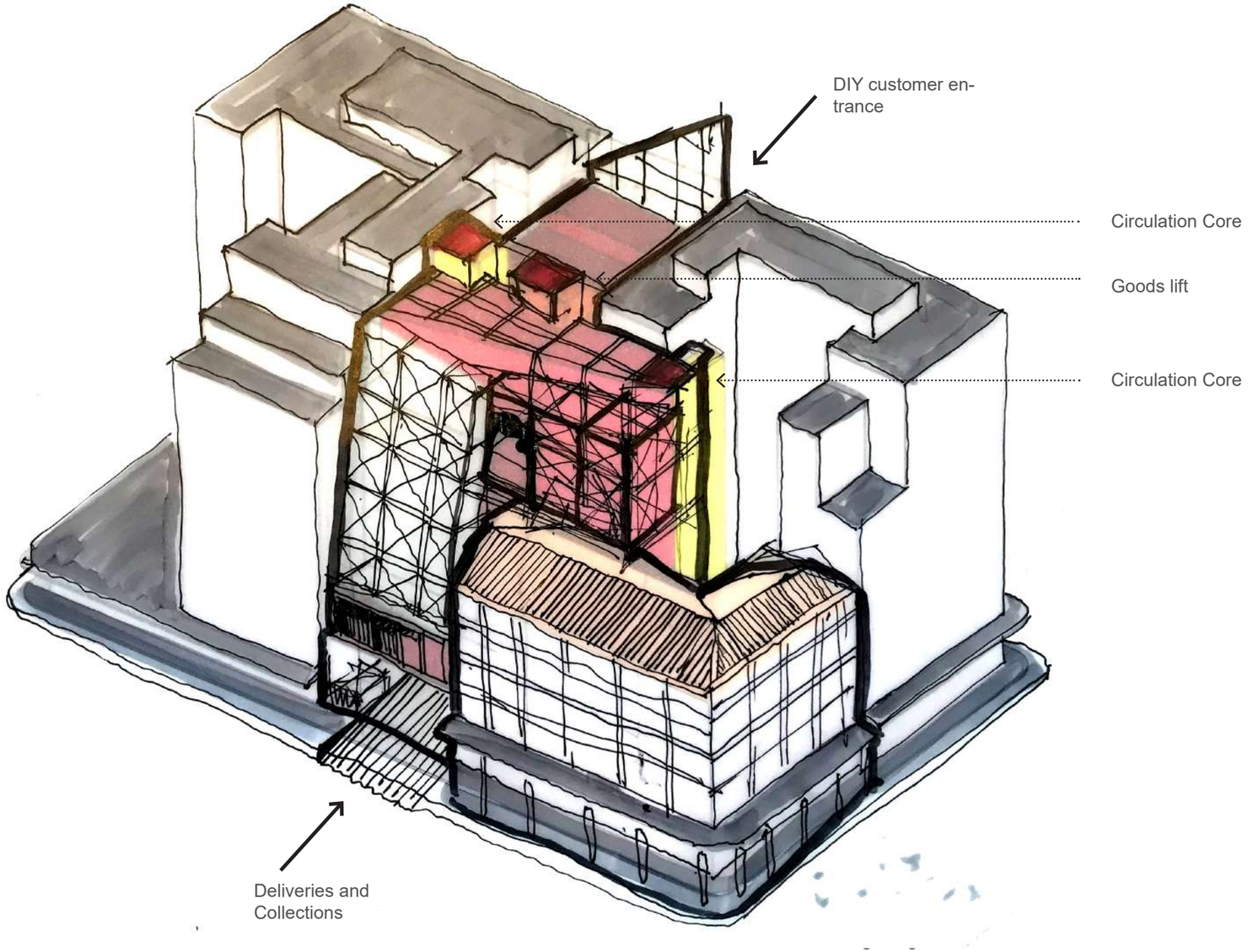
Deliveries and contractor entrance

Figure 96 - mapping of warehouse (author, 2022)

Extractions

When designing a building interested in the mobility of materials, the functional aspects of the building become extremely important. This project attempts to use the ways in which the Builders express directs goods and people. Spatial branding is viewed as an opportunity to create a landmark building where the architectural expression acts as a marketing tool attracting customers.

Figure 97 - sketch (author, 2022)



Enclave Urbanism and the Right to the City

The city is being remade as a collection of juxtaposed fragments. The gritty, complex city, as opposed to its glitzy, idealized counterpart. . .has been obscured and upstaged... Privately owned spaces... will increasingly function as [Johannesburg's] civic squares, but never assume it's civic responsibility".

- Bremner, Sunday Times, 17/03/2002, in Dirsuweit, 2008

Urban redevelopment processes are inherently based on a model that the city is an income generating commodity. Developers view the urban city as merely a commodity worth exploiting which results in a production of spaces that create profits (Harvey, 2009). This view of the city is problematic in that it dehumanises the city. The residents are simply rent-paying assets and consumers that only show value if they can consume the products the developers are producing. This view of the city produces a fragmented city where urban enclaves are carved out of the city.

The creation of urban enclaves' results in a fragmentation of the inner city along divides of race, gender, and class (Wang, 2019). These processes of creating themed precincts and gated urban redevelopments are fuelled by the capitalist notions of privatisation of space. These enclaves, particularly in the South African context, are viewed as safe and soft spaces carved out of harsh urban cities.

The Watershed Market

The Watershed Market by Wolff Architects is a redevelopment of an unused workshop located in the V&A Waterfront. The project was interested in enhancing pedestrian interactions, facilitating collaboration between the various programs and the empowerment of small businesses. The project used the existing open air portal frame as a space to showcase the intended products and to showcase South African art while facilitating interconnectivity between retail, education, and office spaces.



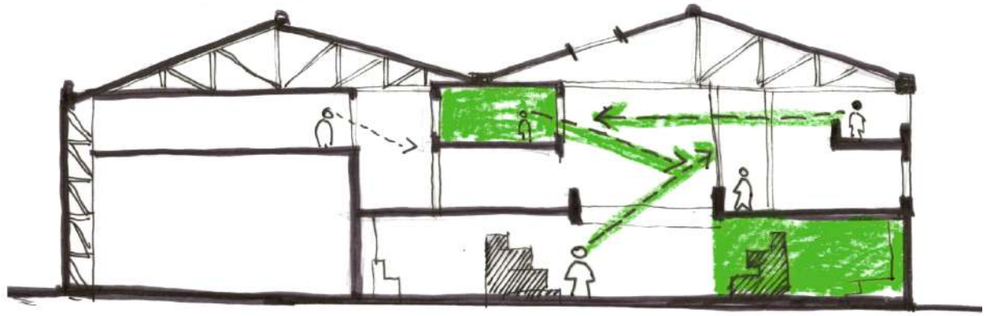


Figure 98 - Watersshed market (Southwood, 2015)

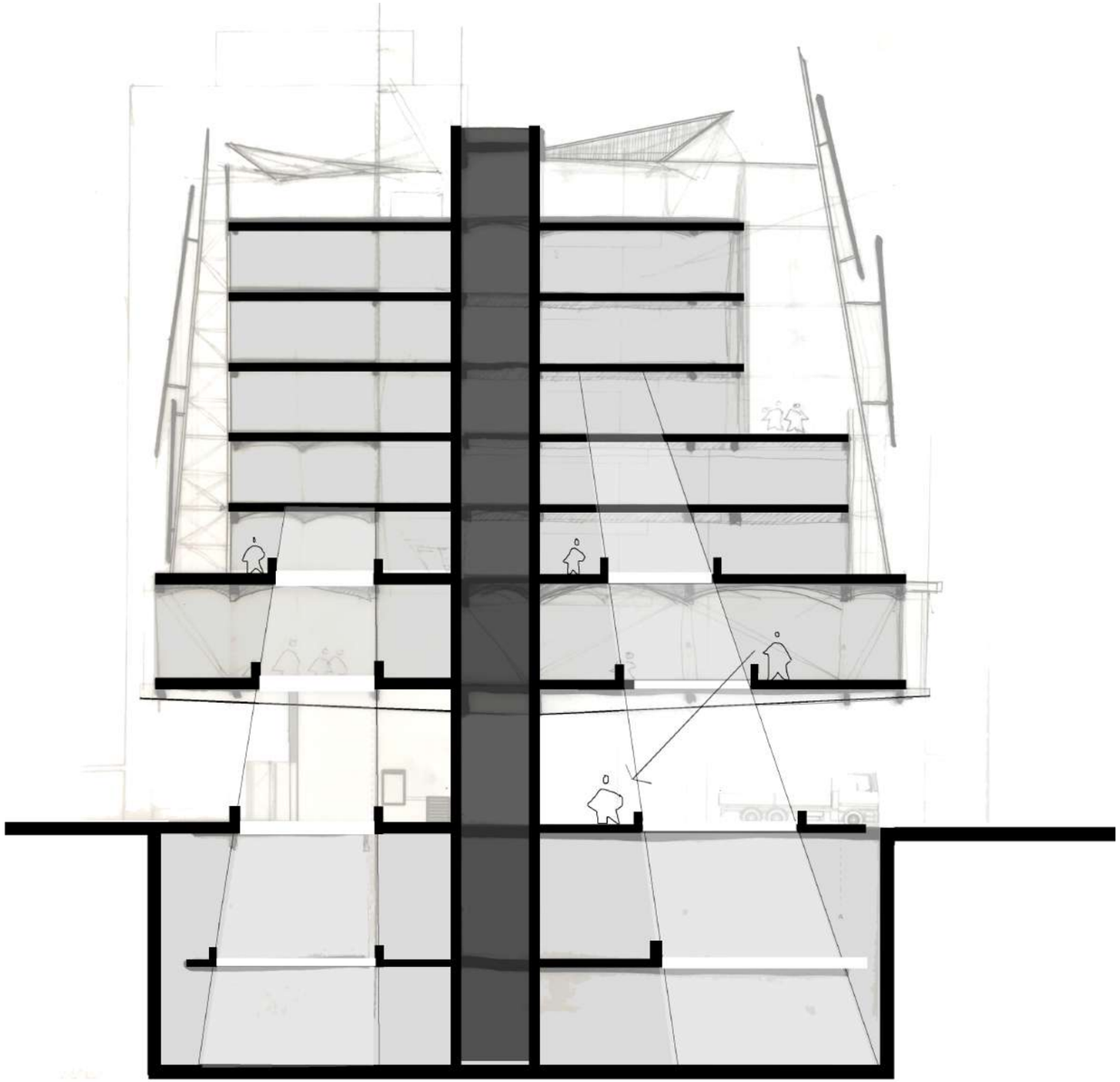
Figure 99 - Sketch analysis (author, 2022)

Extractions

In the Watershed project, Wolff Architects explored the concept of a permanent superstructure and an adaptable substructure. The existing portal frame and new floor plates served as the permanent superstructure that responded to the urban context while the retail substructures allowed for the possibility of incremental change over time. This allowed the Watershed market to empower small businesses with the opportunity to make changes and gave individuals a reclaimed right to the city.

The connection between the various programs was established through circular cut outs in the floor slabs. This created an interconnectivity through the floors and functions – facilitating the development of visual connections, collaborations, and relationships.

Figure 100 - Sketch section (author, 2022)



Chapter 5

Design Development

A documentation of the non-linear design process and the development of an architectural argument

This chapter explores the design development of the project. Although, exercises were tackled in a linear progression throughout the year, the design development has followed a non-linear process – where moving forward meant retrospectively extracting architectural ideas from previous work. This chapter attempts to document the process. The chapter does not provide a finished product but looks to present an architectural thinking inspired by work and research previously discusses in the document.

Sketch Modelling

Destruction and Waste as design informants

The creative modelling took place in the beginning of the year before a defined architectural framework was developed. The creative exercise, which at the time seemed premature, allowed for spatial concepts to be developed relatively quickly with few limitations. This exercise is seen as the initial stages of the design development, presenting a way forward while also offering a creative framework to look back on. This exercise provided a source of inspiration for when the architectural intent was lost in digital software, inspiration was at an all-time low and the finish line seemed to be out of reach.

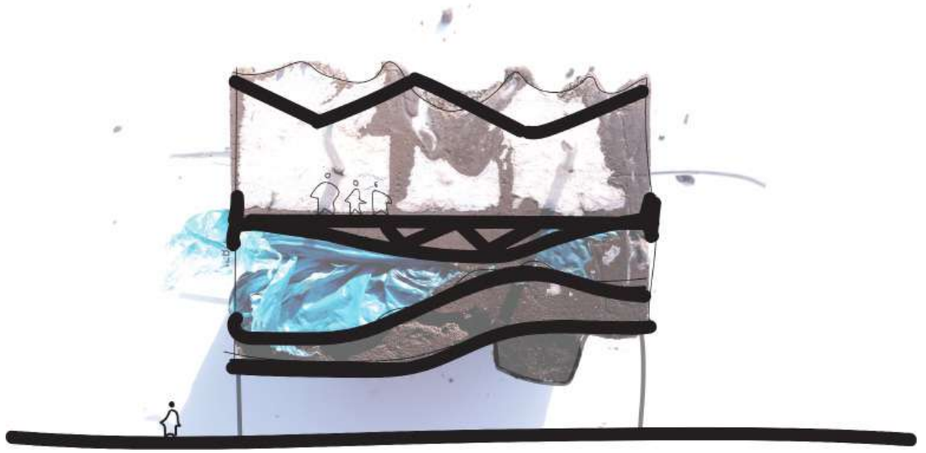
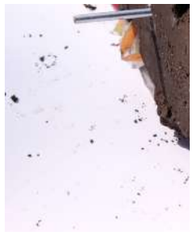
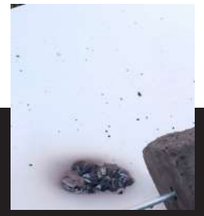


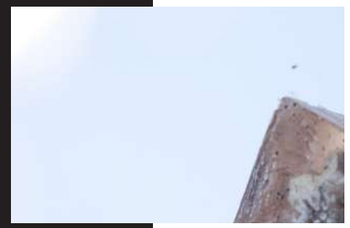
Figure 101 - Sketch over creative model (author, 2022)

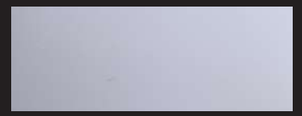














A Creative Approach

A design process governed by unrestrained creativity, offer unexpected outcomes, and allow the designer to step out of a conceptual space into a physical one – producing objects that become a vehicle for further conceptual development. By no means does this exploration offer a fully realised architectonic articulation, but rather it presents a creative illustration of the early conceptual thinking. The exercise was a creative process, creating artefacts that blur the line between artistic expression and an architectural exploration. However, the exploration was executed with a clear outcome in mind – an extraction of spatial concepts that can be taken forward in the design development of the project.







Inspiration

The conceptual framework, for the creative modelling, was first developed when I took notice of the enormous crater in inner city that once housed the Bank of Lisbon Building – ‘a site of tragedy’ as described in the Daily Maverick (News 24, 2019). Now, three years after its demolition, all that remains is a gaping hole in the urban fabric of the Johannesburg inner city. This exercise seeks to reinterpret the contentious demolition of the building and the processes that influenced its final demise.

A product of Johannesburg’s late modernist movement the 26-story Bank of Lisbon building was built in 1976 (Bruwer, 2002). The building Initially housed the Bank of Lisbon but would later become the home to three provincial government offices. In 2018 a fire broke out on the 23rd story completely gutting the building. In the three-day blaze that took hold of the building three Johannesburg fire fighters lost their lives.

After the fire, a carcass of the original building lay standing, however the structural integrity of the building was compromised prompting the demolition the building. Amongst controversy, the building was demolished in late 2019 sparking questions into the motives behind the demolition. There is yet to be substantial report on the fire, and many believe that the demolition was an attempt to destroy evidence – removing any possible claims of negligence (News 24, 2019).



Figure 102 - The site where the Bank of Lisbon building once stood (Javie, 2021)

The Process

Four core ideas were extracted from the process of destruction evident in the life of the Bank of Lisbon building. These ideas were extracted by casting a waste and concrete mix in rectangular molds. These objects were then destroyed, and pieces of the broken object were recast in epoxy resin. Out of this process the findings were abstracted and layered in the hopes of finding conceptual ideas that could be further developed. The process was photographed, and spatial concepts were overlayed.

Make

The initial making of the models presented an early conceptual thinking – how can we use architecture to reinterpret waste. Single-use-plastic, construction rubble and concrete were placed a cardboard mold. These materials, usually on their way to landfills, were transformed into an object with newfound value. It was interesting to note that during the process a considerable amount of waste was produced which prompted a conceptual consideration for waste production during the process. There are still inherent energy expenditures and waste production during recycling processes.

Burn

The burning of the models was a symbolic representation of the tragic fire that destroyed the Bank of Lisbon building. The photographic documentation of the process showed the cracking and warping of the models after the burning.

Break

The breaking of the model was symbolic of the Bank of Lisbon demolition. The breaking of the models left small pieces of concrete, plastic, and rubble. The breaking of the model was an attempt to translate the demolition into a creative process - evoking feelings of desolation and ruination.

Remake

The remaking of the broken artefacts served as an exploration into a hopeful outlook on destruction. Instead of remaining in the past and obsessing over images of a city in crisis and destruction, I propose that we look forward and find ways to remake these images. Pieces from the broken model were collected and cast in a resin mold, presenting a new vision for the broken pieces.








Make





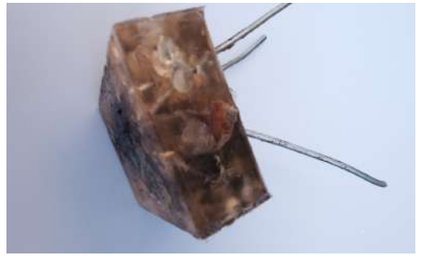

Burn






Break





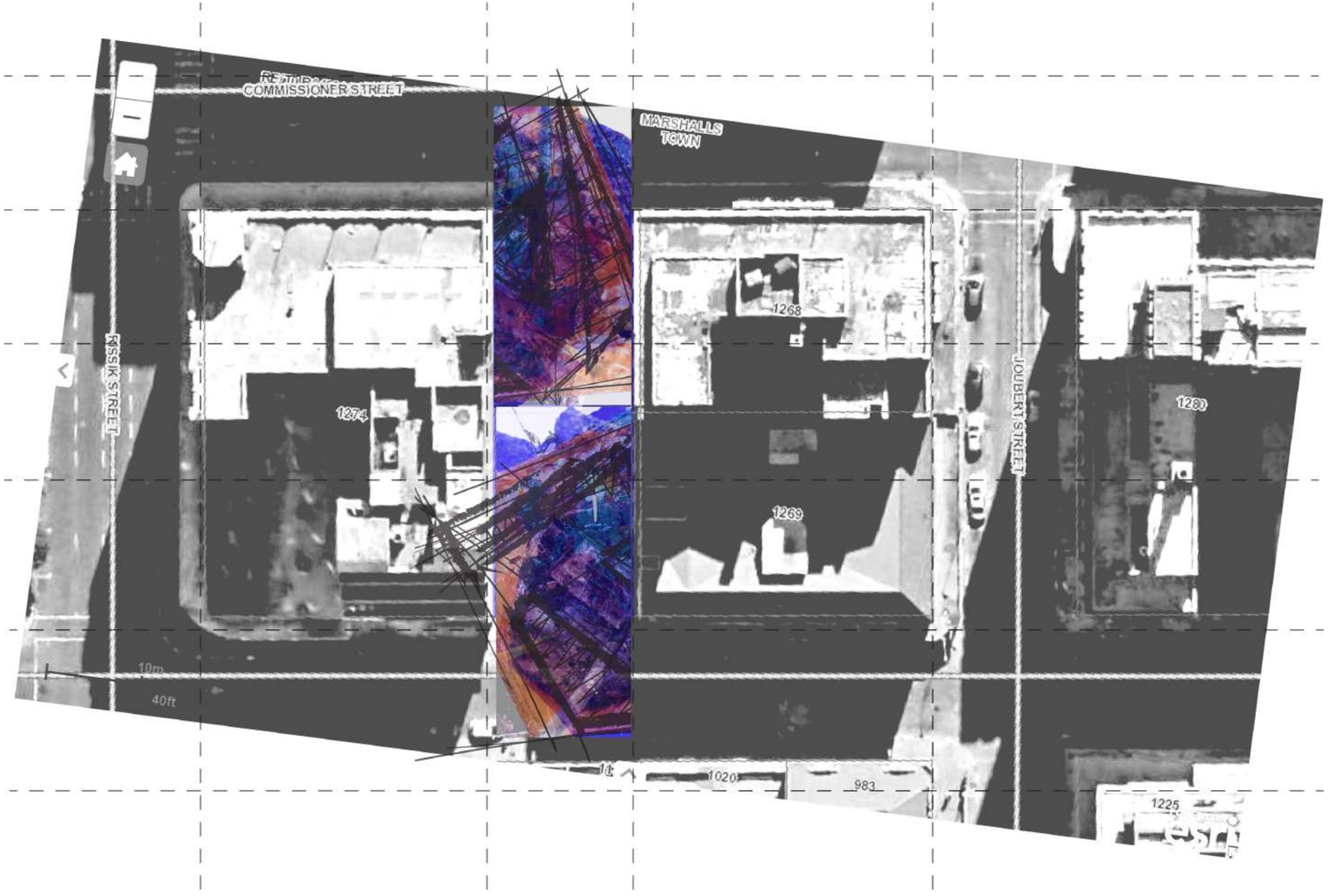

Remake

Images of the model remade were abstracted and layered. These images provide conceptual representations of possible architectural developments.



Figure 103 - Photographs of the creative process (author, 2022)



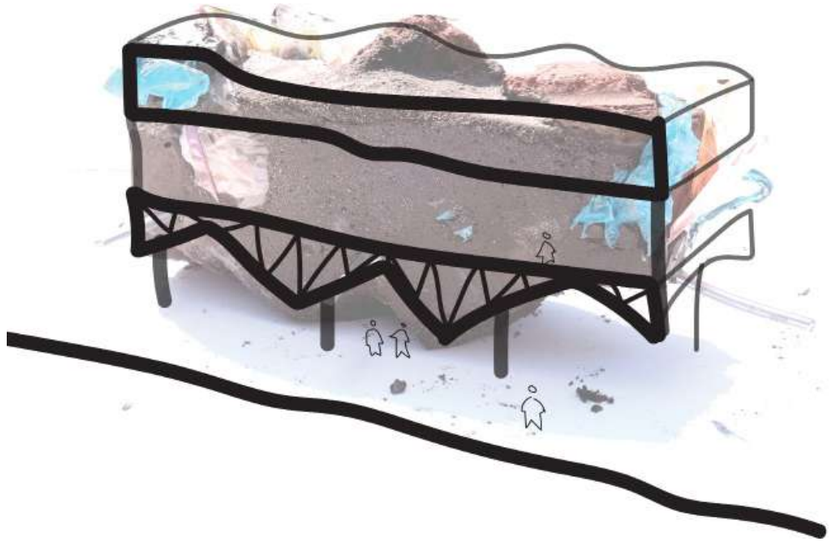


Contextual Insertion

The abstracted images were placed within the building context. These images evoke feelings of an architectural intervention taking hold of an existing context and inserting new functions. This representation of space speaks to similar ideas observed in previous case studies, like the work of Lebbues Woods and Archigram. A parasitic architectural language comes to mind when looking at this spatial extraction.

The contextual insertion provides a visual and speculative exploration of an architectural object infecting and changing structures that no longer serve their purpose. The ruins that lie in the wake of imperial powers that continue to effect the psyche of the city and its people are infected with a new and hopeful vision for Johannesburg.

Figure 104 - Inserting the creative products into the context (author, 2022)



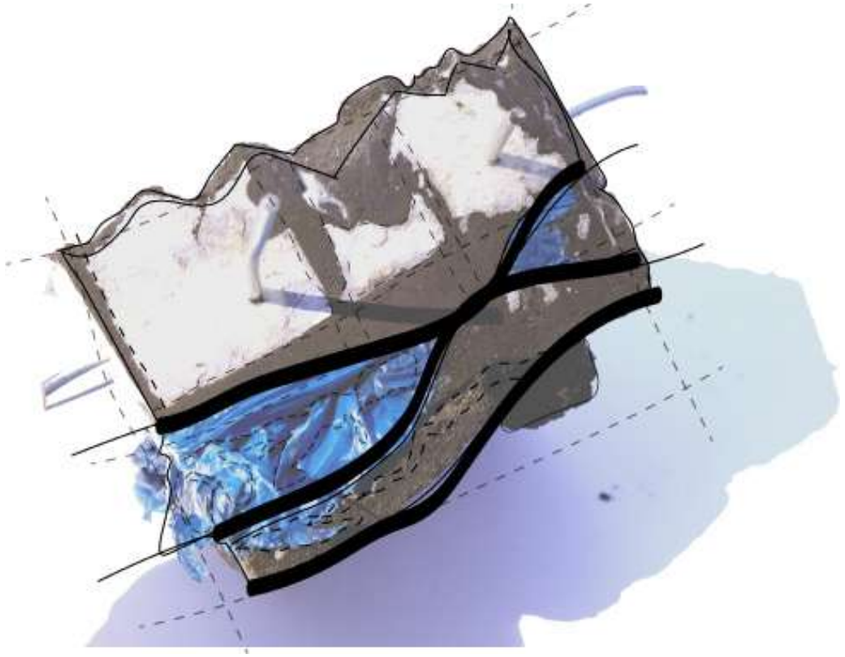
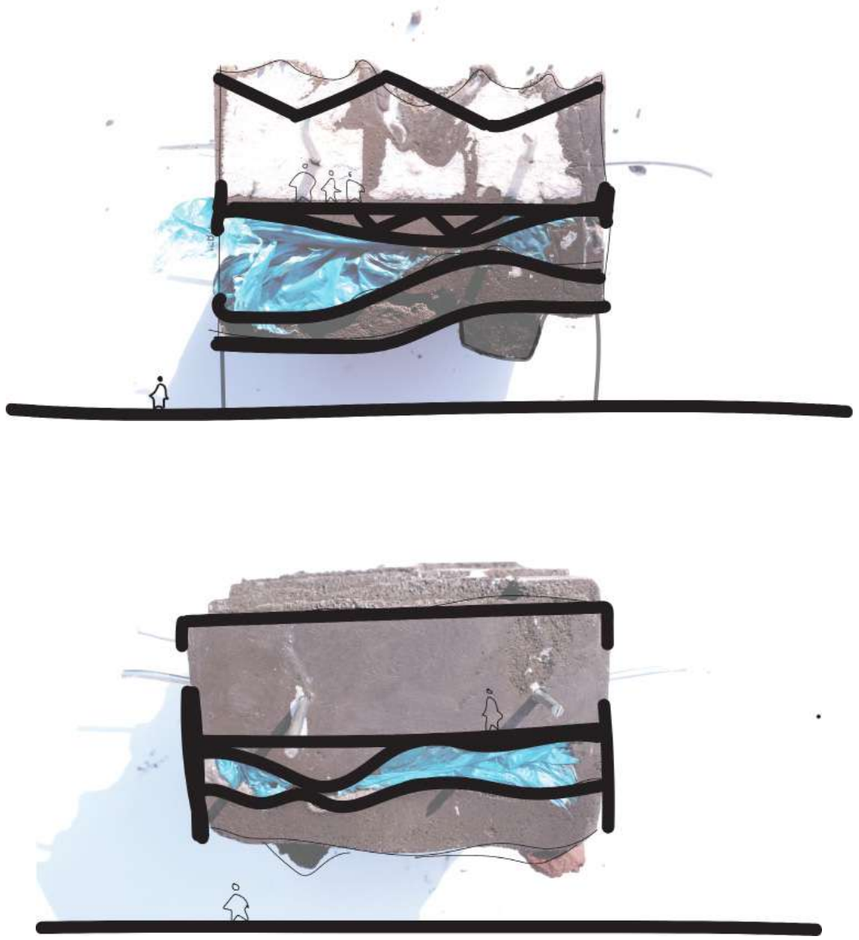


Figure 105 - Spatial extractions (author, 2022)



Spatial Extractions

The previous case studies and sketch modelling allowed me to develop a set of concepts for the further development. These concepts have been informed by intuitive decision-making during the creative process and the exploration of existing architectural ideas.

Contrast

Having chosen a narrow site wedged between historical buildings provides considerable constraints. These constraints however are seen rather as possibilities that will inform the spatial decision-making. A heavy modernist architectural language dominates the site, providing two possibilities – either the proposal can explore a similar architectural language with an attempt to blend into the context, or the intervention can step away from the current language and present a contrasting architectural language. I argue that a contrasting language is more appropriate in that it allows for a spatial dialogue between the old and new. A light transparent building placed within the context provides a more compelling argument. The building is seen as a symbol of a hopeful future while also celebrating the past.

Ground and Sky

The intuitive decision-making during the sketch modelling revealed an unconscious desire for a building elevated off the ground. The ground floor was represented as an open space - connecting the building to the immediate context and facilitating the buildings functions. The ground floor is reserved for the facilitation of the building where deliveries and collections take place. Public functions and open spaces, normally placed on the ground floor, are elevated, and rather placed on the upper floors. By placing public spaces throughout the building an attempt to foster relationships with different programs is explored.
The spaces carved out of the models speak to compelling images of a structural system that allows for large open floor plans and creates expressive spaces.

Imperfect

During the sketch modelling process the ideas of an imperfect architecture emerged. The models spoke to ideas of a harsh and messy architecture grounded in the process of making. I argue that, considering the intended proposal and the inner-city conditions, a glitzy and idealised architectural language is not the way forward. This project seeks to reject the modernist ideas of an ordered architecture but rather looks to the complex city and all the intriguing imperfections.

The project focuses on how a building can become a symbol of an imperfect architecture and facilitate the functions of an imperfect city.

Figure 106 - Spatial extractions (author, 2022)

Digital Modelling

As we move further into a digital world the tools of the trade will continue to evolve and change. Although the age-old processes of sketching and physical modelling are valuable tools to produce space, digital tools are becoming increasing valuable not only in the representation of final designs but also during the creative process.

Having established the spatial extractions, the sketch modelling was revisited. Parametric design software was used to explore the ideas of an imperfect architecture elevated off the ground – with expressive spaces of functionality. The design software allowed for an illustration of these ideas. Although the representation does not provide a fully realised building it offers an addition dimension to a creative process.

Large open spaces are carved out of the floor plates creating visual relationships between the programs. Moving back into sketching the section is traced over and spatial concepts are developed further challenging the ideas of a rigid building governed by structural integrity. The expressive spaces developed in the sketch modelling and the digital exploration further influence the design. This reveals the non-linear process of design where the project constantly looks back at previous work to gain inspiration and inform further development.

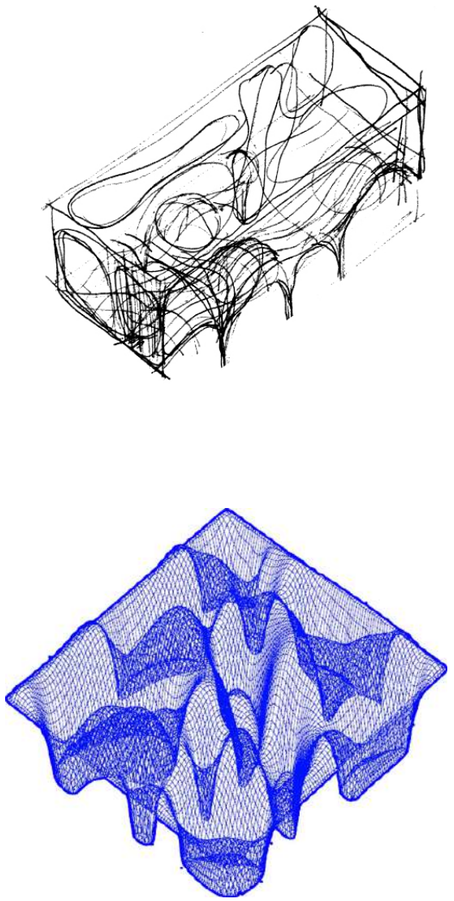


Figure 107 - Grasshopper exploration (author, 2022)

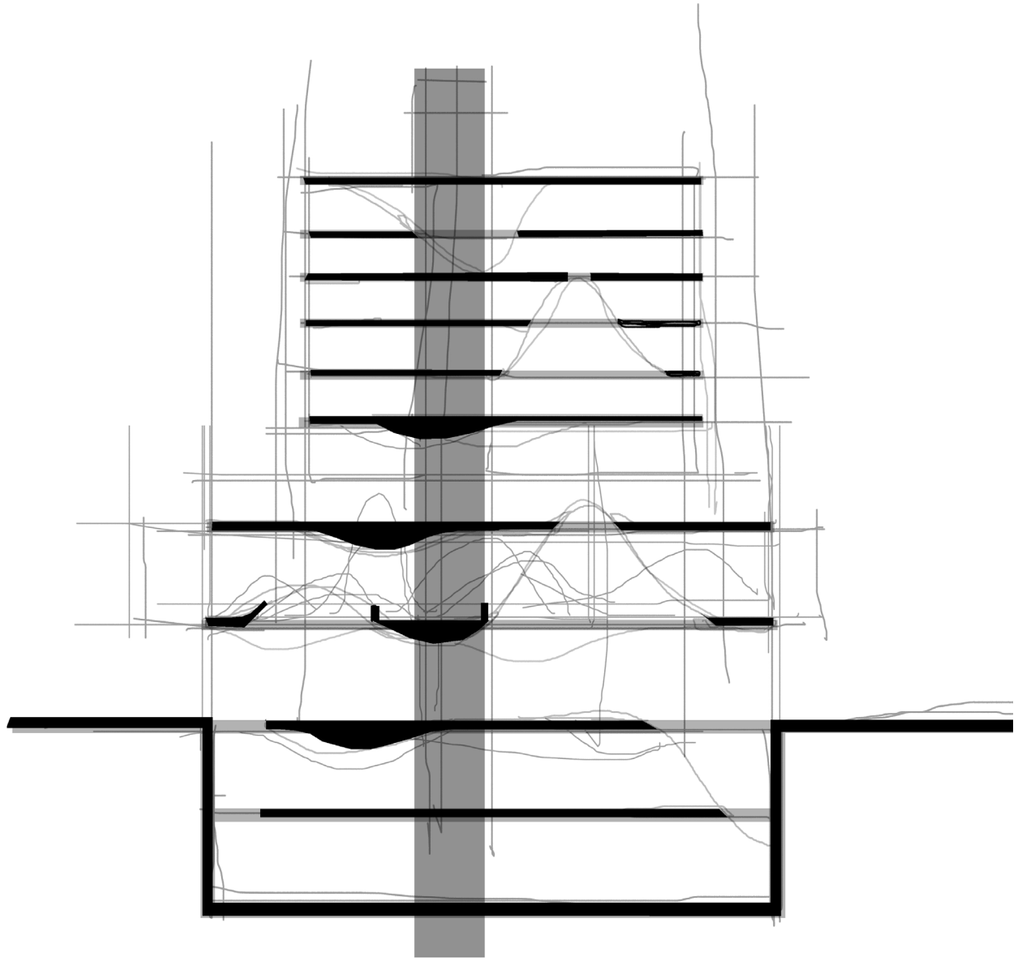


Figure 108 - Sketch section (author, 2022)



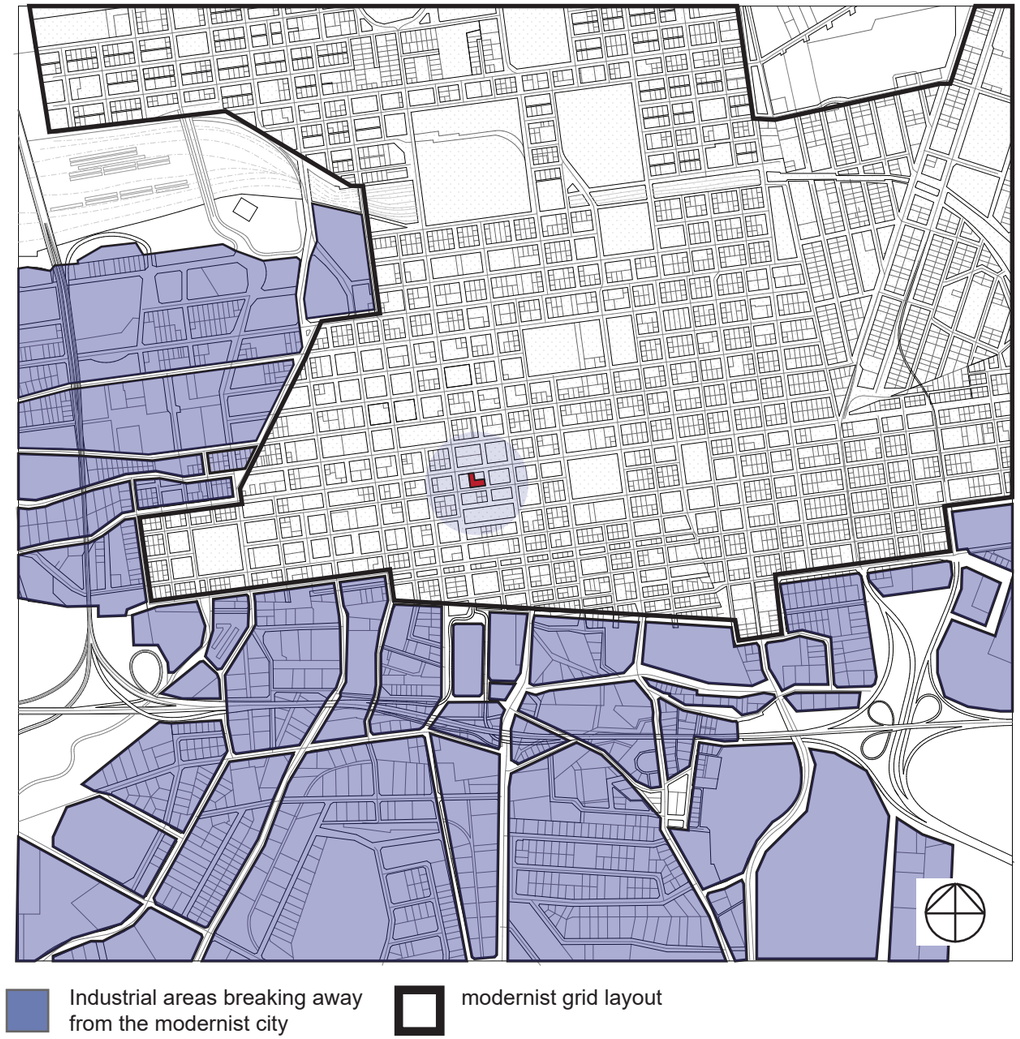
Figure 109 - Sketchmodel(author, 2022)

Site Analysis

Before jumping into the design, directly after a creative exploration, a traditional site analysis was done. The site analysis was used as a tool to ground the project in its immediate context and justify certain design decisions.

