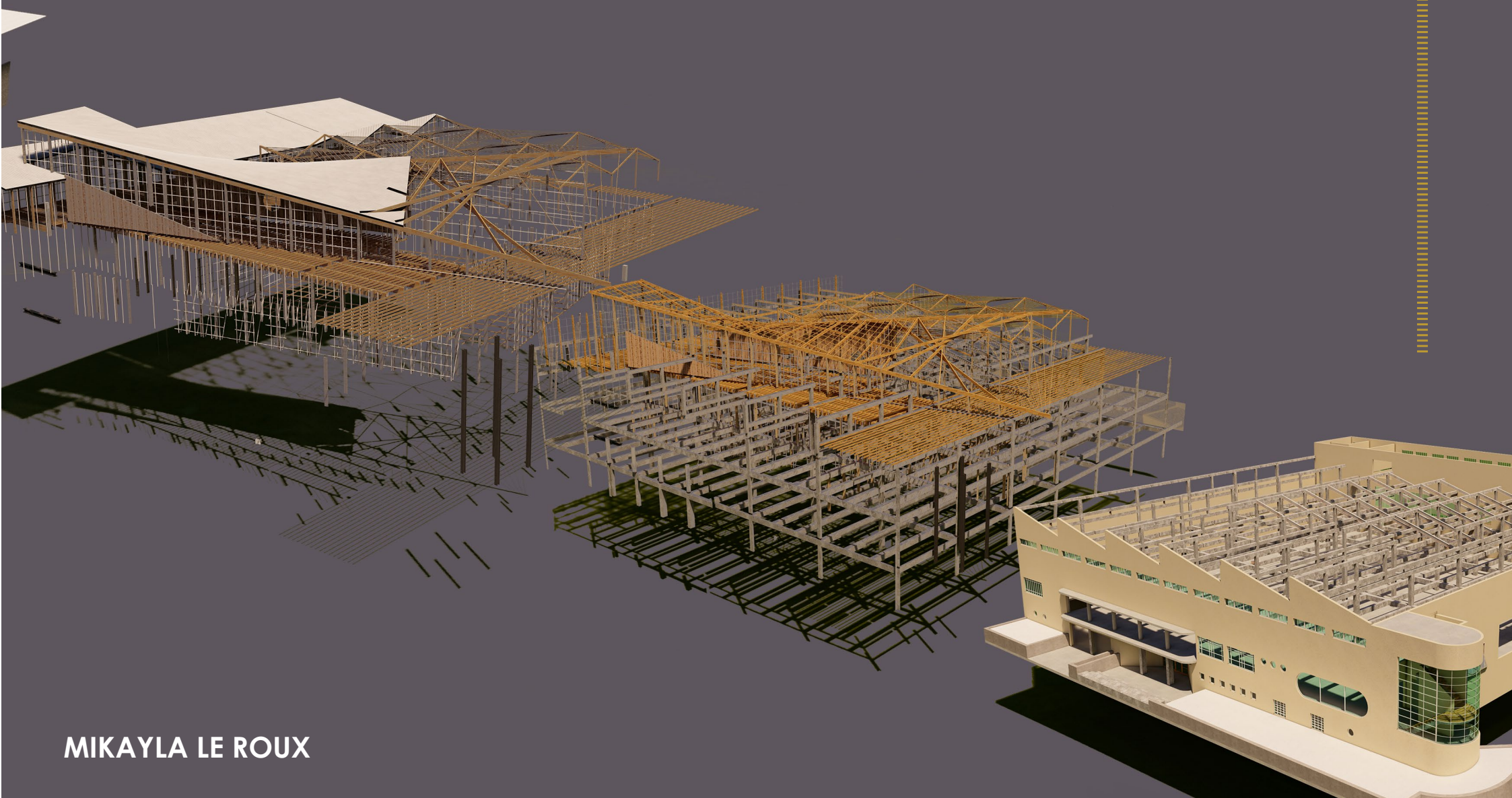
RECYCLING REX TRUEFORM

Adaptive reuse of an unutilised heritage site in Salt River Cape Town by giving it a new function as a textile hybrid



MIKAYLA LE ROUX

Acknowledgements

Thank you, mom and dad for the endless support and sacrifice over the last 5 years. Without you none of this would have been possible.

Thank you to all the lecturers who assisted me throughout the year.

Supervisor: David van der Merwe
Design lecturers: Prof. Jan & Petria Smit
Construction: Hein Raubenheimer

Recycling Rex Trueform preamble

The garment industry is one of the largest industries in the world. Due to rapid technological advancements, the production process of textiles has changed. These changes have resulted in the production of more affordable fabrics and an increase in consumer consumption. This, in turn, has led to mass pollution generated by the production process and mass consumption that ends up in landfills at uncontrollable rates. This happens because the industry functions on a linear process where garments are produced and rapidly replaced with new garments to satisfy the fast pace of consumer demand.

The South African textile industry has faced a massive decline due to the surge of international imports, particularly from China. These imports are part of the global crisis surrounding the pollution caused by the textile industry.

The decline in the textile industry is reflected in the built environment in the Salt River area where numerous abandoned garment factories can be found. The Salt River area primarily functioned as Cape Town's industrial area in the early and mid-19th century. Amongst these abandoned sites, is one that played a large role in the garment industry during the 1960s: the Rex Trueform building. Located on the corner of Queens Park Avenue and fronting Victoria Road (commonly known as Main Road) the site has been abandoned since the company's closure in 2005.

The building has been declared a provincial heritage site due to its significant contribution to not only the textile industry but also the South African modernist movement. Above all, the building is a monumental artifact that embodies the social conditions of apartheid as imposed on the built environment.

In order to understand the significance of the artifact, the study investigated the history of the site and its urban, social and economic development. This included reading the book Unstitching Rex Trueform by architect and activist Ilze Wolff, which covers the depth of the history of the Rex Trueform company and the buildings involved.

Leaving industrial heritage sites abandoned risks the degeneration of the social and cultural history of communities and cities. This intervention hopes to give new life to the existing building, whilst celebrating it as a significant artefact. This new life acknowledges the value that resides within the building's rich history and creates awareness of the textile recycling industry, while activating the forgotten site. In essence, the building will be "recycled" and, within the building, recycling will be "built".

Dissertation content

This dissertation is divided into parts according to the grounding, making and synthesis of the project. Part 1 establishes the relevance of the project by defining the core problem and establishing the project rationale as to why it is important and could be a successful investigation. In this part, photographs of the site are provided to show the existing building and its condition. It concludes by addressing how the project can respond to the problem through an architectural intervention.

Part 2, the making, investigates the history of the site and theoretical concepts to justify the architectural design approach. Studying the history of the site unlocked valuable stories and provided a greater understanding of the complexities and significance of the building's heritage. The theoretical investigation created an understanding of architectural theory and influenced the designer's conceptual thinking towards an architectural response. This part shows how the conceptual thinking evolved through the testing of ideas throughout the process. Exploration sketches, models and renders illustrate this process. Ultimately, the making shows how the conceptual ideas were applied to create a final design synthesis in which the narrative of the intervention is embedded.

Part 3, the structural philosophy, shows how the conceptual ideas were applied and influenced the physical structure in terms of design decisions. The composition of design elements – in terms of floor, wall and roof – is embedded in the conceptual approach explored in Part 2. The design and construction decisions were thus parallel to one another throughout the design process. This part also analyses the building to give an overview of the practical requirements and what the project aimed to achieve.

index:

PART 1

CHAPTER 1- GROUNDING

1.1 The global garment industry stitching together the dark abyss of the future 1,2
1.2 An alternative approach to textile manufacturing 3-11
1.3 The textile industry in a local context: Cape Town as an incubator for the textile revival 12
1.4 The site: a brief history of Rex Trueform 13-24
1.5 Touchstone: giving new life to the existing building through memories 25,26
1.6 client and programme 27
conclusion 28

CHAPTER 2 -VISUAL STUDY

2.1 Site analysis 29,30
2.1.1 Macro 31-34
2.2.2 Meso 35-44
2.2.3 Micro 45-52
2.2 Conservation approach: Burra Charter 53-56
conclusion 57

PART 2

CHAPTER 3- CONCEPTUAL AND THEORETICAL APPROACH

3.1 Introduction to theory and conceptual approach 61,62
3.2 Narrative 63
3.3 The architectural chronotope and narrative 64
3.4 Approach 65
3.5 Prefiguration- sorting (Identifying characters) 66
3.5.1 Genius loci 66-68
3.6 Configuration- shredding (developing the characters) 69
3.6.1 Emplotment (as "events") 70
a) Salt River: the start of modern industrialization 70
b) The building 70-71
c) The law on segregation 72-73
d) Mural art 74-76
e) The company's economic success 77
3.6.2 Intelligibility – (essential theme as the "action") 78
a) The ethical function of architecture 78
b) Reclaiming post-industrial landscapes 78
Theoretical case study 1: Duisburg Nord- Landscape Park (1991) 79,80
conceptual exploration 1: Reimagining Rex Trueform through an Ecological lens 81,84
Theoretical case study 2: Parc de la Villette- cultural park (1984) 85,86
conceptual exploration 2: Syncronised layering of ideas 88-90
Theoretical case study 3: Zeitz Mocca- contemporary art museum (2017) 91,92
conceptual exploration 3: revealing layers to expose and celebrate the significance 92-96
c) Lasting effects of marginalisation 97
3.6.3 Intertextuality: ("tropes") 98
a) Segregation vs modernism – the box of tricks 99,100
b) Workers vs Rex Trueform- the celebrating void 101,102
c) Industry vs nature- the knotted saw tooth 103-106
3.7 Refiguration- re-spinning (dialogue between the characters) 107,108
3.7.1 Palimpsest of layers 109-114
3.8 Summary of the conceptual approach as conclusion to chapter 4 115

CHAPTER 4- PRECEDENT ANALYSIS

4.1.1 Oslo school of architecture 117-120
4.1.2 Shipyard 1862 121-124
4.1.3 SA Breweries Visitors Centre 125-128
conclusion 129

CHAPTER 5- DESIGN SYNTHESIS.

5.1 Design development 130
5.1.1 Development 1 131-136
5.1.2 Development 2 137-144
5.1.3 Development 3 145-152
5.1.4 Development 4 153-162
5.2 Final design 163,164
5.2.1 Programme and spatial requirements 165,166
5.2.2 The recycling facility. 167-169
5.2.3 The experience when taking the visitors route 170-172
conclusion 173

PART 3

CHAPTER 6- STRUCTURAL PHILOSOPHY

introduction 175,176
6.1 CONSeption 177-180
6.2 The act of Sorting – assessing Rex Trueform
6.2.1 The valuable 181, 182
6.2.2 What it lacks 181, 182
6.3 The act of Shredding- transforming Rex Trueform 183.184
6.3.1 Voids 183
6.3.2 Drainage 183
6.4 Adding new fibres 185-188
6.4.1 New structure 185
6.4.2 Canopy 185
6.4.3 Library roof 185
6.5 The act of Re-spinning - connecting old and new 189,190
6.6 Textile properties 191-194
6.6.1 Textile materiality (materials) 191,192
6.6.2 Textile thermal characteristics (climate control) 191,192
6.2.3 Ventilation 191,192
6.6.4 Textile flexibility (circulation) 195,196
final conclusion 197,198

FINAL DESIGN 199-213
Personal reflection 214
ANNEXTURE 1- FINAL DESIGN PRESENTATION 215-226
ANNEXTURE 2- FINAL CONSTRUCTION DRAWINGS 227-246
Reference list 247-251

1.1 The global garment industry stitching together the dark abyss of the future

The garment industry, including the international apparel and textile market, is one of the largest and most essential industries in the world. Its low fixed costs and labour-intensive manufacturing, have made the growth of clothing exports a staple of the starter industrial policies for countries climbing the industrial ladder (Frederick & Gereffi, 2010: 2). The industry's ecological impact has grown rapidly in recent years. This can be mostly ascribed to technological advances in production, although societal changes in wealth, growth due to globalisation, and market retail changes have also played a significant role. Technological advancements in the fabric manufacturing process has led to a decrease in the price of fabrics. The quality of fibres is enhanced with synthetic appropriation, resulting in lower prices for high quality fabrics. This has been one of the main promoters of "fast fashion" (Anguelov, 2016: 3).

What is fast fashion? It is the design and manufacturing of clothing that replicates high-fashion trends at a low cost. In fast fashion garments have a very short lifespan, that new clothes are bought and replaced at a faster rate than necessary. (Anguelov, 2016: 12, 13).

The rise of fast fashion has resulted in fashion being made rapidly available to everyone. It can be created by anyone, promoted by anyone, and enjoyed by anyone. This new reality is boosted by affordability, an affordability based on cheap fabrics. The reality, however, is that the production of these good quality, cheap fabrics is through an extremely toxic manufacturing process, which causes chemical pollution at a much higher rate per item than any other industrial product. Most of this pollution occurs during the textile dye process when the water run-off is directly disposed of into open basins which leads into sewer systems (see fig. 4). Fibres are bleached from their natural yellowish tint to neutral whites, and, unfortunately, this process is repeated several times to obtain the desired result. It is also important to consider that industrial grade chemicals (such as bleach) are a lot stronger than consumer chemicals, meaning the pollutant effect is much larger than standard household chemicals (Anguelov, 2016: 89). In other words, dyes, industrial grade peroxide, and bleach run of into open water basins. The impact of this process makes the textile production industry the most polluting industry in the world.

According to the World Bank Group (2019: online):

- "20% of all water pollution globally is produced during the run-off process of textile dying (this estimate does not include the bleaching or peroxide processes).
- Of the total fibre input used for clothing, 87% is incinerated or disposed of in a landfill.
- The fashion industry is responsible for 10% of annual global carbon emissions, more than all Winternational flights and maritime shipping combined. At this pace, the fashion industry's greenhouse gas emissions will surge to more than 50% by 2030.
- Every year a half a million tonnes of plastic microfibers are dumped into the ocean, the equivalent of 50 billion plastic bottles. The danger? Microfibers cannot be extracted from the water, and they can spread throughout the food chain."



Fig. 3: Collage illustration interpreting the effects of fast fashion (Author, 2021).





Fig. 4: photograph taken in Gazipur, Dhaka, Bangladesh of a 9 year old boy called Jasim who collects pieces of cloth from the waste caused by the dyeing industries released into the Turag River (Rashid, 2011: online).

These stats are alarming, as they indicate that not only does the production of textiles cause mass pollution but also the fast pace of the industry and growing consumption demands result in the majority of garments ending up in landfills. This happens because the industry functions as a linear process where garments are produced and rapidly replaced with new garments to maintain the fast pace of consumer demand.

In order to counter this reality, one must question the ethics of the current industry and reduce the extent of global pollution produced thereby. A possible solution would be to revert to sustainable production by utilising a circular systems approach that revolves around recycling textiles to prolong the lifespan of garments before they end up in landfill.

1.2 An alternative approach to textile manufacturing



Fig. 5: The stages of transforming old denim into a new fabric as a closed loop system (Palais de l'eau, 2020: online).



Fig. 6: A factory worker examining textiles by hand during the sorting stage (Getty Images, 2021: online).

In recent years, the importance of recycling textiles has become apparent. There are multiple environmental benefits offered by recycling, such as a decreased need for landfill space, minimised use of virgin fibres, less energy and water consumed, a reduced demand for dyes, and pollution avoidance (Leblanc, 2020: online).

The textile recycling process

Recycling textiles involves recovering old or discarded clothing, which are sorted, shredded and re-spun into new thread that can be used to make new products. In the textile recycling industry, the most successful programmes focus on polyester and cotton (due to their wide use). However, other fibres, such as wool and nylon, can also be successfully recycled (Muthu, 2017: 64).

Sorting

Recovered clothing items are manually assessed and graded by skilled workers (see fig. 6) to determine the most appropriate end use of the textile (Leblanc, 2020: online). Items are examined for buttons and zippers, which are disassembled from the textile, and sorted based on colour and material (Muthu, 2017: 64).

Grouping items based on colour eliminates the need for re-dying, which reduces chemical water pollution and energy usage (Leblanc, 2020: online). The sorted textiles are then placed into containers or bins (see fig. 7) and sent to the processing stage.



Fig. 7: Sorted textiles grouped into separate containers (Miles, 2020: online).

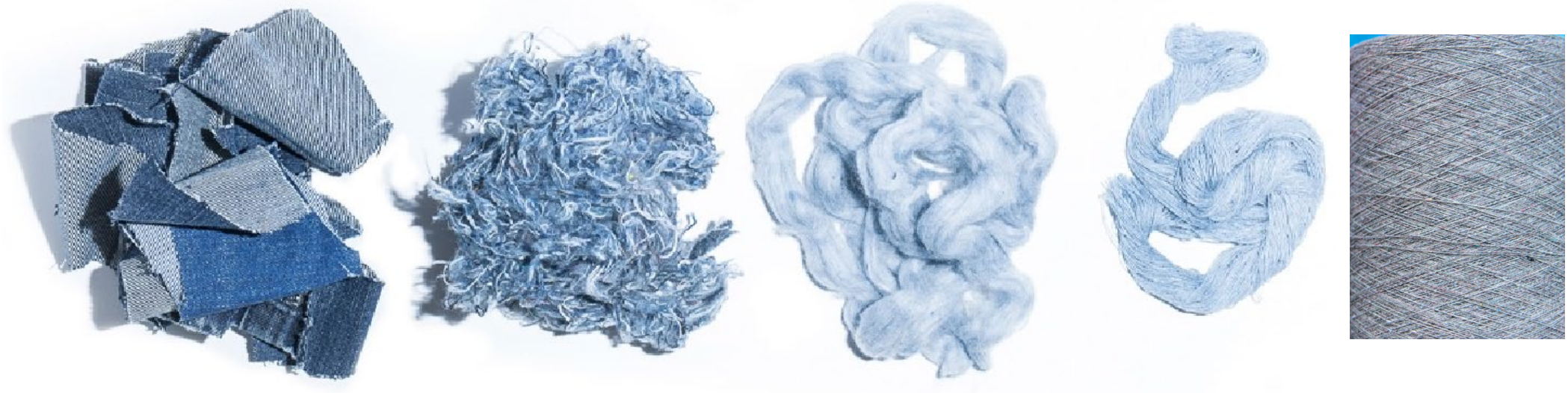


Fig. 8: Demonstration of denim transformation; fabric cut into smaller pieces, shredded into fibers, spun into roving fibers and finally spun into thread (Palais de l'eau, 2020: online).

Shredding

There are two commonly used methods of processing – mechanical and chemical. Mechanical processing is the easiest way to recycle textiles and can produce yarn or fibres that can be utilised in new products. Fabrics are cut into smaller pieces that then pass through a garneting machine. This process breaks down the fabric to produce yarn (Muthu, 2017: 64).

Re-spinning

The yarn is washed and mixed with virgin fibres through a carding process. A carding machine has teeth that comb fibres into the same direction to produce fuzzy roving fibres. Roving fibres are then re-spun into rolls of thread, ready to be knitted or weaved. However, not all fibres are spun, some are compressed for textile filling, such as insulation (Leblanc, 2020: online).

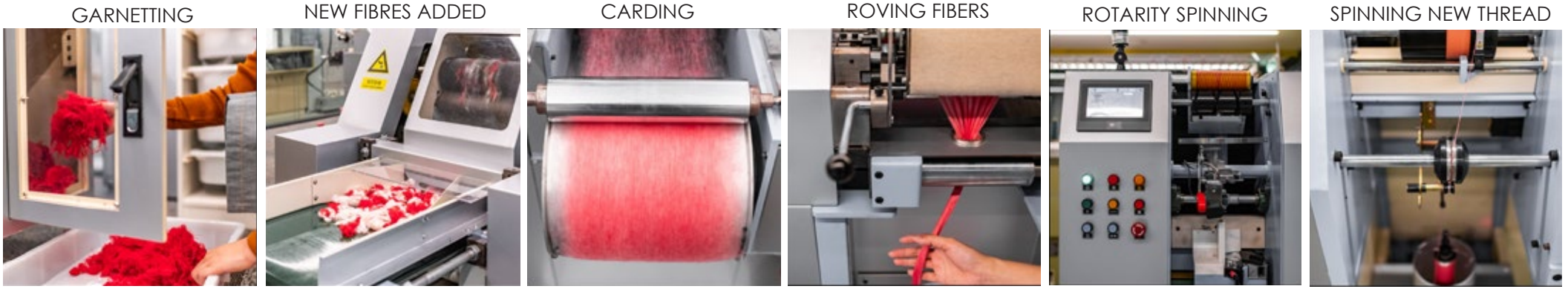


Fig. 9-14: Textile recycling process (Garment 2 Garment. 2021: online).



Fig. 10: Photograph of garneting division in textile factory (Payne, 2015: online).





Fig. 11-12: Photograph of carding machine showing colourful woven fibres and webs (Payne, 2015: online).



Fig. 13: Photograph of carding wheels showing rotating combs (Payne, 2015: online).



Fig. 14: Photograph of man collecting ropes of woven fibres at spinning machine (Payne, 2015: online).



Fig. 15: Photograph of woman inspecting fibres at spinning machine (Payne, 2015: online).

1.3 The textile industry in a local context: Cape Town as an incubator for the textile revival

The South African garment industry has a long history, particularly in the Western Cape, KwaZulu-Natal, Gauteng and the Free State. The industry has existed for many decades and has been a primary source of employment for women in particular. Before the end of apartheid, the industry focused mainly on import substitution. Consequently, the focus was mainly on the domestic market and the industry thus failed to compete internationally (Vlok, 2006: 227). Nonetheless, a handful of high quality men's wear manufacturers, such as **Rex Trueform** (formerly known as Judge Clothing), managed to achieve success domestically and internationally in the export market (Wolff, 2014: 5).

After the end of apartheid in 1994, South Africa joined the World Trade Organisation and the market was opened to international trade. Unfortunately, the depreciation of the rand affected the competitiveness of the market regarding imports and resulted in the export market practically evaporating. Imports came particularly from China, since their low-cost production overshadowed the local industry's ability to compete. This created an unprecedented crisis in the garment and textile industry, resulting in large-scale job losses in the industry starting in the late 1990s (Vlok, 2006: 228).