The site analysis began by looking at the Johannesburg inner city and how the modernist visions that created a dense city with a grid layout are in constant tension with the sprawling industrial areas built to serve Johannesburg as a working city. In some ways this is what makes Johannesburg unique. The mapping illustrates how the modernist images of Johannesburg as a place order and legibility are contrasted by its visions of a city built of industrial processes of extraction.

Figure 110 - Mapping of Johannesburg - industrial sprawl vs modernist city (author, 2022)



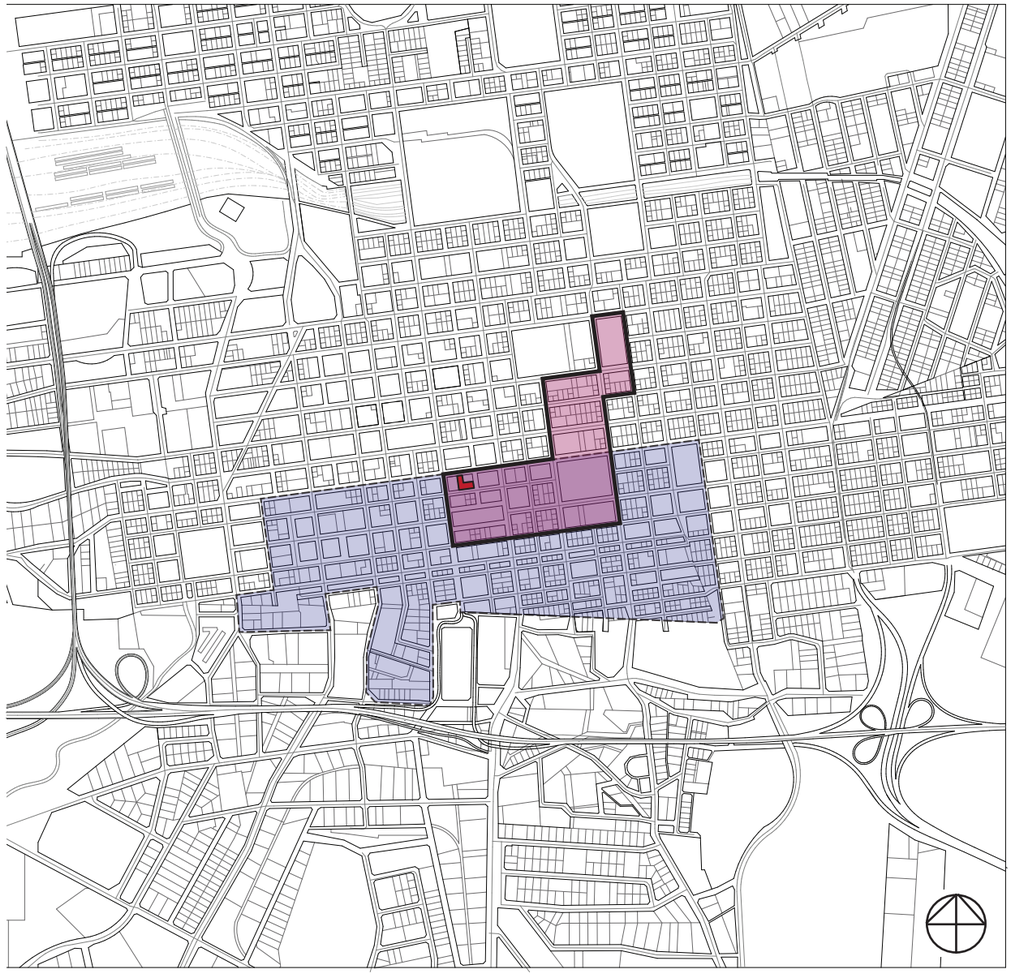


Figure 111 - Locating the site in the two areas it falls under (author, 2022)

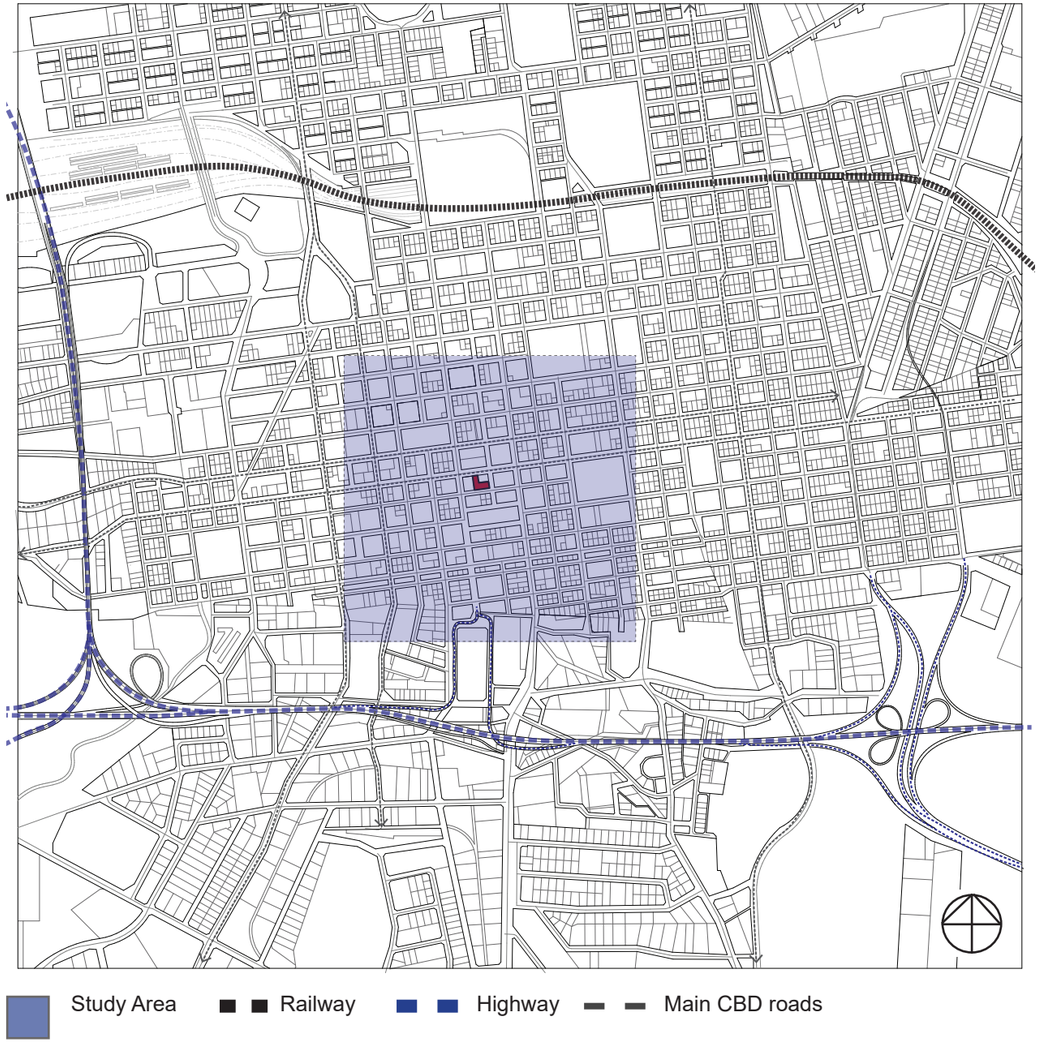


Figure 112 - Major roads and study area (author, 2022)

The site studies that follow explore a defined area of the inner city. The studies explored a series of conditions. Street trading, being an important aspect of the Johannesburg economy has been assisted by the closure of roads and the development of pedestrian roads with street trading spaces. These spaces evoke similar feelings to the shopping arcades that were once an influential part of modernist city planning in Johannesburg. Public spaces have been located and show the network of public spaces in the inner. Main transport roads and public transport routes have been illustrated. A nolli map was drawn to show the solid and void spaces in the study area – creating a textured understanding of the study area.

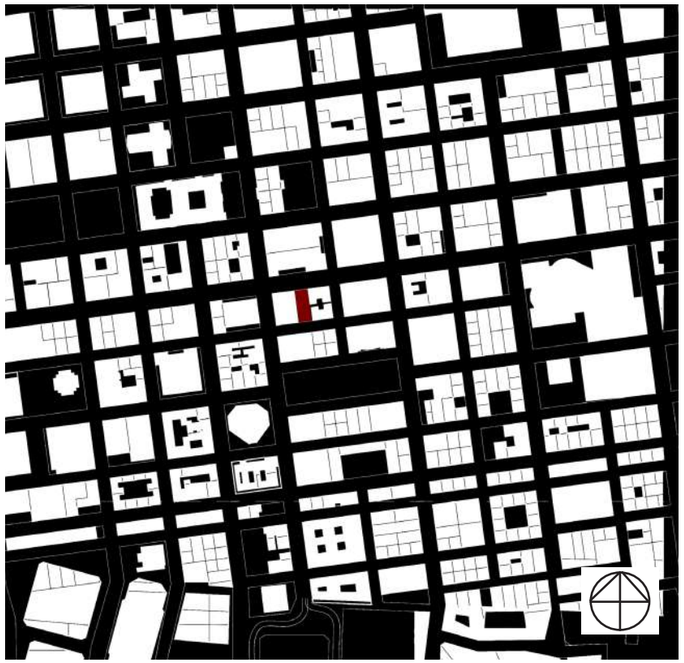


Figure 113 - Inverted nolly map - solid and voids (author, 2022)

Vancant site - part of the proposed site

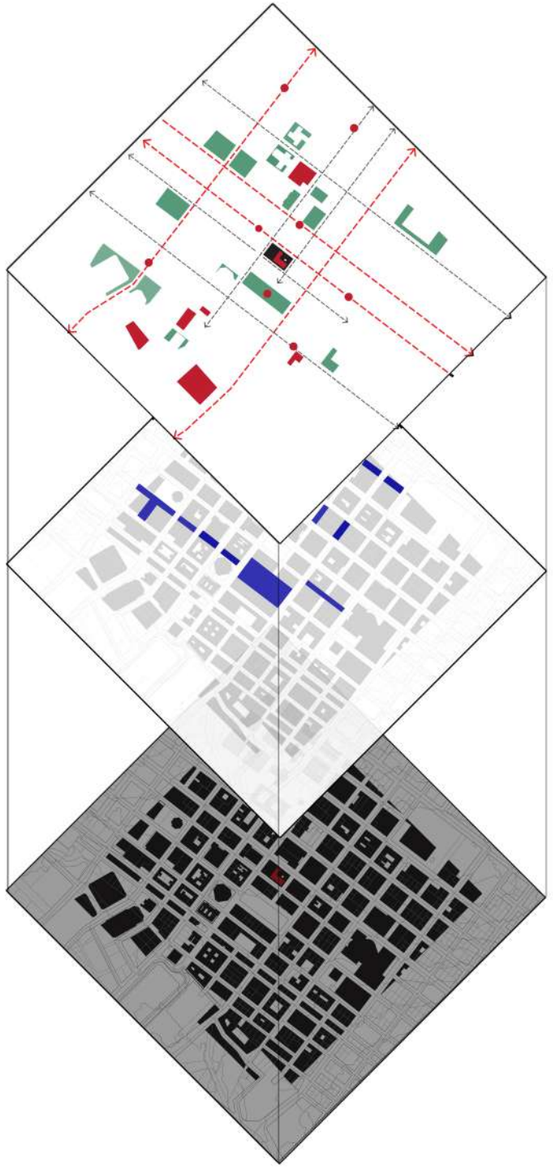


Figure 114 - consolidation of mappings (author, 2022)

Figure 115 - mappingpublic and private open spaces (author, 2022)



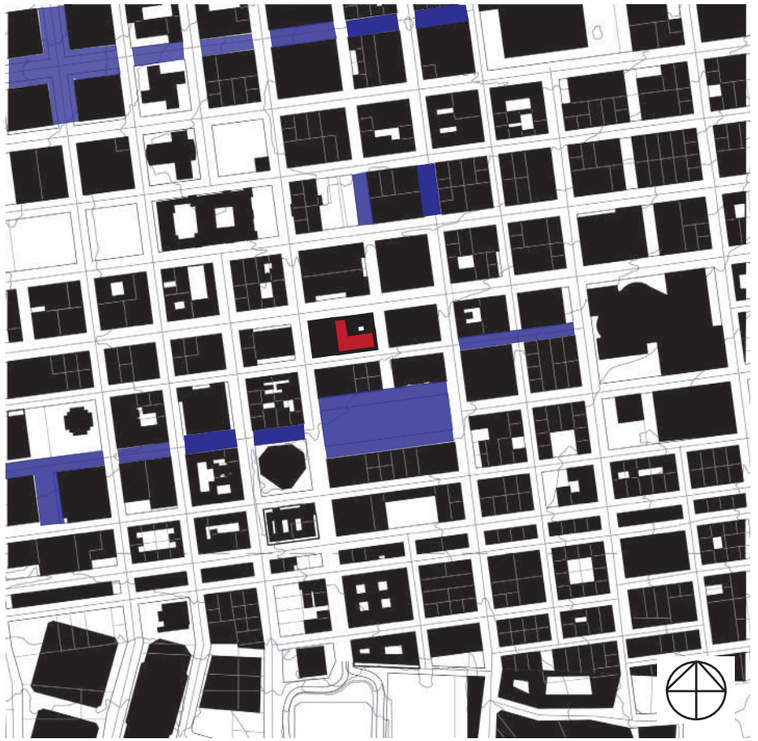






Figure 116 - mapping public pedestrian streets (author, 2022)

Figure 117 - google maps collage of street images (author, 2022)





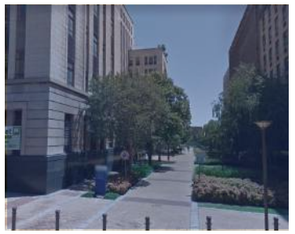


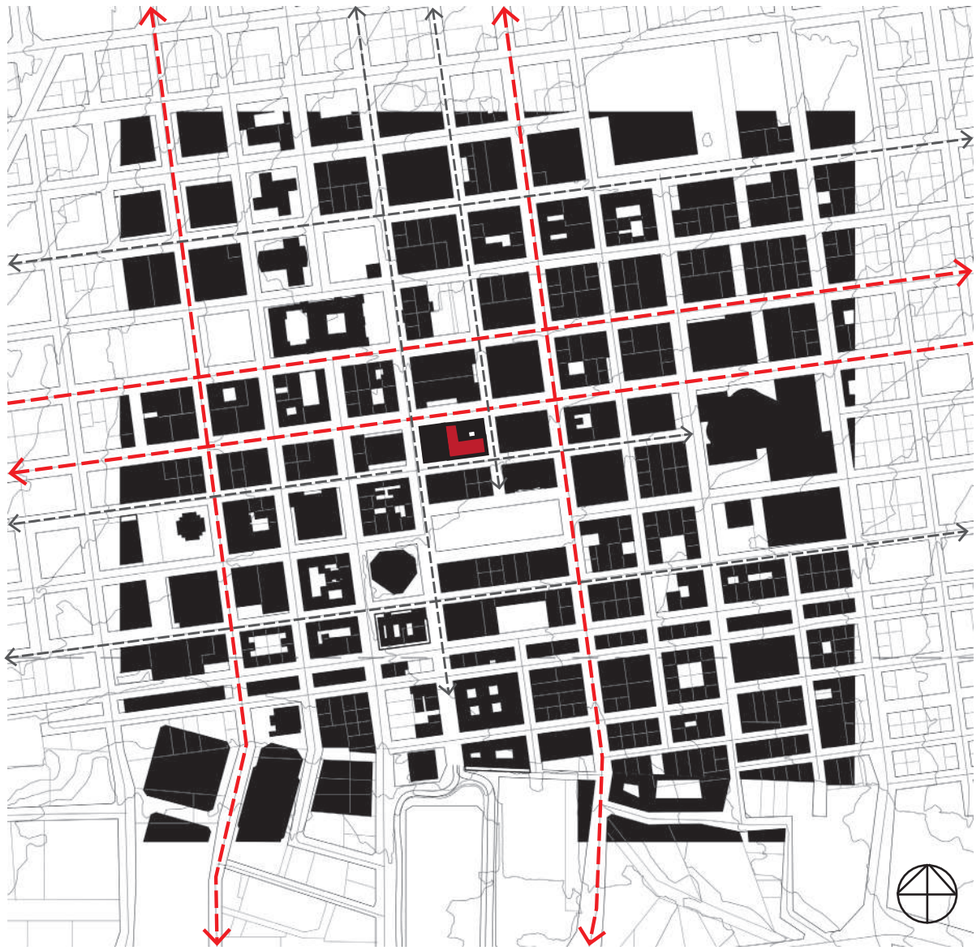


Figure 118 - Public Transport (author, 2022)

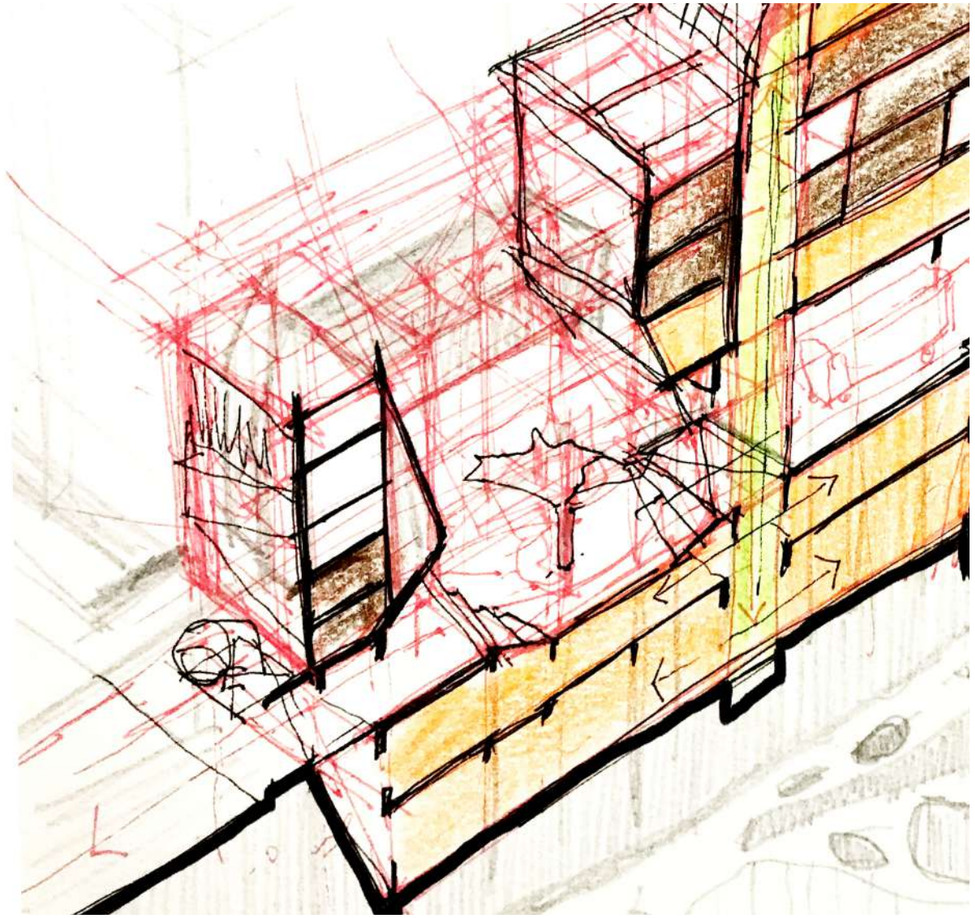


Bus routes Bus stops

Figure 119 - Main roads (author, 2022)



Main roads Secondary roads



Development

This portion of the chapter presents key stages in the design development, highlighting moments in the project where important decisions were made. Although the design development didn't necessarily follow a linear process, the documentation of the explorations is tackled as a progression of ideas built on one another.

Figure 120 - First design development sketch (author, 2022)

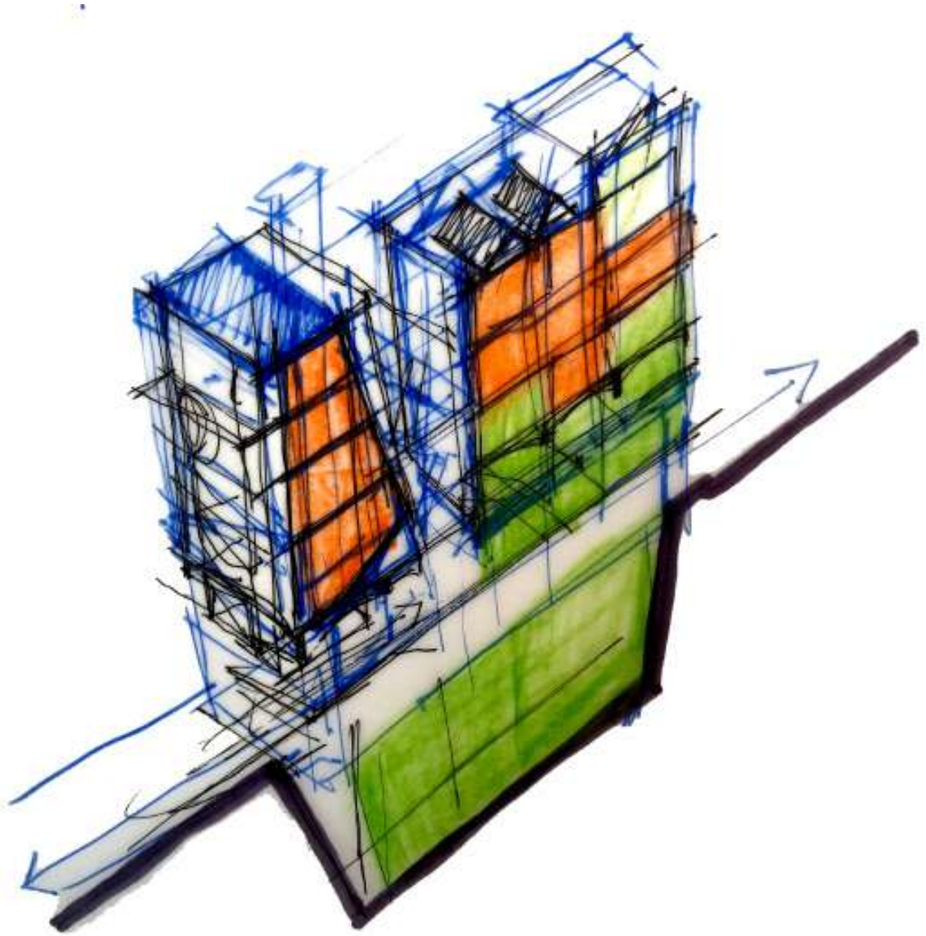


Figure 121 - Sketch section (author, 2022)

Inserting Into a Narrow Site

The narrow site, wedged between the two heavy modernist buildings, provided a clear spatial condition to work from. The vacant space, as it stands, is already an interesting space. This condition allowed for an early exploration of a building inserted into the narrow site. The building was lifted off the ground, the ground floor was left open, and spaces were carved out of the central spaces. The spaces were envisioned to contrast the context using angled roofs and contrasting materials.

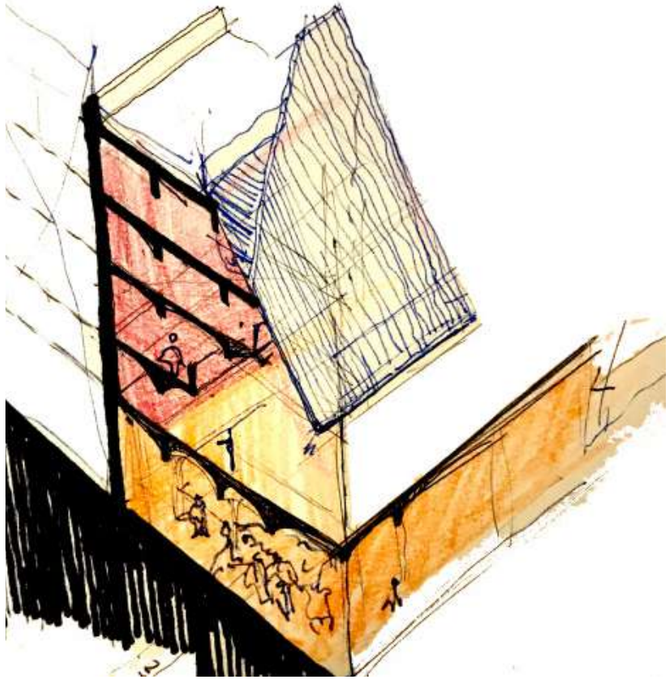


Figure 122 - Sketch section (author, 2022)

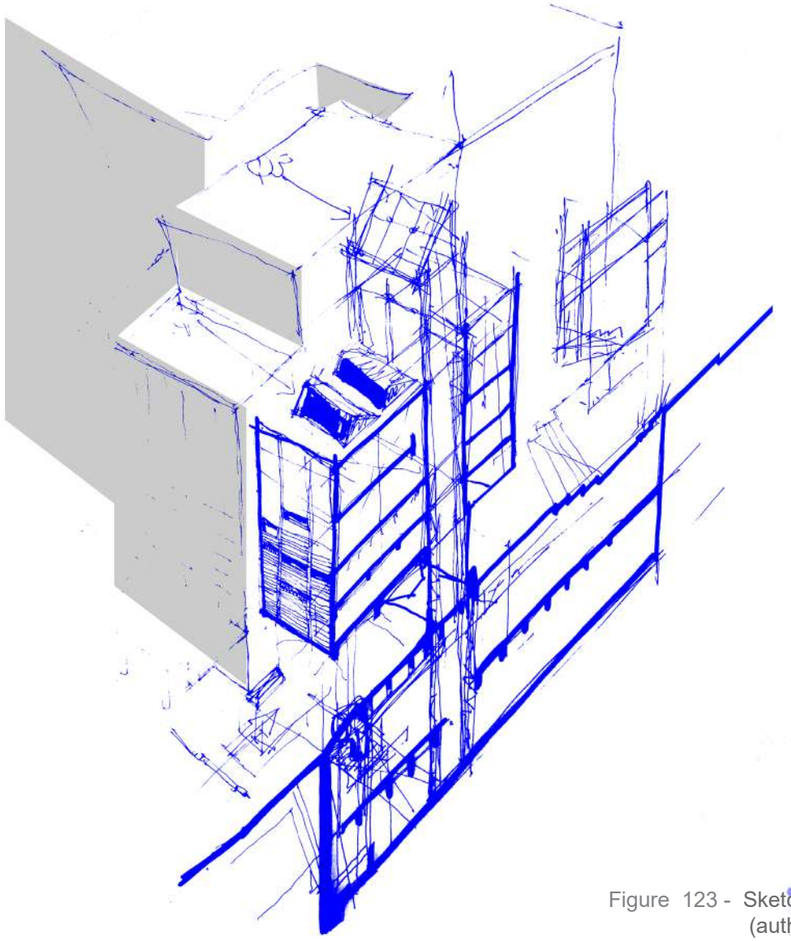
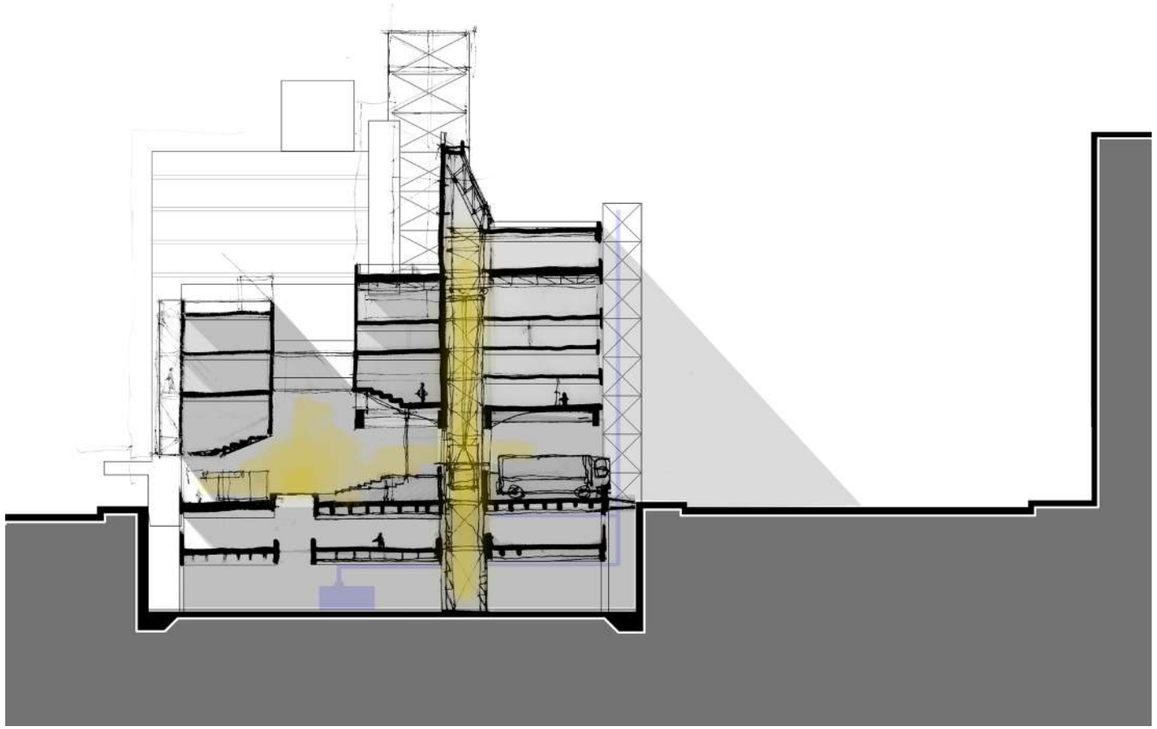


Figure 123 - Sketch section (author, 2022)

Sectional Exploration

At an early stage, the longitudinal section became an important tool. The section cuts through the entire site and presents multiple spatial conditions and opportunities. These sketches illustrate the first ideas of a central core that facilitates the mobility of people and goods, connecting different programs in the building. At this stage the design was still exploring a central courtyard – this concept would later be abandoned.



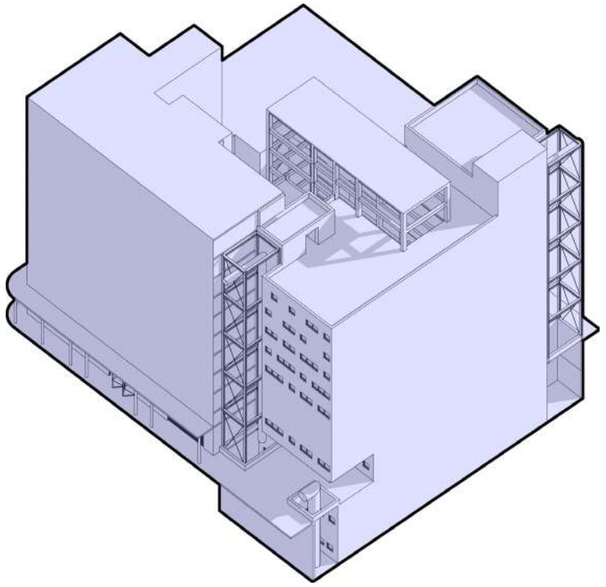


Figure 124 - Axo section (author, 2022)

Mid-year Review – a Logical Representation

These drawings formed part of the mid-year review in June and served as the projects first attempt at presenting a partially realised building. The project presented an architectural insertion into the vacant site that engulfed the two existing buildings (Shakespeare House and The New Kempsey Building). The idea of a central core acting as infrastructure was kept but due to the physical constraints of the site the courtyards were abandoned.

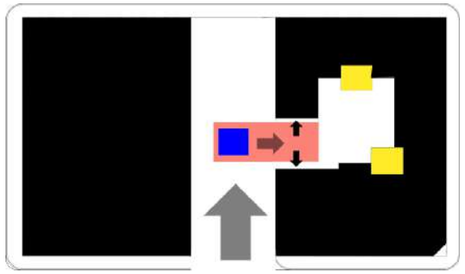
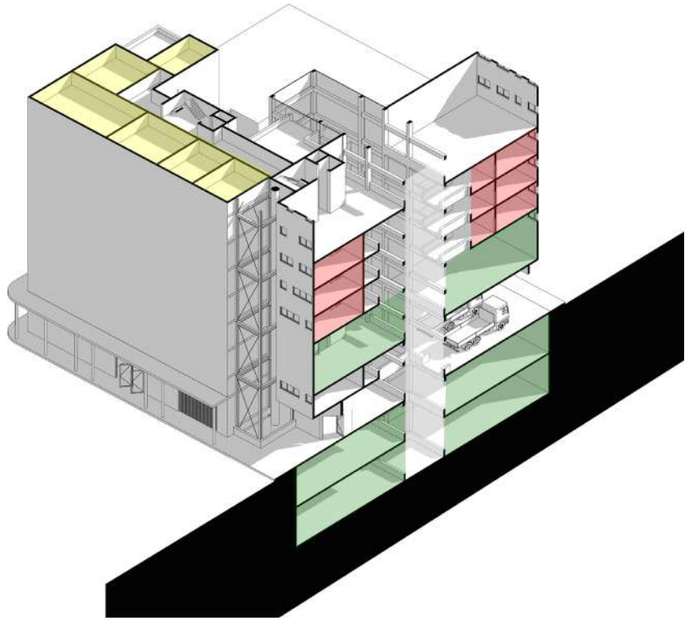


Figure 125 - Intention diagram (author, 2022)



A More Evocative Representation

After the midyear review the project looked back to previous explorations for a more evocative architectural intervention. There seemed to something missing in the design. The building disappeared into the context and lost the evocative ideas developed in the sketch modelling. The sketch modelling exercise was brought back into the process. The parasitic insertion seen in the sketch modelling was used as a reference for developing the new forms.

The building was no longer inserting into Shakespeare House. The intention of the project could be executed through only engulfing the New Kempsey Building. After producing the axonometric the proportions of the building required a more expressive language where the building extends vertically with open space breaking up the different programs.

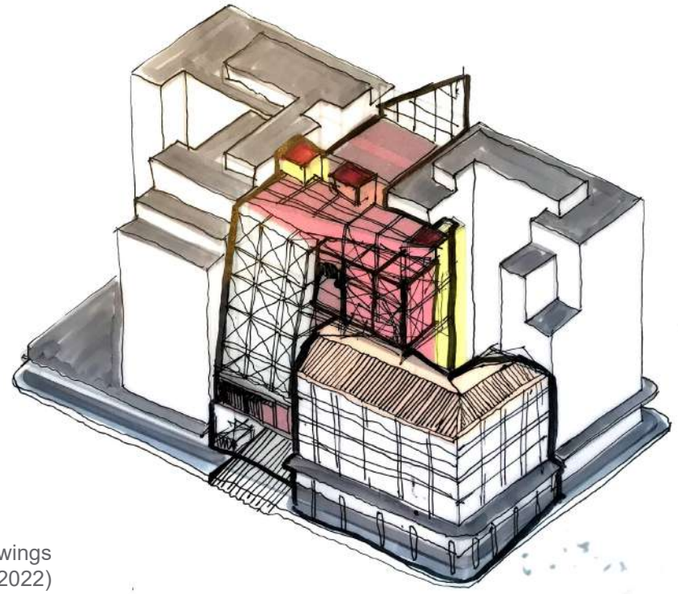
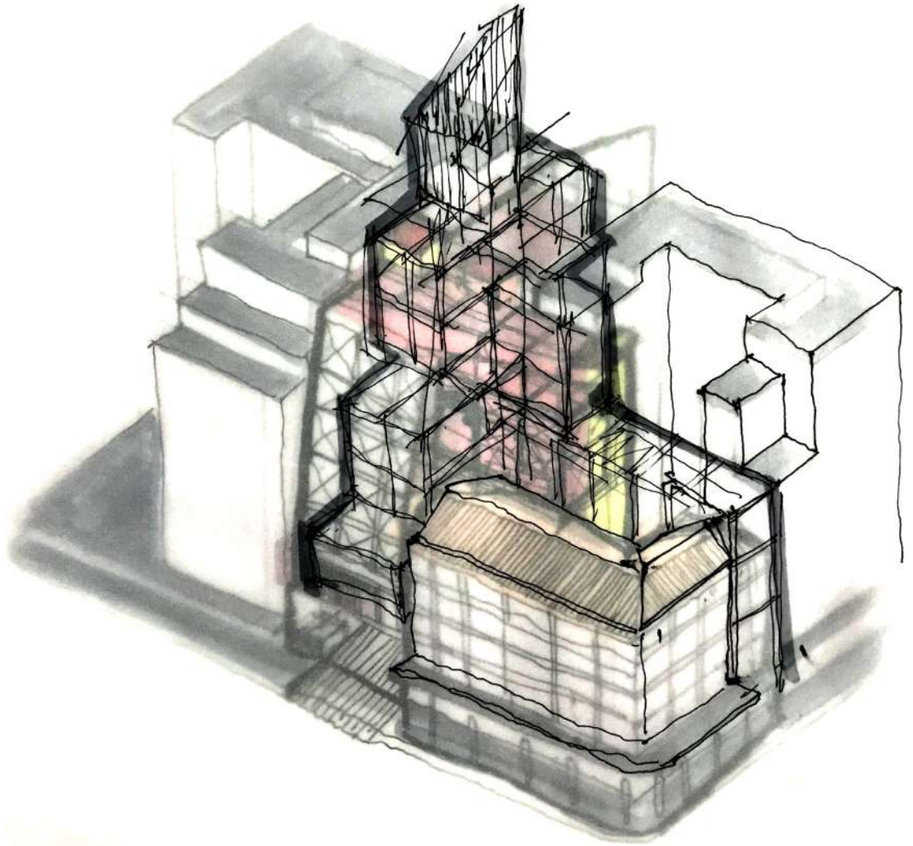


Figure 126 - Axo drawings (author, 2022)



Layering and Sketching

The development of the main section was a continual process of layering and sketching. The explorations developed the idea of a robust concrete framework that supports incremental development, steel work for shading and the transport of goods, and provides uninterrupted floor plans – facilitating industrial activities. The interface between the public, which is usually placed on the ground floor, is placed on the first floor. The public space extends out into the street, providing a visual connection between the street and the first floor. A coffered concrete slab is conceptualised as a tool for creating an expressive public space.

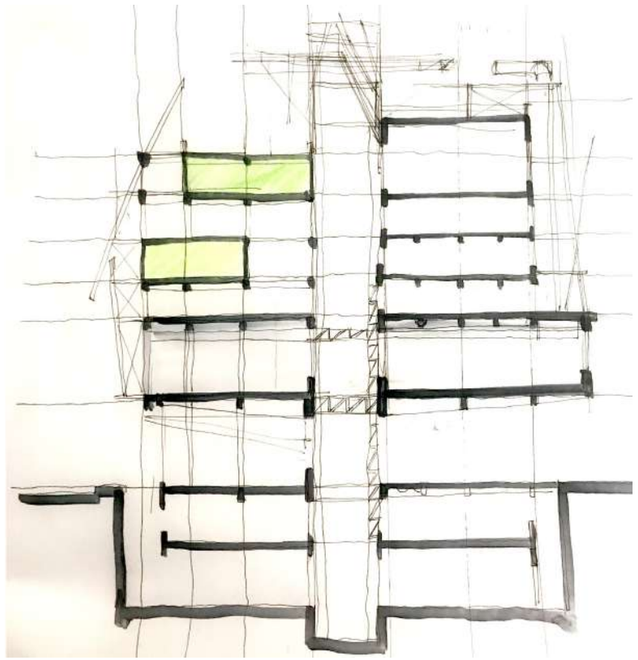
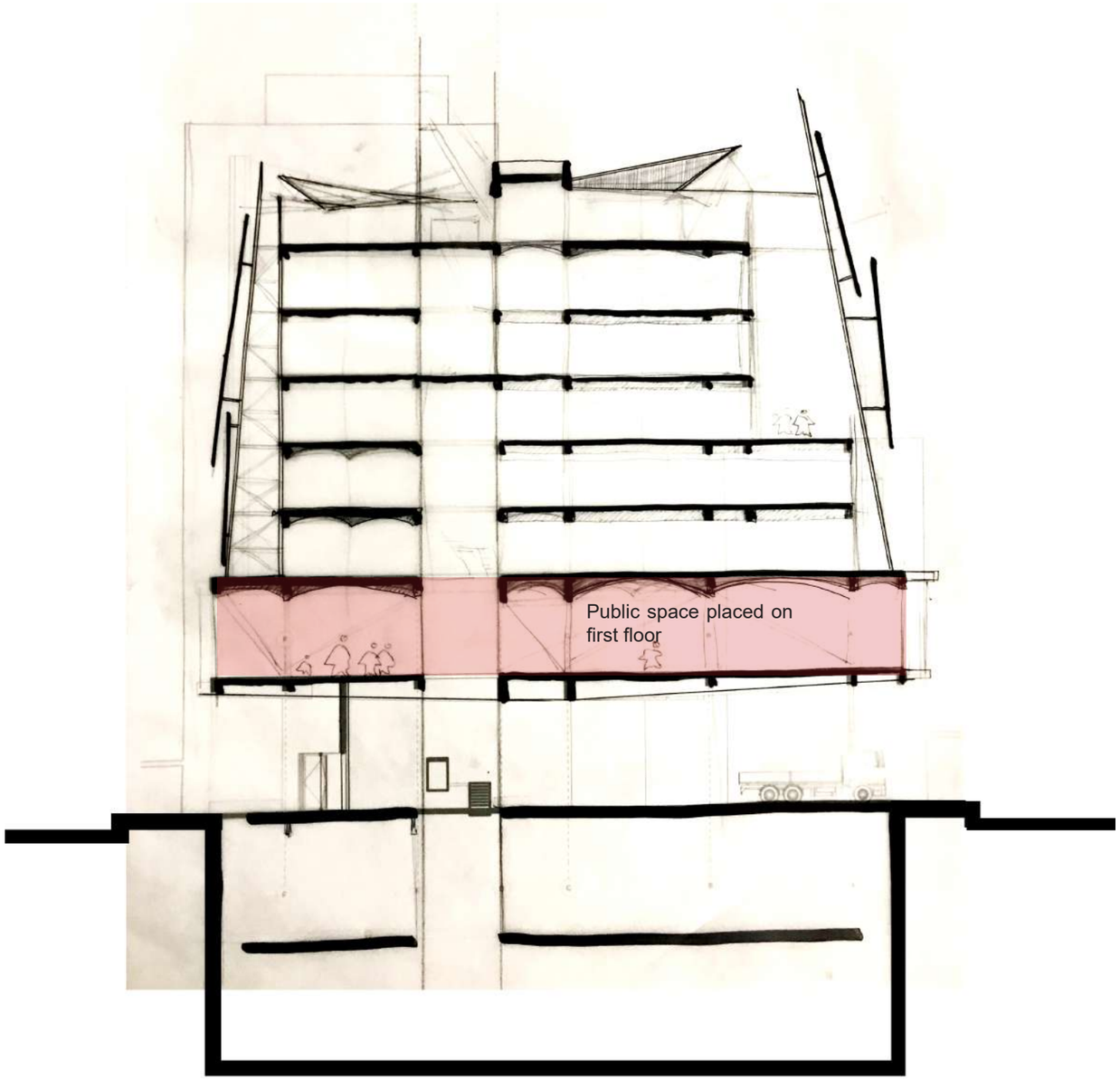


Figure 127 - Section drawings (author, 2022)



Carving Out Spaces

Larger more expressive spaces were carved out of the flat floor slabs creating spaces that correspond to their use. The floor plan shows the investigation into the New Kempsey building becoming part of the new build. Store fronts, intended to house reclaimed material stores, open to the street – taking ques from informal trading in Johannesburg.

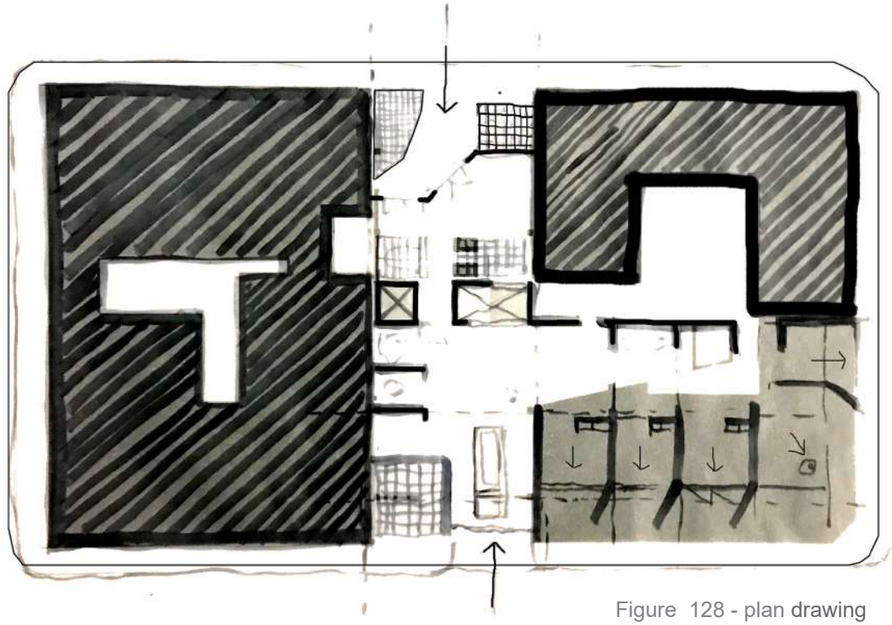
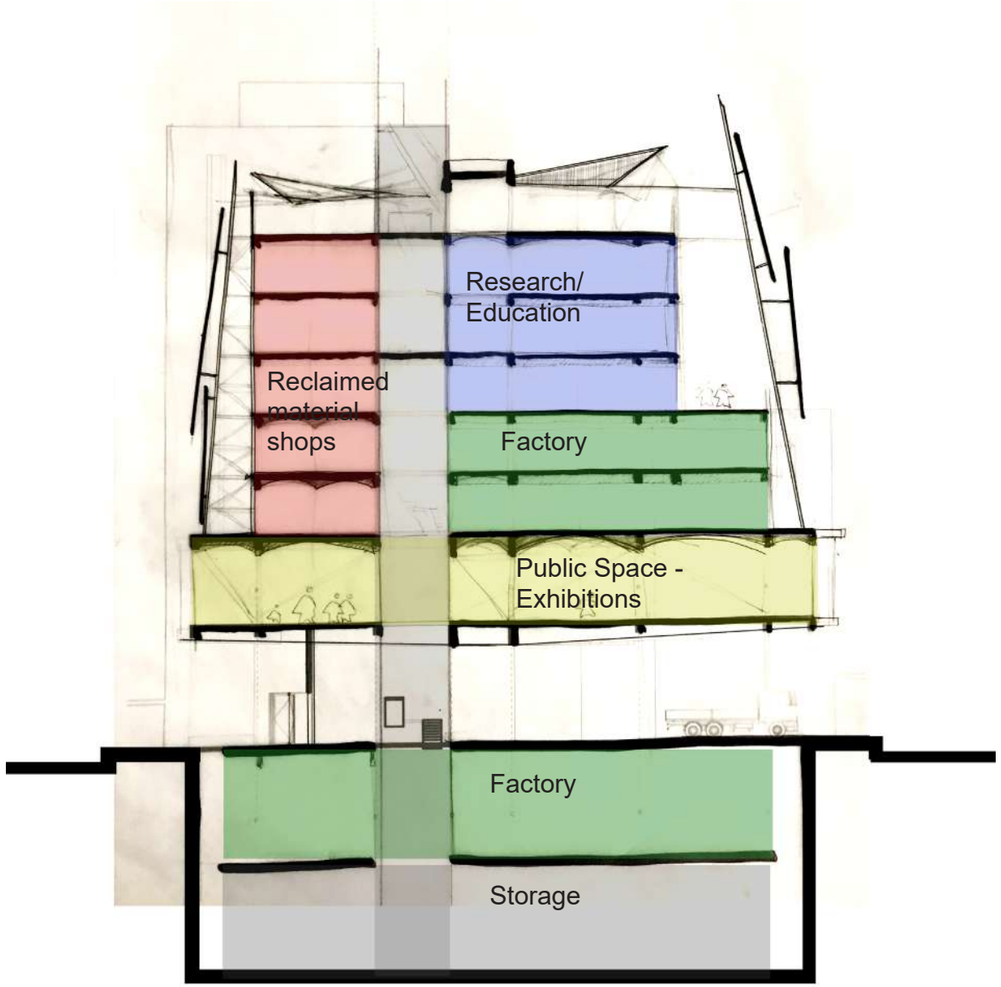


Figure 128 - plan drawing (author, 2022)



Programming

The programming of the building responds to the initial ideas of “the Merchant, the maker and the architect”. Spaces for production are placed in the first-floor basement with intentions of bringing in natural light, the shops for reclaimed materials face north and are serviced the goods lift, education and research spaces are placed above the factory.

Figure 129 - program section
(author, 2022)

Tectonic

These sketch book entries present a tectonic exploration of the building and provide an early development of the building's assembly. I explored the connections between the concrete frame, the curtain wall system and the steel structure that hangs on the side of the building. The sections show how the concrete frame branches out from the structural core and how the steel facades are attached to this structure. The idea was to use the steel structural façade to celebrate the services and allow for the possibility of shading devices to shade the building from harsh northern light.

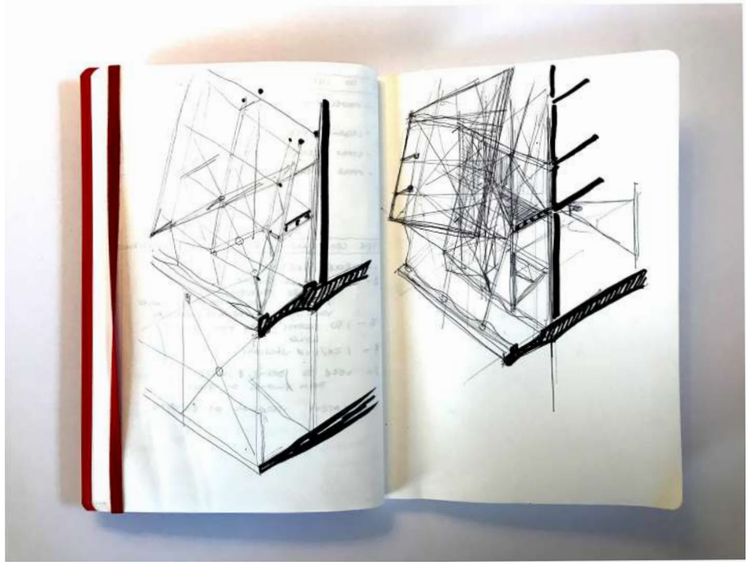
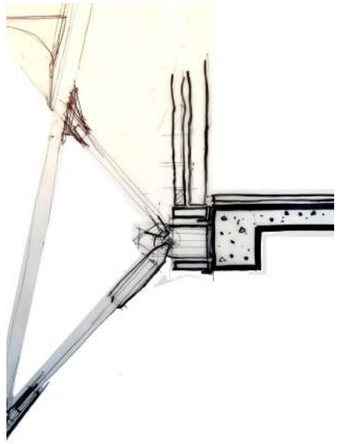
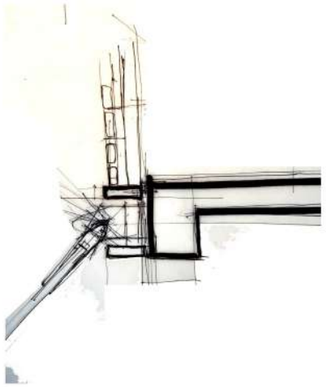
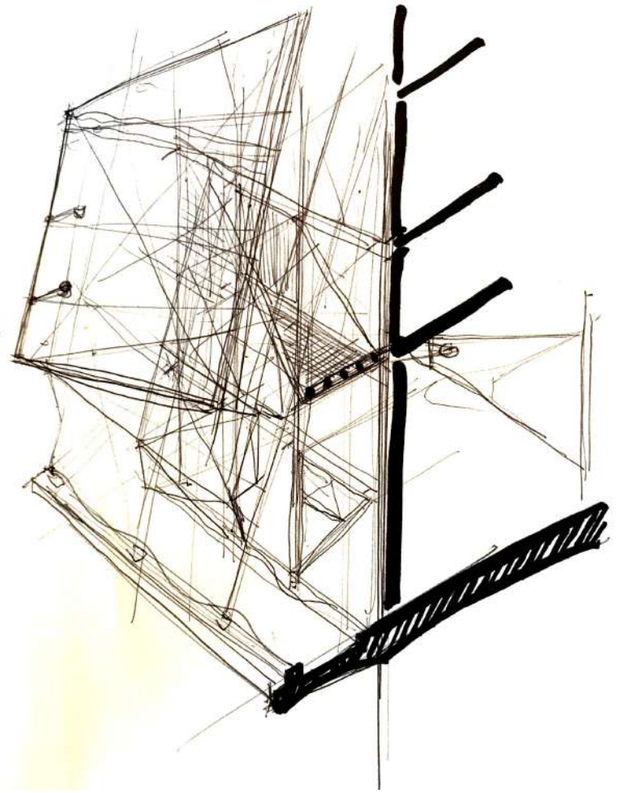
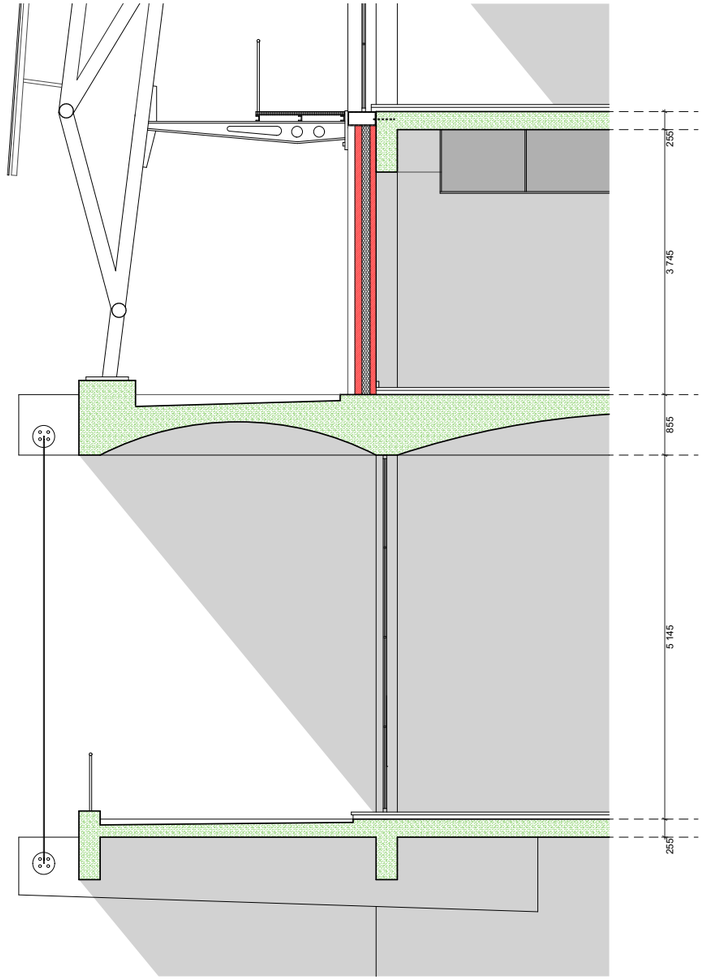


Figure 130 - sketches(author, 2022)









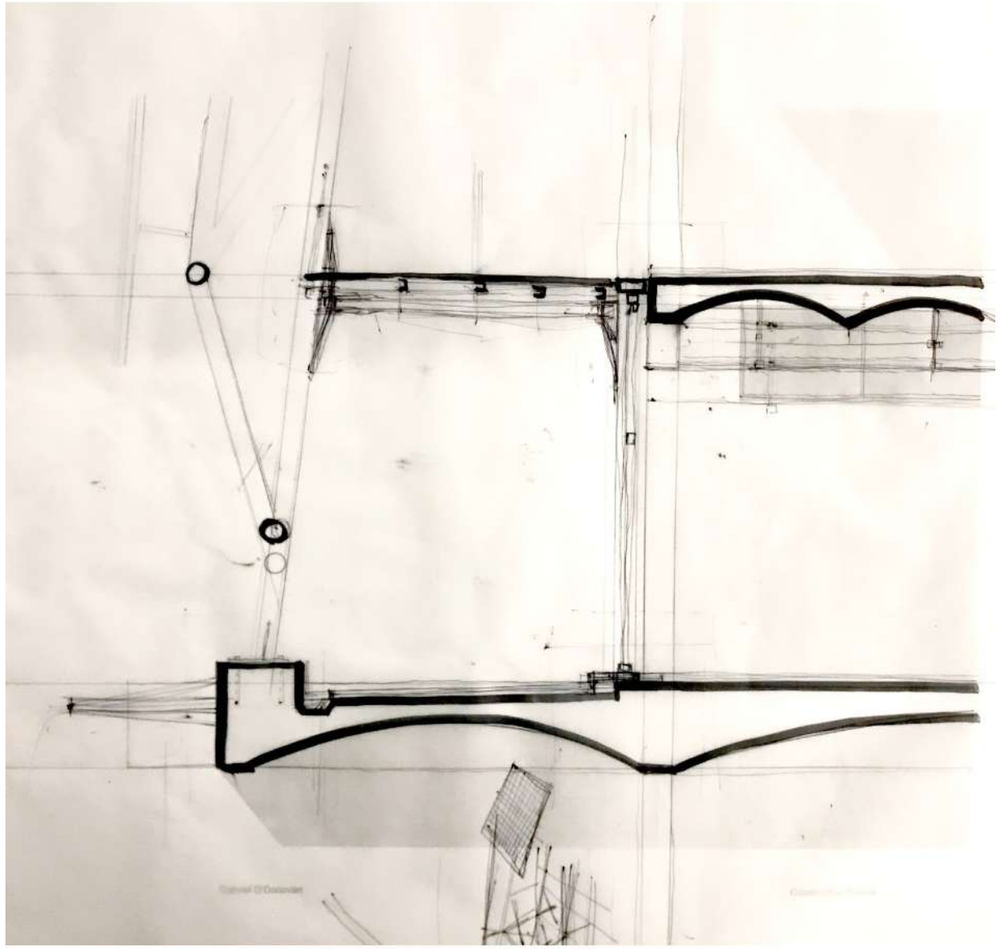


Figure 131 - sketches(author, 2022)

Preliminary Design

The preliminary design presents the architectural object at its current states - acknowledging the proposals incompleteness and the work that still needed to be done. The previous work provides the framework for further development. Having established the key aspects of the project and its intention - the focus was redirected to producing a building embedded with an understanding of Johannesburg as a rich and complex city. The final design seeks to embody an optimistic outlook on the future of Johannesburg and celebrate the terms in which people, objects and spaces operate within the city.

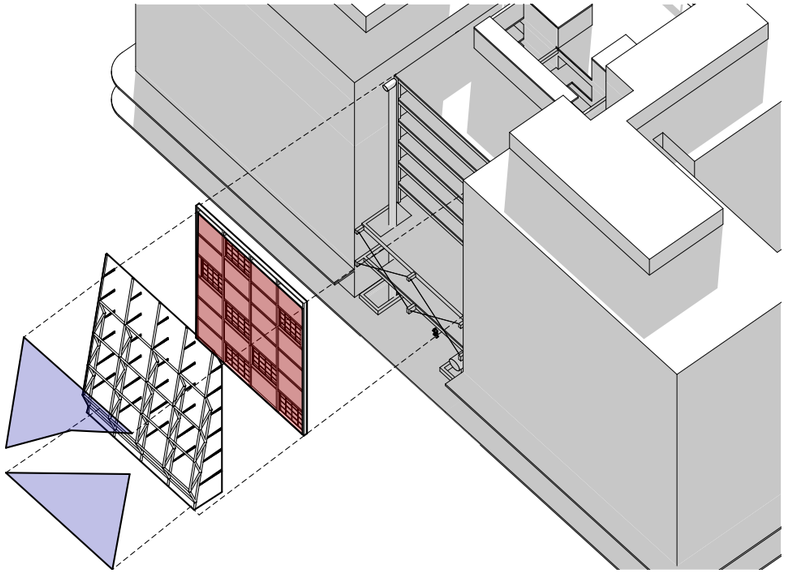


Figure 132 - explodedfacade (author, 2022)

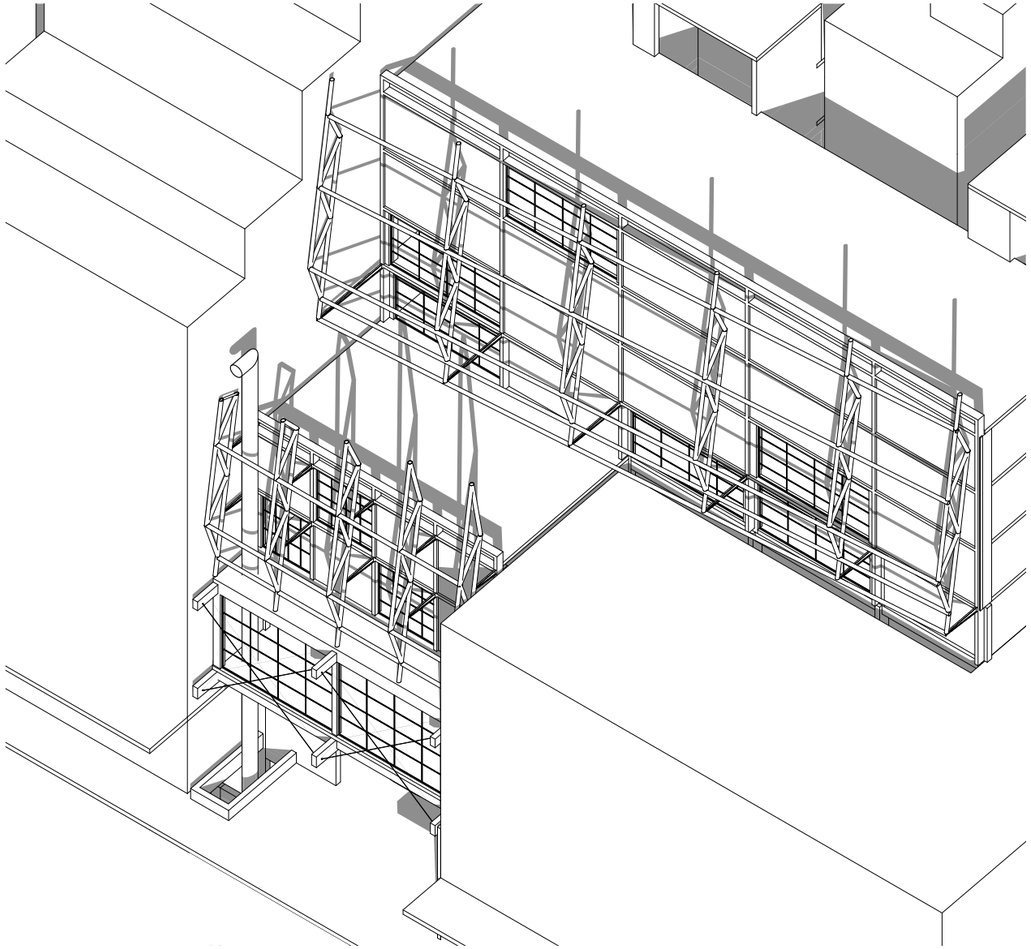
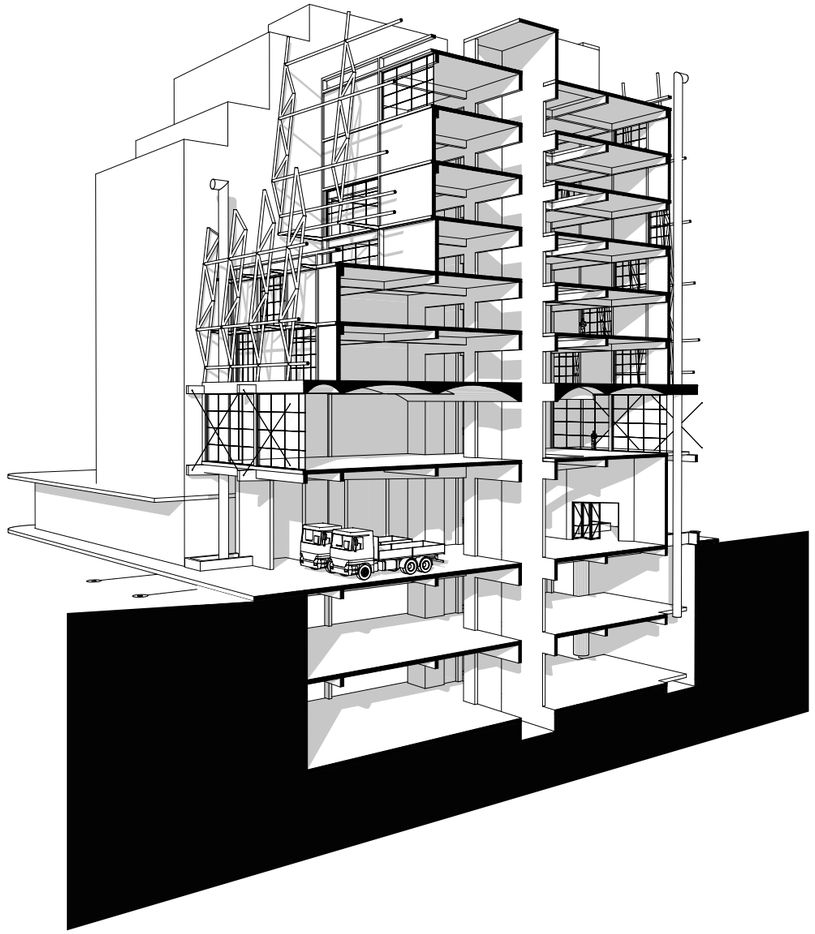
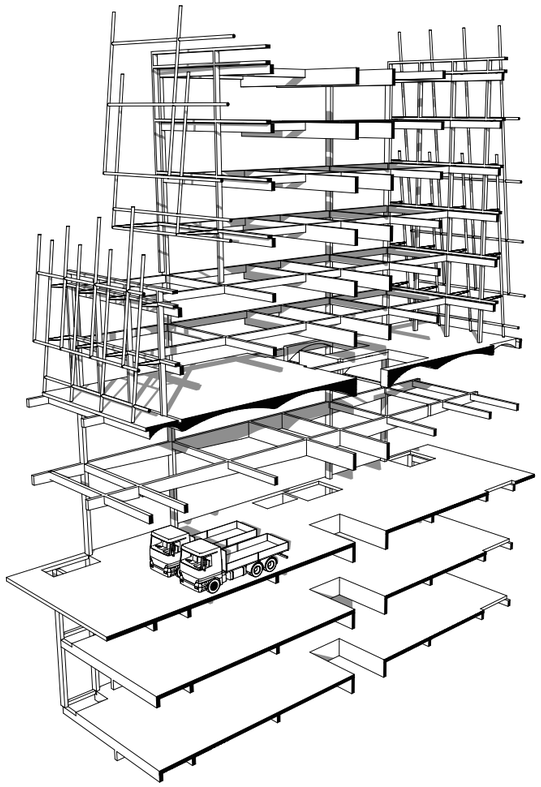


Figure 133 - facade (author, 2022)



Structural Concept



Structural Concept

A robust concrete frame structure is supported from the concrete cores that house the circulation services and the goods lift which transports materials vertically.

Columns line the sides of the building with large concrete beams that allow for uninterrupted floor slabs.

The steel structures that create a layering of the spaces are attached to the concrete frame. These steel structures celebrate the HVAC services and create opportunities for shading panels.

Figure 134 - perspective drawings (author, 2022)

Chapter 6

Final Design

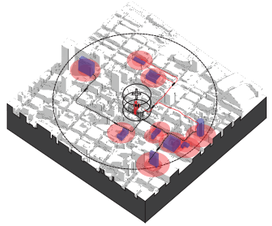
This chapter presents the final design with a full set of architectural drawings and acts as the final remarks for a full years' worth of work. The chapter is broken down into three parts; Urban Concepts - which aims to contextualise the project within the urban setting highlighting how the building responds to its context, Machine Concepts which provides an explanation of the workings of the proposal and the concepts that govern it, and finally the Architectural Concepts which narrows in on the architectural intervention with full architectural drawings.