More than 55 500 job losses have been recorded by the South African Clothing and Textile Workers Union since 2003 (Vlok, 2006: 228). The South African government recognised this issue but regardless of investments and support to revive the industry, it is barely able to survive, let alone expand. The ability to revive the industry to a point where it is able to export, relies on strong partnership between the industry and government to implement a fundamental restructuring of the industry. A restructuring that would mend the supply chain destroyed by China's cheap imports (Ndalana, 2016: online).



Fig. 16: Inside a South African textile factory (Brand, 2017: online).

For the industry to revive itself and raise competitive levels, certain measures must be taken. The industry must:

- Improve technology and raise investment levels
- Significantly upscale skills development within the industry
- Merge technological advancement and innovation with design and investment
- Increase beneficial use of local raw materials and develop an integrated supply chain (comprising fibre production, textiles, finished textile products, clothing design and clothing manufacturing)
- Combat illegal imports and introduce safeguard measures on Chinese imports

(Vlok, 2006: 240-244).

1.4 The site: a brief history of Rex Trueform

Rex Trueform was a garment manufacturing company that, in previous years, thrived in the local garment industry. The existing, abandoned building is located in Salt River, Cape Town – a light industrial area surrounded by residential areas. Rex Trueform played a large role in the garment manufacturing industry and was ranked the sixth largest garment manufacturer in the world during the 1960s (Parther, 2017: online). The company employed thousands of workers, in the main coloured women (Wolff, 2014: 21). When analysing the existing building it becomes clear why this building is regarded significant as a heritage site.

The building was constructed in 1937 by one of South Africa's pioneering modernist architects, Max Policansky (see fig. 20). Some architectural landmarks in the area during the 1930s included the University of Cape Town's campus (see fig. 18). and the Groote Schuur Hospital (see fig. 19), both designed in a neoclassical style by JM Solomon and Sir Herbert Baker respectively (Wolff, 2014:10). The character of the building is emblematic of modernist principles in its functionality, lack of decoration, free flow and modern materials used (see fig. 21 & 22). A typical response, which focused on the idea that form follows function. The building's structural connections allowed the span of the roof to be wider with a larger open space and fewer columns on the first floor. For a building designed and constructed in 1937, this was a ground breaking evolution in South African architecture.



Fig. 17: Map of the Colony of Good Hope dated 18 December 1882. It shows the distinct triangle of land where the Salt River industrial development would later be built-
National Archives of South Africa in Wolff (2014: 12).

LOCATION OF REX TRUEFORM SITE

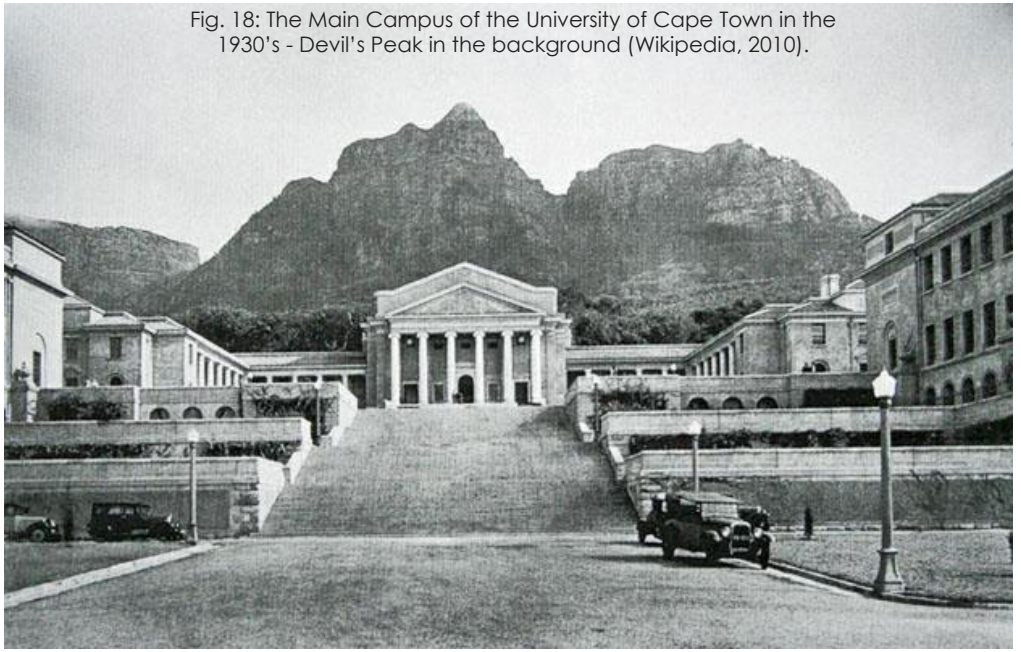


Fig. 18: The Main Campus of the University of Cape Town in the 1930's - Devil's Peak in the background (Wikipedia, 2010).

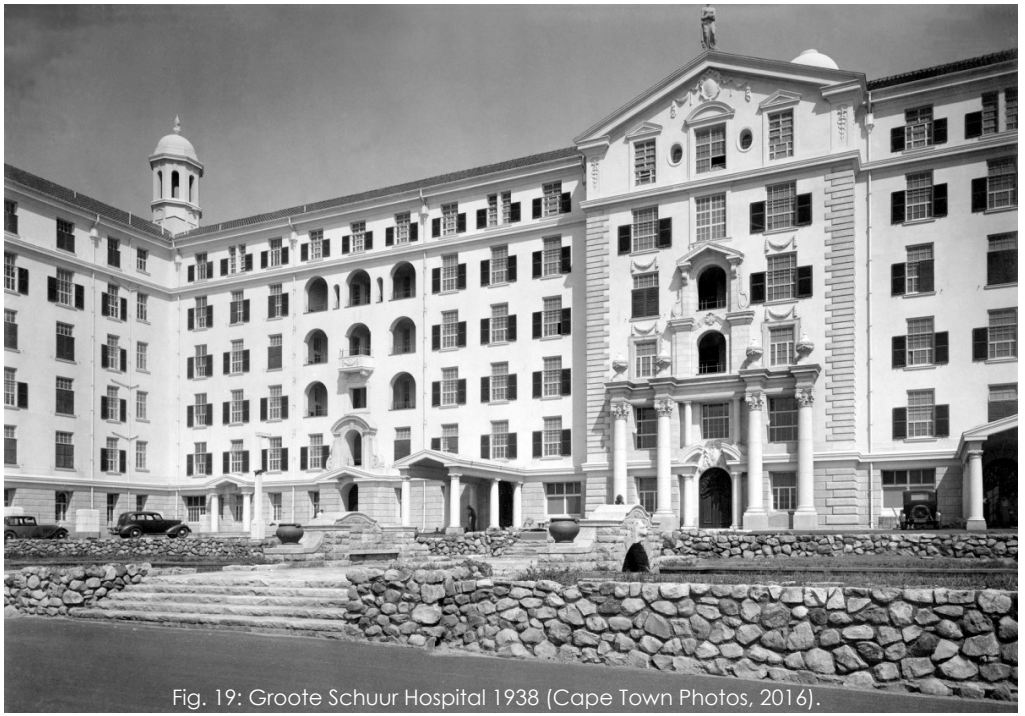


Fig. 19: Groote Schuur Hospital 1938 (Cape Town Photos, 2016).

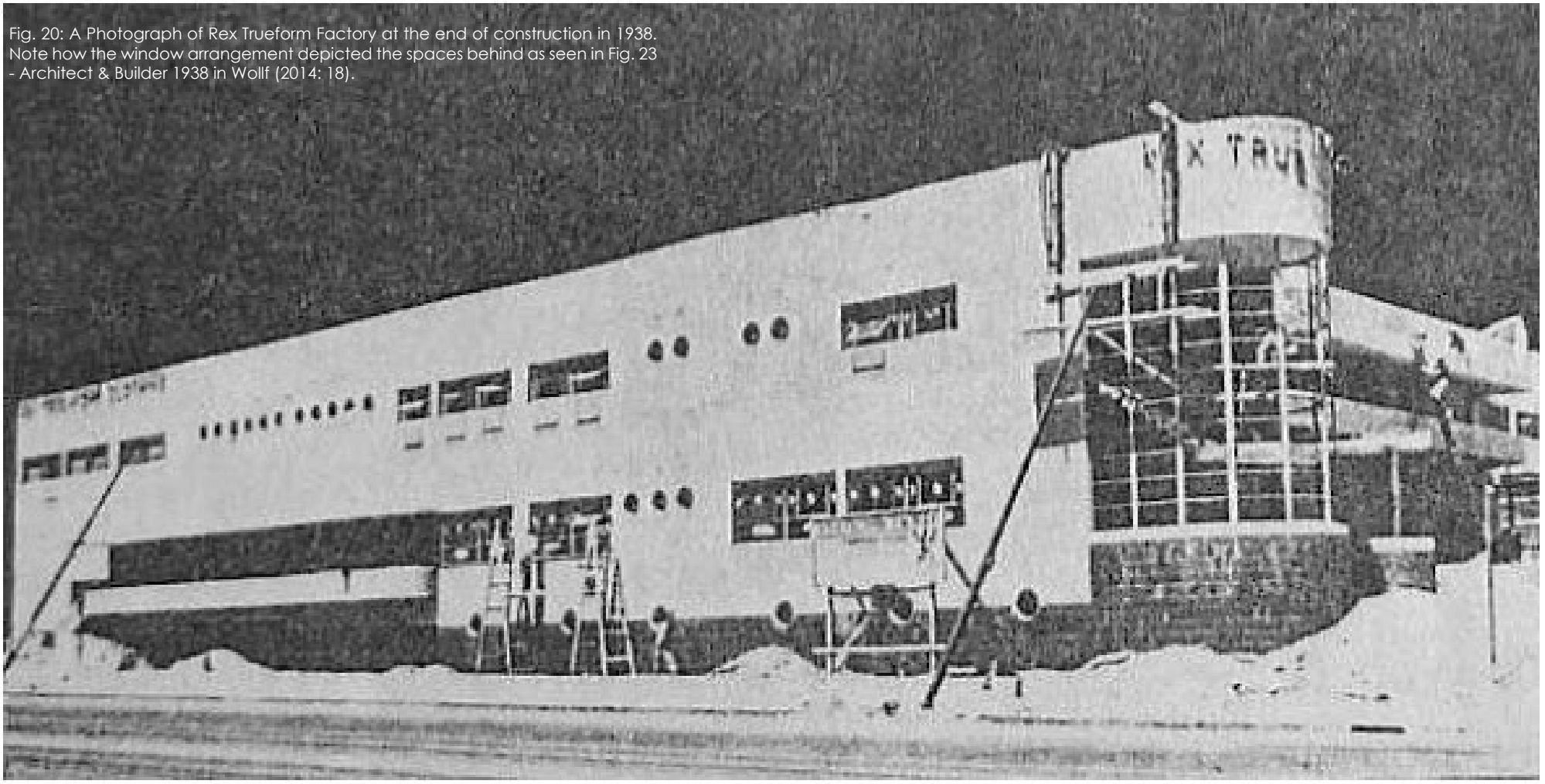


Fig. 20: A Photograph of Rex Trueform Factory at the end of construction in 1938. Note how the window arrangement depicted the spaces behind as seen in Fig. 23 - Architect & Builder 1938 in Wollf (2014: 18).

The façade appears playful and whimsical, yet behind the façade lies the insensible design of the building. Here spaces are duplicated to separate workers according to race and gender. This separation and duplication was also evident in changing rooms, restrooms and building entrances (see fig. 23) (Wolff, 2014: 21).

1.4 The site: a brief history of Rex Trueform

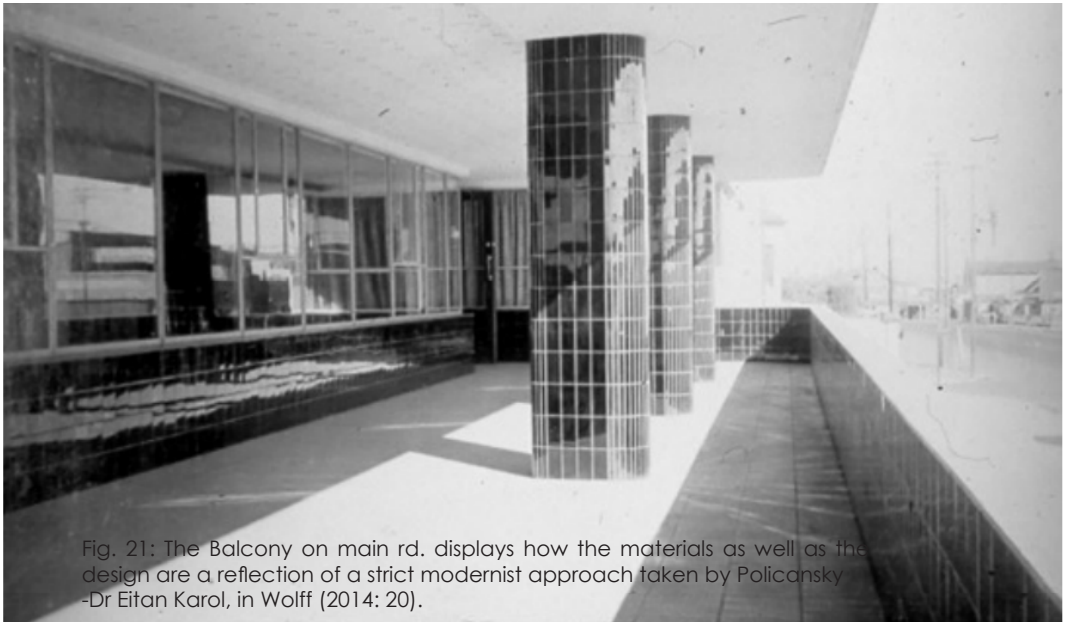
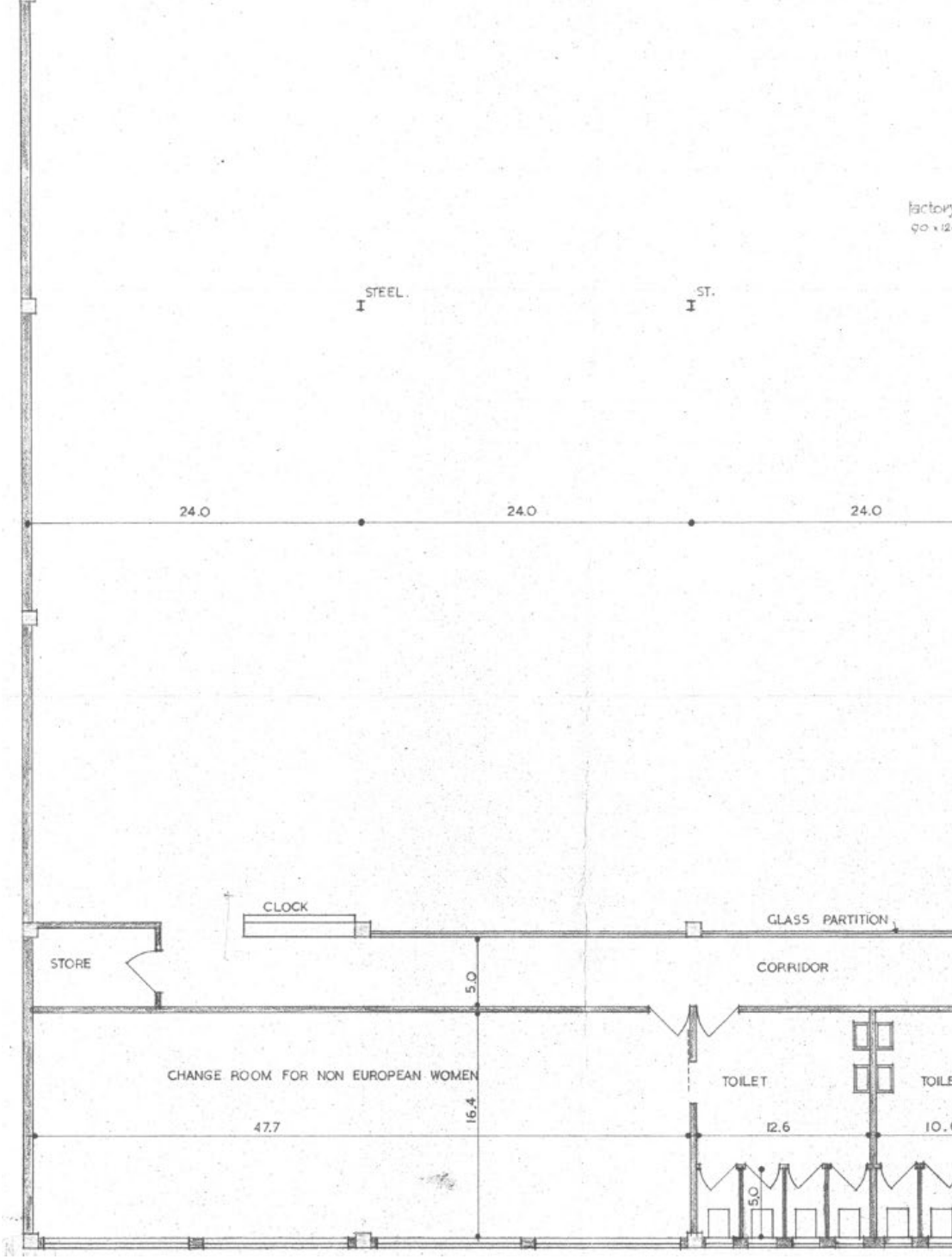


Fig. 21: The Balcony on main rd. displays how the materials as well as the design are a reflection of a strict modernist approach taken by Policansky -Dr Eitan Karol, in Wolff (2014: 20).



Fig. 22: behind the Balcony lies the sample room, a optimal example of modernism through uninterupted spatial flow, lack of decoration and modern materials used -Dr Eitan Karol, in Wolff (2014: 20).



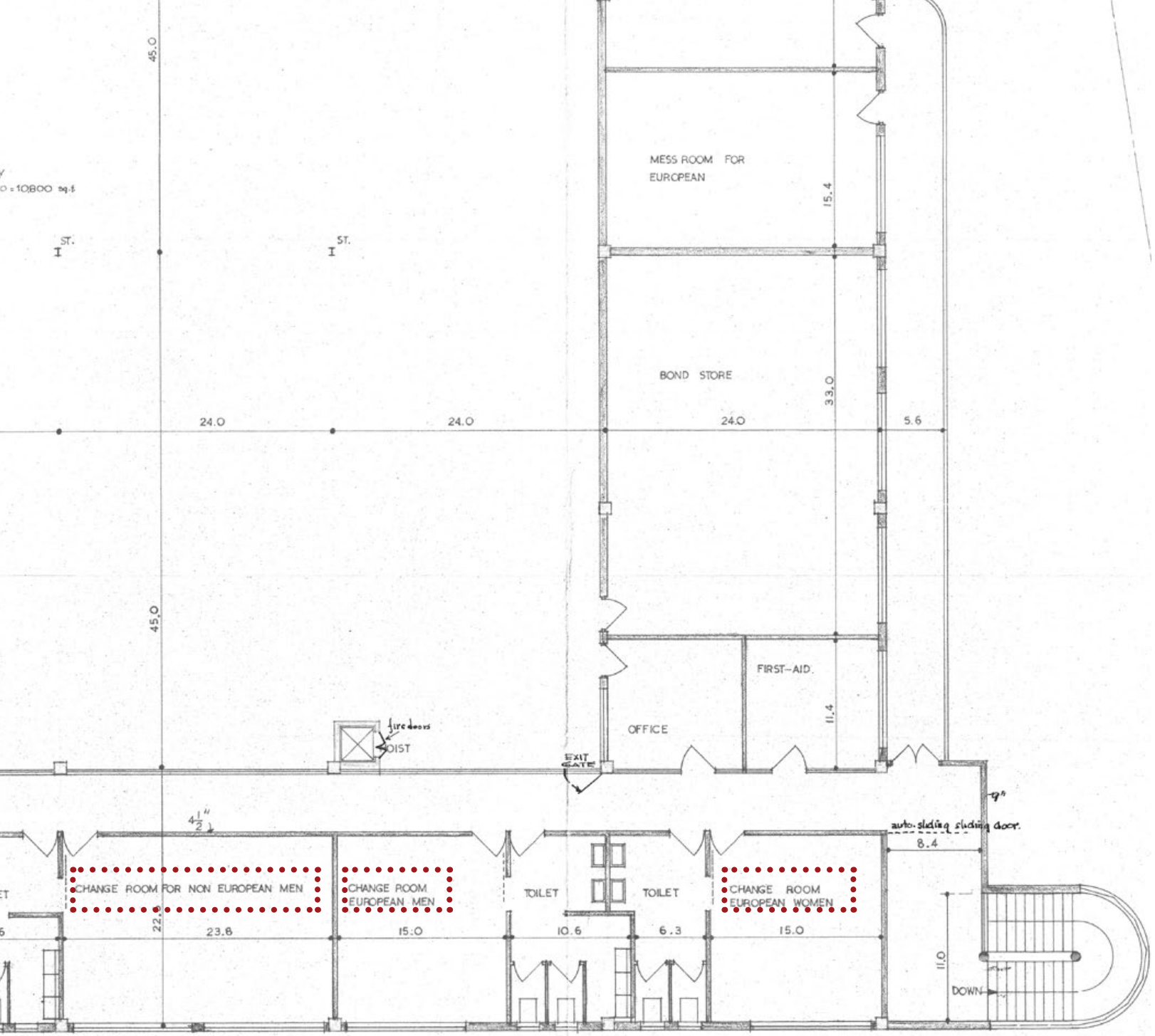


Fig. 23: First Floor plan, 1937
-Max Policansky Collection, UCT Manuscripts and Archives in Wolff (2014: 23) edited by author.