Final Design



Urban Concepts

Contextualising the Project



Machine Concepts

An Architectural Machine for Inner City [Re]construction



Architectural Concepts

The Architectural Response

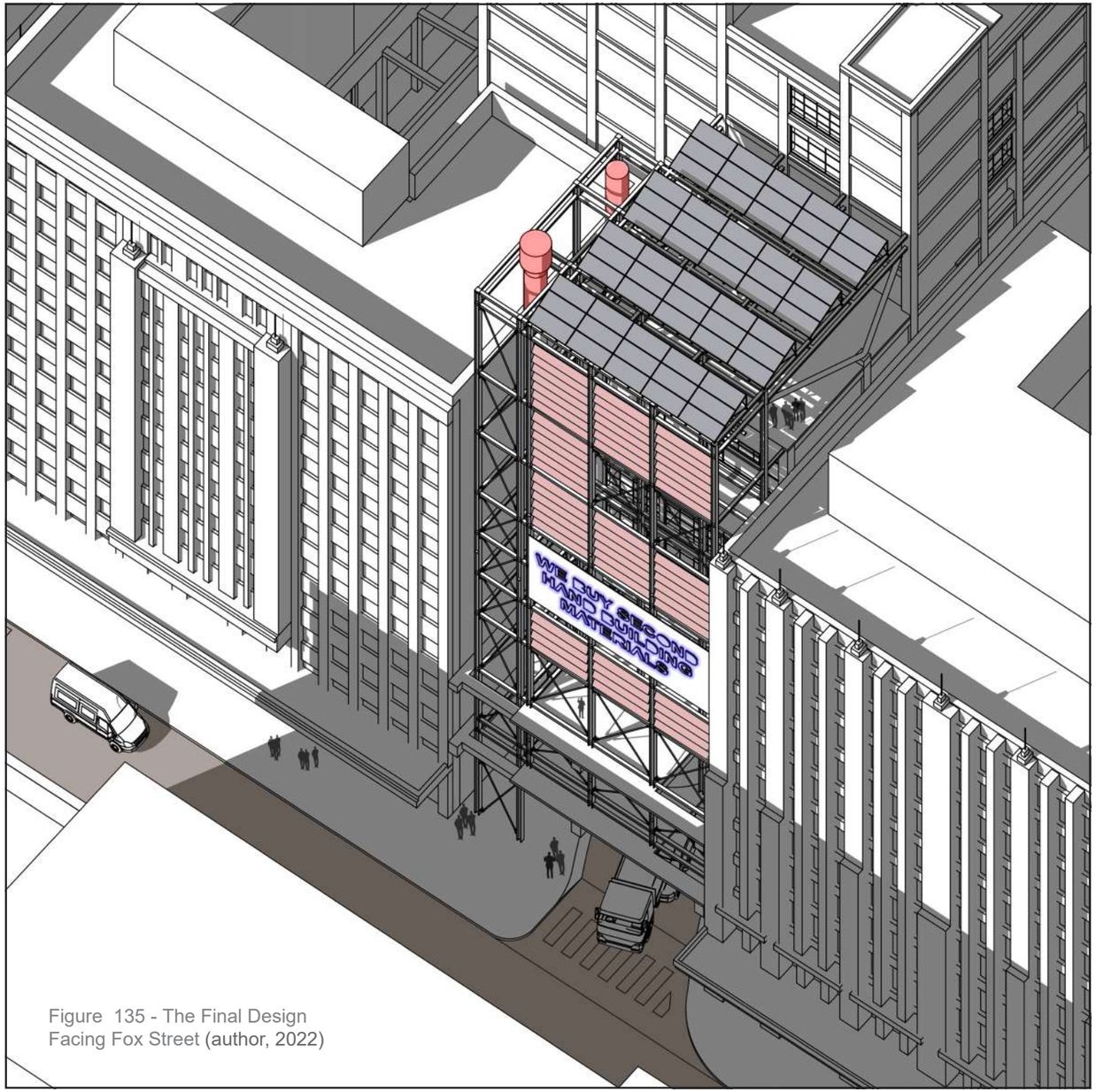
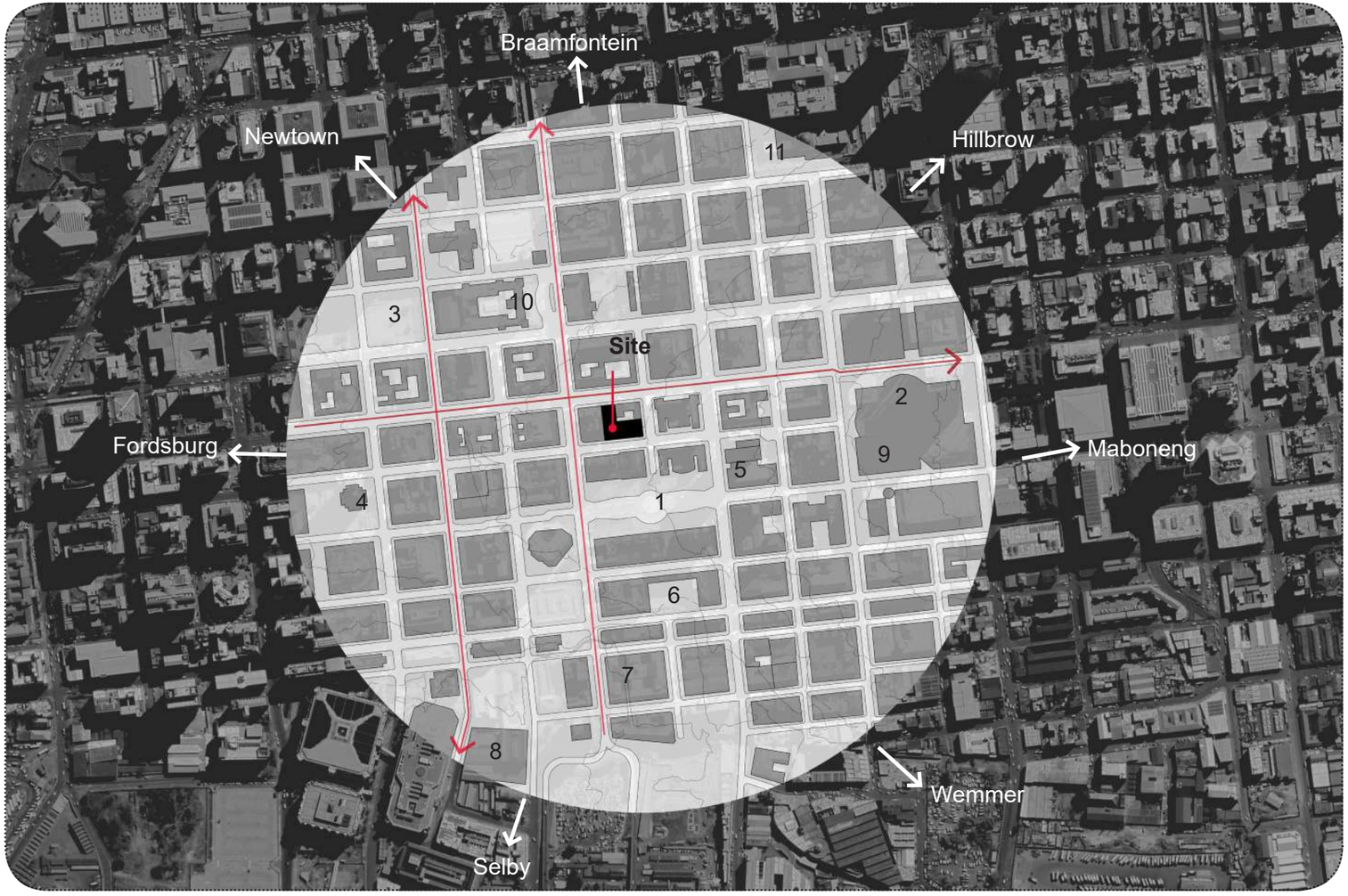


Figure 135 - The Final Design
Facing Fox Street (author, 2022)

Locating the Project

The architectural proposal is placed in Marshalltown, Johannesburg. A tight urban context in the centre of the Johannesburg inner city. The project is set within a prominent and active part of the inner city with endless spatial conditions and opportunities.



1 - Gandhi Square
2 - Carlton Centre
3 - Library Gardens
4 - Standard Bank Hanging Building
5 - Umnotho House
6 - Marshall Street Barracks
7 - South African Revenue Service
8 - Standard Bank
9 - Carlton Hotel
10 - Johannesburg City Hall
11 - Johannesburg High Court

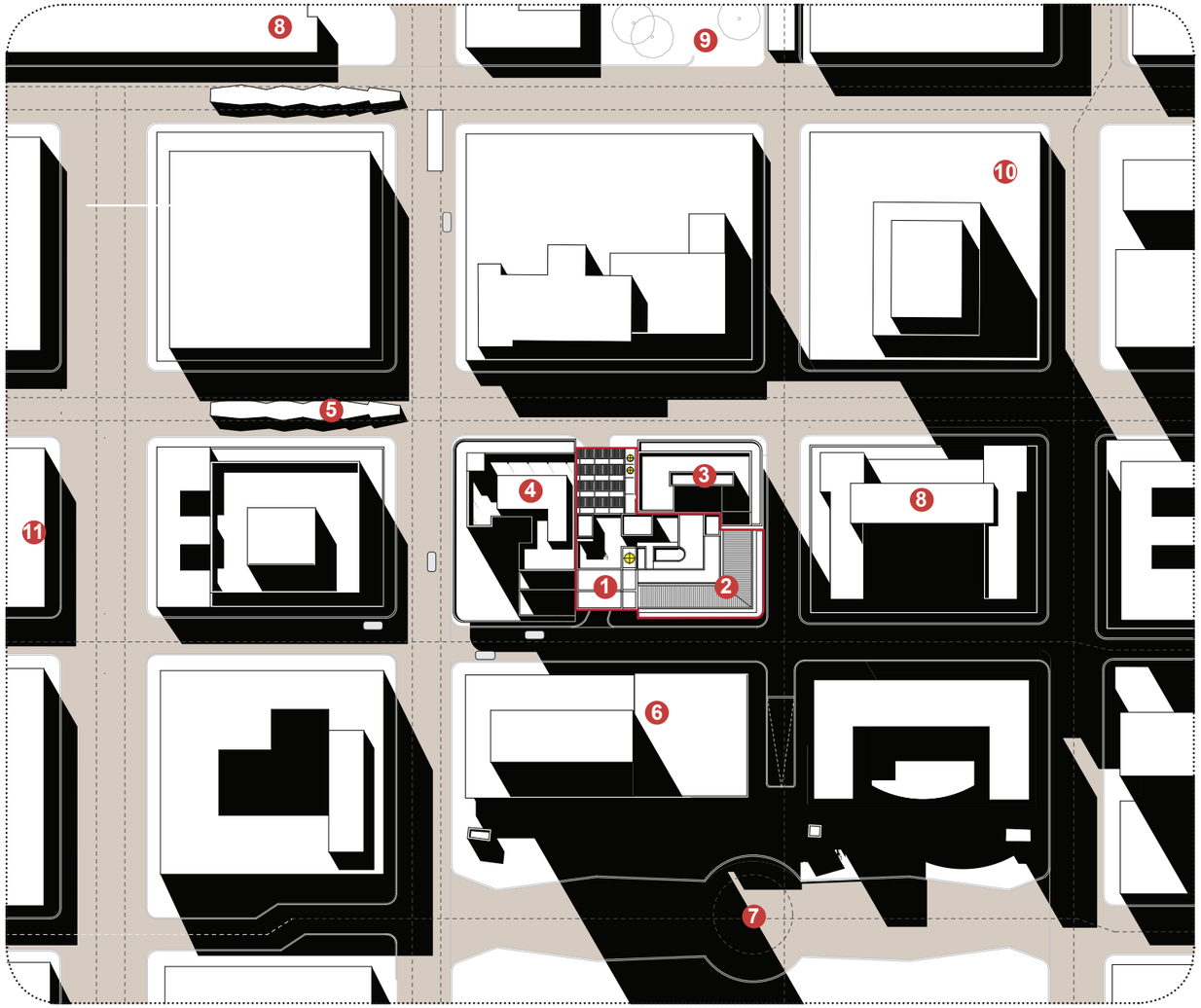
Figure 136 - Context Map (Author, 2022)

Context Plan

0 0.1 0.4km

An Inner City Context

The map illustrates the tight urban setting where the building is inserted and how the building sits wedged between the bold modernist buildings. The immediate context is made up towering buildings placed on rectangular blocks with narrow streets and busy sidewalks.



1 - Site
2 - New Kempsey Building
3 -Shakespeare House
4 - CNA Building
5 - Somerset House
6 - Gandhi Square
7 - Commissioner Street Bus Stop
8 - Johannesburg City Hall
9 - Ernest Oppenheimer Park
10 - Solly Sachs House
11 - Rand Club

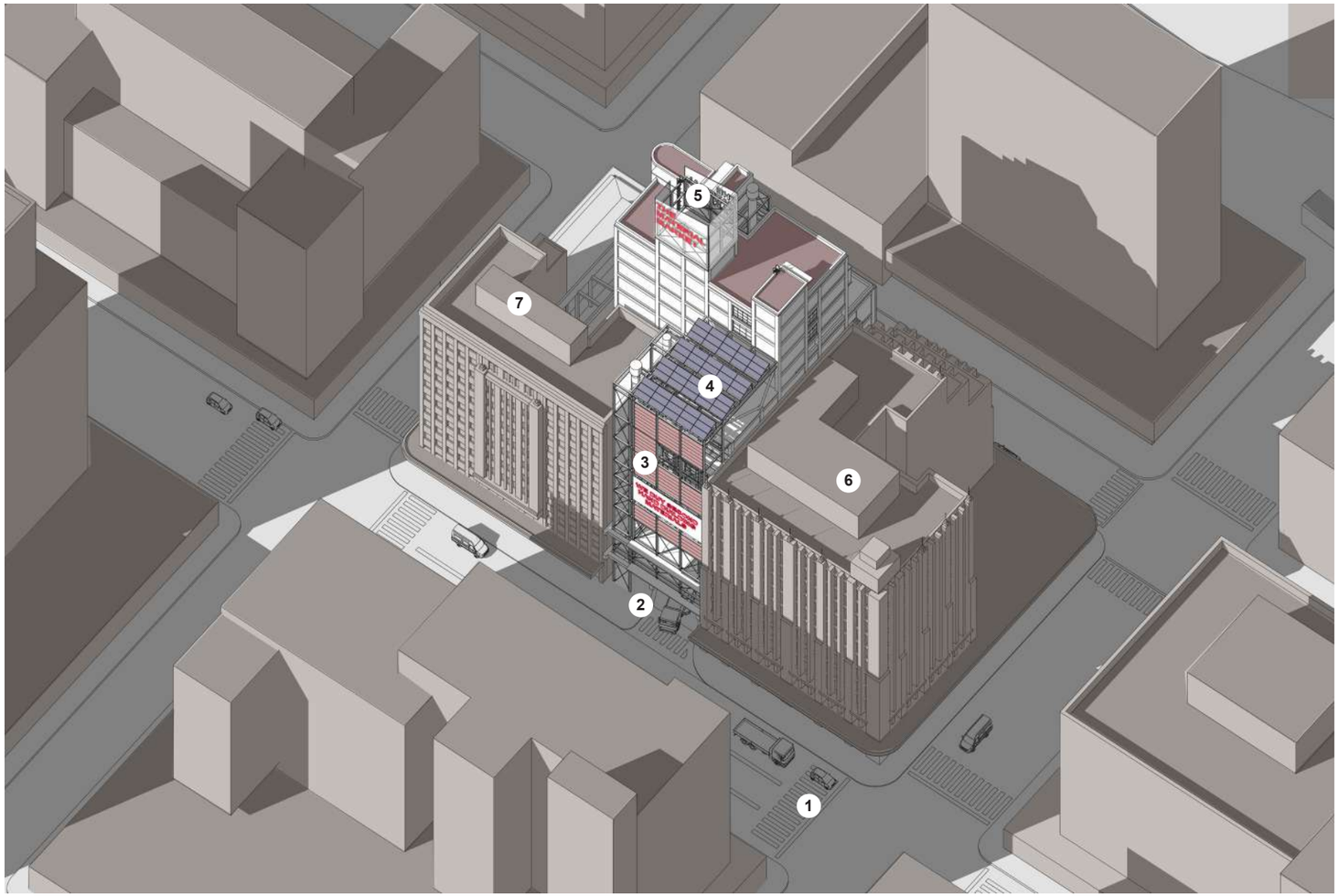
Figure 137 - Site plan (Author, 2022)

Site Plan

0 10 40m

Facing Commissioner Street [North]

Facing north the building makes use of sun shading façade to avoid the harsh north light during summer. The exit curves towards the direction of Commissioner Street allowing trucks and cars to exit easily. Portions of the steel façade are removed allowing light in at specific points and providing striking view from within the building. Advertising spaces are created on the façade allowing the building to make use of considered and delicate branding.



1 - Commissioner Street
2 - Building exit
3 - Sun shading facade attached to steel framework
4 - Solar panels on roof
5 - Building branding
6 - Central News Agency building
7 - Shakespeare House

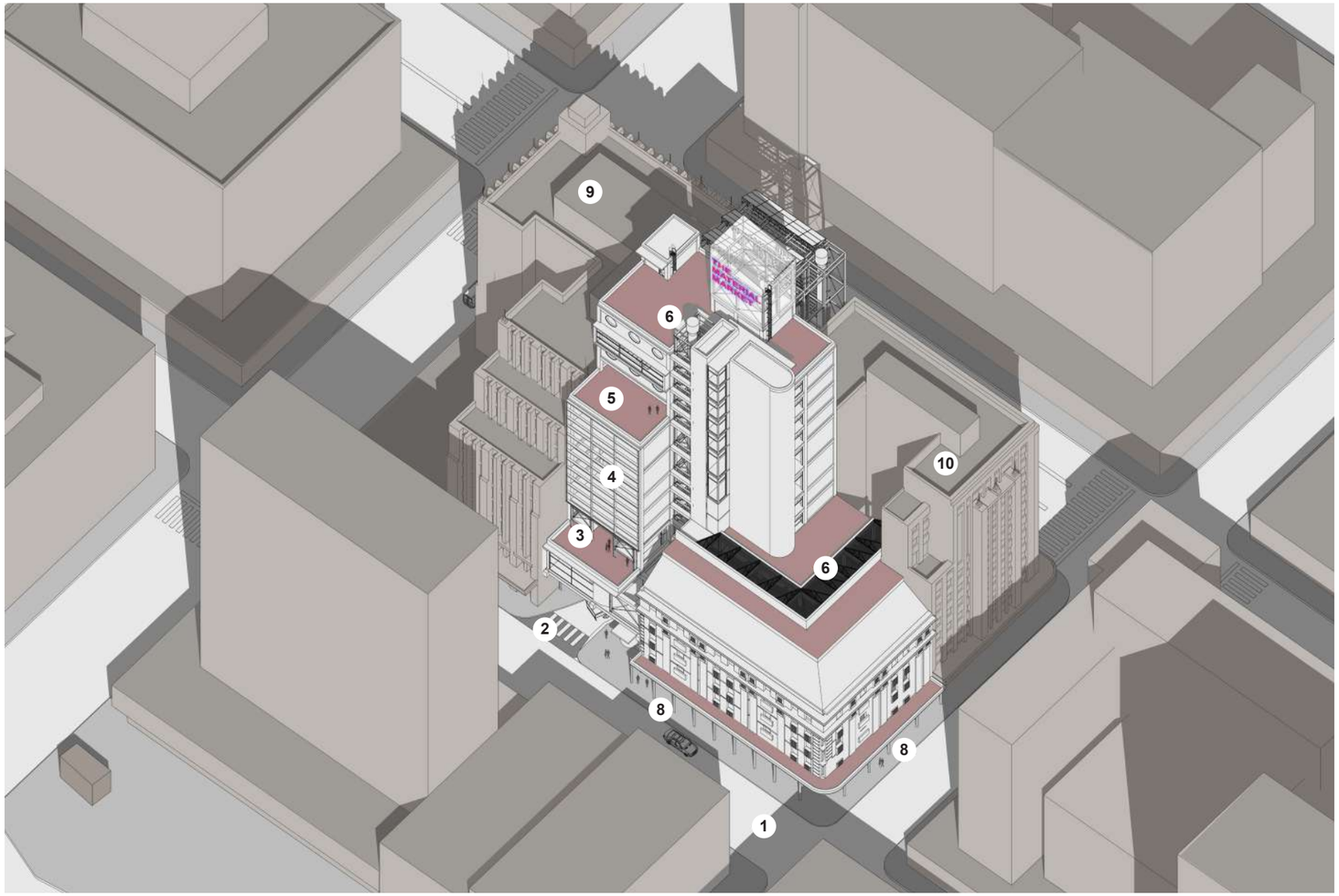
Figure 138 - North View Axonometric (Author, 2022)

Axonometric

0 5 20m

Facing Fox Street [South]

The South Facade takes advantage of low the sun exposure and by the use large glass and polycarbonate facades. The New Kempsey building is infected by the new machine with pedestrian entrances feedthrough the ground floor - where pedestrians enter through the old into the new.



1 - Fox Street
2 - Entrance for deliveries and pick ups
3 - Second floor material storage yard
4 - Polycarbonate facade
5 - 7th floor material storage yard
6 - Services expresseed on side of the building
7 - New Kempsey building - back part demolished and new sky light created.
8 - Pedestrian entrances
9 - Central News Agency Building
10 - Shakespeare House

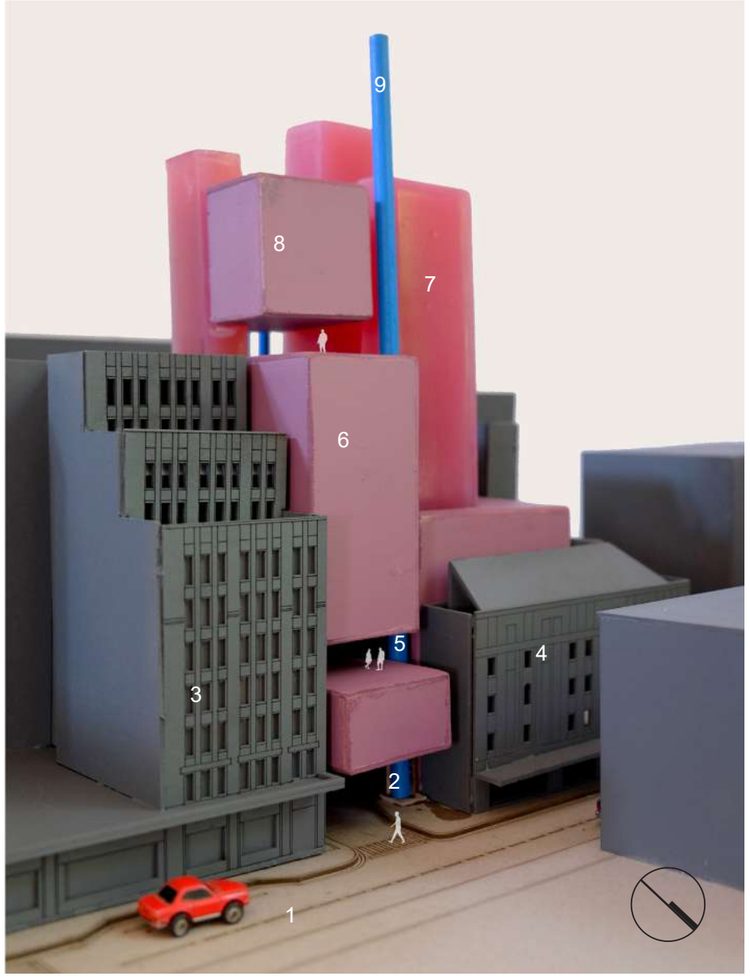
Figure 139 - South View Axonometric (Author, 2022)

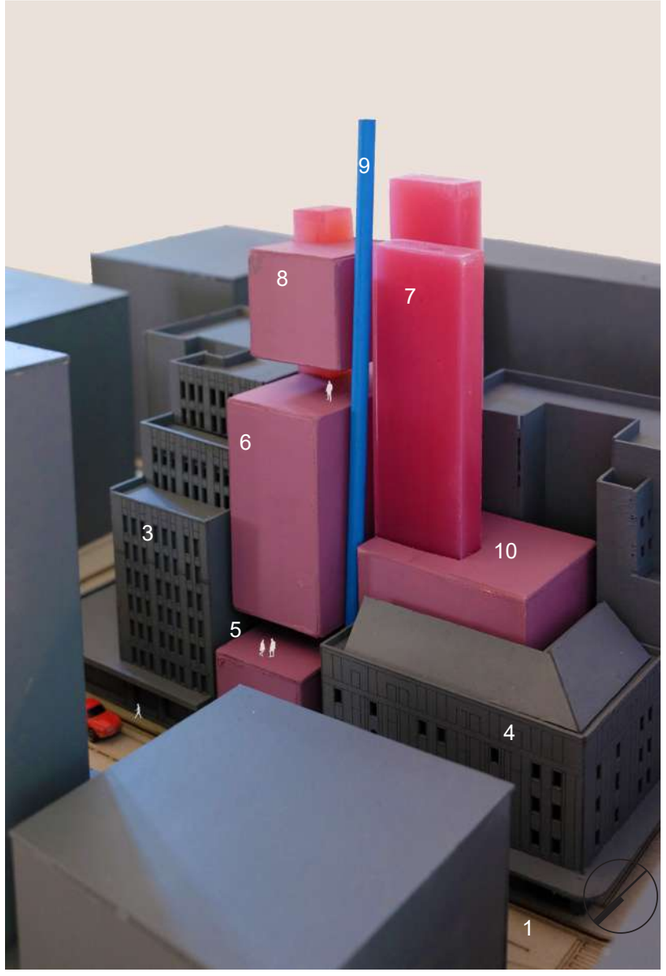
Axonometric

0 5 20m

Physical Representation and a Contextual Response

The Physical model was used as a tool to represent the contextual response - creating clear and legible explanations for the architectural concepts and argument. The massing responds to the street and the existing buildings. The massing, that sits wedged between the decaying buildings, is broken up into various portions with open floors that allow light to filter into the building and create break away spaces that facilitate industrial process of reclamation, production and recycling. The reticulation of services are celebrated in the building where an architectural expression is found amongst the harsh mechanical expression.





01 - Fox Street (one-way in direction of vehicle)
02 - Delivery and pick up security check point
03 - CNA Building
04 - New Kempsey Building
05 - Second floor material yard
06 - Fabrication and production
07 - Vertical circulation
08 - Education and research spaces
09 - exposed and expressed services
10 - New build attached to existing New Kempsey Building

Figure 140 - Images of physical model (Author, 2022)

Scale Model

South Facade
1:250



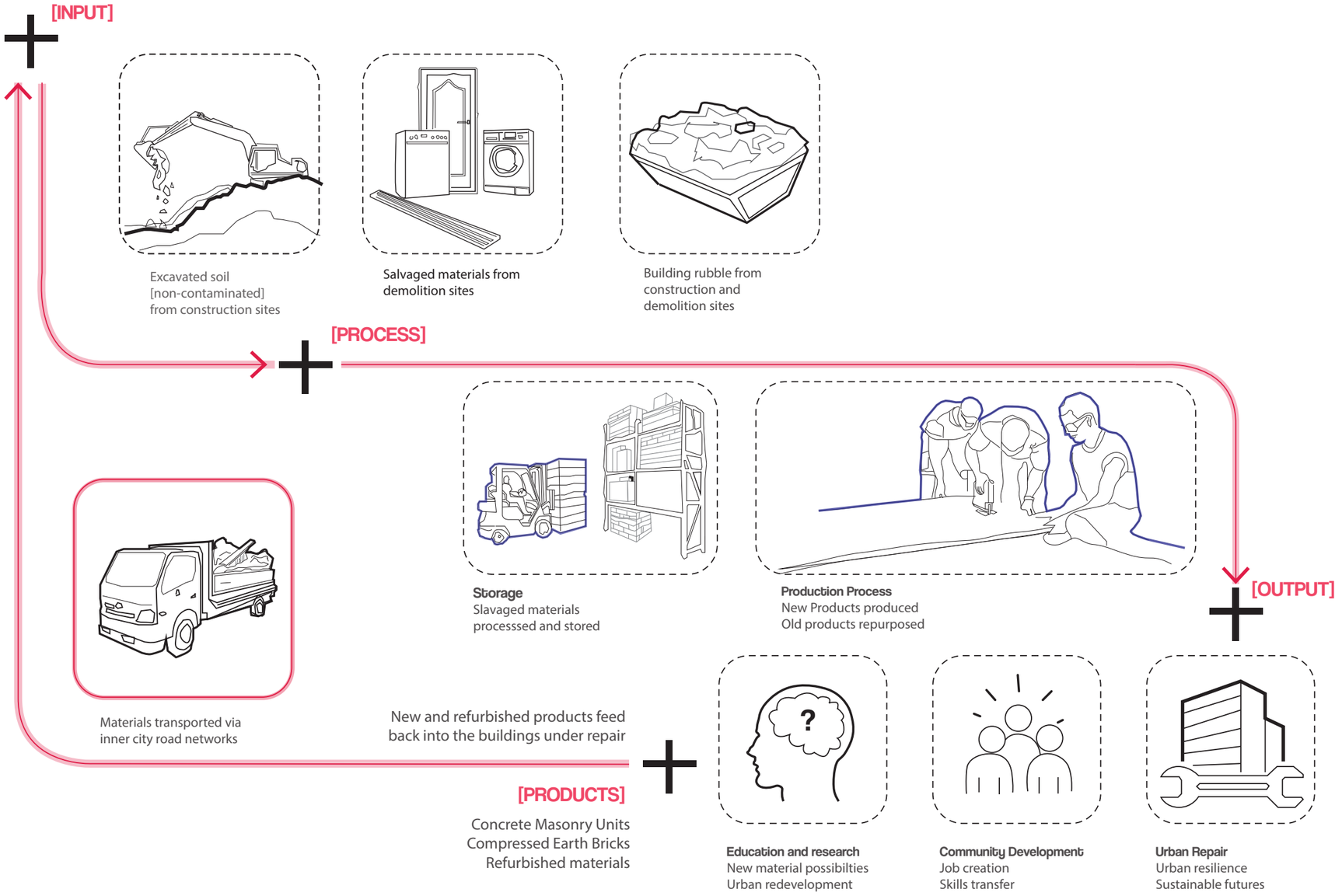


01 - Commissioner Street
02 - Shakespeare House
03 - CNA Building
04 - Buidling services
05 - Goods lift for movement of materials throughout building
06 - Fire escape staircase
07 - Material yard
08 - Material Yard
09 - Security check point at exit
10 - Rissik Street

Figure 141 - Images of physical model (Author, 2022)

Scale Model

North Facade
1:250

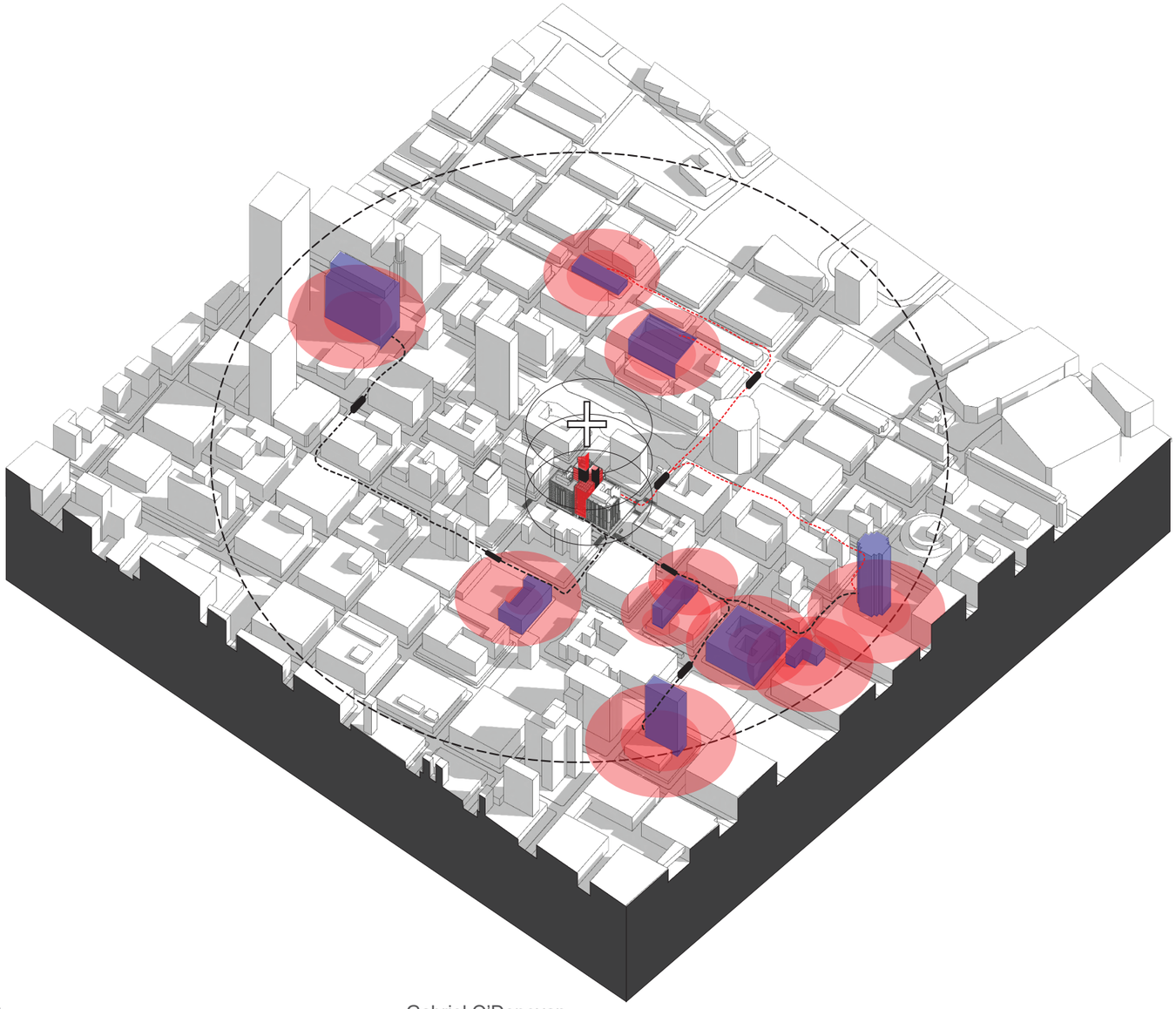


Machine Concepts

The project is grounded in processes of reclamation, reconstruction, and production. In this regard, the building becomes a machine in the process – facilitating urban processes of [re] construction where decaying and abandoned buildings in the inner city are reimagined with an optimistic outlook on the future of the Johannesburg inner city.

Organogram

Figure 142 - Organogram (Author, 2022)



A Narrative of Inner City [Re]construction

The project is interested in the remaking of abandoned buildings in Marshalltown, Johannesburg. Through doing this the project intends to challenge normative building practices evident in many cities. The project looks to processes of remaking that view the abandoned buildings as commodities that can be used and commodified.

The building intends to present an urban proposal where buildings under construction and demolition feed into the Material Market - delivering the unwanted building materials. Once the processes of production, recycling and reclamation have finished the products feed back into the city and are used in the same construction projects – creating a sustainable material culture.

Figure 143 - Urban Reconstruction (Author, 2022)

Site

Abandoned buildings

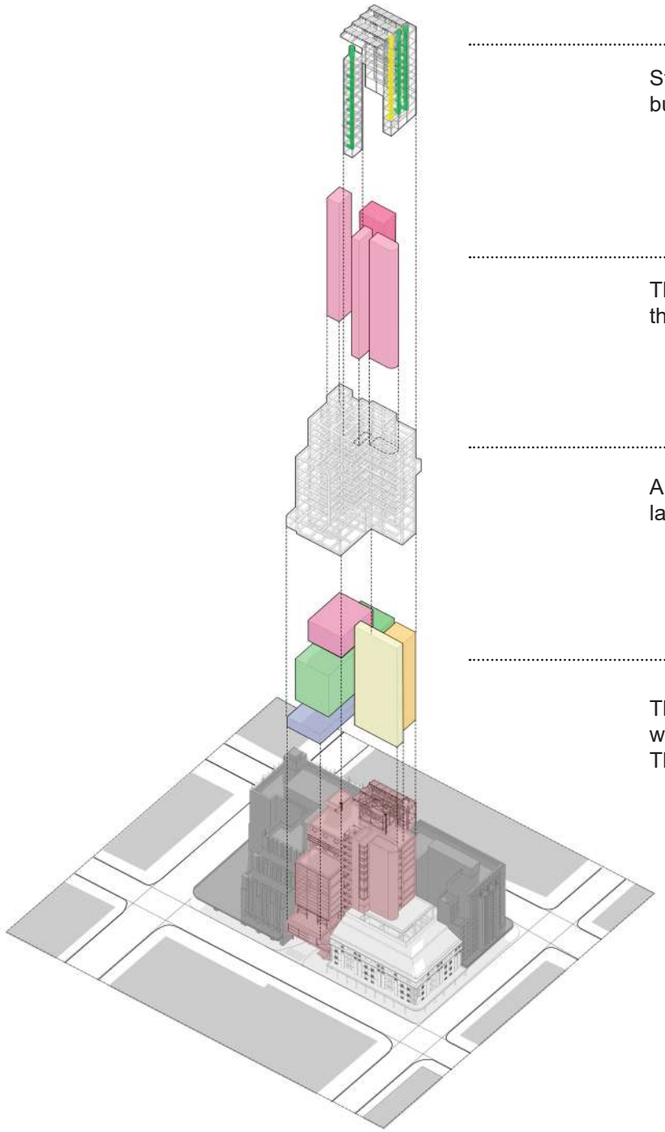
Materials being delivered to site

Finished products feeding back into the city

1km radius

Axonometric

0 0.1 0.5km



Steel framework attached to exterior of the building - incasing services that faciliate the functioning of reconstruction machine.
[Rubble shoot]
[HVAC]

The ciruclation cores serve an important role in the structural integrity of the building and allow for pedestrian and material mobility.
[Goods Lift]
[Vertical Ciruclation]

A tight and robust concrete frame allows for large material loads which are expected for a spaces of production

The mass of the building tapers as it gets taller with void spaces breaking up the volumes. These spaces are used as material storage yards and outdoor areas.

[Public foyer and Exhibition space]
[production space - factory and workshops]
[Education and Research}
[Circulation]
[Service spaces]

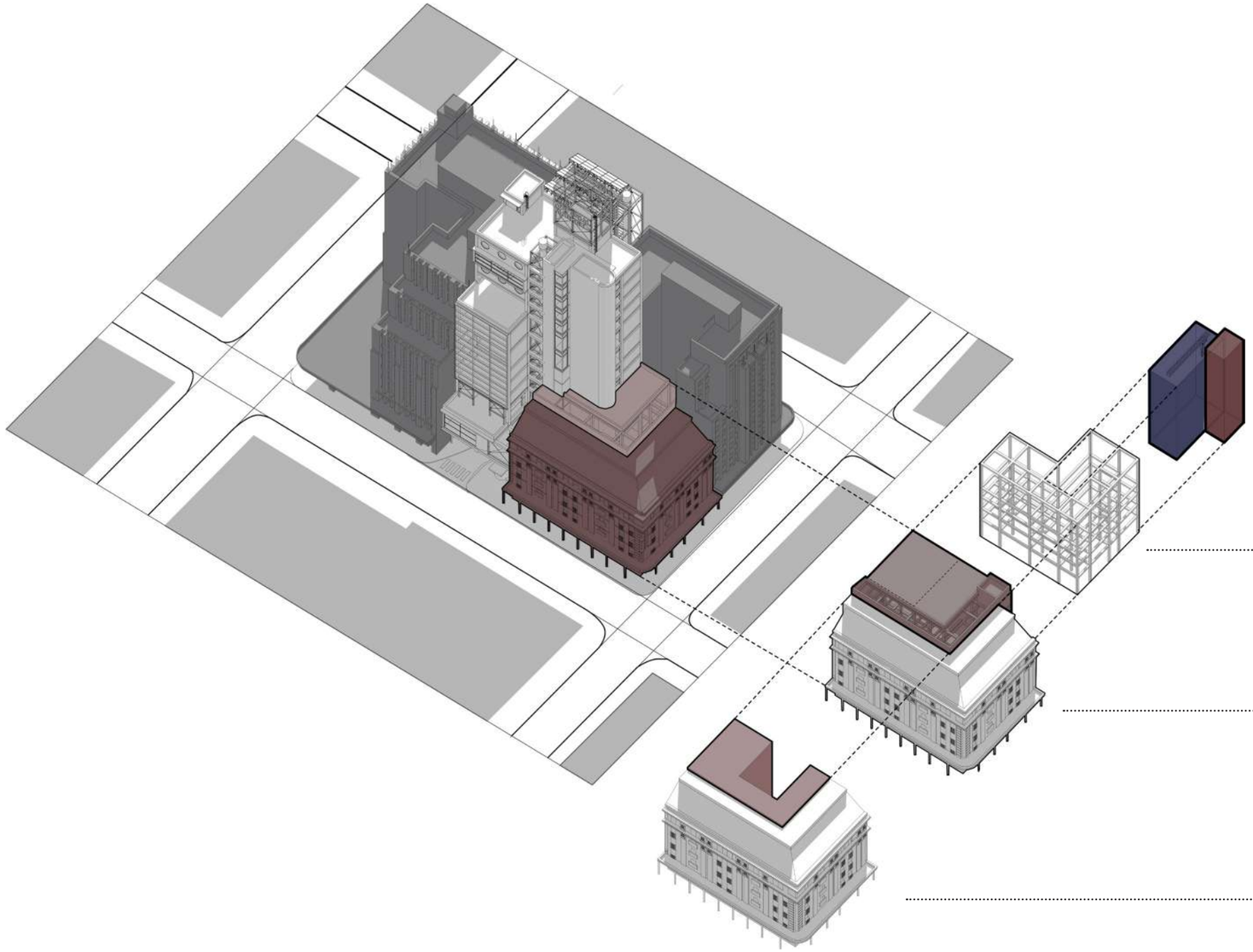
Mechanical Imperfections and Spatial Expression

The building expresses a machine-like quality where functional aspects of the building find composition and structure from the functional components of the building rather than pure spatial expression.

Figure 144 - Diagram
(Author, 2022)

Axonometric Diagram

0 20 80m



An Adaptive Reuse Strategy

Within the concrete framework space is left open that accommodates a a circulation core, the large open volume space facilitates the use of machinery for moving goods

[crane] [vertical circulation]

A robust concrete frame structure is attached to the back of the New Kempsey Building - creating new possibilities for a decaying building.

In place of the demolished portion of the New Kempsey building a new addition allows the building to have a new function.

The facade of the New Kempsey Building is left untouched - acknowledging the heritage value. The back portion of the building is demolished, making way for the new addition.

Figure 145 - Adaptive Reuse Diagram (Author, 2022)

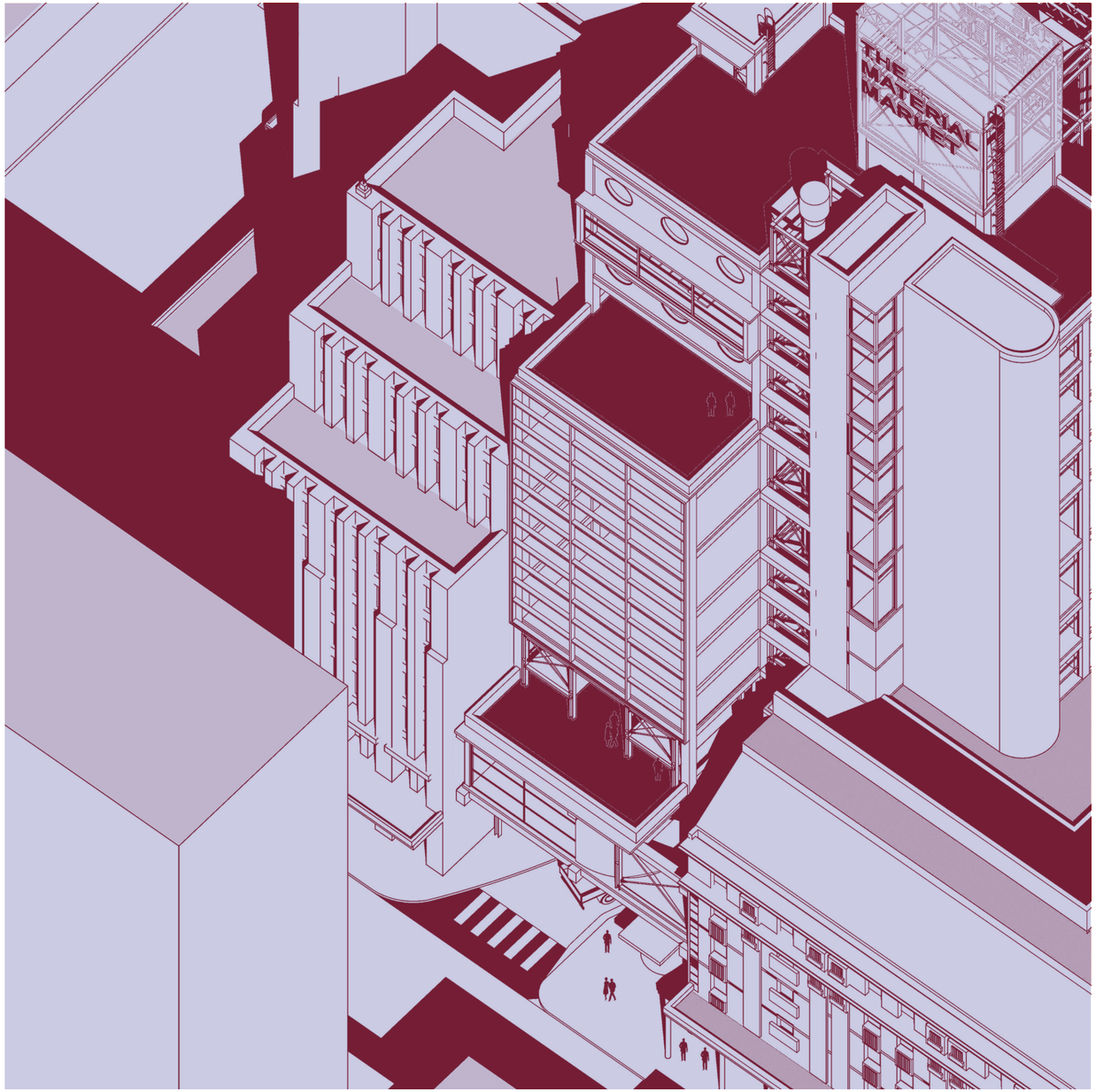
Axonometric Diagram

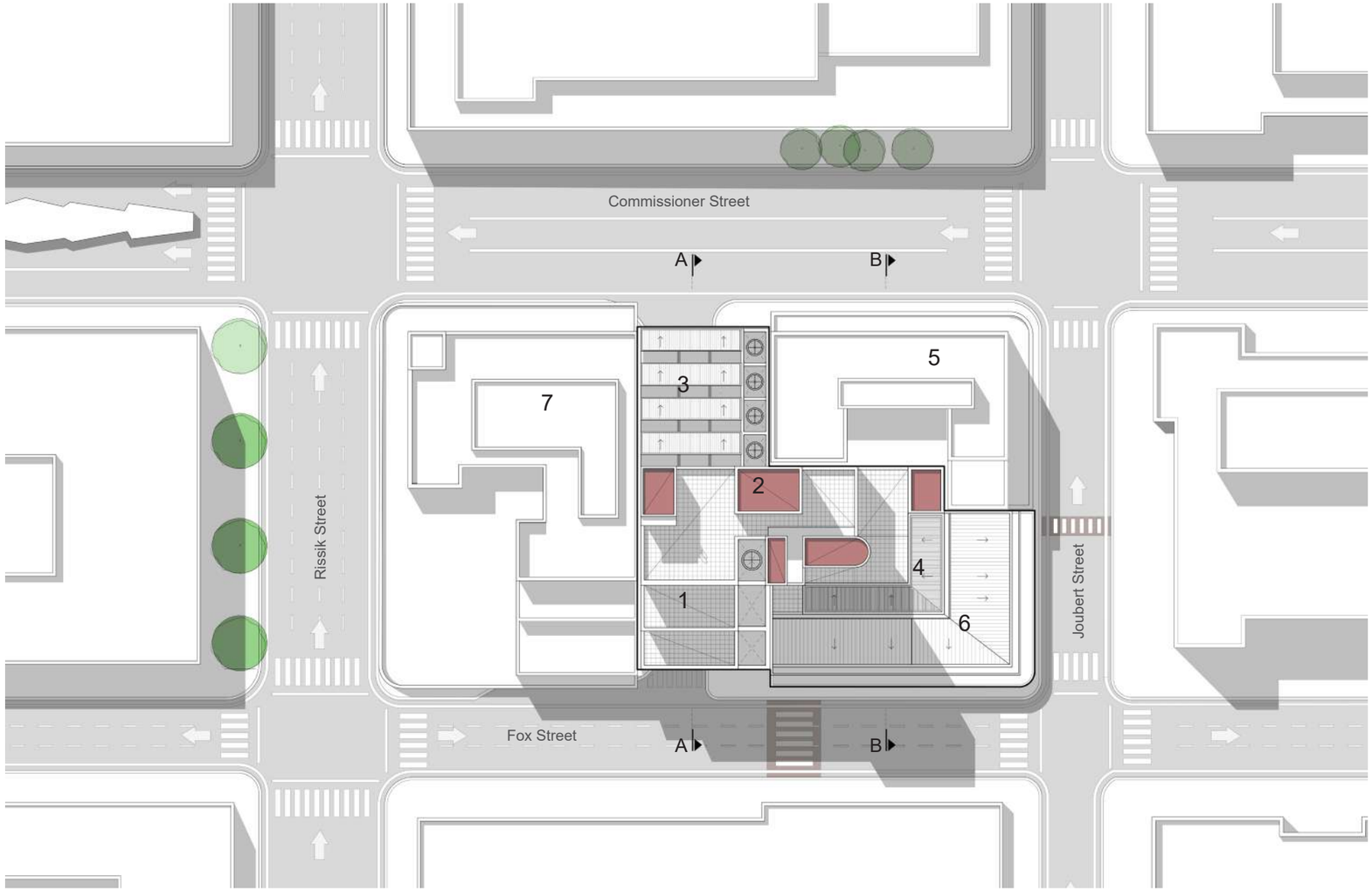
0 5 20m

Architectural Concepts

The following pages present the architectural argument in its most complete form. The final architectural argument is presented using a full set of drawings illustrating the projects intentions - justified by the production of an architectural object.

Figure 146 - South Facade drawing (Author, 2022)





From Above

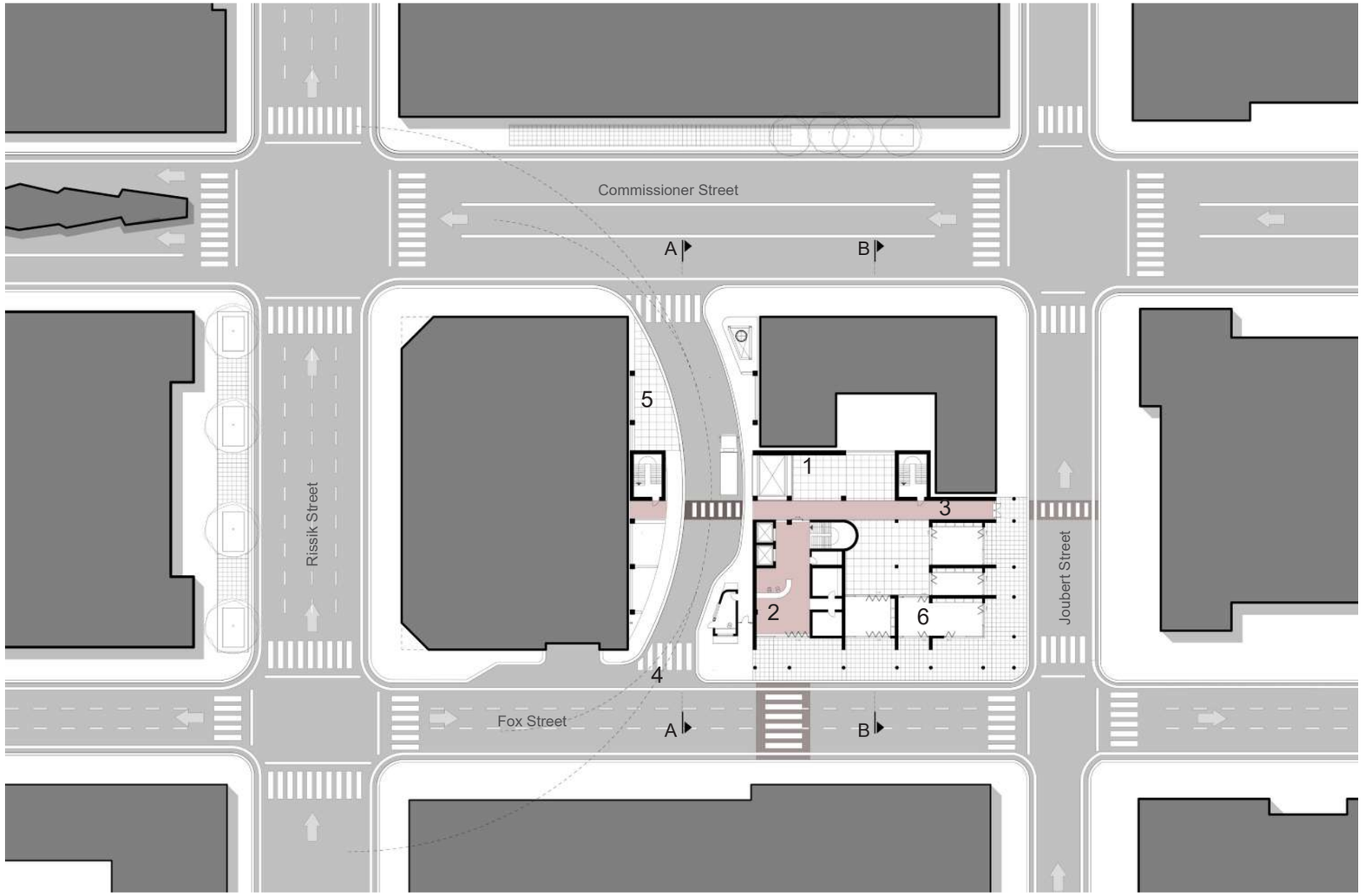
The building sits wedged between three modernist buildings that have been subjected to continued decay. The building inserts into the New Kempsey Building - creating a contrast between old and new. The other two buildings are left to stand in hopes of attracting new investors into the inner city.

01 - Storage yards
02 - Goods lift core
03 - Solar panels
04 - Skylight
05 - Shakespeare House
06 - New Kempsey Building
07 - CNA Building

Figure 147 - Roof Plan
(Author, 2022)

Roof Plan

0 5 20m



The Process Begins

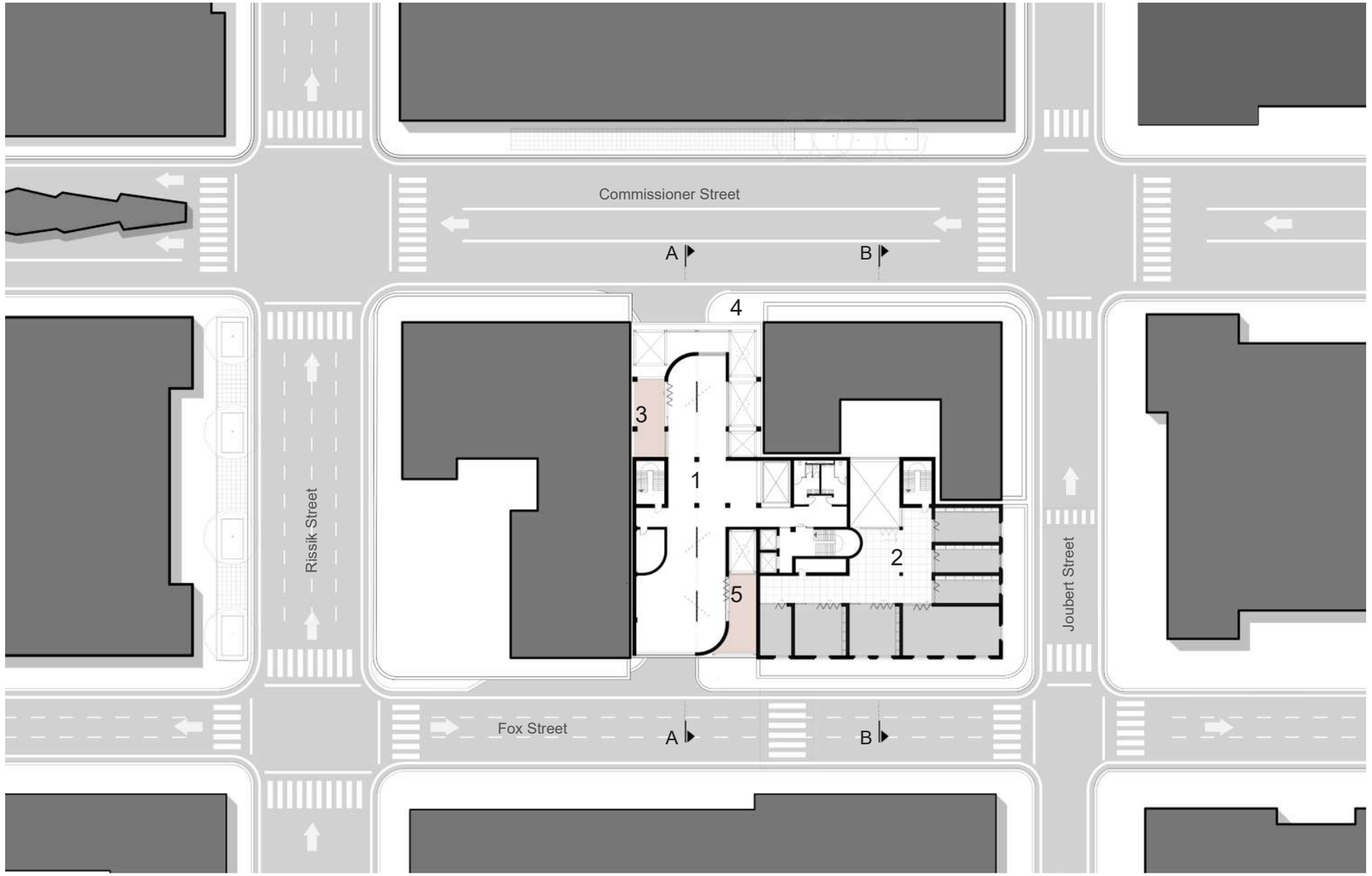
The ground floor is governed by the delivery and transportation of goods in and out of the building. The New Kempsey building becomes the pedestrian entrance - entering through the old into the new while the vacant plot facilitates acts of making and remaking.

01 - Goods lift
02 - Pedestrian Entrance
03 - Entrance
04 - Car entrance and security check
05 - Collection zone
06 - Repurposed Material Market

Figure 148 - Ground Floor Plan (Author, 2022)

Ground Floor Plan

0 5 20m



Machine Views

The public foyer and exhibition space are lifted above the ground floor. Cut-aways in the floor slab allow individuals to have constant views of the mechanical workings of the building. The machines and mechanic services that line the sides of the building become the exhibition that can be observed and experienced. Various programs throughout the building are connected and meshed by celebrating acts of everyday life (working and making) - which in normative space making practices these aspects of architecture are relegated to dark and dingy service areas in the back of buildings.

01 - Foyer/ Exhibition
02 - Repurposed Material Market
03 - Outdoor space
04 - North crane facade
05 - Services

Figure 149 - First Floor Plan (Author, 2022)

First Floor Plan

0 5 20m

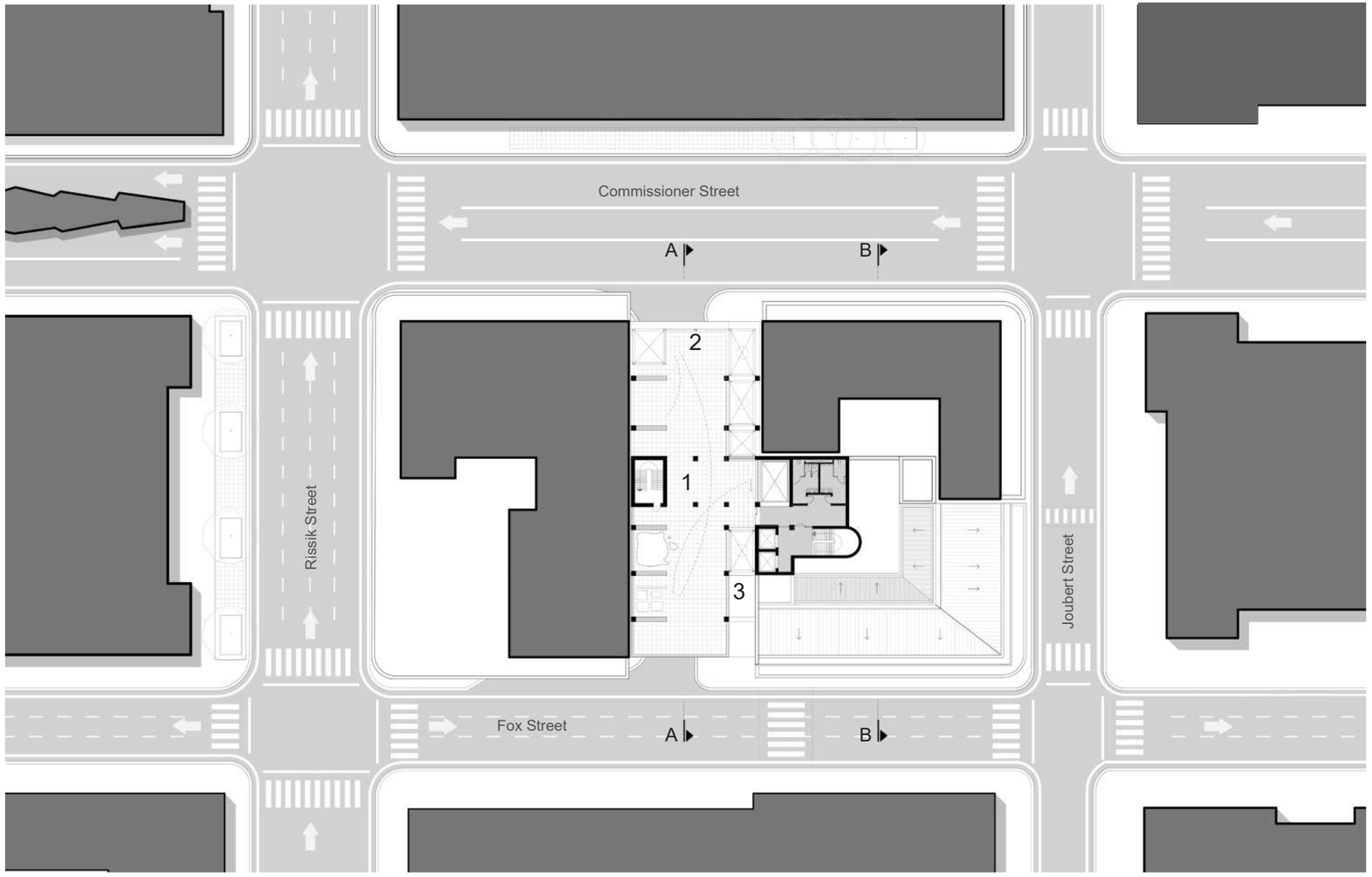


A View Into the Machine

First Floor Foyer and Exhibition Space

Figure 150 - First Floor Render
(Author, 2022)

Render



The Material Yard

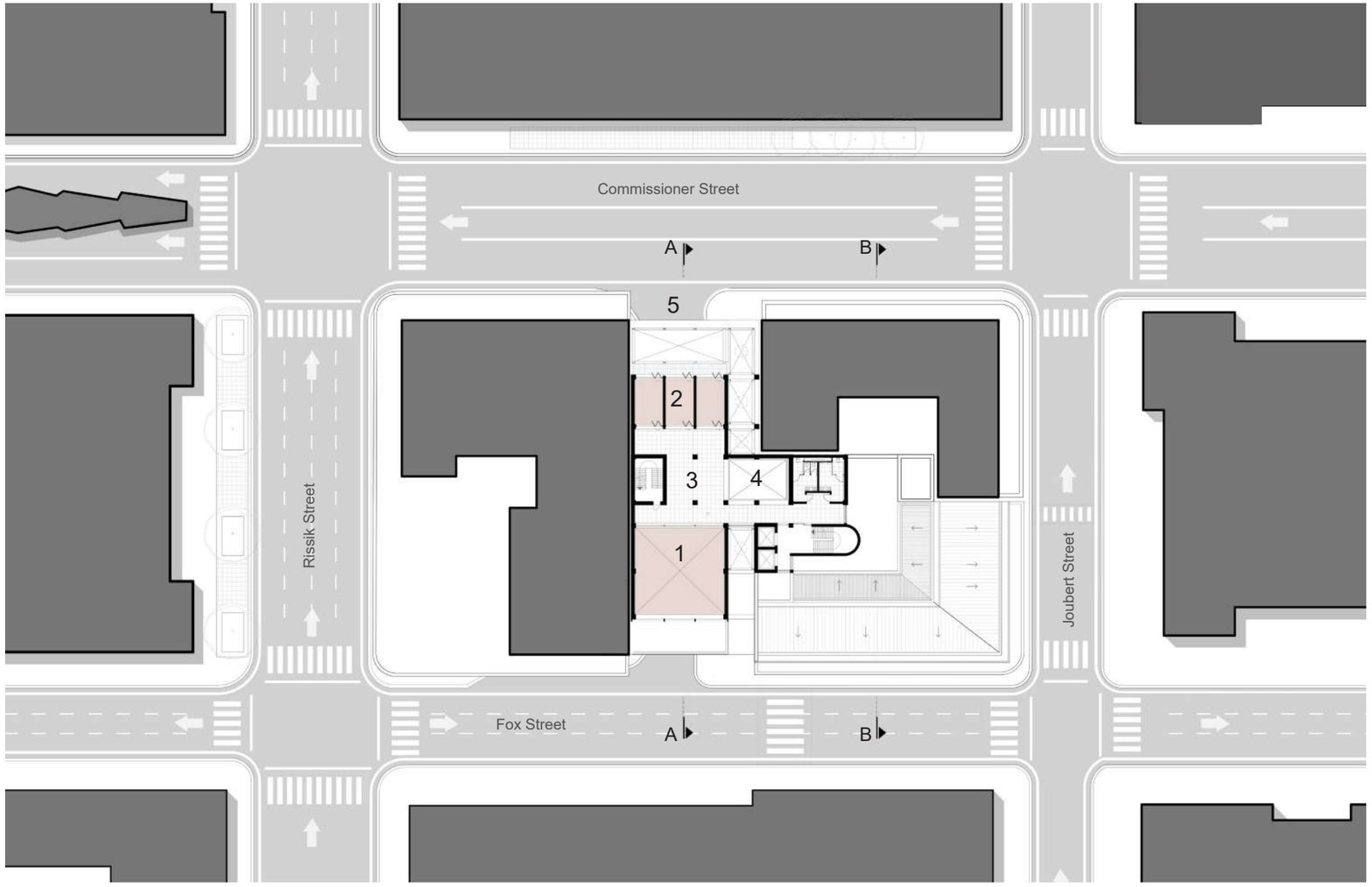
On the Second floor processes of production begin where material [finished and unprocessed] are stored where they wait to be transported where they need to be. The open floor plan allows for the movement of materials from the storage area to the lifts. This floor plan acts as on of the open air material yards where the robust concrete structure provides open spaces which can be adapted and changed to suit the needs of material storage.

01 - Storage yards
02 - Crane facade
03 - Services

Figure 151 - Second Floor Plan (Author, 2022)

Second Floor Plan

0 5 20m



Making

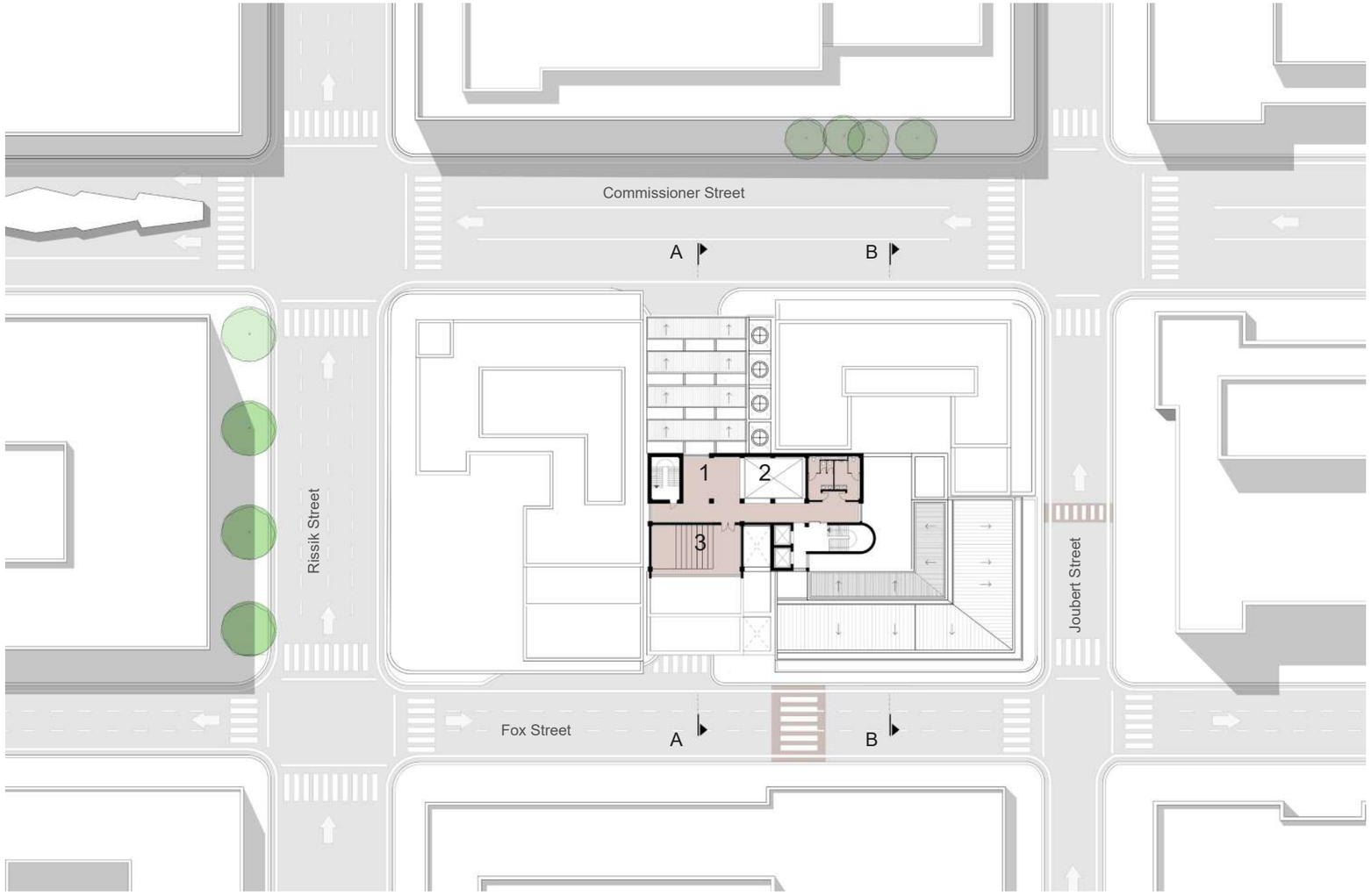
The sixth-floor plan illustrates the spaces of production where materials are recycled, repurposed, and produced. Individual workshops are created with possibilities for adaptation. Each workshop recycles and produces a unique product. These products are transported vertically by the northern façade to customers waiting on the ground floor.

01 - CMU factoy
02 - Marerial Repurpose workshops
03 - Circulation space
04 - Goods lift
05 - Crane facade

Figure 152 - Plan Drawing
(Author, 2022)

Sixth Floor Plan

0 5 20m



A New Material Culture

Material processes that prompt an intellectual discourse.

The education spaces, that start on the nineth floor, resemble the connection between acts of making and thinking - where the processes of recycling, producing, and reordering that occur on lower floors are intellectualised and interrogated. The building becomes a vehicle for producing new material products and thoughts. The building offers a spatial solution that prompts a material and intellectual discourse.

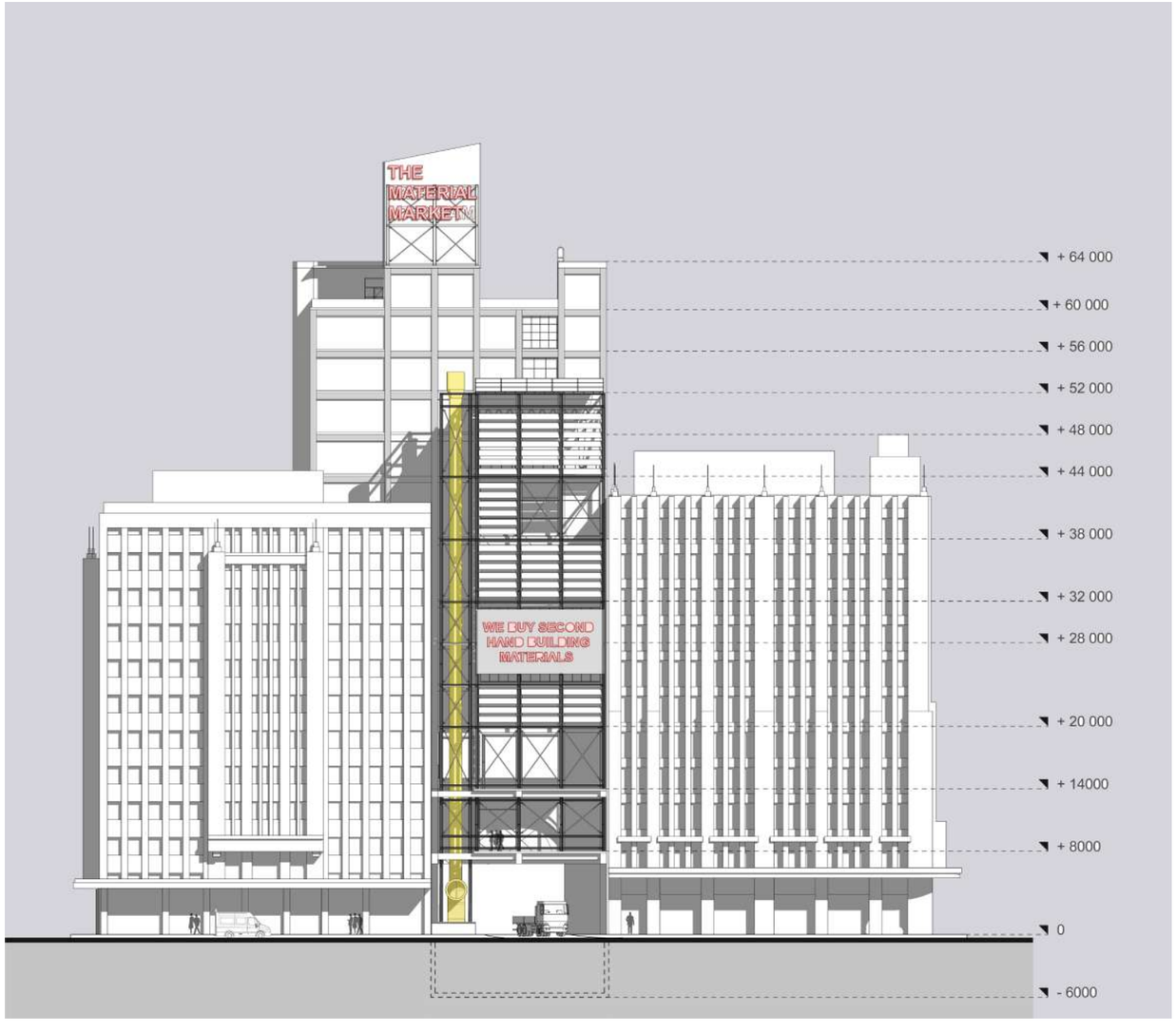
In other words, the education spaces are used by educators and scholars to investigate the process embedded in the 'Material Market'. Scholars investigate ideas of a new material culture, processes of remaking and recycling and urban redevelopment.