1.4 The site: a brief history of Rex Trueform

The building went through some design changes after a fire in 1948, one being the addition of a prominent saw tooth roof (see fig 26). The reconstruction was done by a different architectural firm called Andrews and Niegeman, since Polickansky closed his office to work primarily for the Cape Town Municipality.

The changes consisted of adding a whole new four story flank at the back of the building (see fig. 25). The separate changing rooms were moved to the back of the building in the 1948 reconstruction (Wolff, 2014: 29, 31)



MONDAY, JULY 24, 1944

The top floor of the Rex Trueform and Judge Clothing Manufacturers' factory in Salt River after the fire on Friday night.

Fig. 24: Article in the Cape Times (1944) after the fire at Rex Trueform (Wollf 2014: 30)

The alterations had a massive effect on the character of the building, by solidifying the façade fronting Main Road and changing the silhouette of the building with the new saw tooth roof. It is clear that the company had endured great success due to the functional changes applied to the building which indicated an increase in production space. The balcony fronting main road replaced the masonry balustrades with neoclassical style steel balustrades and rather unflattering timber door frames (see fig 27) (Wolff, 2014: 31, 32).

After great success the company expanded in 1948 and constructed a larger second factory across the road from the old factory (see fig 28,29 & 30). The implications of the rationale behind the spatial planning resulted in the architecture enforcing apartheid constructs that ascribed identity through race and gender (Wolff, 2014: 43).

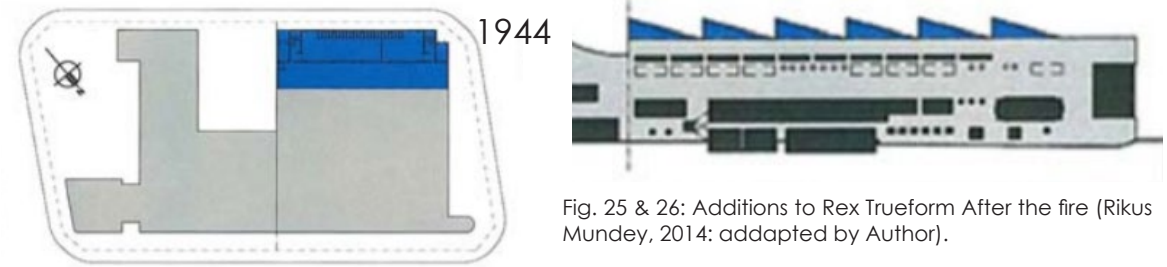


Fig. 25 & 26: Additions to Rex Trueform After the fire (Rikus Mundey, 2014: addapted by Author).



Fig. 27: Photograph of reconstructed balcony with neoclassical balustrades and wooden doors as it appears today (Author, 2021).



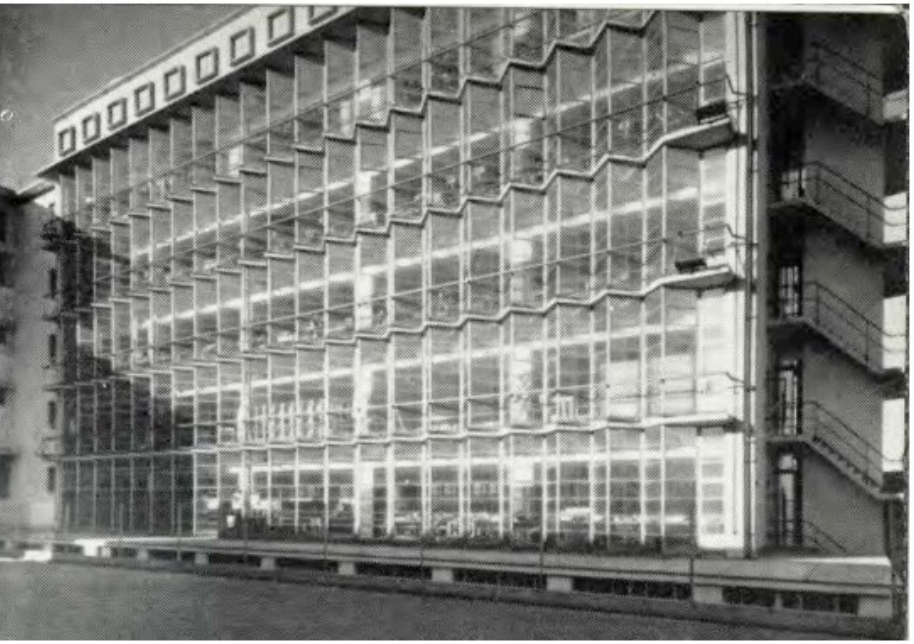


Fig. 28 & 29: (Top) the second Rex Trueform factory from Aubrey Street showing the use of glass with screens hanging off canopies. (Bottom) View from main road with the zig-zag patterned glass façade. - (top) Dr Eitan Karol, (bottom) Supplement to the Buyer (1953) in Wolff (2014: 35)



Fig. 30: Photograph taken in 1947 Rex Trueform's second factory within the context of the old factory -Supplement to the Buyer (1947) in Wollf (2014:46).

1.4 The site: a brief history of Rex Trueform

What makes the factory tick

The Rex Trueform factory throbs with industry. From the West Country of England, the Yorkshire moors and the lonely Isle of Harris come the famous cloths to be made into the garments that South Africa knows so well. Here is the story in pictures of how it is done—how each worker plays his part and how each machine fits into production, from the arrival of the material to the packing of the suits, coats and trousers that are sent out to the four corners of Southern Africa.

British woollen goods arrive and are opened on the receiving platform.



The cloth is stored to permit conditioning.





The pattern grader works from a master pattern.



A suit lay is marked in the Cutting Room.

Continued





- (*Left*) Still in the cutting room an operator chalks round the pattern.
- (*Centre*) Operator cuts out, using electrical mechanical cutter.
- (*Right*) Circular continuous knife in action, cutting linings.





- (*Left*) The circular continuous knife again. This method is very accurate.
- (*Centre*) An inspector checks the garments with the master pattern.
- (*Right*) The cutting room is busy.

Continued

- (*Left*) Cut garments are sorted out and matched with the right linings.
- (*Centre*) Mechanical dart cutting machine. This is accurate to 1/200th part of an inch and ensures uniformity in all garments.
- (*Right*) Garments which have already been cut out by mechanical cutters are recut by hand. Each garment is treated thus.





- (*Left*) The start of the suit assembly line.
- (*Centre*) An operator stitches labels to garments.
- (*Right*) Basting foundation canvas to coats.





1.4 The site: a brief history of Rex Trueform







● (*Left*) An inspector examines garments at this stage. Highly trained craftsmen handle this operation.

● (*Centre*) The "bridles" or edges of the lapel are basted by hand.

● (*Right*) Now the lapels are padded.





● (*Left*) The foundation canvas is shrunk together with the cloth on the Hoffman Steam Presser.

● (*Right*) Next the lapels are shaped.

18

● (*Left*) Lapel under-basting. Infinite care is taken at this stage for here the easy fall of the lapel and the permanent roll is established.

● (*Right*) The facings are basted.





● (*Left*) Side-seams are opened and sleeves shaped.

● (*Centre*) The lining is hand-basted before hand-felling.

● (*Right*) Shoulders are basted by hand—an intricate operation which ensures that canvas and outer material of the coat are in correct position.

19

Continued











- *(Left)* The under-collar is marked and shaped.
- *(Right)* The under-collar is shaped to ensure evenness.







- *(Left)* An inspector examines shoulders and collars—a job requiring a man with years of experience.
- *(Centre)* The gorge is hand-drawn, i.e., the collar is closed. This operation is done by machine except in high class trade.
- *(Right)* Sleeve cuff linings are basted to coat.

- *Left.* Before hand-felling, cuff sleeves are basted to linings.
- *Centre.* Edges of coats, collars and fronts are hand-stitched—a rare refinement.
- *Right.* Buttonholes are made by an ingenious machine, as well as by hand.





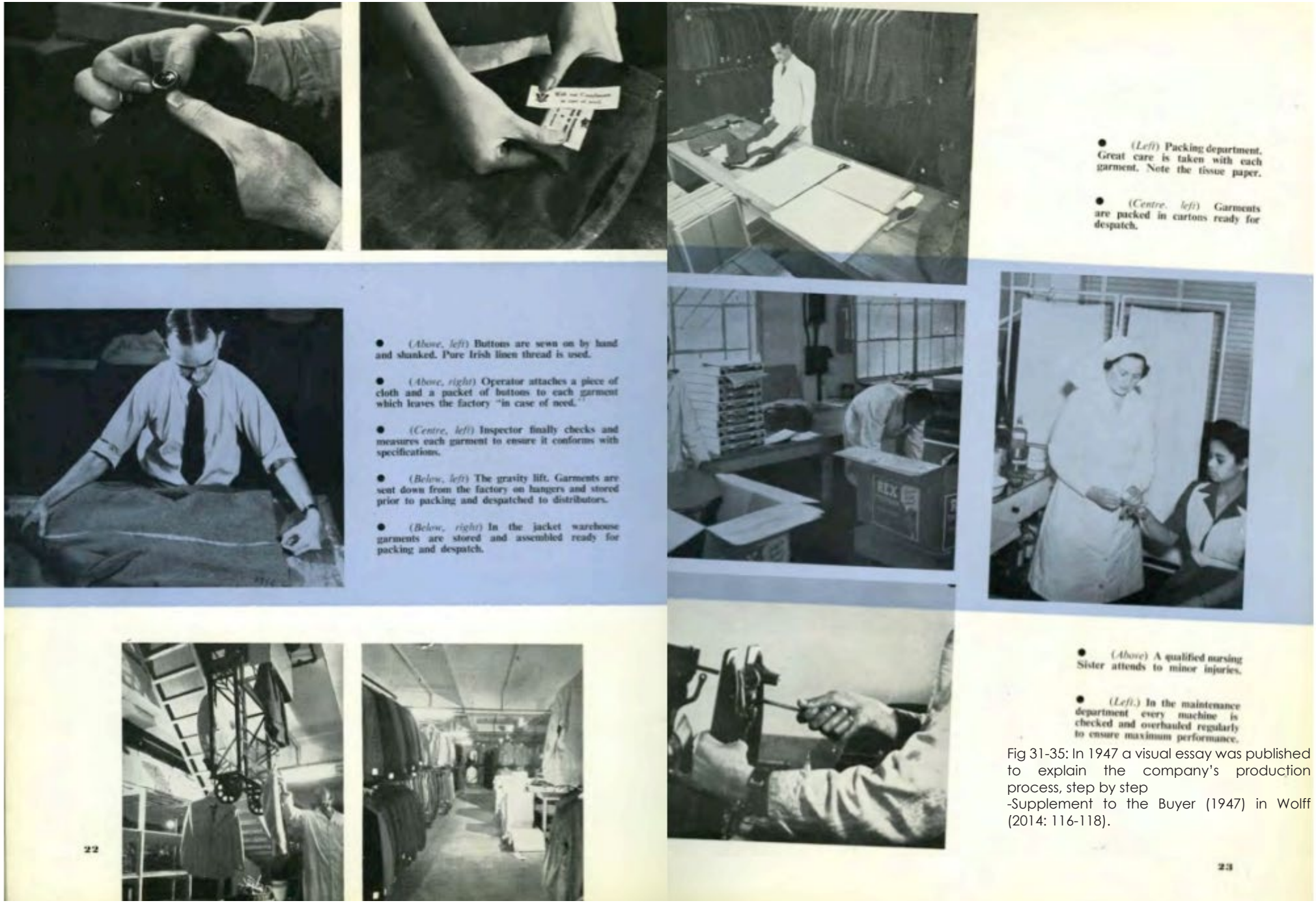


- *Left.* Garments are shaped, steamed and pressed on Hoffman Steam Presses before hand-pressing.
- *Right.* The finished jacket is hand-pressed.





1.4 The site: a brief history of Rex Trueform



● (*Above, left*) Buttons are sewn on by hand and shanked. Pure Irish linen thread is used.

● (*Above, right*) Operator attaches a piece of cloth and a packet of buttons to each garment which leaves the factory "in case of need."

● (*Centre, left*) Inspector finally checks and measures each garment to ensure it conforms with specifications.

● (*Below, left*) The gravity lift. Garments are sent down from the factory on hangers and stored prior to packing and despatched to distributors.

● (*Below, right*) In the jacket warehouse garments are stored and assembled ready for packing and despatch.

22

● (*Left*) Packing department. Great care is taken with each garment. Note the tissue paper.

● (*Centre, left*) Garments are packed in cartons ready for despatch.

● (*Above*) A qualified nursing Sister attends to minor injuries.

● (*Left.*) In the maintenance department every machine is checked and overhauled regularly to ensure maximum performance.

23

Fig 31-35: In 1947 a visual essay was published to explain the company's production process, step by step
-Supplement to the Buyer (1947) in Wolff (2014: 116-118).

Amidst growth, the company also saw workers striking nationwide at the start of the 70s. The company, however, remained stable until 1984, when a strike fractured its stability which became the start of the decline of the company's success (Wolff, 2014:63).

On 11 February 1990, Nelson Mandela was released from Victor Verster Prison (now named Drakenstein Correctional Centre) wearing none other than a Rex Trueform suit. In this moment, Mandela marked the transition to freedom from apartheid, echoed by the change the company and its workers would experience. In 1994, when South Africa became a democratic state, changes were implemented regarding the global export trade. Imports from China prevailed, causing the closure of multiple production companies and marking the beginning of the end of Rex Trueform. The rise of democracy increased the prospects and success of South Africa as a nation, however, the garment manufacturing industry suffered a rapid decline (Wolff, 2014: 70, 71).

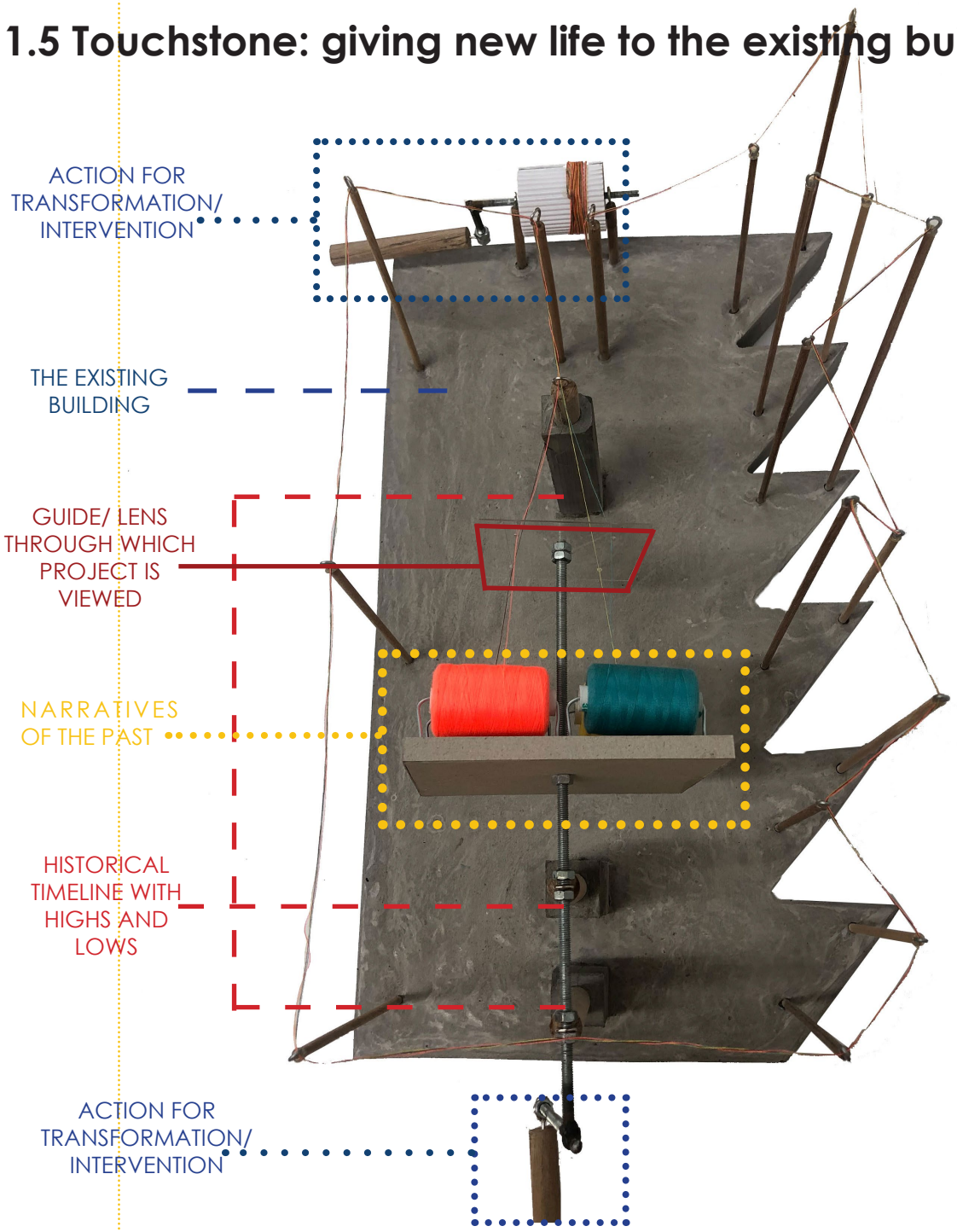
The shift to global imports meant that thousands of workers who facilitated tasks such as cutting and sewing soon became redundant, and the company was forced to initiate mass retrenchments. In 2006, Rex Trueform closed their doors and many more workers lost their jobs. Since then, the second 1948 factory has been occupied as an administrative office, housing a call centre, and the 1937 factory has remained empty (Wolff, 2014: 81).



Fig. 36: Nelson Mandela and his wife, Winnie madikizela-Mandela after Mandela's release, where he served 27 years in prison. Mandela is wearing a Rex Trueform suit, marking a sign of freedom and peace (English, 1990: online).

The remaining original Rex Trueform building was declared a provincial heritage site. Its heritage status is based on multiple factors: its economical role in the textile industry, the architectural value residing in the modernist movement in South Africa at the time, and the apartheid constructs enforced within these buildings. It has been described as a "monument for the workers". "This provincial heritage site is of outstanding significance for the memorialisation and acknowledgement of the textile industry and its role and contribution to society as experienced today," (Pretorius, 2019: online).

1.5 Touchstone: giving new life to the existing building through activating memories



The Rex Trueform factory is currently underutilised, and as with all assets, the development of the building is essential to regenerating its economic viability. The building has become representative of key changes in the economic development of Cape Town, the establishment of a black working class, and the struggle for political freedom. In a post-apartheid state, the site offers the potential to redress and renegotiate the narrative of the past by rescripting the narrative of the future through an architectural intervention.

The existing building is represented by a concrete base. The building has a historical timeline along which highs and lows are remembered within the place. The string represents the different narratives of the past. The Perspex functions as a guide bringing together the various narratives.

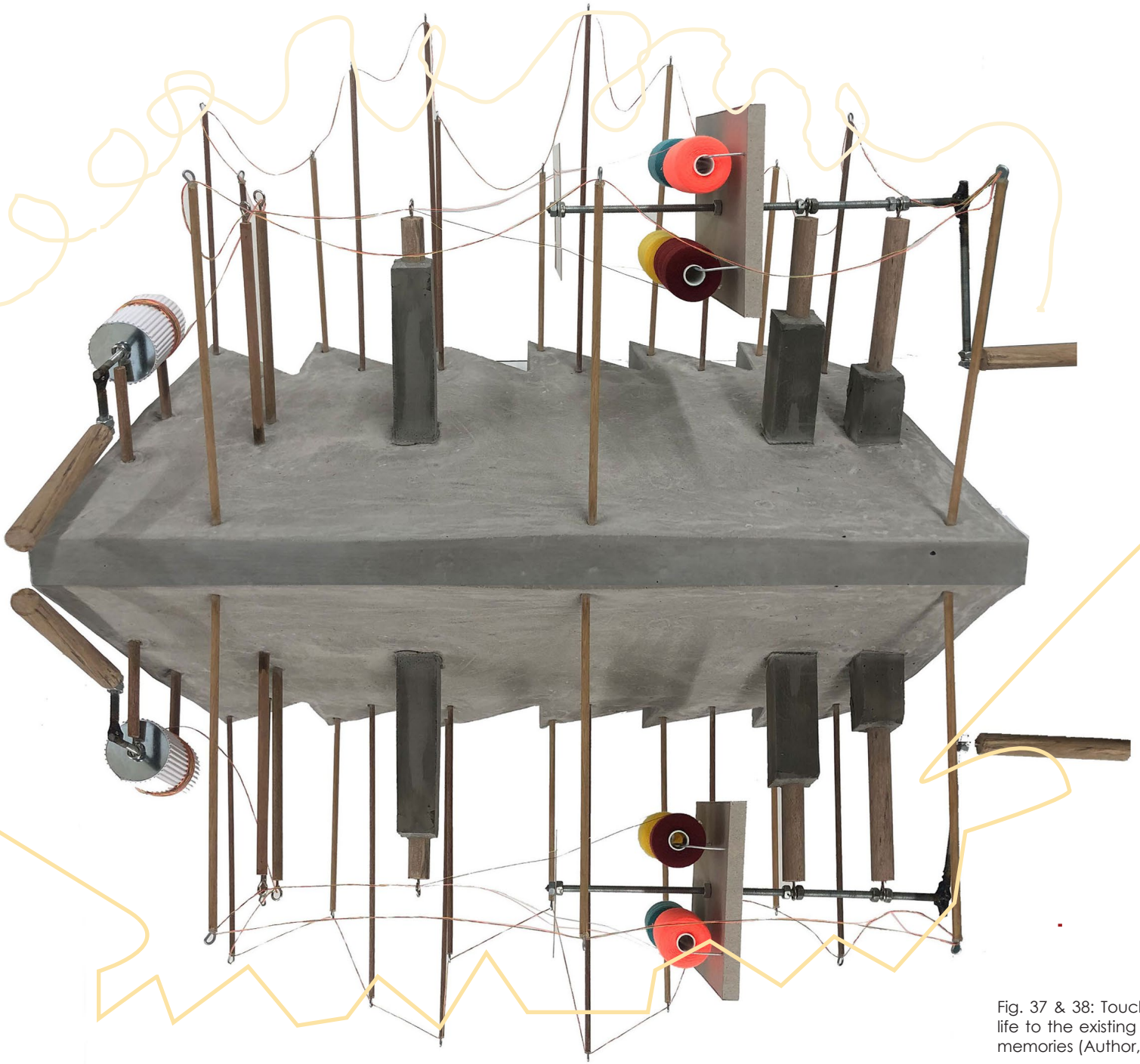
The string is draped loosely, as it represents the potential held within the existing building. The act of winding the handle tightens the string, shaping the architectural intervention. The addition aims to weave itself through the existing fabric, yet still adopt its own unique form.