01 - Circulation
02 - Goods lift core
03 - lecture hall

Figure 153 - Plan Drawing (Author, 2022)

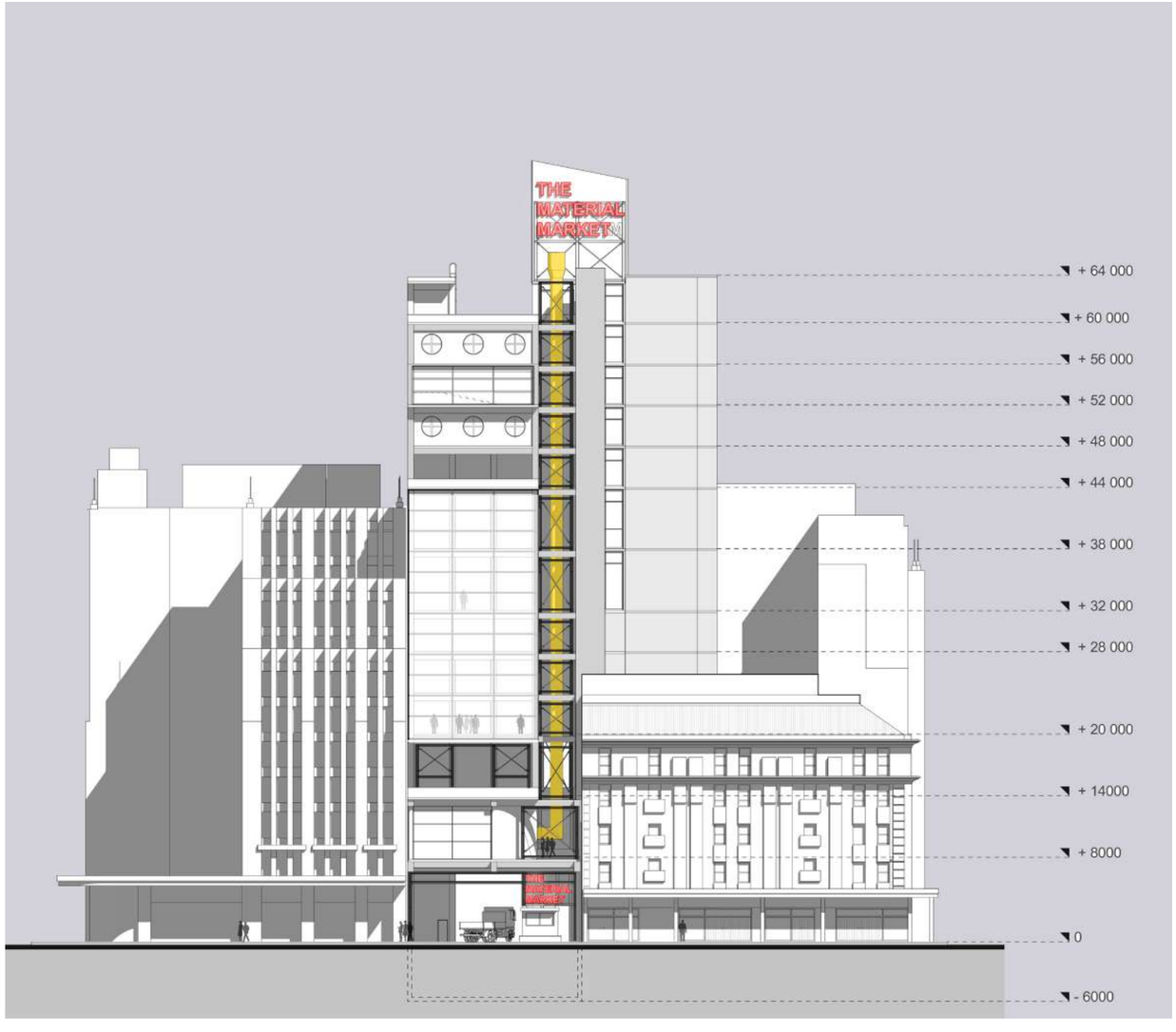
Nineth Floor Plan

0 5 20m



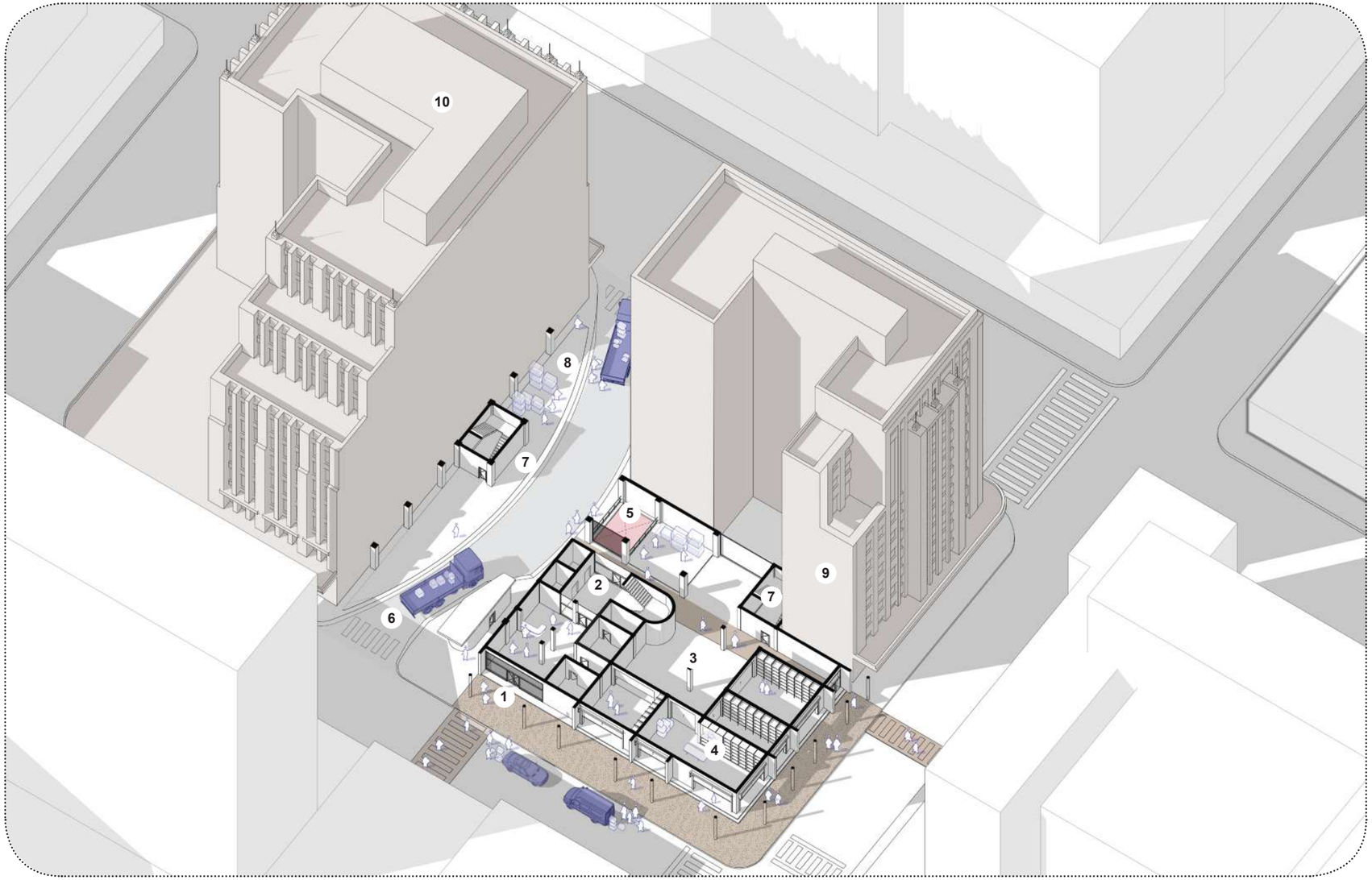
North Elevation

0 5 20m



South Elevation

0 5 20m



Street Edge

Street activation and a connection to the immediate context

1 - Pedestrian Entrance
2 - Circulation Core
3 - Material Market
4 - Material Market Workshops
5 - Goods Lift
6 - Entrance and Security Checkpoint
7 - Fire escape staircase
8 - Material pick up checkpoint
9 - Shakespeare House
10 - Central News Agency Building

Figure 154 - Ground Floor Axo (Author, 2022)

Ground Floor Axo

0 5 15m

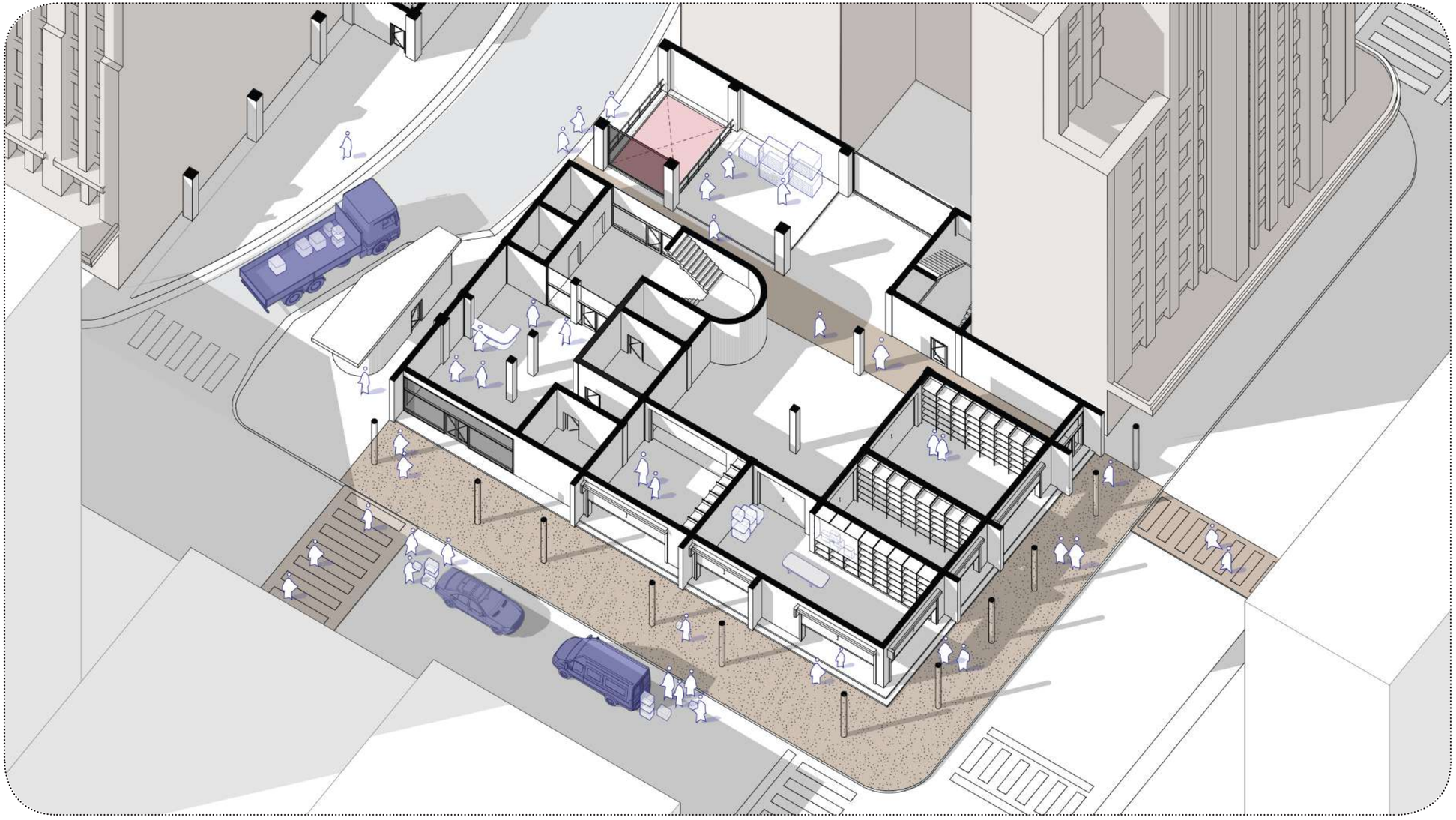
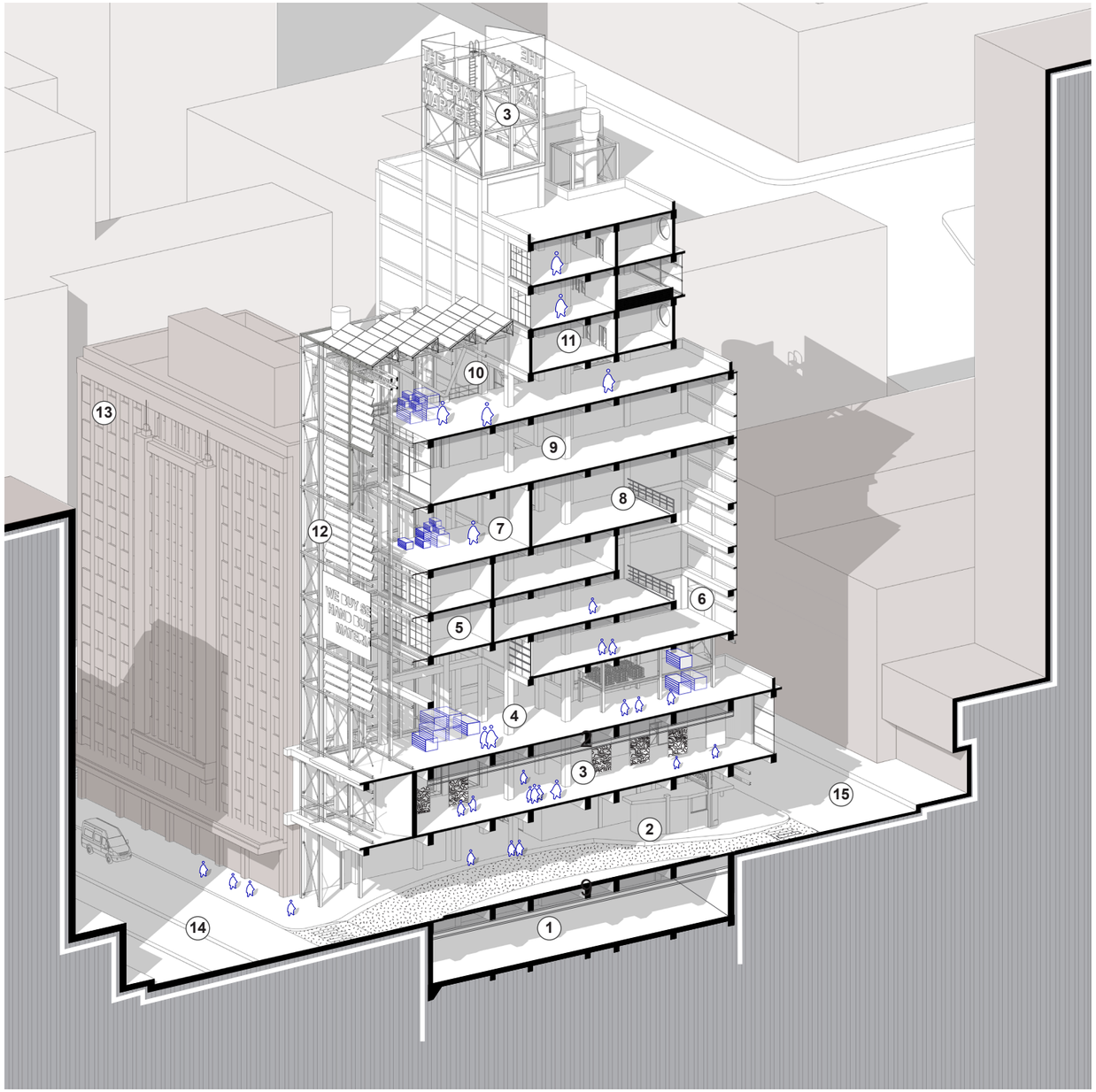


Figure 155 - Ground Floor Axo (Author, 2022)

Ground Floor Axo

0 2 8m



Sectional Narrative

The sectional narrative speaks to ideas of material mobility – where large open spaces are serviced by a goods lift, open-air spaces allow for the organization and storage of materials, and the programs that span the building vertically are connected by the movement of materials and products.

01 - Storage
02- Deliveries and pick ups
03 - Foyer/Exhibition
04 - Material Yard
05 - Material Repurpose Workshop
06 - CMU Factory
07 - Material yard
08 - CMU Factory
09 - Compressed Earth Brick Factory
10 - Material Yard
11 - Education and Research
12 - Working facade
13 - Shakespeare House
14 - Commisioner Street
15 - Fox Street

Figure 156 - Section A - A
(Author, 2022)

Section A - A

0 5 20m

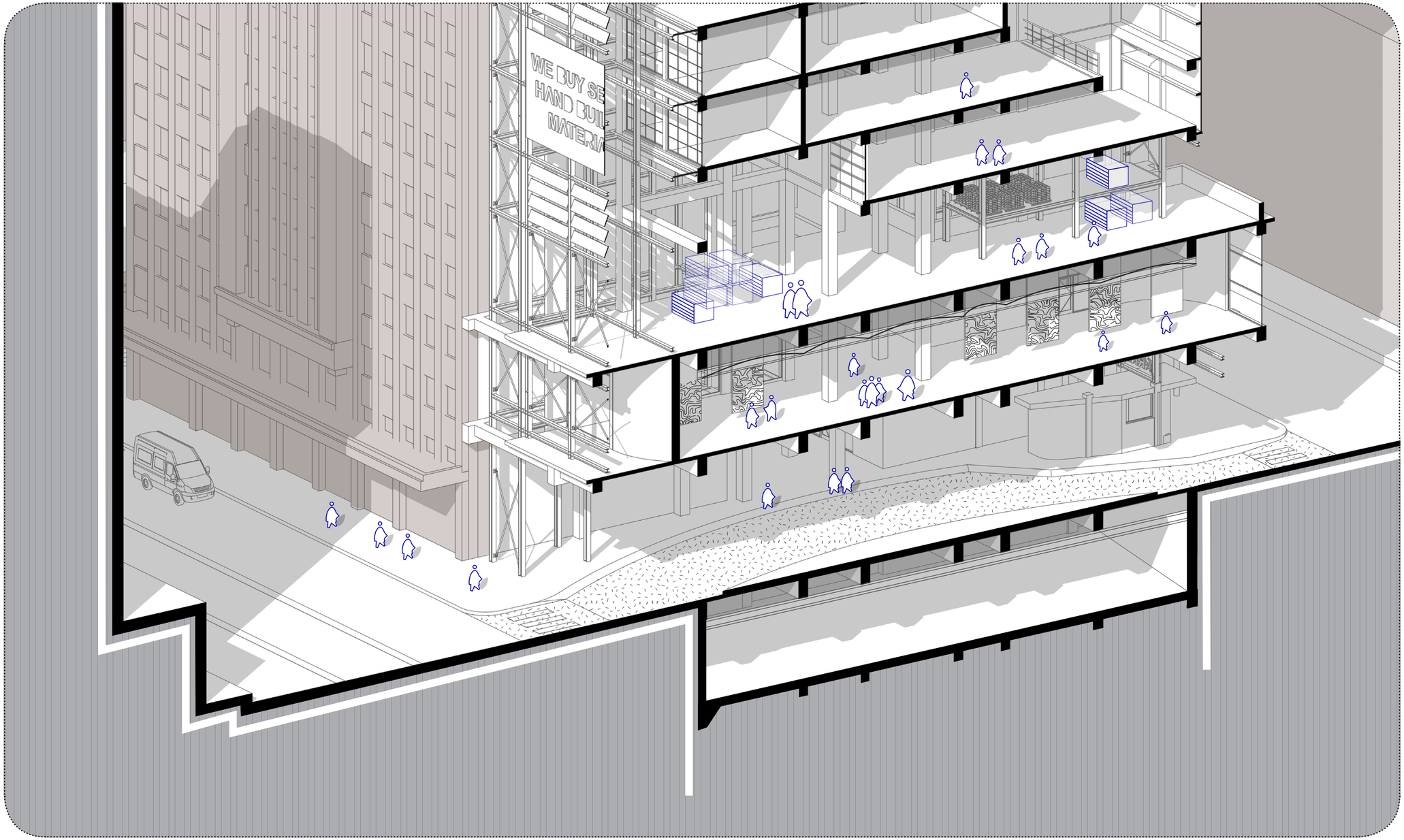


Figure 157 - Section A - A
(Author, 2022)

Zoom in Section A - A

0 2 8m

Form Follows Fabrication

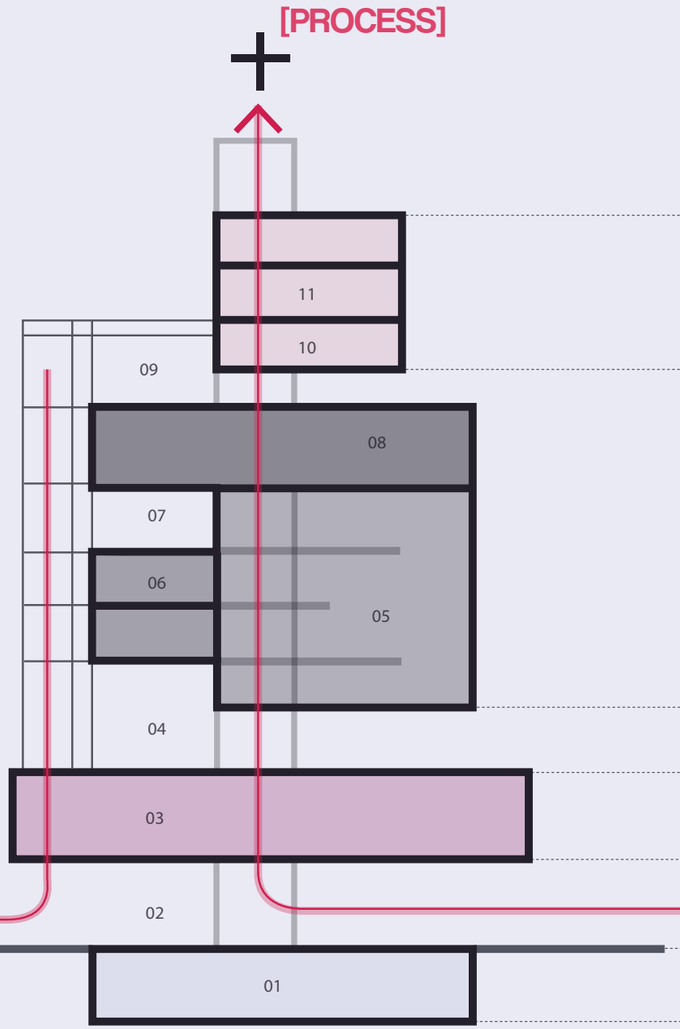


Urban Repair
Urban resilience
Sustainable futures

[PRODUCTS]

Concrete Masonry Units
Compressed Earth Bricks
Refurbished materials





Education

10 - Presentation rooms
11 - Offices and studi spaces

Production

4 - Material Yard
5 - Concrete Masony Production
6 - Workshops
7 - Material Yard
8 - Compressed Earth Brick Factory
9 - Material Yard

Public

3 - Foyer and Exhibition Space

Storage

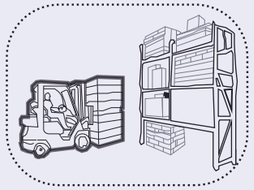
2 - Deliveries
1 - Storage



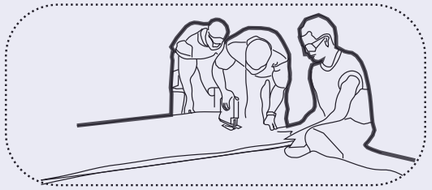
Education and research
New material possibilties
Urban redevelopment



Community Development
Job creation
Skills transfer



Storage
Slavaged materials
processsed and stored



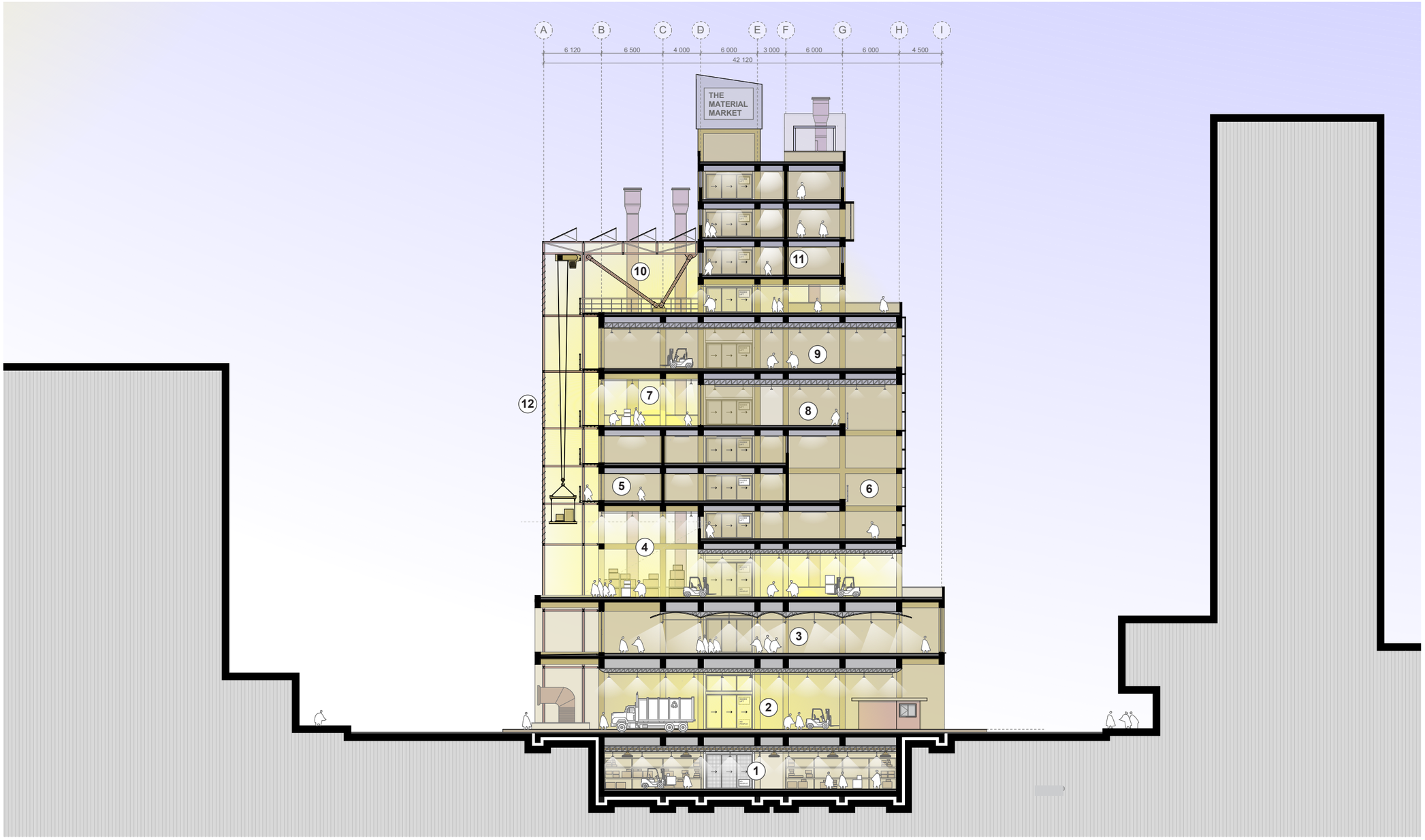
Production Process
New Products produced
Old products repurposed







Reclaimed Materials

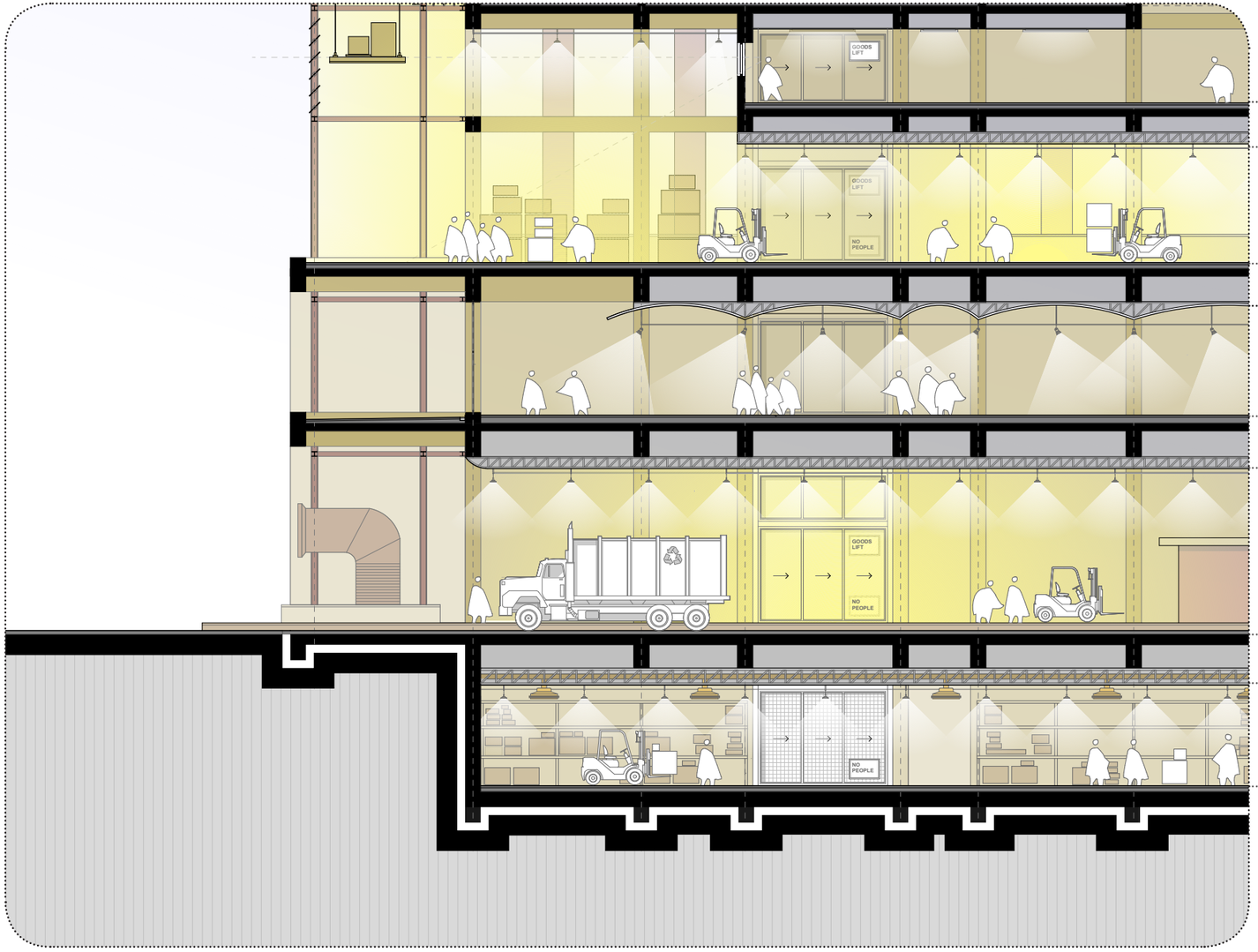


01 - Storage
02- Deliveries and pick ups
03 - Foyer/Exhibition
04 - Material Yard
05 - Material Repurpose Workshop
06 - CMU Factory
07 - Material yard
08 - CMU Factory
09 - Compressed Earth Brick Factory
10 - Material Yard
11 - Education and Research
12 - Working facade
13 - Shakespeare House
14 - Commisioner Street
15 - Fox Street

Figure 158 - Section A - A
(Author, 2022)

Section A - A

0 4 16m



The Material Yards
Large open volume spaces assist in the storage and organisation of materials for production and delivery.

Foyer and Exhibition Space
The first floor is used as the public foyer where individuals are introduced to the workings of the building.

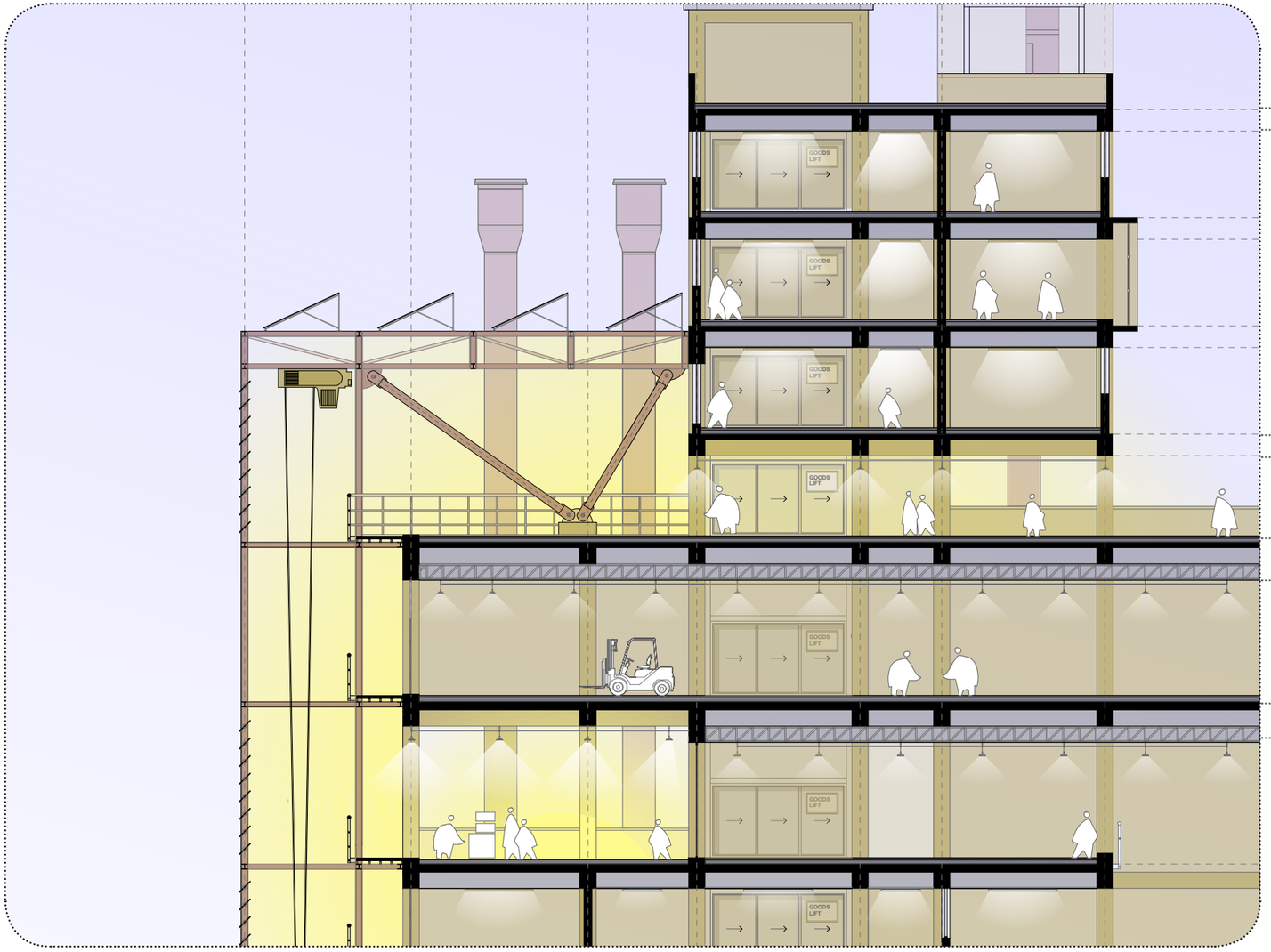
Delivery and Pick-ups
The ground floor is used as a driveway for easy access of deliveries and pick-ups.

Storage
Surplus materials and products are stored in the basement.

Figure 159 - Section A - A (Author, 2022)

Zoom in Section A - A

0 2 8m



Education
Educational spaces are located in the top floors, offering views of the city and spaces to explore the processes and practices of making, embedded in the building.

Material Yards
Large open volume spaces assist in the storage and organisation of materials for production and delivery.

CMU Production
Concrete Masonry units are produced using recycled materials from demolition sites. The finished products are transported vertically using the working facade.

CEB Production
Compressed earth bricks are produced using reclaimed soil from excavation sites. The finished products are transported vertically using the working facade.

Figure 160 - Section A - A
(Author, 2022)

Zoom in Section A - A

0 2 8m

Old Ruins and New Visions

An important aspect of the project was an adaptive reuse proposal for the existing New Kempsey Building. The façade of the building is left standing and a concrete frame structure is attached to the back, providing a new life for a dying building.

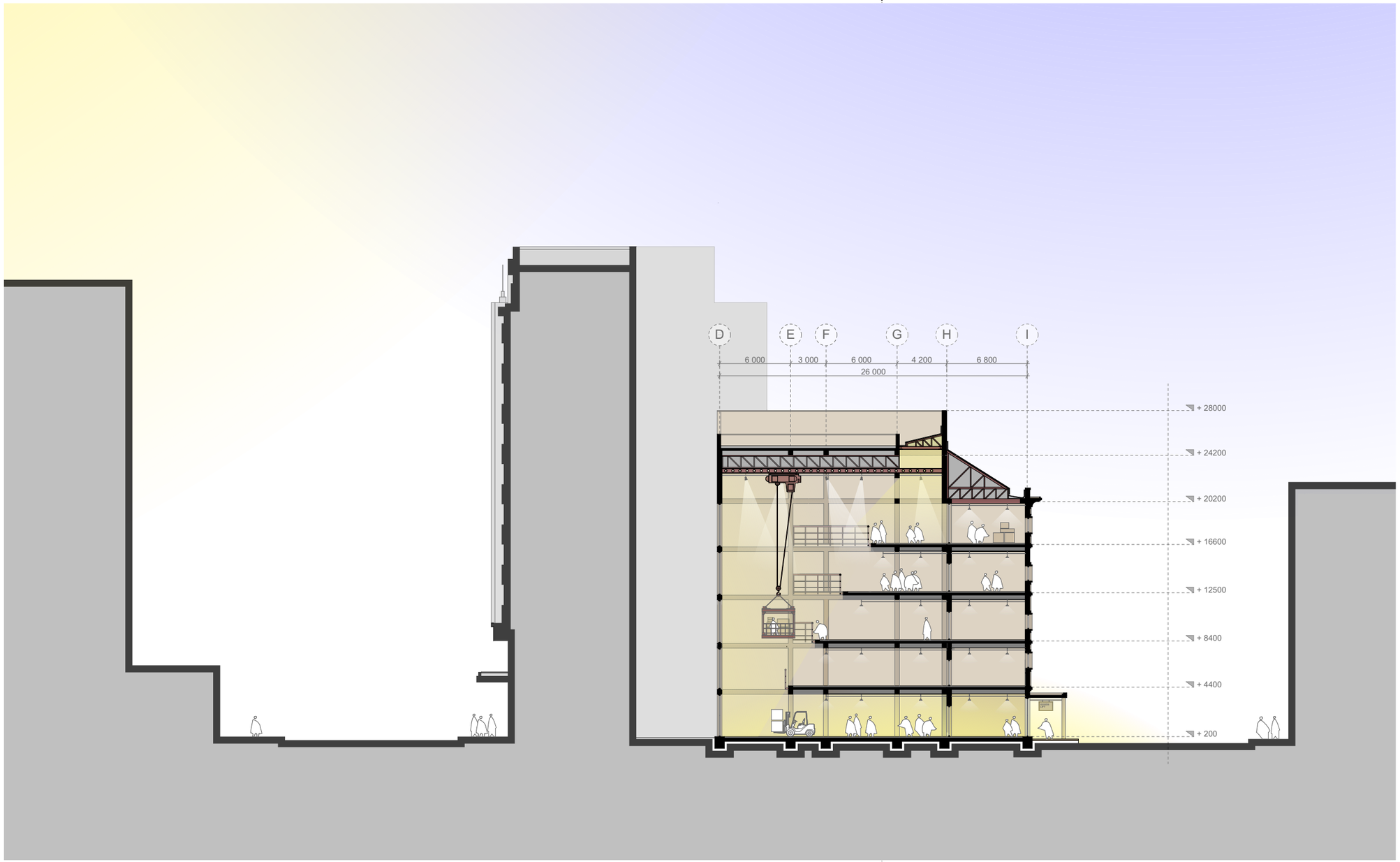


Figure 161 - SectionDrawing (Author, 2022)

Section B - B

0 3 12m

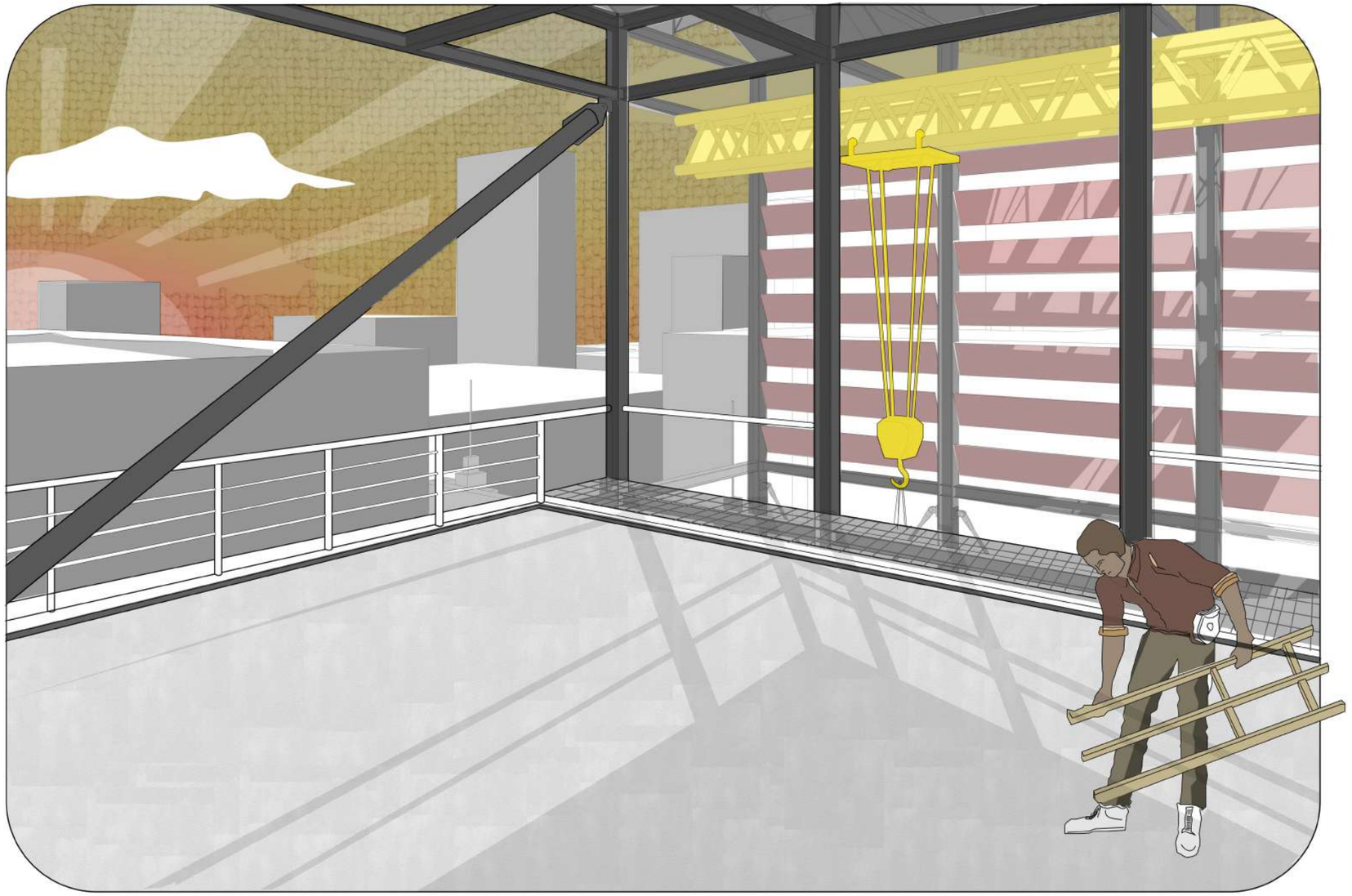


A Speculative Imaginary for the Future of the Inner City

The project is intended to be viewed as a speculative vision for the future of Johannesburg – acknowledging that the architectural intervention is, to a certain degree, a speculative architectural exercise.

Figure 162 - Render 01
(Author, 2022)

Render



A Working Building

The building is not intended to be a flashy building but rather a working building intended for a specific reason – to facilitate the remaking of the forgotten buildings in the Johannesburg inner city.

Figure 163 - Render 02
(Author, 2022)

Render

Reflection

As I sit at my desk, where I sat for hours writing and drawing out this project, I cannot help but reflect on the past year. This master's project has challenged me to critically interrogate the city I call home, my intellectual position on architecture and my place within the world. I am sad this time of my life, as an ambitious student, is over – but I am excited for what the future holds and how this project will influence my life as an architect. This milestone is both a time of celebration and a moment of reflection on the potential lifelong learning opportunities this project has presented.

Looking back at what was a considerably tough year for myself, it would be naïve to say I am not filled with a sense of accomplishment. The year was filled with numerous challenges and endless anxiety, which demanded personal and professional growth.

While reading through the final research report, I feel a sense of ownership for the work I saw. Although, at times during the year, it felt as though my work didn't have a place within academia or that the project failed to offer anything new (and perhaps in some ways this is true), I saw work that portrayed a sense of responsibility. Even with its shortcomings, the project presents an authentic representation of an architectural position – presenting my personal views on Johannesburg, with an optimistic vision for its future. This year has given me the opportunity me to take responsibility for my work and present an authentic response to a complicated architectural issue.

While there is an overwhelming sense of pride and accomplishment, I can't help but acknowledge a feeling of open-endedness. I feel a reluctance to let go of the project and the months of work that went into producing the project. But perhaps the idea of 'closure'

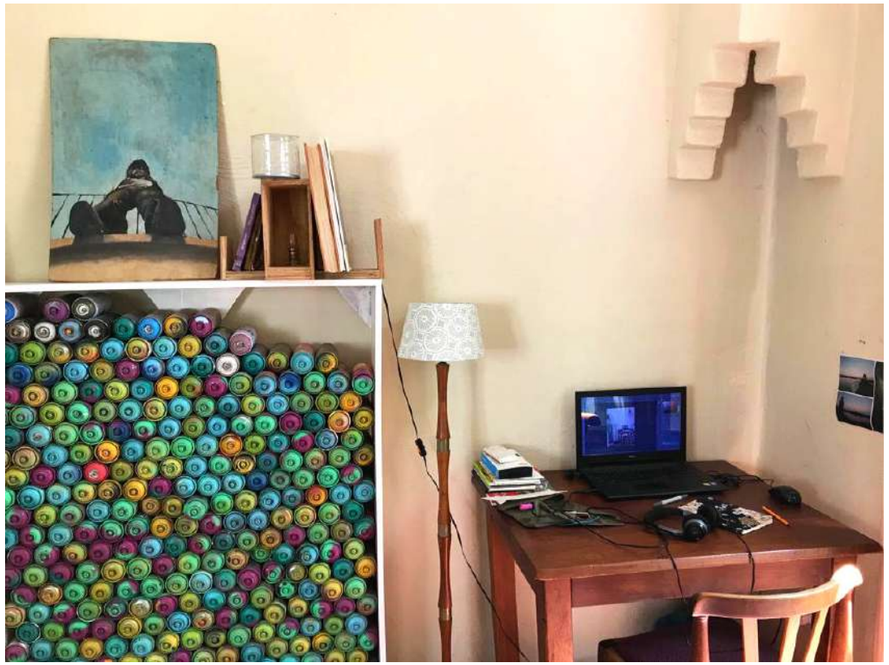


Figure 164 - My workspace at home (Author, 2023)

Reflection

is naïve, rather the ideas and ways of working developed through this project will be continued and extended, giving myself a way forward and opportunities for lifelong learning.

Exploring Johannesburg as a city has been a transformative experience for me, and it has deeply influenced my views on architecture. Johannesburg is a vibrant and diverse city that reflects the complex history, culture, and socio-economic realities of South Africa. Through my interactions with the city, I have come to appreciate the role that architecture plays in shaping the urban landscape and creating a sense of place.

Like many other architects and students, the inner city of Johannesburg has provided me with an endless source of inspiration and direction. As an architect coming into the profession, I find it important to envision a futures that challenge the current ways we experience the city and look towards a hopeful future.



Figure 165 - Oppenheimer Life Sciences Building, Wits East Campus, Braamfontein - A popular building with young architecture students at Wits University (Author, 2022)

Appendix

Work that was not included in the final document has been included in the Appendix Chapter. This chapter serves as a section where extra work has been placed - illustrating the true value of the time and effort put into creating this research report, as well as the information that adds further rigor to the research report. This work was done before the project was finalised; therefore, some parts may contain inconsistencies, but overall the work remains valuable when looking at the project in its totality.

Data Tree Visualisation Using Population Density

Advanced Digital Applications – ARPL7001

During the program Advanced Digital Applications (ARPL 7001) statistics were used to create a data visualisation with the intention of using the graphics to strengthen the architectural argument presented in the research report. Considering the exercise was done in the earlier stages of the project, population density was selected as statistical category as it could benefit the project at a broad scale without yet knowing the specifics of the project.

How can data visualisation help my project?
Understanding the population density in South Africa and the major cities is a nice entry point into understanding the people that live in these spaces. Within higher density urban areas architects ought to be smarter with their decisions. Population density combined with other data sets - such as income statistics, rental prices, property prices would provide a more fully realised statistical exploration of Johannesburg which would tremendously benefit an architectural project.

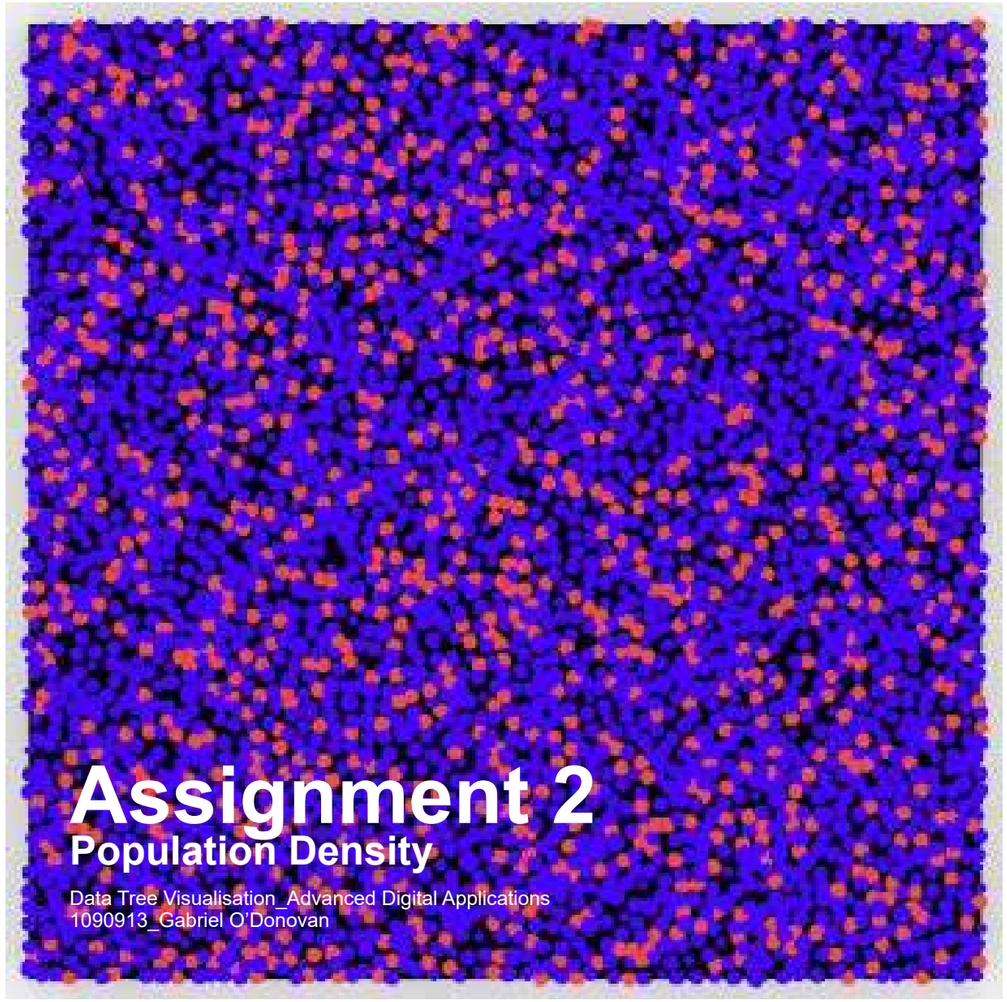


Figure 166 - Assignment Poster (Author, 2022)

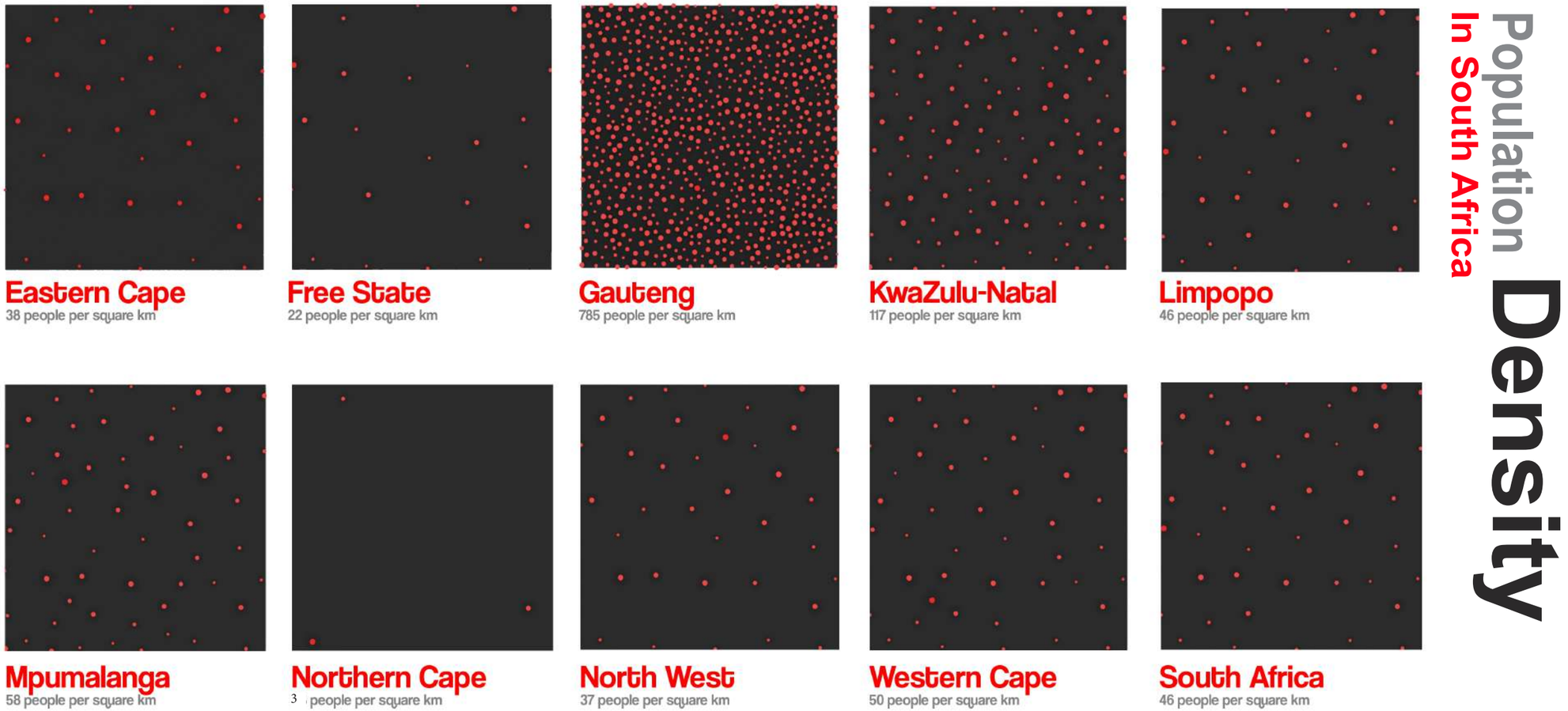


Figure 167 - Population Density in South Africa(Author, 2022)

Population Density
In Four Major Cities

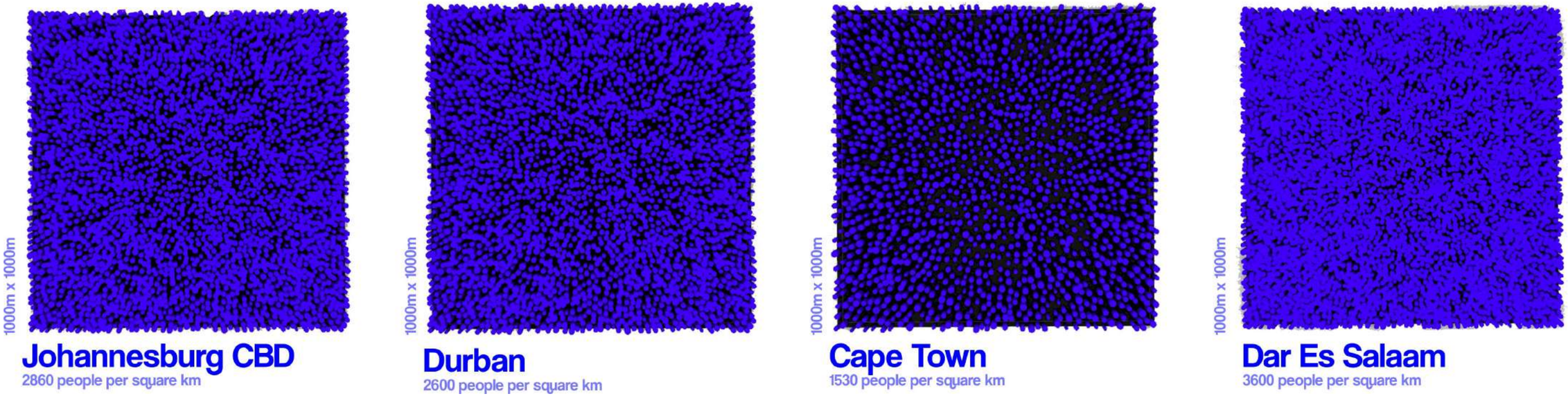


Figure 168 - Population Density in Four Major Cities
(Author, 2022)

References

Books

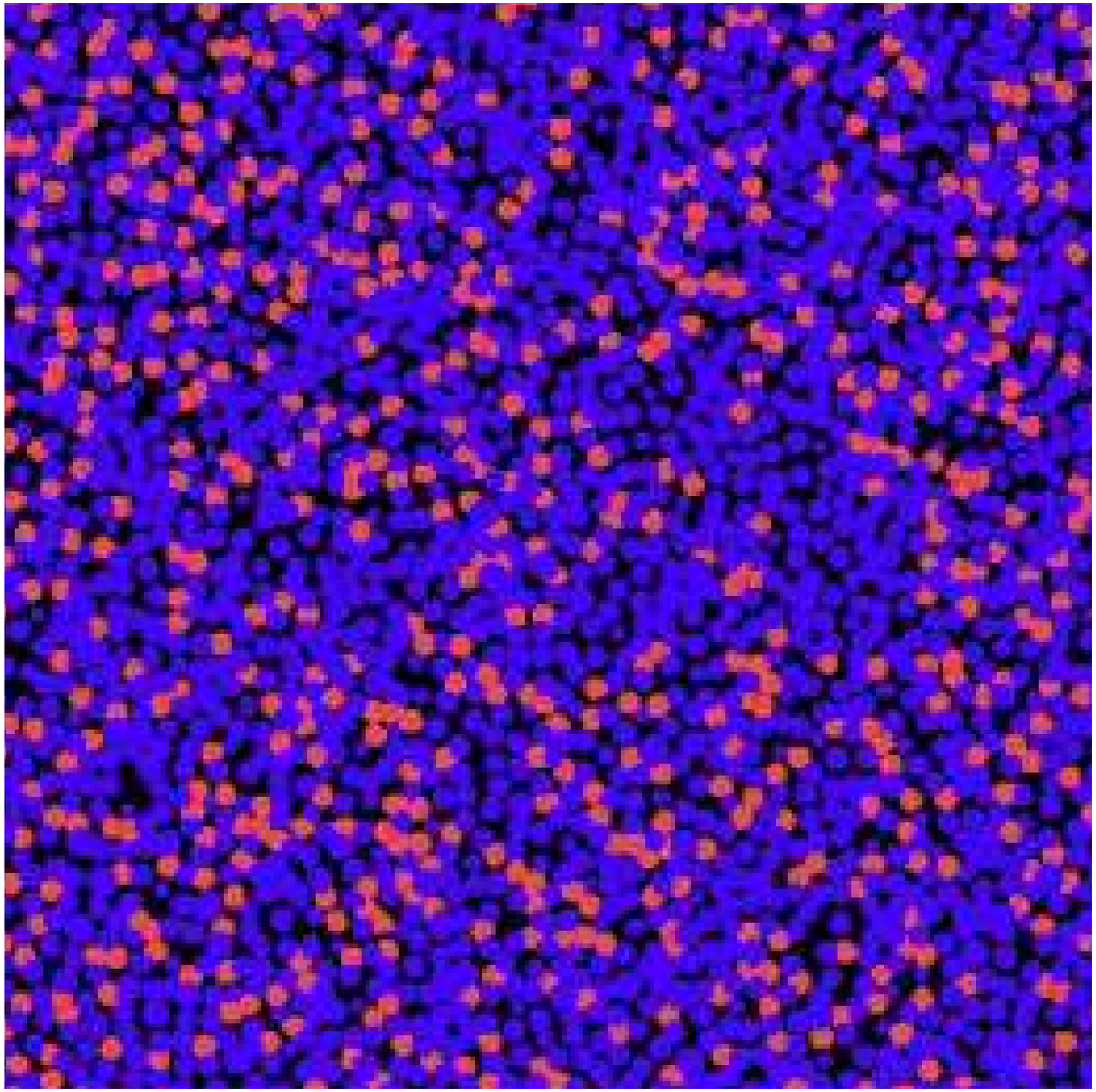
- Tedeschi, A. and Lombardi, D., 2018. The algorithms-aided design (AAD). In Informed Architecture (pp. 33-38). Springer, Cham

Online

- Graphisoft Community. 2022. Design Forum. https://community.graphisoft.com/t5/forums/filteredbylabelpage/board-id/forum_design/label-name/grasshopper?f=43. Date Accesed: 20 April 2022

Youtube

- Alphonso Peluso, 2020. Data Visualization in Grasshopper 3D |. 20 January. Available at: https://www.youtube.com/watch?v=8Np8ef8rwJ
- Jose Mero, 2022. Video 6 Random Circles in Square Grid 25%, 50% & 75% Shading Answer + Populate 2D |. 8 April. Available at: https://www. youtube.com/watch?v=tCHsGwI6ZoE



Viability Report

The Viability Report seeks to define the architectural intervention and develop a proposal that is grounded in a realistic understanding of the built environment. Although, to a large extent, this research project and the proposed architectural intervention is framed and understood as a theoretical exploration – this chapter seeks to explore the proposal for its potential to be realised, as well as the need for such an intervention. This chapter was developed earlier on in the year as part of the course Simulated Office Practice (ARPL7002A), and although the project has changed since then the viability report provides a valuable exploration into the early workings of the proposal.

Introduction

Johannesburg's rich and complex urban character can be understood as a product of various regimes of representation that sought to create the city in their image (Matsipa,2014) – from the visions of Johannesburg as a temporary mining camp with the sole purpose of extracting wealth, to the modernist images of "a New York in Africa". These regimes have produced a contemporary inner-city identity that oscillates between dystopia and hope, abandonment and opportunity, and anxiety and excitement. Although the inner city has conflicting perceptions it continues to attract large numbers of migrants wishing to make their mark and seek their fortune.

This framing of the inner city becomes the driving force for the project. The project is interested in how architectural visions from a past epoch can be reimagined.

The inception of the project is a neglected city block in Marshalltown that is home to the three icons from past architectural visions and a vacant plot wedged between them. The buildings are the Shakespeare House, the New Kempsey Building and the CNA building. This site, with a rich and interesting history, becomes the inspiration for the development of the project's key notions and themes.



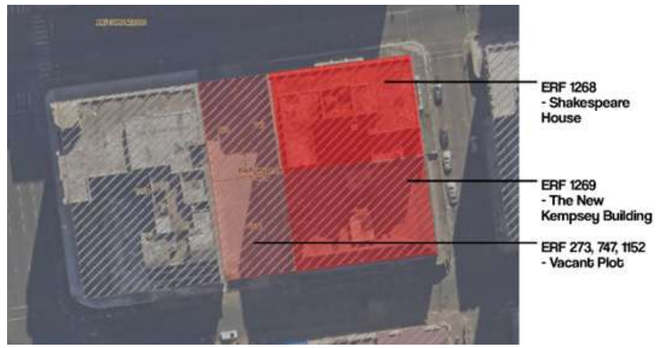


Figure 169 - Project Map collage (Author, 2022)

The Client Brief

The Brief

After the so-called “decline” of the Johannesburg inner city, town planners, architects and policy makers in the City of Johannesburg have had the tough task of trying to reimagine the ruins that were left by visions of a colonial, capitalist, and racially segregated city. The City of Johannesburg has rebranded the inner city in hopes of re-attracting investment and solving issues of urban decay, lack of affordable housing and a lack of economic opportunities.

The brief provided by the client was outlined as follows:

- Reimagine the consolidated site as a space for urban redevelopment.

- Work within the City of Johannesburg’s integrated development plan for creating a sustainable, affordable, safe, and smart future city.

- Develop an architectural object that facilitates the emergence of new visions and imaginaries for the inner city.

- Develop a building that generates attractive returns for the various stakeholders.

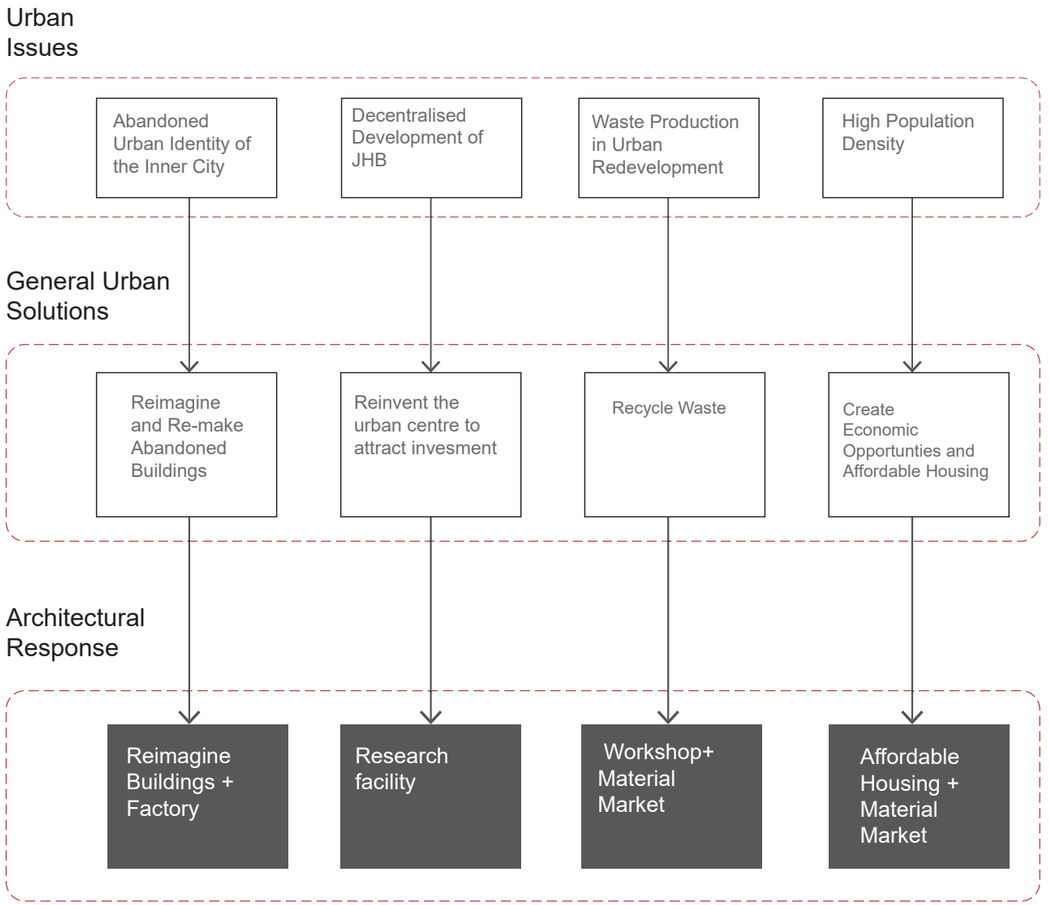


Figure 170 - Project mindmap
(Author, 2022)

The Programs

The programming of the building is divided into the two phases. Phase one looks at the development of a building that facilitates the emergence of new visions and imaginaries for the future of Johannesburg. This is explored through the implementation of a Material Research and Production Facility. The facility will:

- Research spatial and material possibilities for the redevelopment of the inner city.

- Educate students through research methods

- having close ties with the University of the Witwatersrand's School of Architecture and Planning.

- Produces sustainable building materials (earth bricks) with notions of closed loop systems. In other words, the earth and rubble used to produce the earth bricks will be salvaged from construction sites where it would naturally be sent to landfills, then the earth bricks that facility produces will be used in the renovation of abandoned buildings – thus closing the construction loop.

Phase two is seen as the product of the Material Research and Production Facility. The two abandoned buildings, Shakespeare House, and The New Kempsey Building, are remade with visions created by the Research Facility. The buildings are reimagined as a residential apartment block and a vertical retail market.