Therefore, application of the additional architecture is informed by the history of the existing building and not strictly formed thereby. In essence, there will be added to, but barely touched. The old is transformed into something new, something new is not merely imposed on the old but rather a reaction on the essence of the existing. This transformation is a change in form, revealing what is personal, internal and significant to those who will occupy and visit the building. Through this transformation the expansion of Rex Trueform will inspire a new appreciation of heritage and promote the textile recycling industry.

The touchstone sparked the possibility of using narrative theory to support the design approach. French philosopher Paul Ricoeur's (2016) narrative theory is based on the process an author goes through when writing a book. The narrative is to be interpreted as a: conversation of the history, interpretation of the history, and understanding of the history. Using narrative theory in this way would allow the user to experience different interpretations of the building in order to understand the significance of its heritage from all perspectives of possible narratives.

POTENTIAL HELD
WITHIN EXISTING

- STRING DRAPED
LOOSELY



THE ACTION SHAPING
THE INTERVENTION

- STRING PULLED
TIGHTLY

Fig. 37 & 38: Touchstone- giving new life to the existing through activating memories (Author, 2021).

1.6 client and programme

Client- Rewoven

Rewoven is an innovation project based in Cape Town and founded in 2018 by three youthful innovators- Tshepo Bhengu, Lonwabo Mgoduso and Esethu Cenga. Rewoven collects and processes textile waste to be reused into manufacturing goods (Rewoven, 2021: online).

The trio's passion for sustainable practice originated from the unequal effects caused by unethical business practices on poor and disenfranchised communities. They believe that ethical fashion could be a tool to prevent the exploitation of workers, promote diversity as well as develop skills. They are involved with textile recycling not only because it is a sustainability practice needed by the clothing industry to mitigate the impact on the environment, but also because it is a process that creates an avenue for job creation. They aim to ethically transform the clothing and textile industry, creating a circular economy in the process. Their goal is to have textile waste used for the manufacturing of 100% recycled fabrics (Rewoven, 2021: online).

programme

The proposed programme will take a hybrid approach that incorporates both a textile recycling facility and mixed used components. In this way the local community is brought into the fold and can interact with the site and its purpose in a meaningful way.

An educational element relating to recycled textiles could be introduced, which could also benefit the wider Cape Town community. As a result a textile design school will be included in the programme. The recycled textiles could be used by the textile design school and or sold in a recycled thread store.

In order to lure public activity to the site a thrift market will also be included. The market poses opportunities for young entrepreneurs with small businesses to gain a platform to progress the economic market for the sustainable clothing industry. In recent years the second hand clothing industry has gained a lot of popularity among the youth through the up rise of small online second hand brands. By establishing a place where these businesses can physically retail, could promote small business as well as become an income generating resource to the intervention.

A trade system can be incorporated where the public donate used clothing or fabrics and in return receive a coupon to spend at the market or at the in-house thread store. In this way the recycling facility could gather material to operate and the thrift market a customer basis. The coupons spent at the thrift market could be substituted for rent or deductible.

The proposed programme comprises functions that assist in achieving the goal.
As a result, a new hybrid will be created that combines the functions of production and recycling with education and retail.

- Production – textile recycling facility (greenhouse included for eco dye processes)
- Education – textile design school
- Retail – up-cycle market

Conclusion

As industrial activities and processes continually change and develop, the history of these sites reside in continual change and adaption. Changes in technology and production processes result in unpracticality in using industrial buildings for their original purpose. For the conservation of industrial sites, adaptive reuse is essential to give these abandoned sites an ongoing life, even if this means a change in function (Heritage Council Victoria 2014:10).

This dissertation hopes to unlock ways in which architecture can act as a re-mediator that both promotes the textile industry by advocating sustainable production and reintegrates the redundant industrial site with the urban fabric and acknowledges its history.

Rex Trueform accumulated multiple narratives, whereby individuals recall different meanings in relation to the building. It is thus important for the architecture to acknowledge these differences and attempt to respond in a way which opens up possibilities that explore different interpretations of these narratives.

CHAPTER 2 -Visual study

2.1 Site analysis

2.1.1 Macro
2.2.2 Meso
2.2.3 Micro

2.2 Conservation approach: Burra Charter

Chapter 2 visual study- Site analysis

This chapter is a visual analysis of the site. The site analysis is studied in 3 sections: first the macro (the broader context), then the meso (the urban corridor) and finally, the micro (the immediate context). This is followed by a conservation approach. The purpose of this chapter is to establish the critical considerations of the investigation, which indicated both the opportunities and challenges of the intervention.

2.1 Site analysis

2.1.1 Macro analysis

The macro analysis examines the Rex Trueform location in the broader context of the project. It orientates the reader on the location of the site in terms of Cape Town's built fabric.

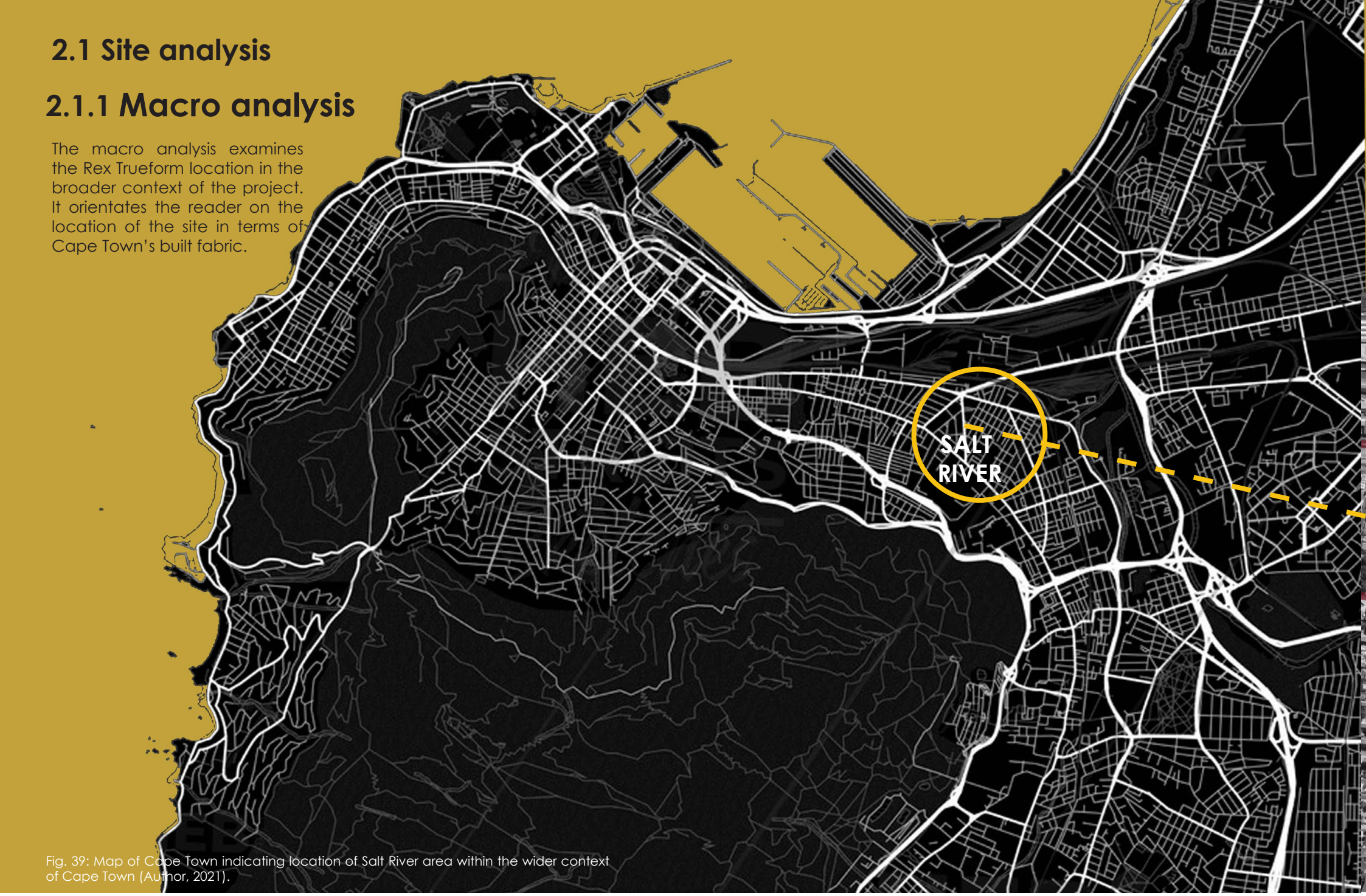


Fig. 39: Map of Cape Town indicating location of Salt River area within the wider context of Cape Town (Author, 2021).

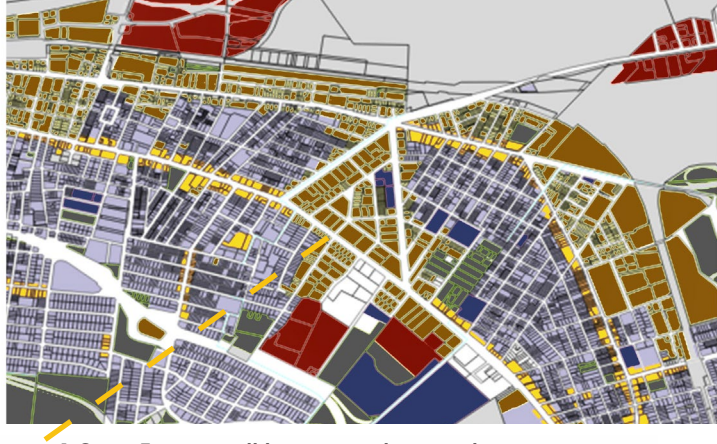
Located in Salt River, Cape Town, the site is approximately 3.5 kilometres from Cape Town's city centre. Salt River is a semi-industrial area surrounded by residential neighbourhoods, such as Woodstock and Observatory. Woodstock and Observatory are both in the process of developing to become vibrant social nodes outside the city centre. They have transformed into cultural art hubs bringing people together to enjoy art, fashion, design and food.

Salt River can follow its neighbours and revitalise the area to become a vibrant hub of activity. Its close proximity to the city centre allows easy access to the public via the major motorways.

Cape Town experiences hot summers and rainy winters. The site's proximity to the ocean exposes it to gusts of strong wind.



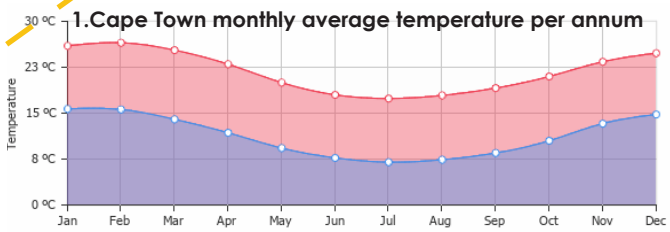
Fig. 41: Zoning in and around the site (Author, 2021).

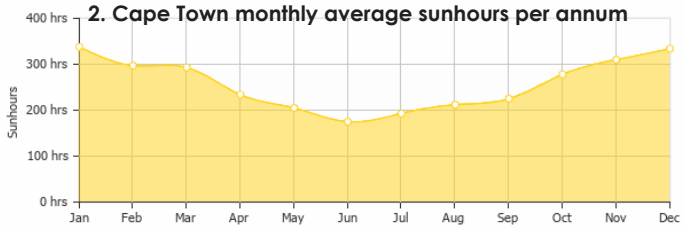


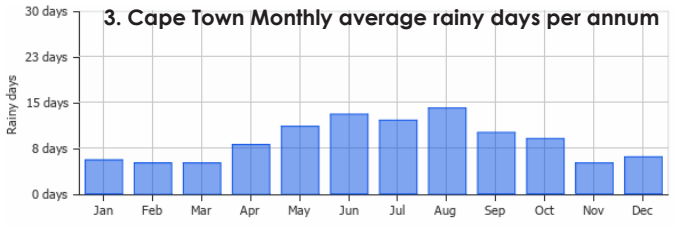
2.1.1 Macro analysis



Fig. 40: Salt River area indicating major motor ways as well as site (Google Earth, 2021: online). Adapted by author.







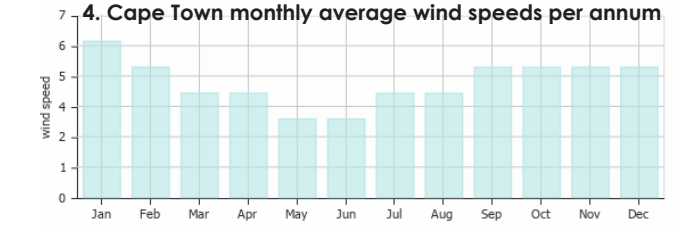


Fig. 42-45: Graph 1-4 Cape Town annual weather statistics (Weather & Climate, 2021: online)

2.1.1 Macro analysis

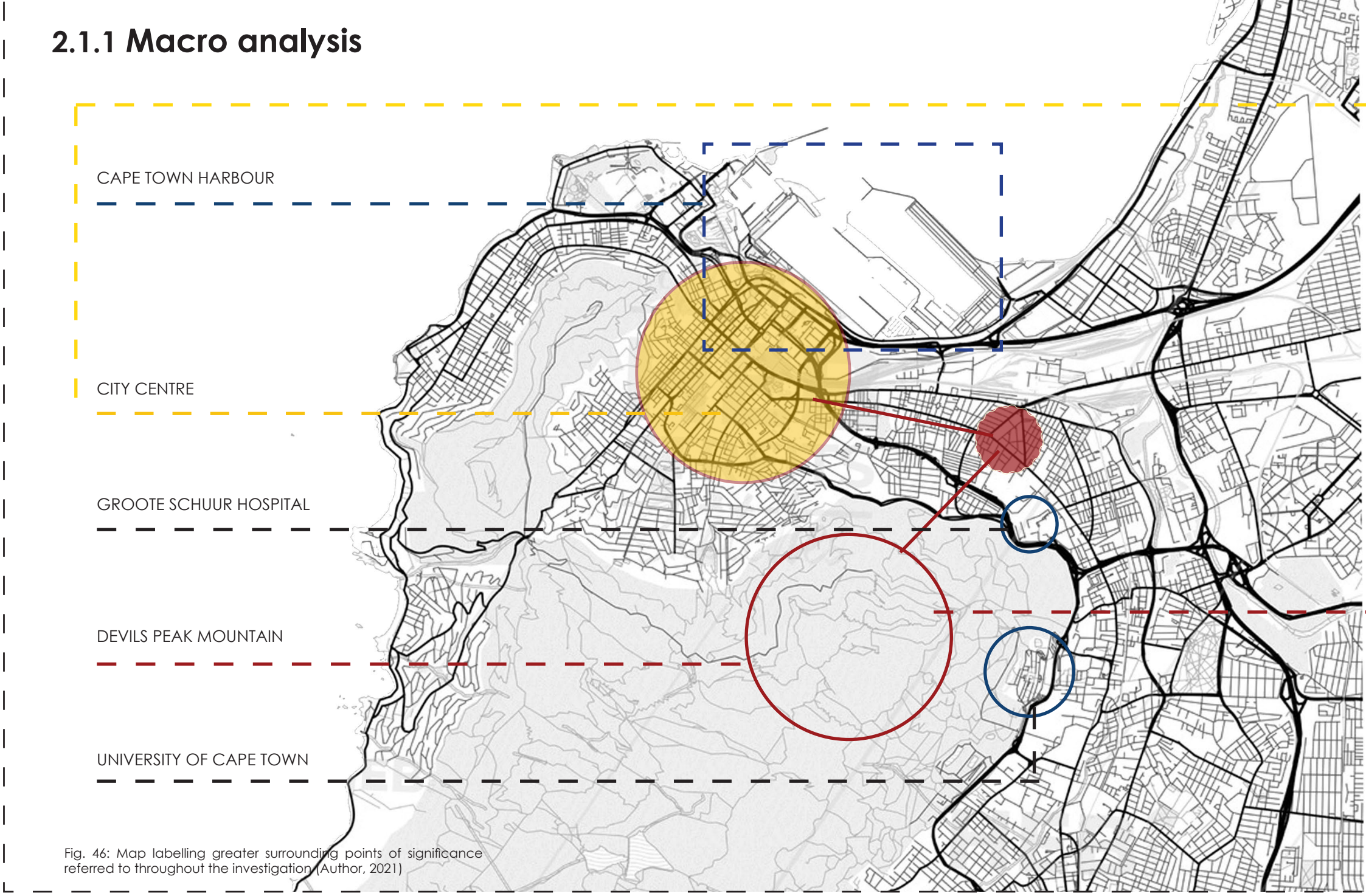


Fig. 46: Map labelling greater surrounding points of significance referred to throughout the investigation (Author, 2021)



Fig. 47: Zoomed in view of City Centre from Salt River (Google Earth, 2021: online).

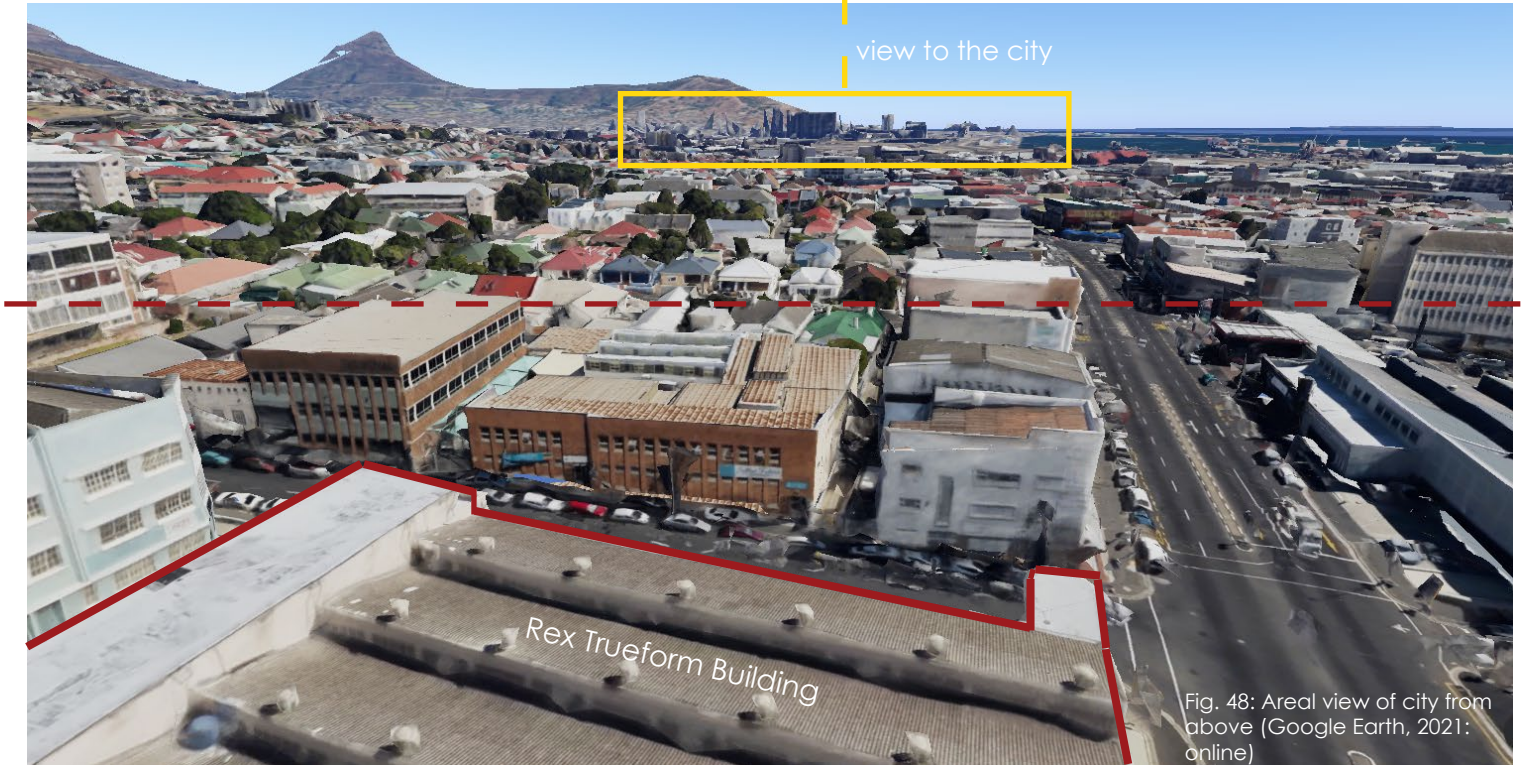


Fig. 48: Areal view of city from above (Google Earth, 2021: online)

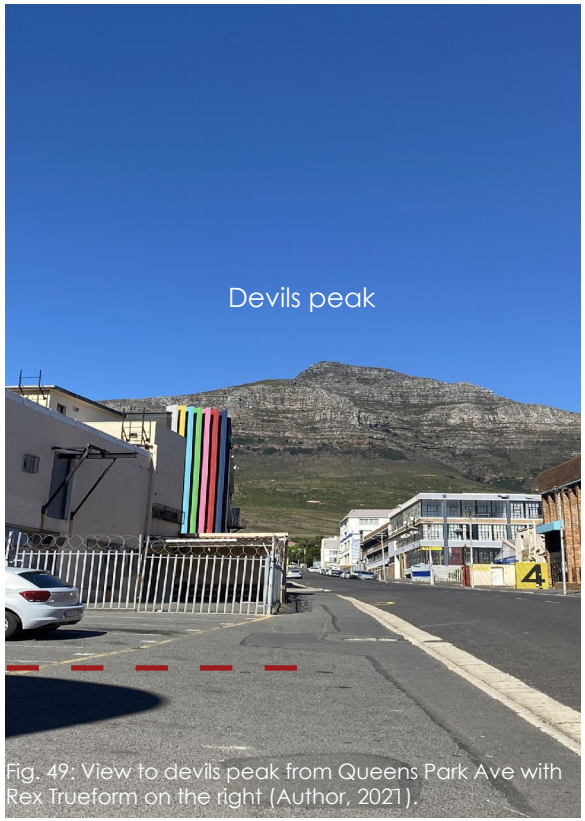


Fig. 49: View to devils peak from Queens Park Ave with Rex Trueform on the right (Author, 2021).