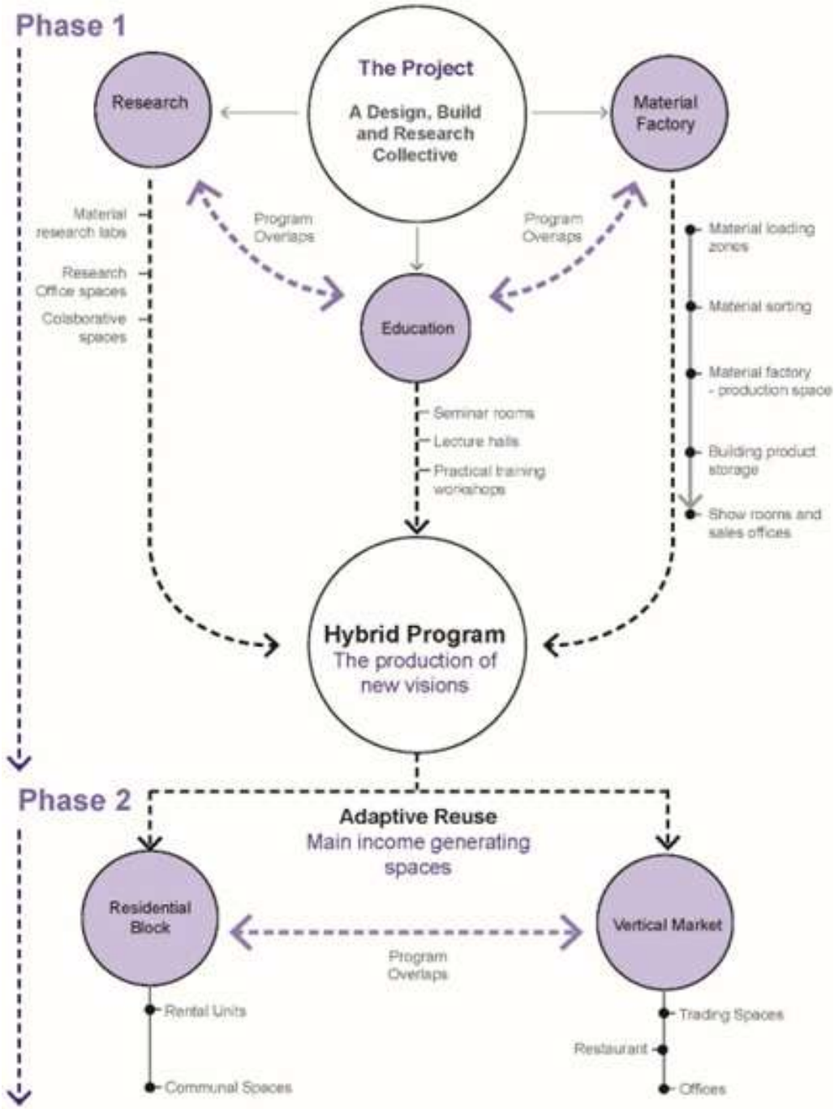


Figure 171 - Program mindmap (Author, 2022)

Project Stakeholders

The intention of this project is to facilitate and instigate the urban redevelopment of the Johannesburg inner city – with a key focus on sustainability, affordable housing, and creating economic opportunities. Operating under this umbrella of intent, the initiative would naturally be undertaken as a joint venture with stakeholders that have an interest in the rejuvenation of the inner city. These stakeholders are identified as having a passion for the Johannesburg inner city. The stakeholders are broken down into two categories: Project Clients and Project Investors.

Project Clients

The Joburg Property Company

The JPC is a property company that manages a large property portfolio within Johannesburg on behalf of the City of Johannesburg. The company has been mandated by the City of Johannesburg to manage and invest in property developments that align with the city's future visions.

In 2002 the JPC was initially set up as a private company which was owned by the City of Johannesburg, but in 2008 the company was transferred to a state-owned company after the implementation of the Companies Act of South Africa in 2008. The company has a keen interest in the redevelopment of the inner city and the state-owned company will prove beneficial during applications and procedures to the City of Johannesburg.

Jozi Housing

Established in 2003, Jozi Housing has been at the forefront of rejuvenating the inner city through purchasing dilapidated buildings and renovating them with the intention of providing affordable housing. The company is a rental property company with an interest in creating safe, sustainable, and affordable rental options in the inner city.
Having operated within the inner city for almost two decades, Jozi Housing will be a beneficial stakeholder for this project. Not only will Jozi Housing offer invaluable expertise during the design stages they will also provide professionalism and management expertise after completion.

Divercity

Divercity is relatively young and ambitious for-profit property fund that was founded in 2016. With several flagship urban redevelopment projects, the property fund is quickly becoming a major driver in the urban rejuvenation Johannesburg's inner city. The company places an emphasis on "setting a new standard" for environmentally sustainable, socially responsible, and



Figure 172 - Project stakeholders (Author, 2022)

economically productive urban developments – while also creating attractive returns for investors – making Divercity a beneficial stakeholder in the development of this project.

Project Investors

TUHF

TUHF is a commercial property finance company that provides funding for entrepreneurs wanting to create urban redevelopment projects in South Africa's inner cities. Their focus is on funding urban development projects that intend on creating affordable housing in urban centres. Not only do they provide property loans they also offer support, guidance, and risk management for potential projects – making the property finance company an important investor for the initiative.

RMH Property

RMH is an investment holding company with a large portfolio of commercial, retail, and urban renewal investments. The company is a successful investment company with a large body of expertise and capital. Having already worked closely with Divercity on the Jewel City Precinct development in

Johannesburg, RMH Property is a perfect potential investor for this initiative.

The joint venture will be registered as a for-profit organisation, under the Companies Act of 2018, with the CIPC. The five major stakeholders, who have invested capital into the project, will become directors of the company according to the percentage of invested capital. The funding for the project is discussed further in the financial consideration chapter below.

Potential Tenants

Much of the income generated from the development will be through rental assets – therefore understanding the potential tenants is an important factor in creating an income generating commodity. The Tenants are categorised according to the specific programs within the development.
Shakespeare House - Residential Block
The adaptive reuse of the Shakespeare House is expected to target low to medium income tenants seeking affordable housing within the Johannesburg inner city. The apartments rental prices are estimated to be within R3000 and R7000 – for one-bedroom apartments up to three-bedrooms apartments respectively.

The New Kempsey Building - Retail Trading Market

Within the City of Johannesburg's framework for the development of opportunities for small, medium, and micro enterprises (SMME), the reimagining of the New Kempsey building into a cross-programmed vertical retail trading will provide spatial infrastructures and opportunities for SMME's to thrive.

Material Research and Production Facility
The Material Research and Production Facility has a slightly more complex programmatic definition – making the potential tenants harder to identify. The overall goal of the facility is to research, educate and produce sustainable material and spatial solutions for the inner city of Johannesburg.

Using the architectural studio of BC Architects, Studies, and Materials, who are based in Brussels, Belgium, as a case study – the facility will house an organisation that has an interest in research, teaching and producing new material technologies and new ways of redeveloping the inner city of Johannesburg. This design collective will be closely linked to the University of the Witwatersrand's School of Architecture and Planning – providing a space for a postgraduate students interested in studying sustainable materials.

Financial considerations

Construction Cost

According to AECOM 2021/22 Property and Construction Africa Guide an estimate of the construction cost for the proposed building was generated. The estimate values are tabulated according to the guide provided by AECOM resulting in an estimated total construction of R108 152 900,00. The estimated calculations can be seen in Sub Appendix A – Construction Costs.

Land Cost

According to information gathered from the Property24 website 112 and 112A Commissioner Street were both sold in 2005 for R10 850 000. Using this information as the basis for calculating the estimated land cost – the three vacant sites (Erf 273, 747 and 1182) can be estimated to be valued at R32 550 000. However, these properties were sold in 2005 which is almost 20 years ago – due to inflation and the increasing nature of property prices the land cost for the three vacant erfs is estimated at R35 000 000.

The land cost for the two sites with existing buildings on them - erf 1268 (Shakespeare House) and erf 1269 (New Kempsey Building) were gathered from information from Property 24 that provides the last sale value of buildings within Marshalltown of a similar nature. Several buildings along Commissioner Street, according to Property 24, were sold between R10 000 000 and R16 000 000 in 2005. Considering the neglected and dilapidated condition of these buildings the cost of land for both buildings is estimated at R26 000 000.

The total estimated land cost for the project will amount to R61 000 000. Although this may seem like a high evaluation - the land is located within the CBD of Johannesburg where there are numerous economic benefits and potentials.

Professional Fees

For this project the architect will be appointed conventionally and for full services. The Architectural professional fees for the project were calculated according to the architectural professional fee guideline volume 677 published by SACAP on November 26, 2021. The building is categorised as high complexity as the project has a multitude of complex architectural issues – which results in the use of table 2 in the professional fee guideline.

Value of Works: R108 152 900,00
Primary Fee: R4 625 768, 63
Secondary Fee: += (Value of works – on balance over) x 10.9%
= (R108 152 900 – R40 000 001) x 10.9%
= (R68 152 900) x 10.9%
= R7 428 666,1
Architects Professional Fee = Primary fee + Secondary fee
= R4 625 768, 63 + R7 428 666
= R12 054 434

Other basic consultants were estimated through rough calculations according to a document from the Construction Industry Board. These calculations can be seen in Sub Appendix D.

Funding

Seeing as though this project is interested in the urban redevelopment of the Johannesburg inner city - property investors with similar interests would be approached to provide the funding for the project. As mentioned before the two financial investor stakeholders have been identified TUHF and RMH Property.

The direction of funds is broken down as a way to estimate the value the different stakeholders would contribute towards the funding of the project. The property investors (TUHF and RMH Property) would provide 50% of the total development cost and the three other stakeholders (The Johannesburg Property Company, Jozi Housing and Divercity) would contribute the remaining 50%.
Income vs Expense

The main income generated is through rental assets– with the largest rental income coming from the apartment block and the retail market. As seen in Sub Appendix D the income generated by the build exceeds the expenses with a relatively large excess. The excess income will be placed back into the company where bond repayments will be made then stakeholders will receive their respective returns.

Viability

The income versus expenses reveals the viability of the project at basic level of understanding – more complex calculations will need to be done by a professional to ensure full viability. These estimates prove that the project is viable and will create returns for the investors. The large demand for affordable housing and spaces for small enterprises illustrates the successful nature of this project. Although the project can largely be understood as a income generating venture – a large portion of the viability is based on the idea that this building will provide a much needed service within the inner city.

Figure 173 - Construction Costs (Author, 2022)

Construction Costs

	program	size (m2)	Cost (R/m2)	Net Total	VAT	Gross Total	Percentage	Phase 1
Factory	Delivery Yard	250	R7 200,00	1800000				
	Material Sorting	300	R7 200,00	2160000				
	Factory Production	1000	R8 100,00	8100000				
	Storage	600	R15 200,00	9120000				
	Administrative	100	R8 100,00	810000				
	Total	**2250**		**21990000**	**3298500**	**R25 288 500,00**	**23%**	
	program	size (m2)	Cost (R/m2)	Net Total	VAT	Gross Total	Percentage	
Education	Administrative	100	R8 100,00	810000				
	Lecture Studio	150	R17 200,00	2580000				
	Studios	200	R15 200,00	3040000				
	Total	**450**		**6430000**	**964500**	**R7 394 500,00**	**7%**	
	program	size (m2)	Cost (R/m2)	Net Total	VAT	Gross Total	Percentage	
Research	Administrative	200	R8 100,00	1620000				
	Workshops	500	R17 200,00	8600000				
	Studios	200	R15 200,00	3040000				
	Total	**900**		**13260000**	**1989000**	**R15 249 000,00**	**14%**	
	program	size (m2)	Cost (R/m2)	Net Total	VAT	Gross Total	Percentage	Phase 2
Retail New Kempsey	Retail	1500	R9 000,00	13500000				
	Restaurant/Café	1000	R14 000,00	14000000				
	Total	**2500**		**27500000**	**4125000**	**R31 625 000,00**	**29%**	
	program	size (m2)	Cost (R/m2)	Net Total	VAT	Gross Total	Percentage	
Residential Shakespeare House	1 Bedroom Apartment	1120	R3 300,00	3696000				
	2 Bedroom Apartment	600	R11 000,00	6600000				
	3 Bedroom Apartment	870	R11 000,00	9570000				
	Parking	1000	R5 000,00	5000000				
	Total	**3590**		**24866000**	**3729900**	**R28 595 900,00**	**26%**	
		Size (m2)		Net Total	VAT	Gross Total	Percentage	
Total		**9690**				**R108 152 900,00**	**100%**	

Income

	Item	Price Per m2	Qty/Month	Total
Factory	Factory rent	R80,00	2250	R180 000,00
	Item	**Price Per m2**	**Qty/Month**	**Total**
Research	Research Rent	R100,00	500	R50 000,00
	Item	**Price Per m2**	**Qty/Month**	**Total**
Education	Education Rent	R80,00	450	R36 000,00
	Item	**Price Per Unit**	**Qty/Month**	**Total**
Retail	Large Retail Unit	R5 000,00	20	100000
	Small Retail Unit	R3 000,00	25	75000
	Restaurant	R18 000,00	3	54000
	Studio	R2 500,00	10	25000
	Item	**Price Per Unit**	**Qty/Month**	**Total**
Residential	1 Bedroom Apartment	R2 600,00	40	R104 000,00
	2 Bedroom Apartment	R5 000,00	15	R75 000,00
	3 Bedroom Aoartment	R6 500,00	15	R97 500,00
	parking	R500,00	30	R15 000,00
Total Per Month				**R811 500,00**
Total Per Annum				**R9 738 000,00**

Total Development Costs

Item	Cost
Land	R61 000 000,00
Construction Costs	R108 152 900,00
Professional fees	R49 445 061,00
Total	R218 597 961,00

Income vs Expenses

	Per annum
Total Income	R9 738 000,00
Total Expense	R7 944 000,00
Profit per Annum	R1 794 000,00

Expenses

	Item	Price per month
Factory	Salaries	R50 000,00
	Maintenance	R10 000,00
	Services	R18 000,00
	Total	R78 000,00
Research Education	**Item**	**Price per month**
	Salaries	R100 000,00
	Maintenance	R8 000,00
	Services	R10 000,00
	Total	R118 000,00
Residential Retail	**Item**	**Price per month**
	Salaries	R120 000,00
	Maintenance	R5 000,00
	Services	R10 000,00
	Total	R135 000,00
Total Per Month		**R662 000,00**
Total Per Annum		**R7 944 000,00**

Site

Location

The site is in located in Marshalltown, Johannesburg on the city block between Commissioner Street, Joubert street, Fox street and Rissik Street. The site is made up of five existing erfs (273, 747, 1182, 1268, 1269). These erfs will be consolidated to form a single site. The site is located within the Central Improvement District - a legislated CID within the Johannesburg inner city.

Choice

The initial choice of site was driven by intention of using the abandoned buildings within the inner city as infrastructure for the reimagine of past visions. This framing of the project's intention allowed for the choice in site. The city block is home to buildings which have been abandoned and left to decay for more than two decades. These sites which are manifestations of decay, abandonment, neglect, and ruination will be redeveloped into spaces that resemble hope and excitement for the future of the inner city.

Status of Site

According to sale records from Property24 the properties were all last sold in 2005 to a property investment company looking to develop the sites. However, the sites have all been vacant since the transfer and there are no signs of any sort of redevelopment happening soon. The sites will need to be proclaimed and consolidated into one erf.

The process for proclamation and consolidation of the site, the evaluation of heritage value and the evaluation of the neglected structures safely will prove costly procedures. However, the cost of a new build is relatively higher than that of an adaptive-reuse design making the processes worthwhile.

Rights

According to the City of Johannesburg's Land Use Scheme of 2018, the five intended sites fall under the same rights. The intended project complies with the granted rights, however the implementation of a production facility on the vacant site may prove difficult during application procedures. This will most likely require a consent application for the zoning of the Material Research and Production Facility.

The City of Johannesburg's Future Visions

Central Improvement District

As mentioned before, the newly consolidated site will fall under the Central Improvement District. Although, forming part of this CID will require payment of extra levies each month – the benefits of being part of a legislated CID will prove beneficial for the development. According to Johannesburg's' CID online forum the Central Improvement district is a legislated group of private property owners that have a greater influence on the governance of the area. This allows for cleaner and safer urban areas, quicker service fault repairs and increased economic investment. Locating the project within this CID will help influence the viability of the intended project.

Johannesburg's Integrated Development Plan (IDP)

According to Johannesburg's Integrated Development Plan 2021/2022, the city of Johannesburg has an interest in the redevelopment of the inner city with the intention of attracting investment. The city intends on attracting investment through assisting developers in faster and easier application procedures and tax incentives such as the UDZ tax incentive. These attempts by the city will make the viability of the project higher.

Technology,Sustainability and Materiality Technology

The project intends on using commonly used building technologies as well as sustainable low-tech methodologies for the realisation of the project. Rather than looking at technologies for inspiration the project intends on plugging into existing construction practices and construction skills.

Sustainability

Economic

The project intends on emphasising economic sustainability through creating economic opportunities in several ways. Firstly, the project intends on creating jobs through labour intensive construction methods. Secondly, the production of earth bricks from construction waste will produce jobs and help the local economy. Lastly, the project intends on creating affordable spaces for medium to micro enterprises through the vertical retail market.

Environmental awareness has multiple layers in this project. The adaptive reuse

of the abandoned buildings reduces the waste of materials. The production of building materials in a closed loop will reduce transportation costs and uses waste a source of construction materials.

Social

The project wishes to enhance social sustainability through enhancing the inner city through the rejuvenation project – which will help encourage further reinvestment into the city. The project also intends on providing the much-needed affordable rental apartments to people living in the inner city.

Materials

Since the project is tied closely to notions of low-tech construction methodologies, circular design, sustainability and creating economic opportunities through design, the choice of building materials will illustrate these ideas. The production of recycle earth bricks, by the Material Research and Production Facility, will implement processes of circle design and sustainable construction procedures while using relatively low-tech construction methodologies. The production of the bricks within the inner city will reduce transportation costs and will benefit the local economy through providing jobs.

Using the common South Africa construction method of framed concrete structures with brick infill, the project intends on working within this knowledge of current construction methods but implementing several more sustainable materials. The use of earth bricks – that are produced close to site and implement notions of a closed loop system – allow for a low-tech, environmentally sustainable, and economically productive materials to be plugged into a common construction system. This reveals the viability of the project in terms of construction materiality, commonly available technical skills, environmental sustainability, and economic sustainability.

Implementation

Procurement

The architectural services as well as the services of the design team will be procured through the PROSCA Client Consultant Agreement. For the procurement of contractual services, the typical competitive tender will be used – which ensures a fair and transparent appointment of contractual services. This allows for the project to provide smaller contractors the opportunity to apply for the tender, thus avoiding the simple appointment of large companies. In terms of the architect acting as the principal agent the JBCC Principal Building Agreement will be used.

Project team

Architect: As mentioned before the architect will be appointed for the full scope of service which include the roles of Principle Agent, Principal consultant, and Professional Architect. This is a typical appointment for an architect within a design led architectural project – making the appointment viable.

Attorney: The appoint of an attorney is required for the establishment of the joint venture company as well as the purchase and transfer of the property to the client.

Town Planner: The town planner will be responsible for the proclamation and consolidation process for the site. They will assist with ensuring that the project complies with relevant town planning policies and legislations, as well as informing the client of town planning policies that will benefit the client such as UDZ tax incentives.

Land Surveyor: The land survey will be responsible for drafting the SG diagram for the site and establishing the new boundaries for newly consolidated site.

Structural Engineer: The structural engineer will assist with the structural design of the building but in a more specific nature to this project will assess the structural safely of the existing buildings.

Geotechnical engineer: Considering the unique characteristics of the underground conditionings in Johannesburg it can be assumed that a geotechnical engineer will be needed to conduct a study on the soil conditions of the site.

Mechanic engineer: Given that the design of the building requires fabrication spaces the mechanical engineer will be required to assist in the design of the ventilation system – ensuring safely and design efficiency.

Traffic engineer Given that the Material Research and Production Facility is in the dense area of Marshalltown and will require delivery access from Fox Street - a traffic engineer will help with the implementation of a traffic design.

Urban designer Considering the extent of the project and the design intent of using almost an entire city block an urban designer will be necessary for assisting with the design of building at an urban scale.

Heritage Consultant: Given the heritage value of the two buildings (Shakespeare House and the New Kempsey Building) a heritage consultant will be required from inception – first assessing the heritage value of the buildings and secondly providing design solutions or guidelines for the design.

Site management

The implementation of the project will use the programmatic relationships to its advantage by implementing a phased construction process. Since a portion of the development already has existing buildings (Shakespeare House and The New Kempsey Building) – and will need to undergo a process of heritage and structural evaluations, as well as a process of interior demolition - the construction process will be implemented as a phased one.

The construction of the Material Research and Production Facility will be phase one. Once the construction of this building is complete the earth bricks produced by the factory will be used in phase two of the project. The adaptive reuse of the two buildings in a vertical retail market and a residential apartment building will use the building materials produced by the Material Research and Production Facility.

This phased approach allows for a focused and clear implementation of the project by the architect. The materials gathered from the gutting of the existing buildings will be transformed into earth bricks which will then be used for the construction of the building – therefore closing the loop between construction waste and construction materials.

Conclusion

In conclusion – the project which is imagined as a space for the production of future visions for the Johannesburg inner city has shown to be viable. The project will be able to produce profits for investors and create urban spaces that align with the City of Johannesburg's Integrated Development Plan. The project illustrates an emphasis on the redevelopment of the inner city, an attitude towards sustainable solutions, an interest in creating economic opportunities for SMME's and the ability to provide affordable housing for Johannesburg's inner-city inhabitants.

References

Publications

- AECOM. (2019). Africa Property & Construction Cost Guide 19' 20'. AECOM SA (Pty) Limited
- City of Johannesburg. (2018). City of Johannesburg Land Use Scheme, 2018. Johannesburg: City of Johannesburg
- City if Johannesburg. (2020). City of Johannesburg Integrated Development Plan, 2020. Johannesburg: City of Johannesburg
- South African Council for the Architectural Professional. (2021). Professional Fee Guidelines, 2021. SACAP

Lectures

- Daskalakos, C. (2022). Client Architect Agreements. (Lecture) Architectural Professional Practice. University of the Witwatersrand
- Daskalakos, C. (2022). Standard Fees and Professional Fees. (Lecture) Architectural Professional Practice. University of the Witwatersrand
- Daskalakos, C. (2022). The Professional Team. (Lecture) Architectural Professional Practice. University of the Witwatersrand

Online

- BC Architects. (2019). About Us. (online) Accessed 12 June 2022 at http://architects.bc-as.org/about-us
- City of Joburg Property Company SOC Ltd. (2013). Process followed by the City of Joburg Property Company SOC Ltd (JPC) with regard to Leasing/Selling of Council-Owned Properties. (Online). Accessed: 11 June 2020 at http://www.jhbproperty.co.za/images/2013/pdfs/processes/JPC%20lease%20procedure.23April2013.pdf

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG | SCHOOL OF ARCHITECTURE PLANNING

13 June 2022

Faculty of Engineering and the Built Environment:

Ethics clearance letter:

Dear Gabriel Odonovan

Student number (1090813), this letter confirms that your ethics application has been cleared. Your clearance/protocol number: SOAP027/03/2022

Yours sincerely

Lerato Nkosi

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References & List of Figures

References

Books

- Brillembourg, A, Klumpner, H. (2013) Torre David: informal vertical communities. Lars Müller.
- Boxel, V and Koreman, K (2018) City of permanent temporality: incomplete & unfinished. Amsterdam: Nai010 Publishers.
- Chipkin, C. (2008) Johannesburg Transition: Architecture & Society 1950 - 2000. Johannesburg: Real African Publishers
- Chipkin, C. M. (1993) Johannesburg Style: Architecture & Society, 1880s-1960s. David Philip Publishers.
- Dovey, K. (1999) Framing Places: Mediating power in the built environment. Routledge
- Dirsuweit, T. (2009). New Urbanism, Public Space and Spatial Justice in Johannesburg: The Case of 44 Stanley Ave. In Annales de géographie (Vol. 665666, No. 1, pp. 76-93). Armand Colin.
- Lefebvre, H. (1991). The Production of Space.
- Murray, J. (2008) Taming the disorderly city: The Spatial Landscape of Johannesburg After Apartheid. Cornell University Press.
- Pieterse, A and Simone, A. (2013) Rogue urbanism: emergent African cities. Johannesburg: Jacana Media
- Piano, R. (1997) Renzo Piano Logbook. Rome: Monacelli Press.
- Sadler, S (2005) Archigram: architecture without architecture. Boston: Mit Press.

Academic Articles and Literature

- Bobbins, K, & Trangoš. (2018). Mining Landscapes of the Gauteng city-region. Gauteng City-Region Observatory.
- Bremner, L. (2000) Reinventing the Johannesburg inner city. Cities, 17(3), 185-193.
- Buchanan, Peter (2015) Renzo Piano: poet of technology. Architectural design 85, no. 2
- Cartwright, A. (2015). Better growth, better cities: Rethinking and redirecting urbanisation in Africa. The New Climate Economy Working Paper.
- Fitchett, A. and Rambuwani, P., 2022. Waste control in South African construction projects. Transactions of the Royal Society of South Africa, pp.1-8.
- Fisher-Gewirtzman, D. (2016). Adaptive reuse architecture documentation and analysis. Journal of Architectural Engineering Technology, 5(3), 1-8.

- Fitchett, A. (2009) Employment creation in building. IMIESA.
- Fitchett, A., 2001, July. Contractor development through the provision of low-cost mass housing. In Urban Forum (Vol. 12, No. 3, pp. 352-364). Springer Netherlands
- Frescura, F. (2020). Our vanishing vernacular: A warning from Africa. Architectural guide: Sub-Saharan Africa.
- Frescura, F (2018). Durban remembers its war dead: the tale of two memorials and a cenotaph. South African Journal of Cultural History.
- Goldsmith, S (2014, September). Shape Finding or Form Finding? In Proceedings of IASS Annual Symposia (Vol. 2014, No. 23, pp. 1-10). International Association for Shell and Spatial Structures (IASS).
- Harvey, D (2008). The right to the city. The city reader, 6(1), 23-40.
- Hale, S (2021). The reuse of excavated soils from construction and demolition projects: Limitations and possibilities. Sustainability, 13(11), 6083.
- Le Roux, H (2010). Coffee Manifesto: sampling instant and slow spaces in the African city.
- Le Roux, H (2017). Bunna without Borders: Coffee/Making as a Relational Space. Architecture and Culture, 5(3), 463-474.
- Matsipa, M (2014). The Order of Appearances, Urban Renewal in Johannesburg, University of California Berkley, California.
- Matsipa, M (2017). Woza! Sweetheart! On braiding epistemologies on Bree Street. Thesis Eleven, 141(1), 31-48.
- Parker, A (2014). Images and influence: The role of film in representing Johannesburg and shaping everyday practice in the city (Doctoral dissertation, University of the Witwatersrand, Faculty of Engineering and the Built Environment).
- Rapoport, A. (1990). Defining vernacular design. Turan: Vernacular architecture paradigms of environmental response. Avebary: Gower Publishing Company Limited.
- Rutcosky, K. (2007). Adaptive reuse as sustainable architecture in contemporary shanghai.
- Sennet, R. (1990). The design and social life of cities.
- Simone, A. (2004). People as infrastructure: Intersecting fragments in Johannesburg. Public culture, 16(3), 407-429.
- Stoler, A. (2008) Imperial debris: reflections on ruins and ruination. Cultural anthropology.
- Walsh, S. (2013). 'We won't move' The suburbs take back the center in urban Johannesburg. City, 17(3), 400-408.
- Woods, L. (1996). The question of space. Technoscience and cyberculture, 279-292.
- Wright, G. (2017). Racism, Human Growth and Societal Change in District 9. Filming the Filming the Future, 75.

Publications

- Bruwer, J. (2002) ‘Shakespeare House’. Johannesburg Metropolitan Musicality Heritage Assessment Form BF – 3
- Bruwer, J. (2004) ‘New Kempsey Building. Johannesburg Metropolitan Musicality Heritage Assessment Form BF – 3
- Bruwer, J. (2003) CNA Building. Johannesburg Metropolitan Musicality Heritage Assessment Form BF – 3
- Bruwer, J. (2000) Summerset House. Johannesburg Metropolitan Musicality Heritage Assessment Form BF – 3
- City of Johannesburg. (2018). City of Johannesburg Land Use Scheme, 2018. Johannesburg: City of Johannesburg
- City if Johannesburg. (2020). City of Johannesburg Integrated Development Plan, 2020. Johannesburg: City of Johannesburg

Online

- Candela, O. (2012) Torre David [online]. Available from https://www.metalocus.es/en/news/torre-david [16 June 2022]
- Larkin, J. (2013) After Johannesburg’s Gold Rush: Mine Dumps [online] Available from < https://www.bloomberg.com/news/photo-essays/2013-09-25/after-johannesburgs-gold-rush-mine-dumps?leadSource=uverify%20wall > [21 July 2021]
- Shepard, S (2022) Apartheid From Outer Space – ‘District 9’ Movie Review [online] Available from < https://reelrundown.com/movies/Apartheid-From-Outer-Space-District-9-Movie-Review > [15 March 2022]
- Kisho Kuwakawa Architects and Associates (2015) Nakahin Capsule Tower [online] available from < https://www.kisho.co.jp/page/209.html > [1 August 2022]
- Noero Architects (2013) Productive (Re)public [online] Available from < https://www.noeroarchitects.com/project/productive-republic/ > [10 May 2022]
- RSHP. (unknown) Tomigaya [online] Available from: https://rshp.com/projects/culture-and-leisure/tomigaya/ [2 June 2022]
- Peter Rich Architects. (2009) Mapunbubwe Interpretation Centre [online] Available from: https://www.peterricharchitects.com/mapungubwe-interpretation-centre [3 May 2022]
- Archigram. (unknown) Archigram Portfolio [online] Available from: https://www.archigram.net/portfolio.html [21 June 2022]

- Parker, A. (2021) What is the Gauteng City-Region? [online] Available from: < https://www.gcro.ac.za/research/project/detail/what-is-the-gauteng-city-region/> [01 March 2022]
- Woods, L. (2009) The Meta-Institutes [online] available from: < https://lebbeuswoods.wordpress.com/2009/08/01/meta-institutes/> [21 August 2022]
- Battelli, C. (2014) Dirty Geometries and Mechanical Imperfections [online] Available from: < https://www.metalocus.es/en/news/bryan-cantley-dirty-geometries-mechanical-imperfections> [10 August 2022]
- BC architects. (2019) BC Materials [online] Available from < http://architects.bc-as.org/BC-Materials> [24 June 2022]
- Kumalo, Z. (2022) Bank of Lisbon blaze: 4 years after 3 Joburg firefighters died, the families still wait for answers [online] Available at: https://www.news24.com/news24/southafrica/news/bank-of-lisbon-blaze-4-years-after-3-joburg-firefighters-died-the-families-still-wait-for-answers-20220718> [July 2022]
- Greene, L .(2018) How Do You Recycle an Entire Building? [online] Available from < https://earth911.com/home-garden/how-do-you-recycle-entire-building/> [21 August 2022]
- Simon, F. (2021) Excavated soils: The biggest source of waste you’ve never heard of [online] Available from< https://www.euractiv.com/section/circular-economy/news/excavated-soils-the-biggest-source-of-waste-youve-never-heard-of/> [21 May 2022]

Drawings, Images and Visual Media

- Archigram (1961) Archigram Poster [online] Available at: https://www.archigram.net/portfolio.html [Accessed 21 July 2022]
- Baan, I (2013). Photographs in Torre David: informal vertical communities. Lars Müller.
- Baan, I (2021) Serpentine Pavilion Photograph [online] Available at: https://www.serpentinegalleries.org/whats-on/serpentine-pavilion-2021-designed-by-counterspace/ [Accessed 10 September 2022]
- Battelli, C. (2014) Dirty Geometries and Mechanical Imperfections [online] Available from: < https://www.metalocus.es/en/news/bryan-cantley-dirty-geometries-mechanical-imperfections> [10 August 2022]
- BC Architects (2019) BC Material Hall. [online] Available at: http://architects.bc-as.org/BC-Materials [Accessed 1 August 2022]
- Burchell, W J (1824) A View in the town of Litakun. [online] Available at: http://biodiversitylibrary.org/page/48905971. [Accessed 1 May 2022]
- Cantley, B (2008). Dirty Geometries + Mechanical Imperfections. [online] Available at: https://www.metalocus.es/en/news/bryan-cantley-dirty-geometries-mechanical-imperfections [Accessed 20 June 2022]

- City of Johannesburg (2012) Views of the Johannesburg city. [online] Available at: https://www.joburg.org.za/about_/Pages/About%20the%20City/About%20Joburg/Facts-about-Joburg.aspx [Accessed 23 June 2022]
- Cook, P (1961) Plug-in City [online] Available at: https://www.archigram.net/portfolio.htm [Ac-cessed 5 June 2022]
- Coop Himmelblaue (1988) Rooftop Remodelling model. [online] Available at: https://coop-himmelblau.at/projects/falkestrasse/ [Accessed 10 May 2022]
- District 9 (2009). New Arrivals looking over Johannesburg to their abandoned spacecraft in District 9. [online] Available at: https://reelrundown.com/movies/Apartheid-From-Outer-Space-District-9-Movie-Review [Accessed 13 August 2022]
- District 9 (2009) An abandoned spacecraft hangs above Johannesburg [online] available at: https://wondersinthedark.wordpress.com/2016/07/18/89-district-9/ [Accessed 26 July 2022]
- Google Maps, 2022. Living Amongst Mine Dumps, 1:1000. Google Maps [online] Available through: https://www.google.com/maps [Accessed 31 June 2022]
- Javier, A (2021) What's left of the Bank of Lisbon building [online] Available at: https://ewn.co.za/2021/09/06/exclusive-a-cover-up-gauteng-gov-accused-of-hiding-bank-of-lisbon-blaze-report. [Accessed 10 June 2022]
- Larkin, J (2013) Tales from the City of Gold: RDP Housing. Heidelberg: Kehrer.
- Larkin, J (2013) Tales from the City of Gold: Top Star. Heidelberg: Kehrer.
- Le Roux, H (2017). Uses of the former medical suites building in Jepper Street.
- Neto, K. (2019) Middle Centre. [online] Available at: https://www.okayafrica.com/south-african-photographer-exhibits-photos-at-taxi-rank/ [Accessed 13 June 2022]
- Noero Architects (2013) Productive (Re)public [online] Available at: https://www.noeroarchitects.com/project/productive-republic/ [Accessed 12 July 2022]
- Peter Rich Architects (2009) Section drawing of Mapunbugwe Interpretation Centre [online] Avail-able at: https://www.peterricharchitects.com/mapungubwe-interpretation-centre [Accessed 1 August 2022]
- Piano, R (1979) UNESCO Neighbourhood Workshop Drawing. Rome: Monacelli Press.
- RSHP (1992) Physical model of Tomigaya Tower [online] Available at: https://rshp.com/projects/culture-and-leisure/tomigaya/ [Accsessed 13 July 2022]
- Schadeberg, J (1995) "We won't move!", Sophiatown in defence, 1955. [online] Available at: https://digitalcollections.lib.uct.ac.za/collection/islandora-7455 [Accessed 21 June 2022]
- Southwood, D (2015). Parasitic Office Extension by Local Studio.
- Southwood, D (2015). Watershed Market [online] Available at: https://www.wolffarchitects.co.za/projects/all/watershed/ [Accessed 3 June 2022]
- Unknown. (2013) Population density map of Gauteng province of South Africa, from the 2011 Census, at the "Small Area" level. [online] Available at: https://commons.wikimedia.org/wiki/File:Gauteng_2011_population_density_map.svg [Accessed: 10 May 2022]
- Unknown (1896). Map of early Johannesburg showing brickfields and the coolie location (1896): Part of Museum Africa Archive. [online] Available at: https://www.theheritageportal.co.za/article/census-1896-making-johannesburg [Accessed: 10 July]
- Unknown (1896). Market Square in 1896, in Johannesburg Transition: Architecture & Society 1950 - 2000. Johannesburg: Real African Publishers.
- Unknown (1904) The Rand Club, Johannesburg. [online] available at: https://www.news24.com/channel/arts/photo-essay-inside-the-rand-club-where-old-johannesburgs-elite-would-meet-20210514 [Accessed 20 August 2022]
- Unknown (1935). Postcard of the Ansteys Building. [online] Available at: https://www.lizatlancaster.co.za/blog/art-deco-in-johannesburg [Accessed 14 June 2022]
- Unknown (1973). Sandton City aerial photograph. [online] Available at: http://www.sacommercialpropnews.co.za/south-africa-provincial-news/gauteng/8533-the-history-and-legacy-of-sandton-central.html [Accessed 21 April 2022]
- Unknown (2015). Maboneng. [online] Available at: https://passportandpiano.com/things-to-do-in-maboneng/ [Accessed 13 August 2022]
- Unknown (1955) High Life Textile Factory by Felix Candela [online] Available at: https://www.re-thinkingthefuture.com/design-studio/a2163-felix-candela-15-iconic-projects/ [Accessed 13 July 2022]
- Utzon,J (1957) Section Model of Sydney Opera House [online] Available at: https://drawingmatter.org/mogens-prip-buus-utzon/ [Accessed 12 August 2022]
- Unknown (1973) Capsule tower by Kisho Kuwakawa Architecture. [online] Available at: https://designtaxi.com/news/419991/Tokyo-s-Famous-Capsule-Tower-To-Make-A-Comeback-In-Both-Real-Virtual-Worlds/ [Accessed 1 July 2022]
- Woods, L (1962) Meta-institute Model. [online] Available at: https://lebbeuswoods.wordpress.com/2009/08/01/meta-institutes/ [Accessed 2 June 2022]

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