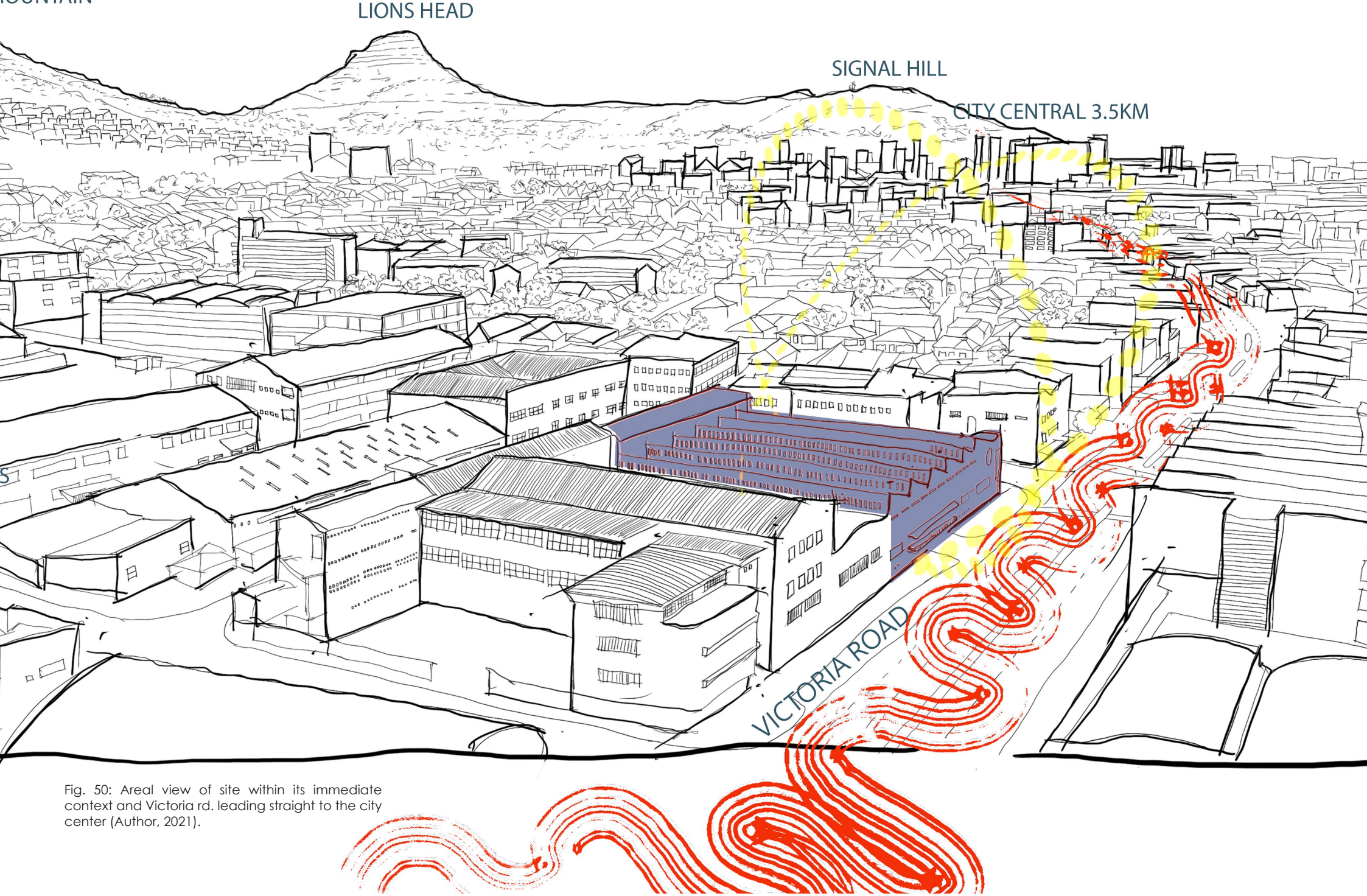
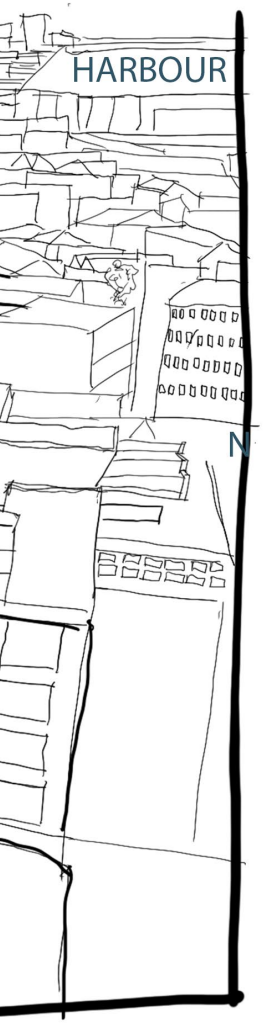


Fig. 50: Areal view of site within its immediate context and Victoria rd. leading straight to the city center (Author, 2021).

2.1.2 Meso Analysis



The meso analysis examines the context of the surrounding urban environment. It provides insight into the immediate urban fabric and its influence on the project.

The site spills out onto Main Rd (Victoria Rd), which leads directly to the city centre to form a direct access route past the site boundarie (see fig. 50). The urban area surrounding the site was designed exclusively for industry and production. It does not cater for the pedestrian – there is not a single pedestrian crossing over busy Victoria Rd (see fig. 52) and there are no designated rest spaces or shading for passers-by (see fig. 67 & 68).

The character of the surrounding architecture is a combination of industrial buildings, offices, residential buildings and retail stores (see fig. 53-66). Street-side parking is available on Factory Rd, Queens Park Ave, Brickfield Ave and Friend St (see fig. 52). There is an upward slope towards the foot of Devil's Peak, which creates a change in floor level from Main rd. to Factory rd. (see fig. 69).

2.1.2 Meso Analysis

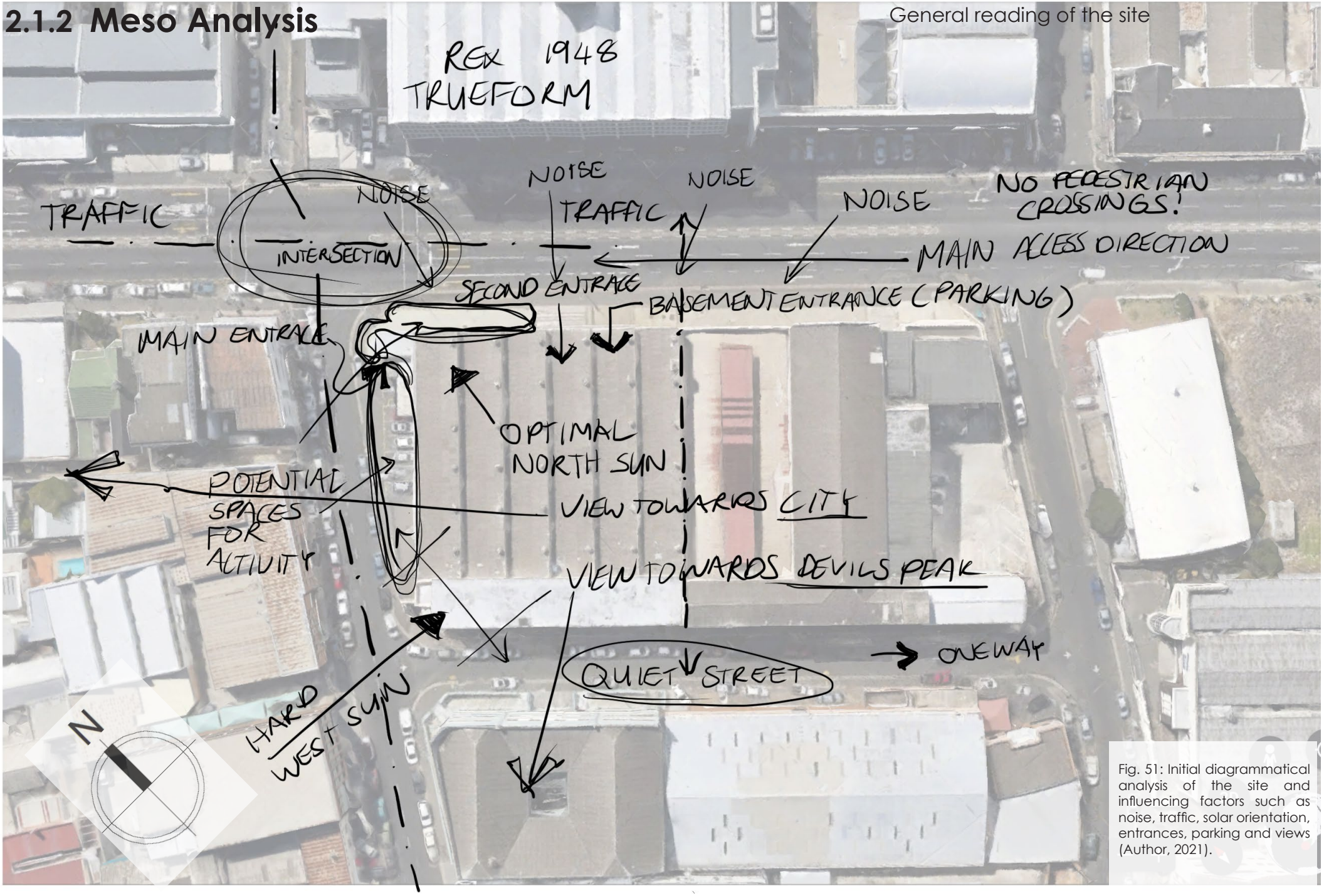


Fig. 51: Initial diagrammatical analysis of the site and influencing factors such as noise, traffic, solar orientation, entrances, parking and views (Author, 2021).

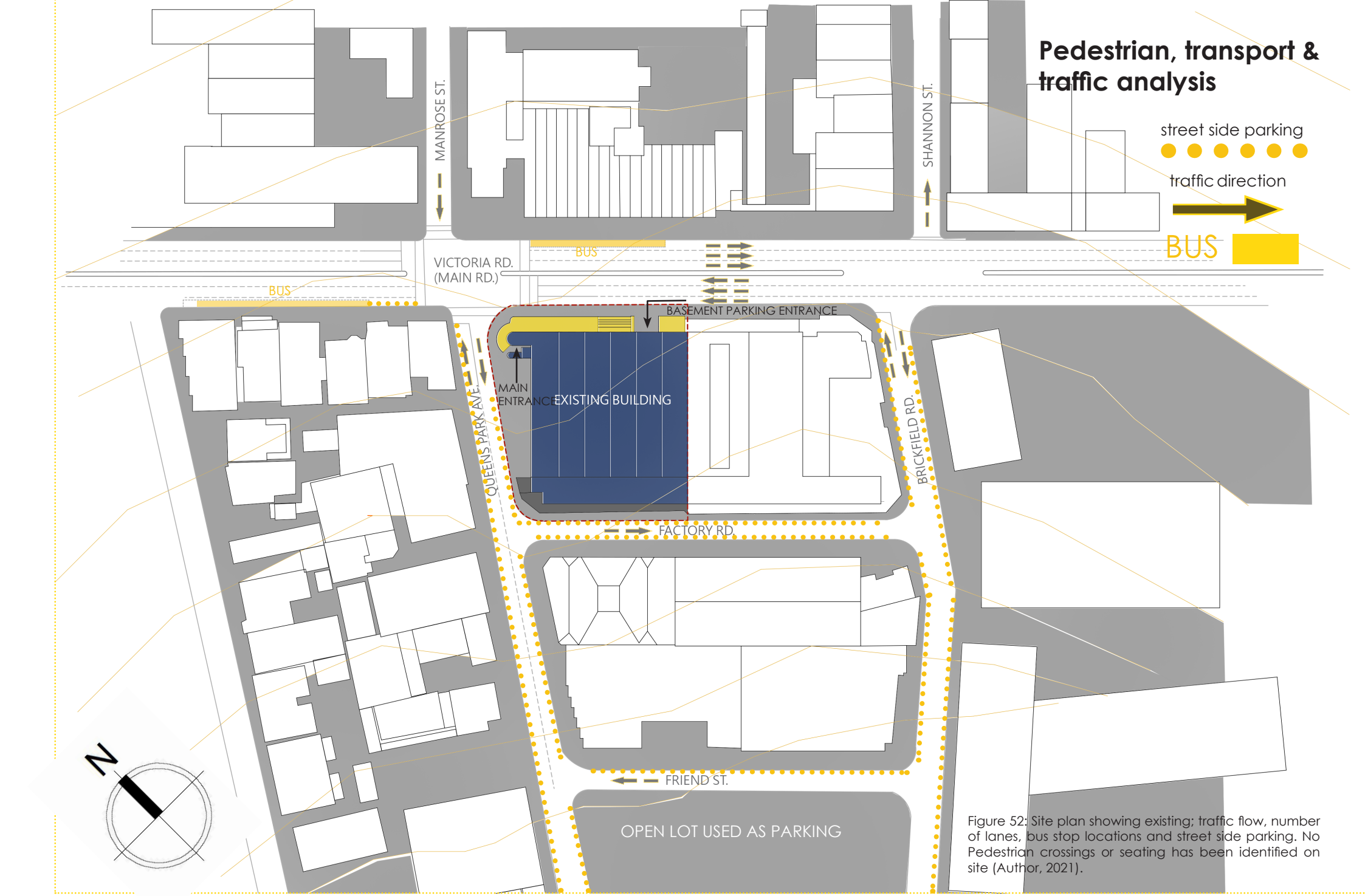


Figure 52: Site plan showing existing; traffic flow, number of lanes, bus stop locations and street side parking. No Pedestrian crossings or seating has been identified on site (Author, 2021).



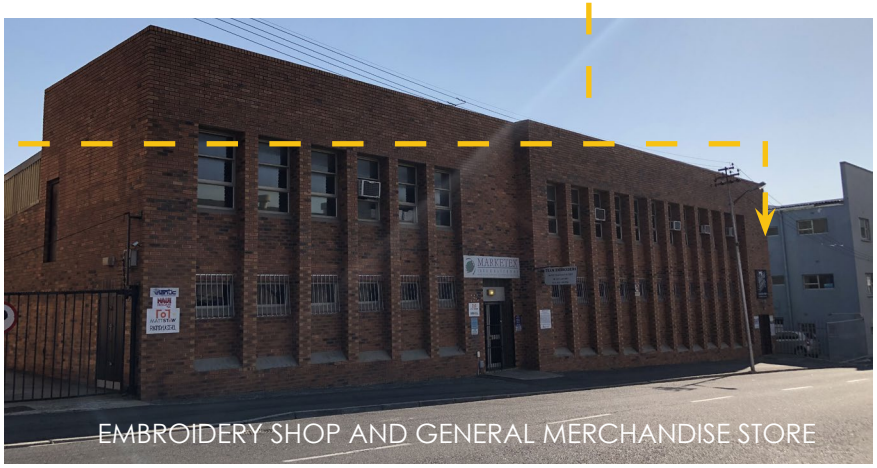






2.1.2 Meso Analysis









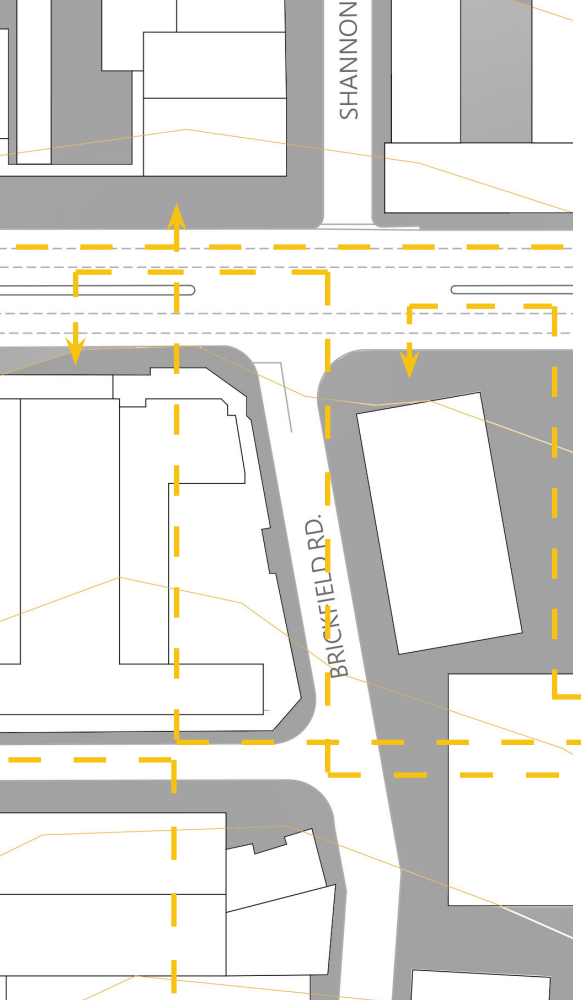




Fig. 53- 66: Site plan with photographs indicating surrounding building use and character (Author, 2021).

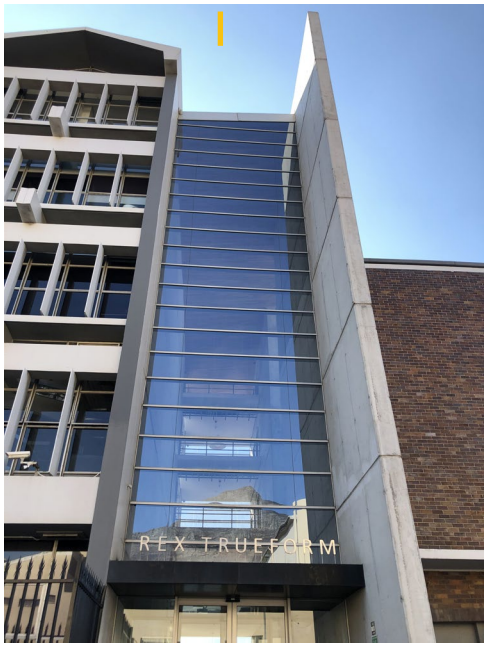


Surrounding building occupancy and character analysis





ENTRANCE TO TOKYO NEXT TO SECSECOND REX TRUEFORM FACTORY





2.1.2 Meso Analysis

Street & site sections

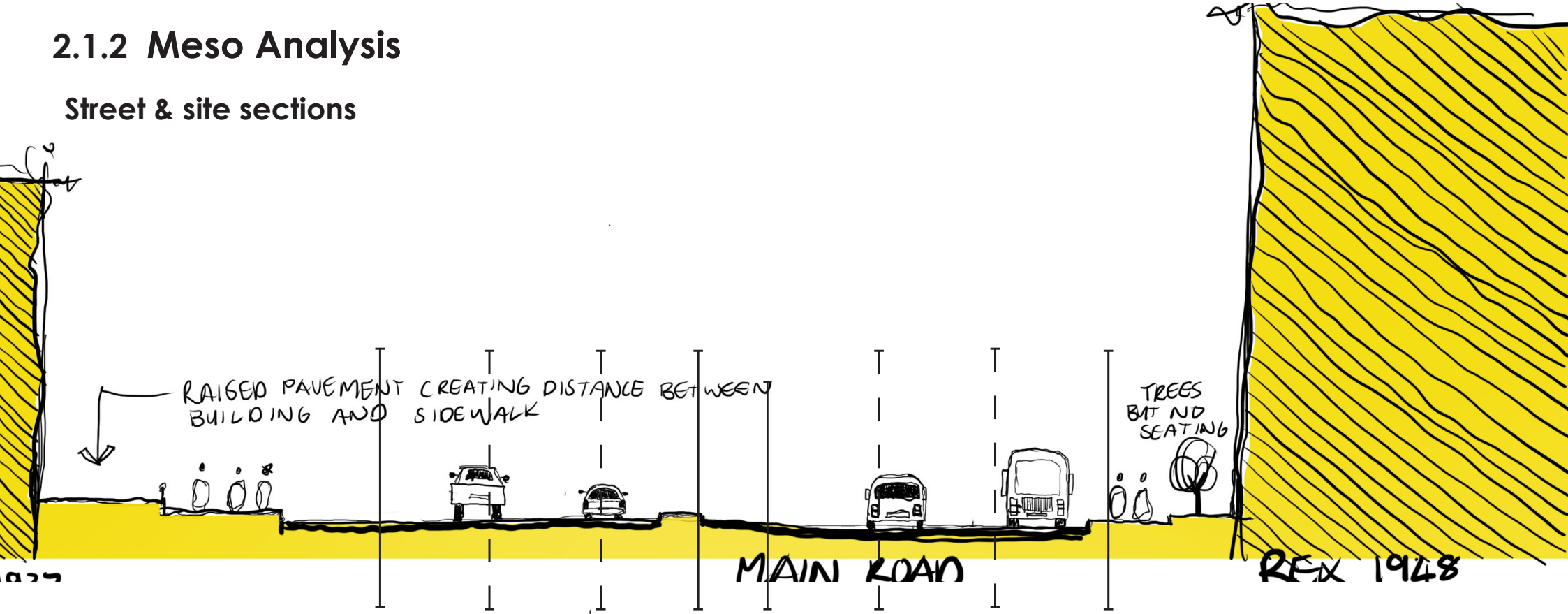
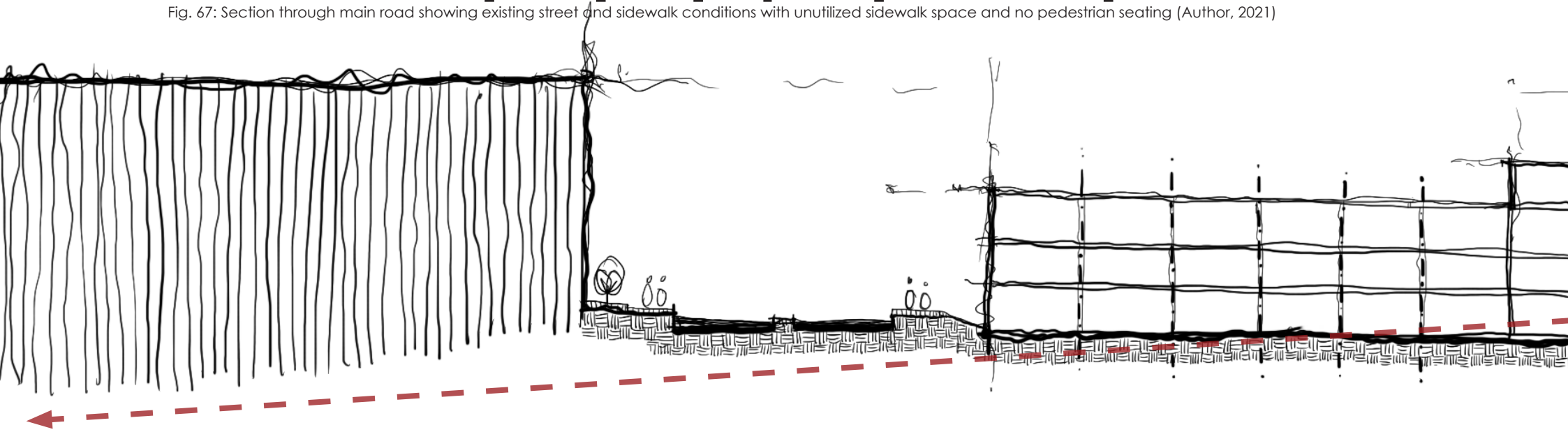


Fig. 67: Section through main road showing existing street and sidewalk conditions with unutilized sidewalk space and no pedestrian seating (Author, 2021)



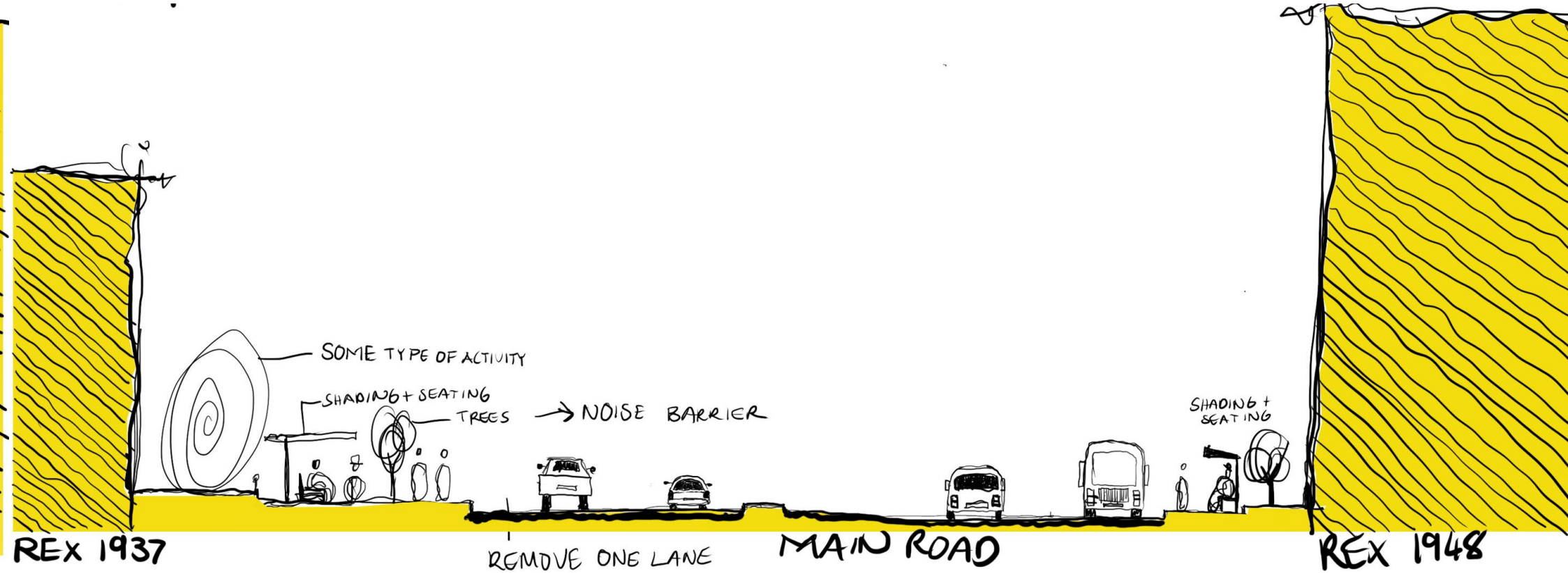


Fig 68: Section through main road showing proposed street and sidewalk conditions, removing one lane and implementing shading and pedestrian seating (Author, 2021).

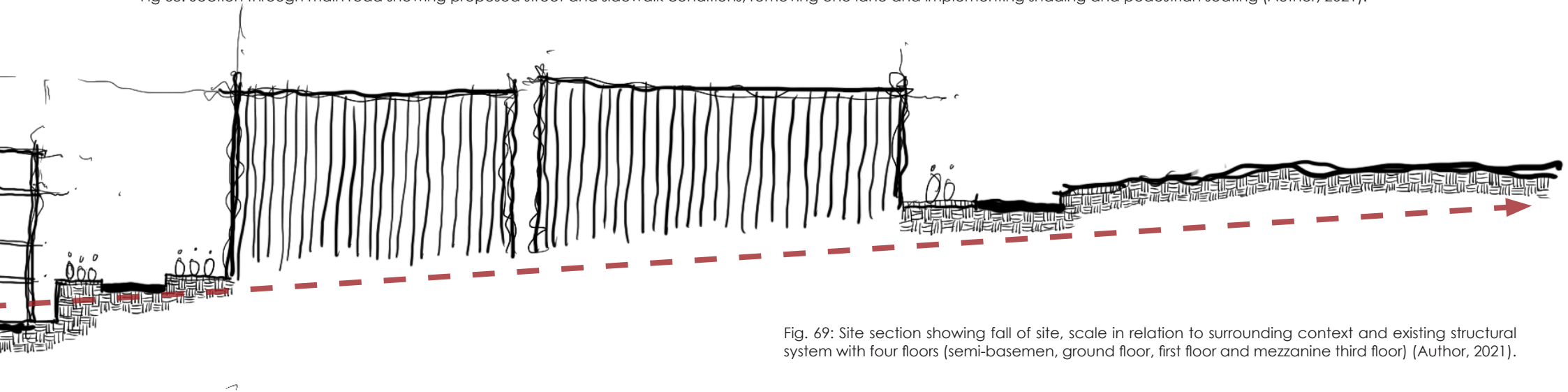


Fig. 69: Site section showing fall of site, scale in relation to surrounding context and existing structural system with four floors (semi-basemen, ground floor, first floor and mezzanine third floor) (Author, 2021).

2.1.2 Meso Analysis

Street view perspectives

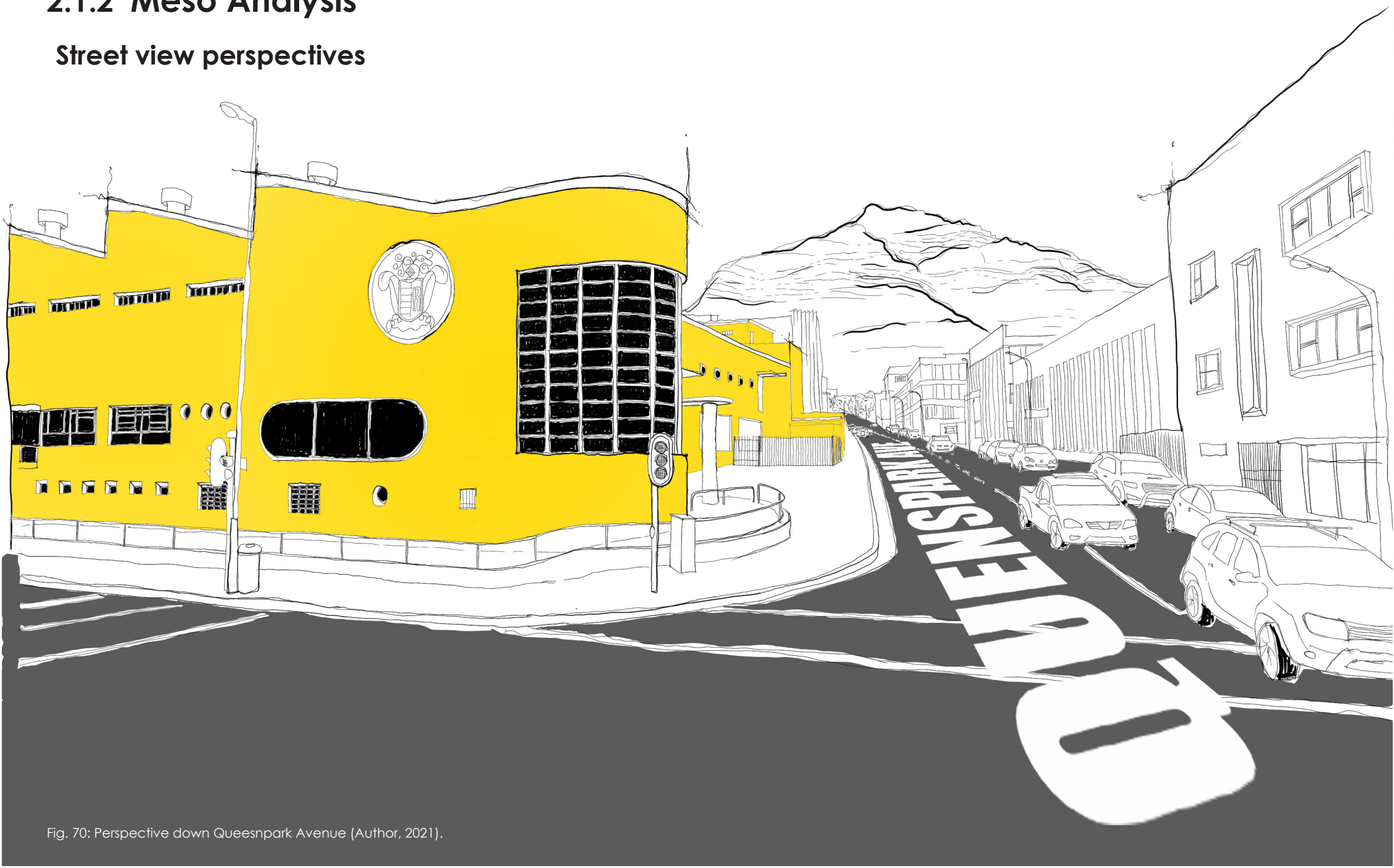


Fig. 70: Perspective down Queesnpark Avenue (Author, 2021).

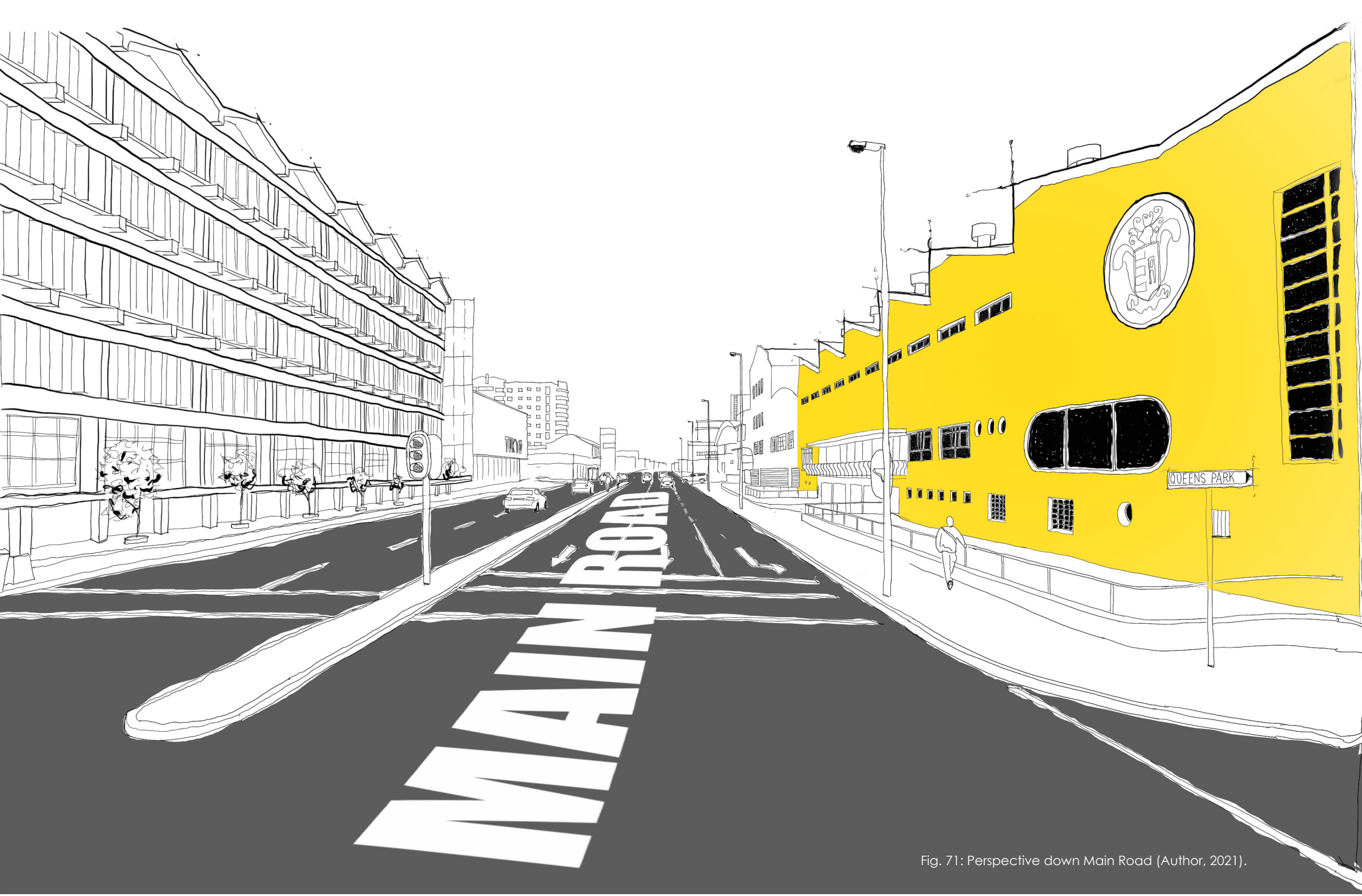


Fig. 71: Perspective down Main Road (Author, 2021).

2.1.3 Micro Analysis

The micro analysis examines the existing building and its immediate conditions. It provides insight into the building's relation to its immediate context.

The building comprises four floors: a basement, ground floor, first floor and mezzanine floor at the back of the building. The basement will be utilised for parking and storage, whilst the new programme will be inserted on the ground floor, first floor and mezzanine level. The structural grid of the existing building provides a guideline for spatial development and structural points for connection.

The interior spaces on the ground floor receive little to no sunlight, consequently they are dark and unpleasant. This creates a problem that can be solved by partly opening up the first floor. Both the ground floor and first floor offer large open spaces. This gives the project freedom to insert new spaces and plan according to the needs of the programme.

The building is disconnected from interaction with the outside word. The raised and enclosed platform of the north façade creates a barrier between the pedestrian and the building. This creates the opportunity for intervention to reintegrate the building with the urban fabric. Although this edge creates a barrier, it also creates an organic sense of movement around the building's prominent semi-circular stairs. Naturally, this articulates the staircase and developing this space thus presents an interesting design challenge. The design solution should be sensitive to not take away from the north façade and the staircase, as these features are essential to the character of the existing building.

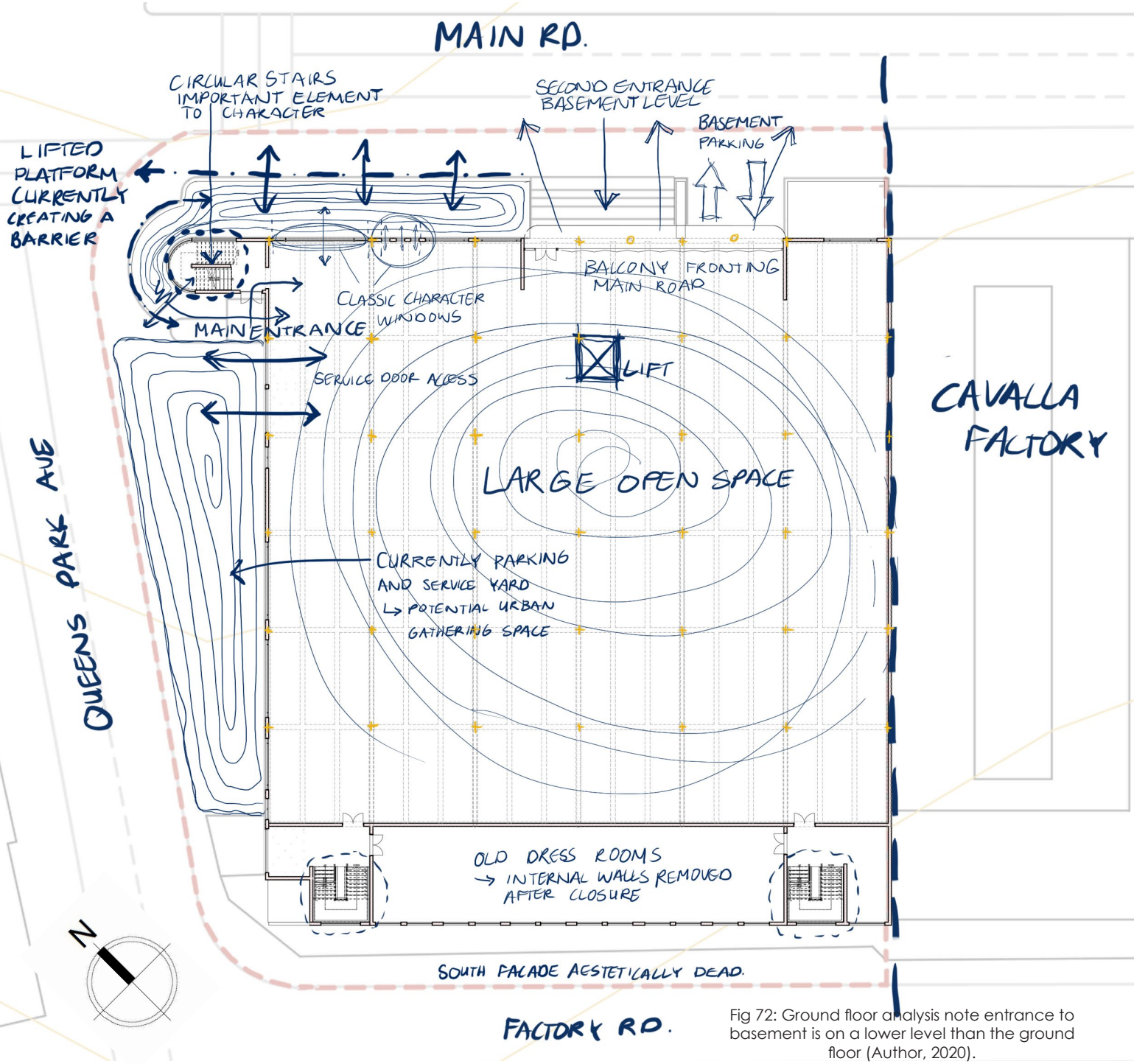


Fig 72: Ground floor analysis note entrance to basement is on a lower level than the ground floor (Author, 2020).









Fig 73-76: Photos of the interior of the building (Pinnock, n.d.: online).

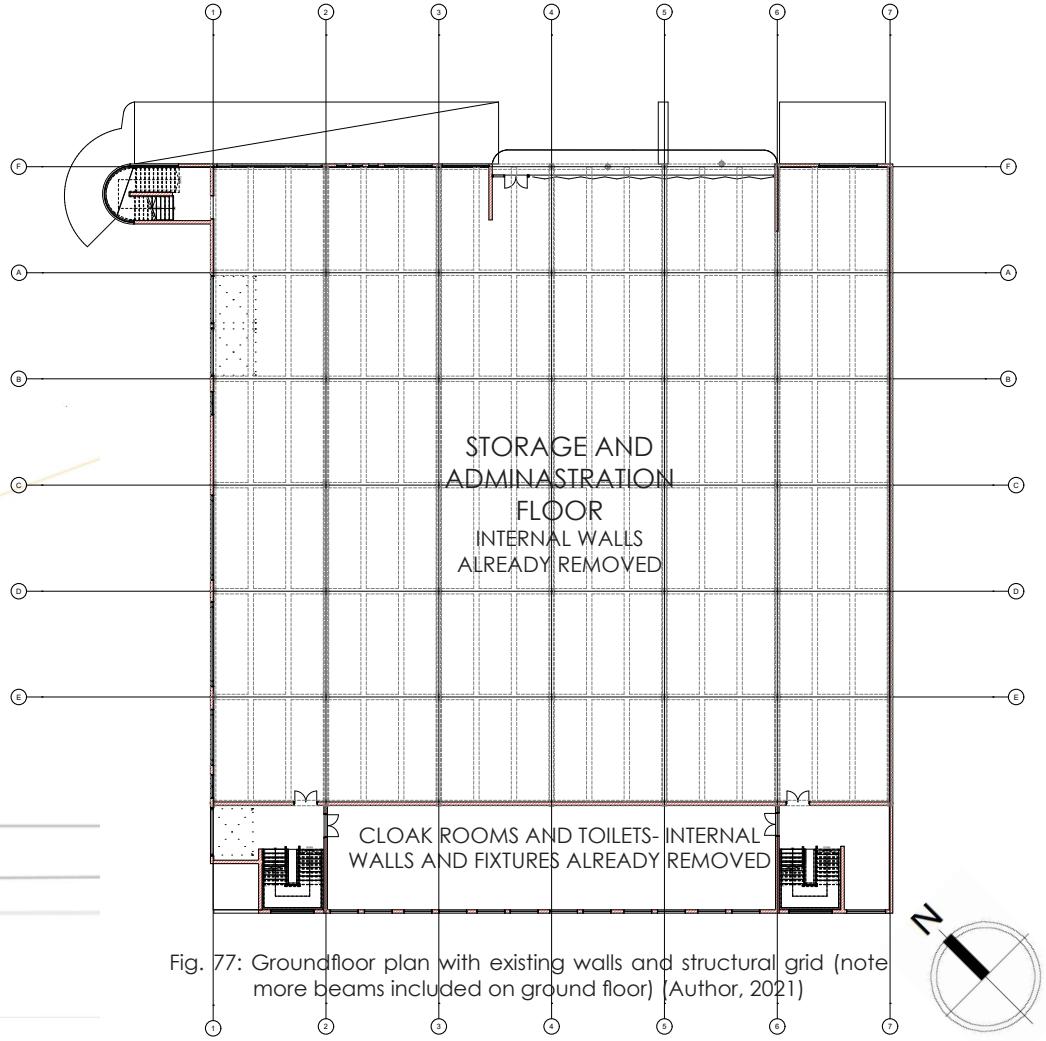


Fig. 77: Groundfloor plan with existing walls and structural grid (note more beams included on ground floor) (Author, 2021)

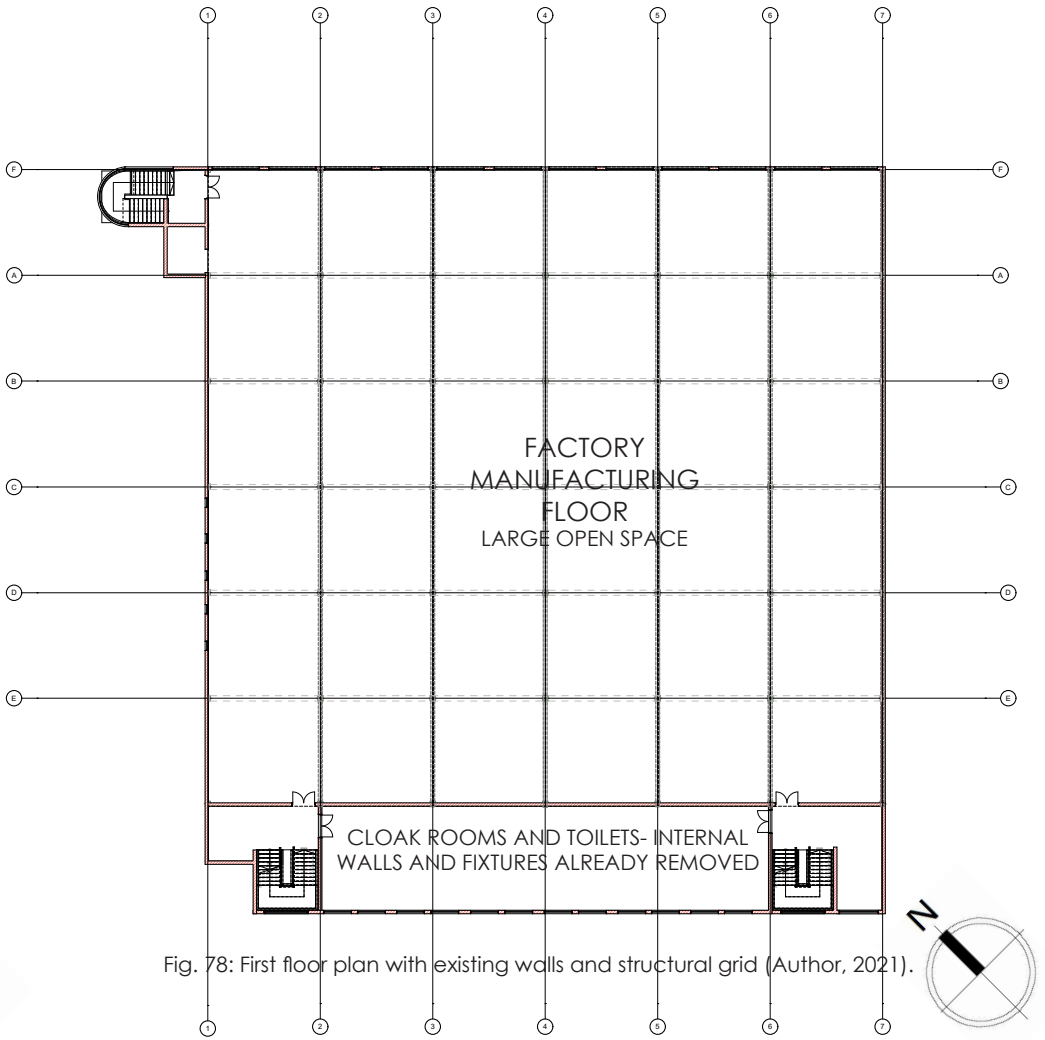


Fig. 78: First floor plan with existing walls and structural grid (Author, 2021).

Building photos



Fig. 79: North façade fronting Main Road (Author, 2021).





Fig. 80: South façade fronting Factory Road (Author, 2021).



Fig. 81: West façade fronting Queenspark Avenue (Author, 2021).

Building photos

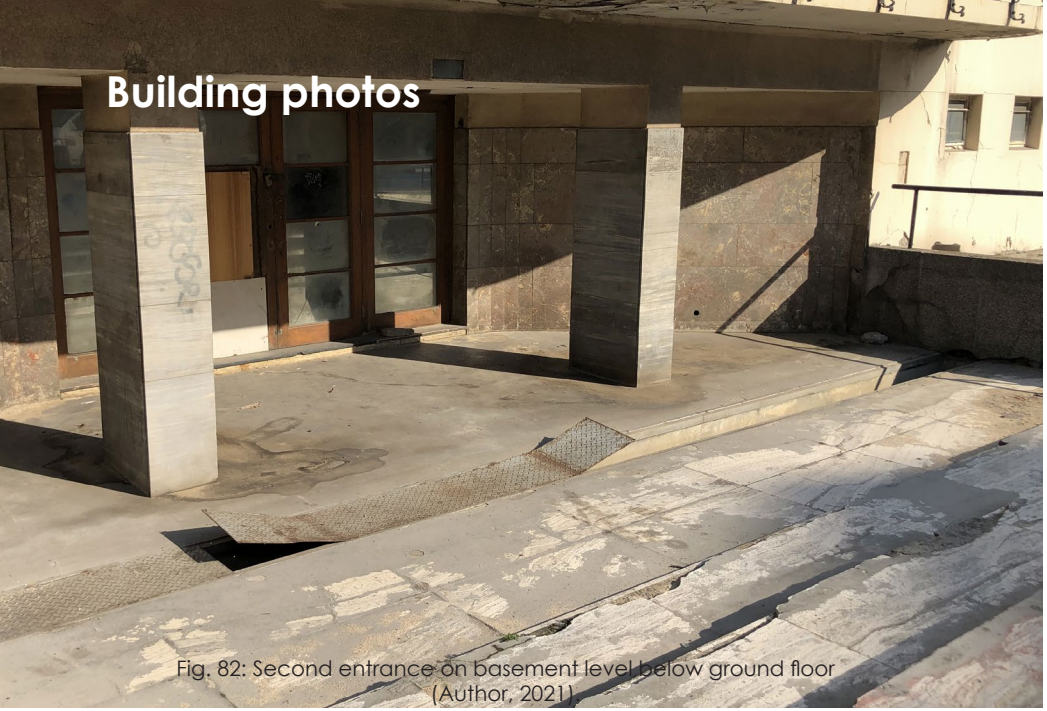


Fig. 82: Second entrance on basement level below ground floor (Author, 2021)



Fig. 83: Basement vehicular entrance below ground floor balcony fronting Main Road (Author, 2021).





Fig. 84: Perspective view down Factory Road (Author, 2021).



Fig. 85: Detail of curved railing around semi-circle stairs (Author, 2021).



Fig. 86: Main entrance on Queesnpark Avenue (Author, 2021).

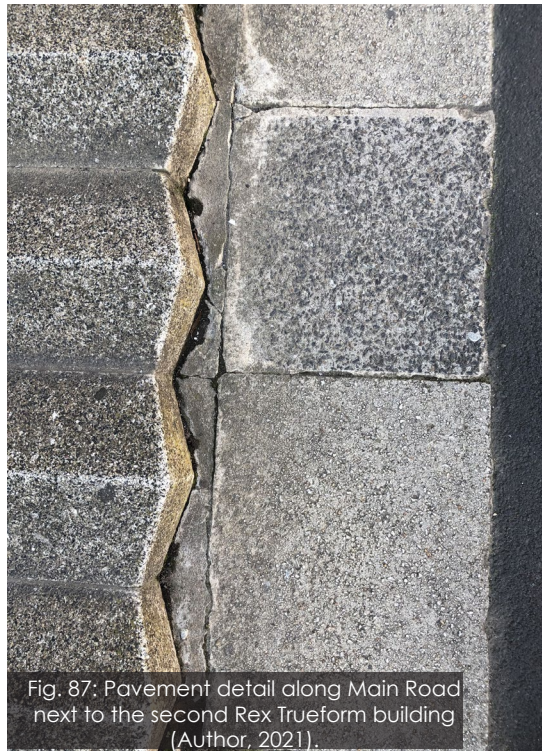


Fig. 87: Pavement detail along Main Road next to the second Rex Trueform building (Author, 2021).

Building photos



Fig. 88: Spikes on south boundary wall (Author, 2021).



Fig. 89: Perspective along south boundary wall (Author, 2021).



Fig. 90: Perspective along north sidewalk (Author, 2021).



Fig. 91: Perspective along raised platform on north boundary (Author, 2021).

2.2 Conservation approach: Burra Charter

Places of cultural significance have the ability to enrich people's lives by developing a deep and inspiring sense of connection to community and place. This connection relates to past and lived experiences, remembered through buildings or structures. These physical historical records are important expressions of identity and experience and must therefore be conserved to preserve connections to cultural history.

The Burra Charter is a guiding tool for the conservation management of places of cultural significance. It was developed by the Australian National Committee of the International Council on Monuments and Sites (ICOMOS).

The purpose of the Burra Charter is to set basic standards of practice and assist in decision-making regarding places of cultural significance. It promotes a cautious approach – changing as little as possible and maintaining as much of the original as possible – to preserve the cultural significance of the structure. (Burra Charter, 2013: 1). Since the cultural significance of a place may not always be readily apparent, it should be explained through interpretation. The interpretation should deepen understanding and enhance engagement, whilst maintaining cultural appropriateness (Burra Charter, 2013: 8).

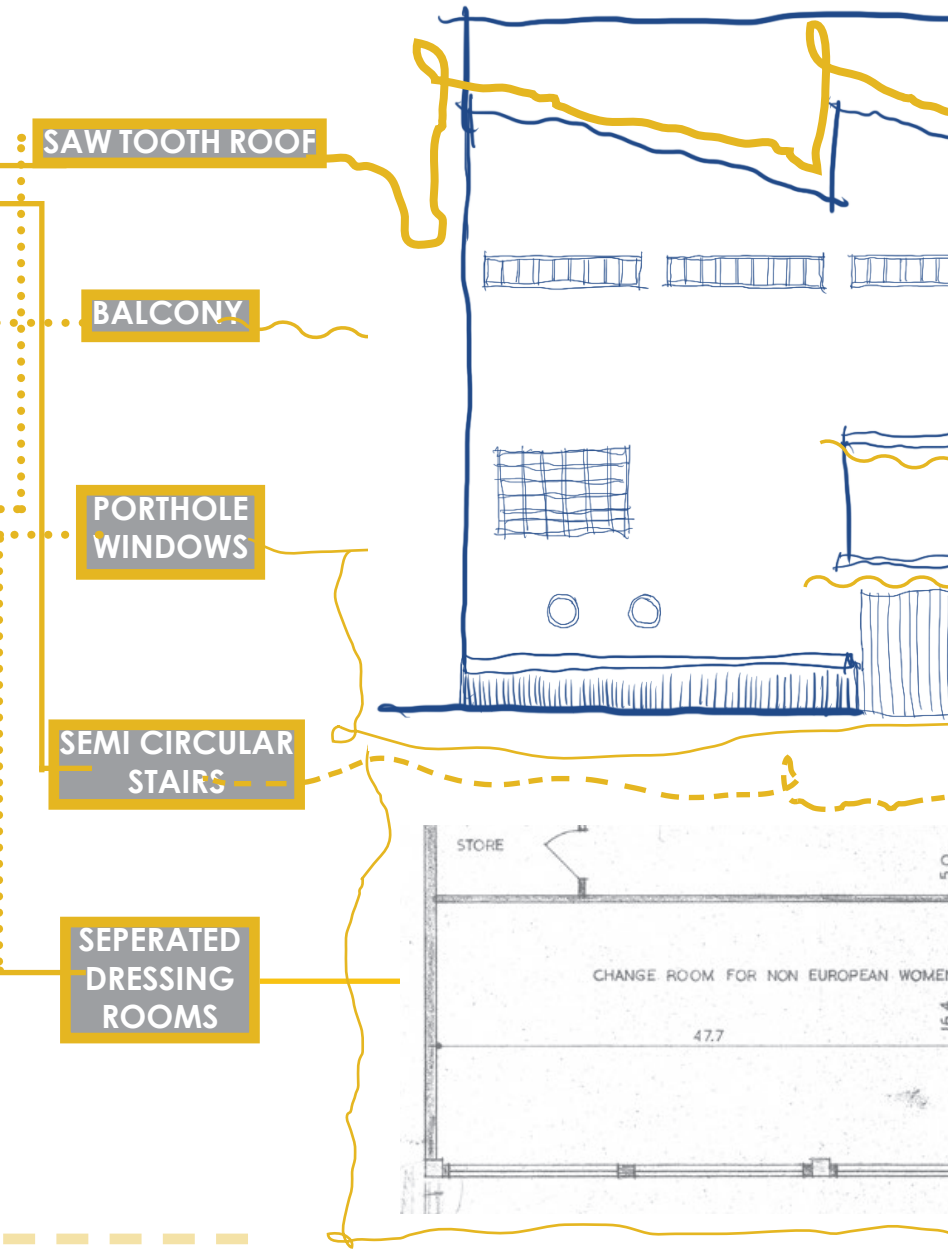
1. identify place and associations to understand the significance

- One of the first modernist buildings in Cape Town, constructed in 1937 by pioneering modernist architect Max Policansky: the use of modern materials (for the time), free-flow open spaces (as seen in the balcony protruding outward from the interior), stripped of decoration (form follows function), and the saw tooth roof that allows light to enter the factory main floor (functionality).

- Rex Trueform was a garment manufacturing site for men's suits. The company played a large role in the garment economy between the mid-1940s to early 1980.
The company emblem can still be seen on the north façade facing Main Rd.

- Apartheid constructs were enforced on the workers based on race and gender.
The window arrangement appears playful yet, behind the windows lie the insensible duplication of services that separated workers based on race and gender. Separate entrances are located on the south façade, facing Factory Rd, with the main entrance on the corner of Queens Park Ave and Main Rd. The building underwent changes after a fire in 1944, which resulted in the changing rooms being moved to the back of the building.

Understand significance



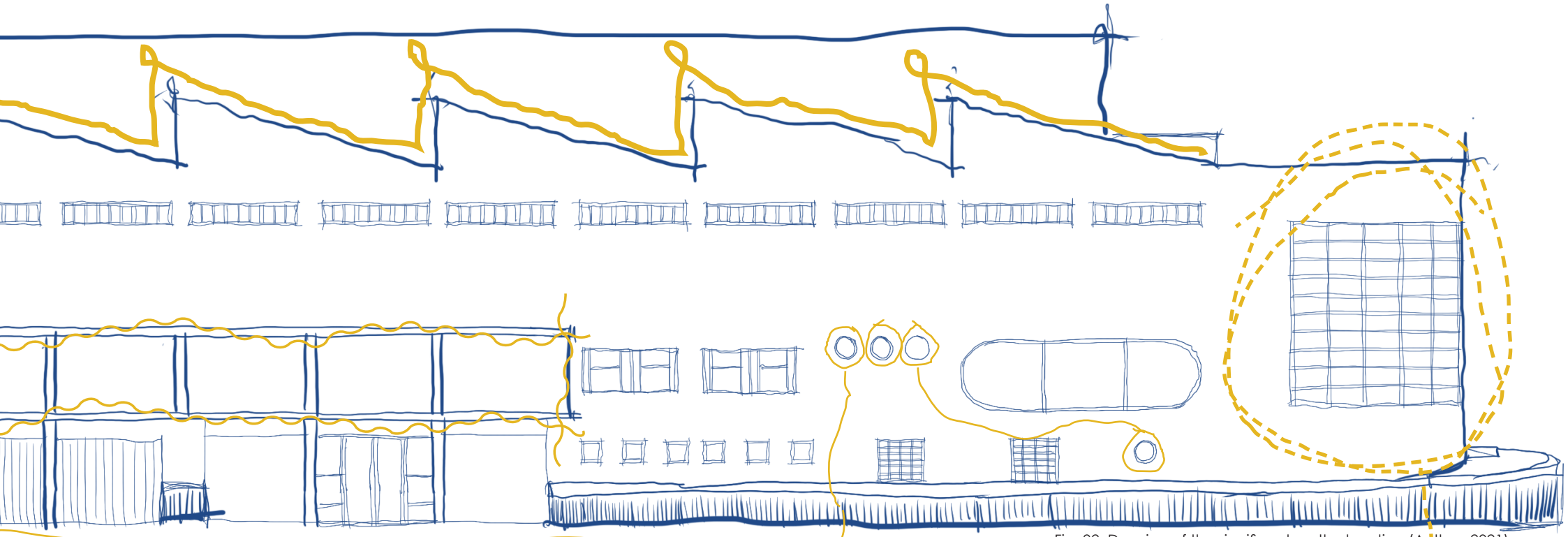


Fig. 92: Drawing of the significant north elevation (Author, 2021).

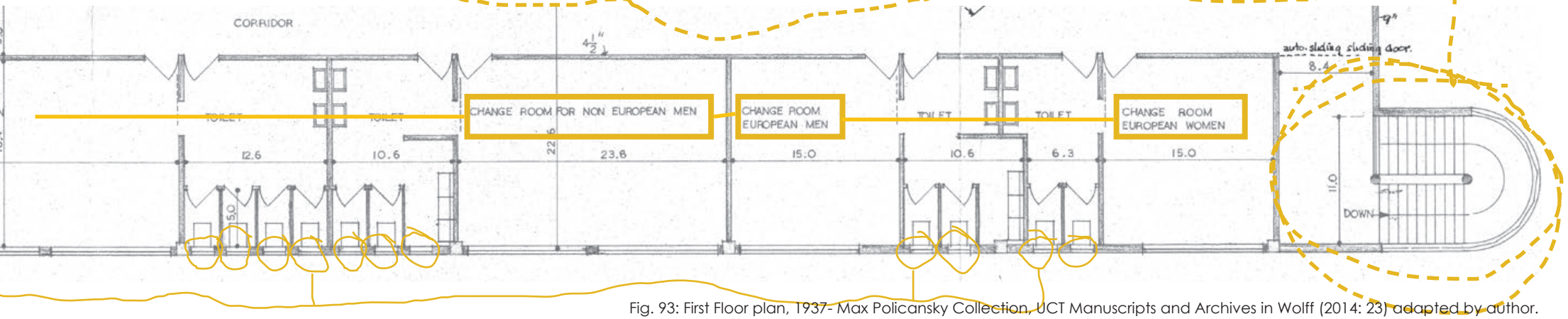


Fig. 93: First Floor plan, 1937- Max Policansky Collection, UCT Manuscripts and Archives in Wolff (2014: 23) adapted by author.

2.2 Conservation approach: Burra Charter

2. Assess cultural significance

The site is a prime example of how industrial architecture of the time materialised and spatialised conditions of modernity to ascribe identity through apartheid, modern industry, and modern architecture. The place thus becomes a valuable reminder and provides insight into the narrative of South African social, architectural and industrial history.

3. Identify all factors and issues

3.1 identify obligations arising from significance

The saw tooth roof is covered with asbestos, which would have to be removed to comply with health and safety regulations. The exterior doors are nailed shut from the interior, giving the building a bare appearance from the outside. Although the structure of the building is in good condition, the exterior needs surface maintenance. The interior of the building has been neglected due to misuse (see fig. 98), but the first floor is in good condition (see fig. 95).

The exterior concrete balcony on Main Rd is sprawling and the balustrades are rusting (see fig. 94). The mosaic tiles on the columns are chipping away and the enclosing timber door frames are in a bad condition due to water damage. Various glass panels from the semi-circular stairs are missing (see fig. 97) and the tread tiles are chipped (see fig. 96 & 100). The internal walls in the dressing rooms have been removed and the sanitary fittings cleared in anticipation of future development (see fig. 99) (Wolff, 2014: 61).

3.2 other factors that influence the future of the place

There is a growing need to exhibit the history of the textile industry and factory conditions of the time. The textile industry today requires a revival that comments on the ethics of consumption and production.

The development of the surrounding areas, such as Woodstock and Observatory, has led to them becoming vibrant hubs of food, fashion, art and design – revitalising dangerous areas to become an incredible mix of diversity and culture. To further expand this notion of diversity in development, the place must coincide with a mixed-use programme that attracts people to the area and unites different cultures through public gathering spaces.



Fig. 94: Dilapidating balcony with paint sprawling (Author, 2021).



Fig. 95: The first floor of the building in good condition –van Staden, C (2013) in Wolff (2014: 137).



Fig. 97: Missing windows on semi-circular stairs (Author, 2021).



Fig. 98: Damaged floor on ground level (Author, 2021).

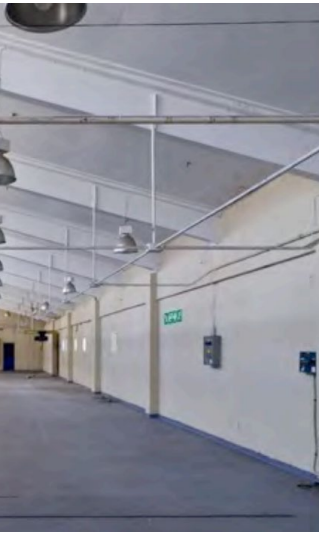




Fig. 96: The grand circular stairs with a few broken stairs and a missing handrail – Van Staden, C. (2013) in Wolff (2014: 138).



Fig. 99: Traces of removed plumbing fixtures at the back of the building (Author, 2021).



Fig. 100: damaged stairs at basement entrance (Author, 2021).

4. Develop policy

The north façade is the most important and its original character should be conserved as much as possible. The west façade is also noteworthy in the character of the windows, but solid sections create the opportunity for changed intervention.

The policy suggests that the design should:

− Allocate a new function that attracts visitors and generates income to make the project viable
− Dedicate spaces to exhibit the significance of the building history
− Remove the old asbestos roof covering without altering the existing saw tooth roof-scape
− Replace all broken glass panels and windows in accordance with original windows
− Adapt and reconstruct broken or chipped stairs in the semi-circular staircase and second entrance beneath the balcony
− Maintain functional and practical planning with sustainable design that utilises space appropriately to minimise waste
− Design all new additions to not impede on the building's cultural significance
− Implement a new drainage system where needed for sewerage disposal

5. Develop a management plan

Management and maintenance would be the responsibility of a newly planned textile design school and the textile recycling company.

The surrounding urban fabric should be redeveloped to accommodate pedestrian movement and gathering and supply shade.

The existing building should be thoroughly documented prior to change.

6. Monitor and review the plan

The local heritage council would need to review and monitor the completed plans.

Conclusion

Rex Trueform is an industrial heritage site in an innovative, growing city. The mental place is unknown to the city and does not fit into the vibrant Cape Town fabric. It exists as an old building unnoticed by the city dwellers. Its physical place is a semi-ruined artefact of South African history that exists only as an abandoned factory building.

The site exists with a lot of potential waiting to prevail as a regenerated intervention. However, the building is of utmost significance and the design approach ought to take care to not diminish the value that resides within the place. Instead of overpowering and undermining the existing character, the architectural response must ensure that these qualities be preserved or even enhanced.

Identified challenges that arose from the visual analysis:

-Choosing an appropriate material to contrast the existing smoothly plastered and light colour façade
-Responding to the predominantly west facing orientation
-Activating the pedestrian sidewalk without disturbing the existing north or west facades
-Allow light to enter the deeper darker quarters of the interior spaces
-Protect the building against winds blowing from the harbour side

Identified opportunities that arose from the visual analysis

- The quiet Factory road on the South façade could create an opportunity to relocate a service yard to this section of the building
- The wide sidewalk on the north façade allows ample opportunity to introduce an urban intervention that caters for the pedestrian by passer
- The need to remove the timber door frames enclosing the balcony could allow the north façade to become permeable and open towards Main Road without disturbing the north elevation
- The large open plan creates a degree of freedom to implement a new programme on the interior of the building without demolishing existing walls

Part 2- conceptual and theoretical approach
CHAPTER 3

3.1 Introduction to theory and conceptual approach
3.2 Narrative
3.3 The architectural chronotope and narrative
3.4 Approach
3.5 Prefiguration- sorting (Identifying characters)
3.5.1 Genius loci
3.6 Configuration- shredding (developing the characters)
3.6.1 Emplotment (as "events")
3.6.2 Intelligibility – (essential theme as the "action")
Theoretical case study 1: Duisburg Nord- Landscape Park (1991)
conceptual exploration 1: Reimagining Rex Trueform through an Ecological lens
Theoretical case study 2: Parc de la Villette- cultural park (1984)
conceptual exploration 2: Syncronised layering of ideas
Theoretical case study 3: Zeitz Mocca- contemporary art museum (2017)
conceptual exploration 3: revealing layers to expose and celebrate the significance
3.6.3 Intertextuality: ("tropes")
3.7 Refiguration- re-spinning (dialogue between the characters)
3.7.1 Palimpsest of layers
3.8 Summary of the conceptual approach as conclusion to chapter 4

RQ: How can a post-apartheid industrial heritage site in Salt River, Cape Town be re-imagined through methods of recycling in order to emphasise the need for sustainable textile production and contribute to cultural heritage conservation?

Part 2 chapter 3 (theoretical and conceptual approach applied to history)

In Chapter 3, the conceptual approach and theoretical investigation are established, which were used to formulate an appropriate response in the form of a design strategy. The history of the building is considered, as it indicated the immediate effects on the design approach. As the project progressed, the understanding of the theoretical implications and interpretations continually developed and the architectural response was adapted, as will be discussed in the design development in chapter 5.



Fig. 101: Conceptual drawing of the women who worked in the factory, cloaked in Rex Trueform suits as the building façade (Author, 2021).

3. Theory and conceptual approach

3.1 Introduction to theory and conceptual approach

Recycling is the action or process of converting waste into reusable material. The first step is to realise the value that is evident within the waste. The action of transformation creates something new, and contained within this new product are the fibres of the old. The product is transformed without losing its essence. Recycling Rex Trueform would thus suggest a transformation of the existing building. Therefore, if the existing building represents the waste, the intervention would result in transforming the existing without losing its essence. It uses the meaning of the waste to say something new.

The textile recycling process can be divided into three phases: sorting, shredding and re-spinning.

1. Sorting has to do with identifying different textiles based on colour, materiality and condition.
2. After materials have been sorted they move on to the shredding process, in which fabrics are torn apart to reduce them to smaller fibres.
3. Finally, the shredded fibres are mixed with other natural fibres and re-spun into rolls of new thread.



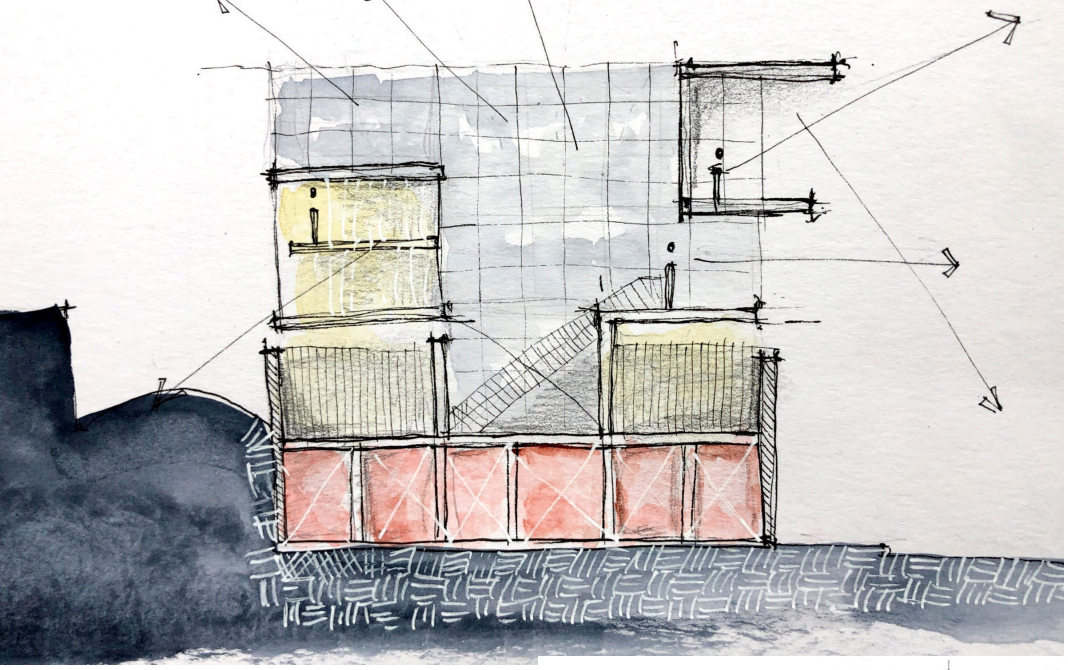
Fig. 102: Diagram illustrating the quality of the conceptual stages of sorting, shredding and re-spinning (Author, 2021).

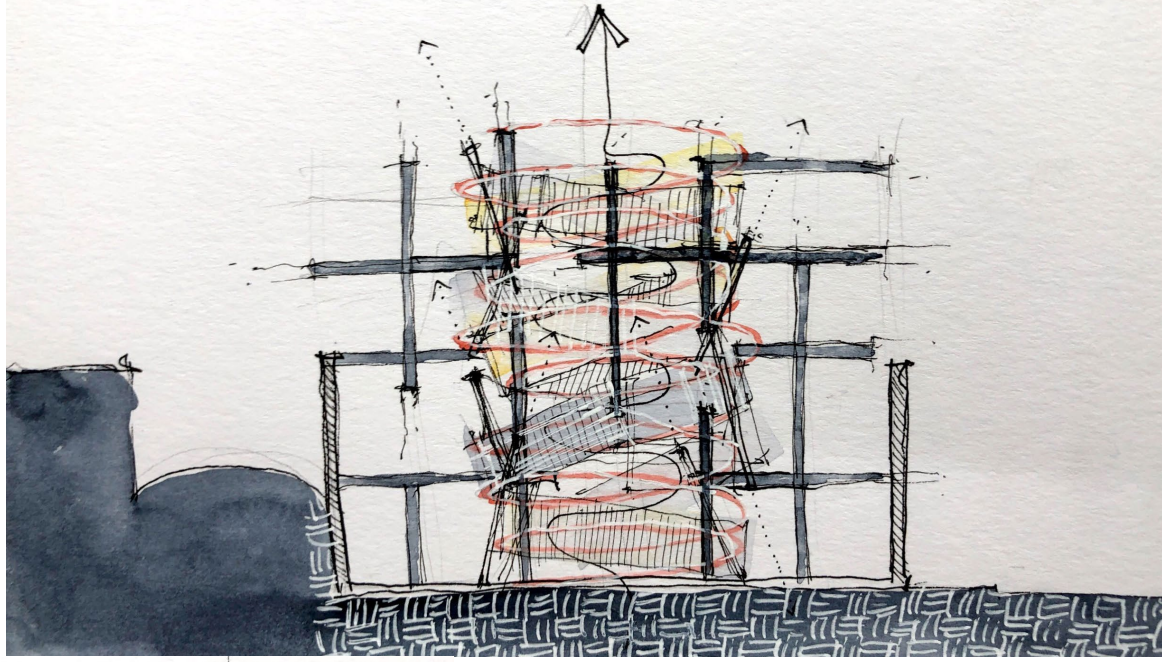
These steps in the recycling process have been interpreted to manifest the conceptual design approach.

Sorting relates to sorting the existing building in terms of not only its historical significance relating to physical aesthetic and spatial and contextual connections but also how the building exists within the surrounding fabric. Sorting thus assists in gaining an understanding of the building and the essence of its historical significance. The idea is that through this categorisation of what is important and what is not, opportunities and possibilities would start to present themselves going forward in the design. The aim of sorting is to emphasise the existing genius loci by identifying specific elements that are focalised and reimagining them in **abstract reinterpretations**. Thus, the extended building elements would embody the essence of the building's original character and enhance the experience of the past within the character of the new.

Shredding refers to the start of the transformation process. After sorting the building, observations are made on opportunities for the existing building to **transform** in terms of the broader interpretation thereof. In other words, ensuring that the building is appropriately transformed regarding its significance and its relationship to the context. This transformation would consist not only of breaking open the existing but also introducing new functions. Thus, the aspects identified in the sorting phase are interpreted and transformed from the existing to what they could be.

Re-spinning celebrates **connectedness**, as in the act of loose fibres coming together and reconnecting. The new thread consists of the old and new fibres. The transformation that has occurred therefore mirrors the relationship between the old and new fibres. Re-spinning thus becomes the presence of the old and the new, and the way in which they relate to one another in integration creates a completely new experience.





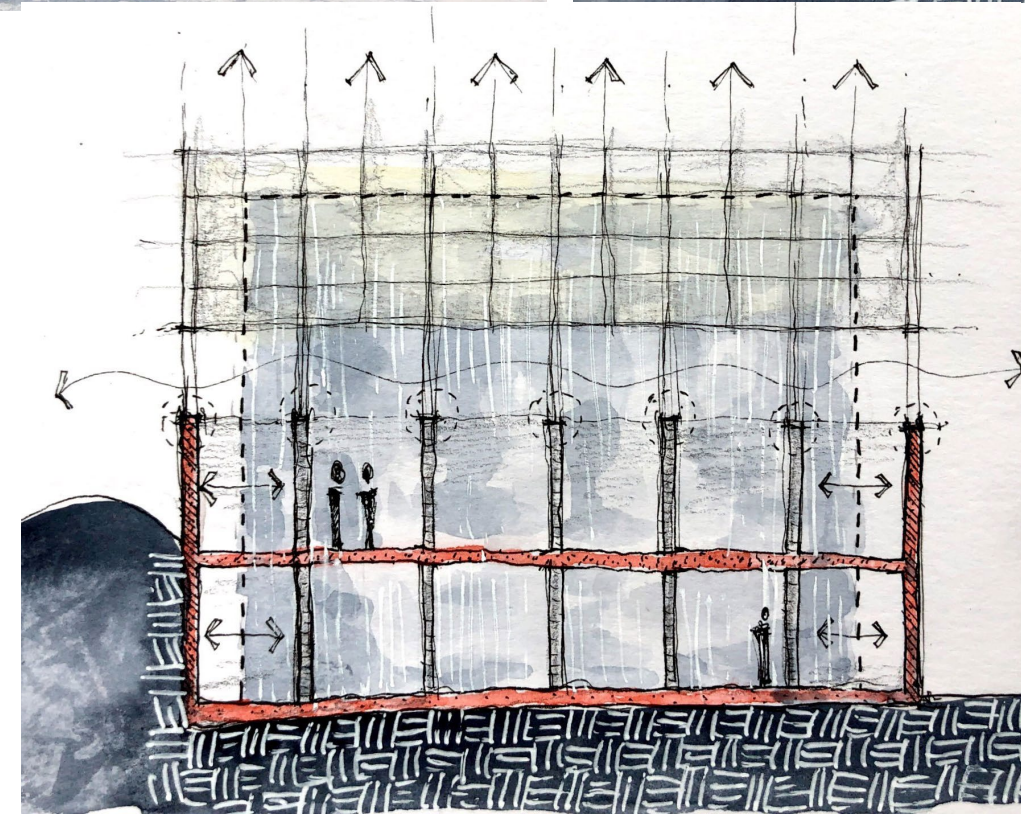


Fig. 103-105: Early conceptual drawings of sorting, shredding and re-spinning (Author, 2021).

3.2 Narrative

"And it seems to me that the glory of architecture is to make present not what is no longer but what was by means of what is no longer" (Ricoeur, 2016: 31).

The words of Ricoeur suggest that architecture is profound when it evolves from the past by reflecting or reacting to it through change, without repeating or ignoring the past.

Ricoeur's (2016) narrative theory supports the significance of heritage as a conversation about the history, interpretation of the history, and understanding of the history. This theory enables full engagement with the possible interpretations of the building's significance and how the divergent meanings embedded within its history are experienced differently by individuals. The suggestion is thus that the narrative is to be interpreted as being prefigured relating to what it is; configured relating to what it could be; and refigured to provide a better understanding thereof, after experiencing the prefigured and the configured. This would allow the user to experience different interpretations of the building to understand the significance of its heritage from the perspective of each possible narrative.

Ricoeur places his analysis of narrative as the personified process of writing and ultimately reading a book, while the story within it becomes the narrative. However, for the narrative to become what it is and how it is received by the reader, it undergoes various stages of transformation and interpretation. It starts with an idea or memory, and through the writer's interpretation, it becomes a written story. When an individual reads it, the narrative might be understood or experienced differently from the initial stages of its storyline. Each person might identify with different aspects of a narrative due to different personal experiences. The basic theory of this literary explanation of narrative can be applied to the narrative of architecture (Ricoeur, 2016: 31).

The stages in Ricoeur's narrative theory have been interpreted to coincide with the steps in the recycling process to manifest the conceptual and theoretical design approach. In its construction, a narrative (in a certain sense) undergoes a process of "recycling", whereby the initial story is transformed to become a new interpretation of the narrative, which encompasses the essence of the original story. The process is a continuous interpretation and reinterpretation of the narrative. The prefigured is refigured in order to justify the way in which it will be configured. After the act of configuration, the relation between what was and what is evokes, yet again, a new possibility of refiguration. It is an ongoing cycle by which time is experienced in the past, present and future as a dialogue of possibility in meaning. In other words, the resultant experience will be open for interpretation – allowing opportunities for different meanings to be experienced.

In the same way, the recycling process refrains from being a linear process. The title Recycling Rex Trueform also becomes the essence of the conceptual approach. In other words, recycling denotes a process with a start but without a clear end. So too, the architectural approach applies a transformation whereby the experience of the narrative continuously changes through the passing of time. In other words, the narrative is time recounted in space.

The time of the narrative comes into play in the "shredding" and "re-spinning" of the physical and of psychological time. Psychological time is experienced as the present of the past in memory, the present of the future in expectation, and the present of the present in attention (Ricoeur, 2016: 32). Therefore, time will be recounted in space through an architectural response that interprets the past in memory and the future in expectation.

3.3 The architectural chronotope and narrative

Professional architect Andrew Carr (2017) wrote an article on the concepts of succession and duration to explain the temporal experience of architecture. Succession and duration are concepts that draw on various temporal interpretations of architecture. Architecture that is based on duration maintains permanence – it is perpetual within time, whilst architecture based on succession engages with change, rhythm and transience (Carr, 2017: 95). Carr (2017: 98) suggested that the organisation of duration and succession creates various temporal structures, which advance wider architectural chronotopes and the experience of time. Succession and duration draw on the different temporal interpretations of architecture. Architecture based on duration maintains permanence (perpetual within time), whilst architecture based on succession engages with change, rhythm and transience (Carr, 2017: 95).

Changes in position (through movement) create a succession of moments that opens up new views when moving through thresholds or walking around and among forms. How we navigate a route is informed by memory and anticipation, creating connections between past, present and future. Circadian rhythms and the sunlight associated with a temporal structure are connected to the linear experience of movement that informs use. The material qualities of architecture thus presuppose duration, which creates a basis for succession and is primarily articulated through the duration of time. Sunlight reveals the passing of time as the sun shifts shadows across surfaces. This imposes new temporal geometries on buildings, beyond the presumed fixed geometries. The opening and closing of structures enable succession through movement, thus becoming dynamic elements of architecture. Sunlight filters through these openings to create succession through changes in light quality and temperature (Carr, 2017: 100).

"We will give the name chronotope (literally 'time space') to the intrinsic connectedness of temporal and spatial relationships that are artistically expressed in literature […] In the literary artistic chronotope, spatial and temporal indicators are fused into one carefully thought-out, concrete whole. Time, as it were, thickens, takes on flesh, becomes artistically visible; likewise space becomes charged and responsive to the movements of time, plot and history. This intersection of axes and fusion of indicators characterise the artistic chronotope" (Bakhtin, 1981: 84).

The term chronotope was coined by literary theorist Mikhail Bakhtin to refer to the organisation of time and space evoked by a given narrative as the setting. In terms of literature, the "movement of time, plot and history" constitutes the chronotope. The term describes how an author controls characters and their created world from the beginning to the end of a story. Carr (2017: 97) related the term to the narration of the architect controlling "time, plot and history" until construction is complete. As a result, the experience of the building is shaped by the architect as author through the projection of spatial and temporal structures into the future. The architectural chronotope is therefore the result of the design – encapsulating time, plot and the history related to the narrative. Enhancing the experience of the architectural chronotope could be through methods of duration and succession enhancing the atmosphere of the narrative setting in built space.

3.4 Approach

If narrativity is time recounted in space, the architectural chronotope can be used in conjunction with the stages of Ricoeur's narrative theory to develop the architectural intervention. **Characters** will thus be developed as spatial and temporal structures to perform the narrative experienced in the space. In doing so, the significance of the place can be experienced through narrative reinterpretations in the adaptive reuse of this post-apartheid artefact in Salt River.

The first part of Ricoeur's narrative theory **(prefiguration)** links to the concept of **sorting**, which aims to identify the essence of the **genius loci.** Architectural **elements** will represent the genius of the place as characters of the narrative. These elements are the architecture of duration, seeking to persist unchanged within the place.

The second part of Ricoeur's narrative theory **(configuration)** relates to the concept of **shredding**, in terms of transformation. Configuration is divided into three parts: **emplotment, intelligibility and intertextuality,** which are elaborated upon in Section 3.6 of this chapter. In essence, the stage of configuration will be used to **develop** the characters. The characters will be **personified** to give the architectural elements identified during prefiguration personality and to progress the narrative. This reinterpretation of the elements will transform the durational elements to embody successive qualities.

Ricoeur's third stage **(refiguration)** relates to **re-spinning** in terms of connection. The **dialogue** between the various characters will allow the narrative to be experienced as time recounted in space. It is here that the dialogue between durational architecture and successive architecture enhances the experience of time and the architectural **chronotope**. The presence of the new as well as the old creates a dichotomy which will reveal the **layered palimpsest** of the narrative.

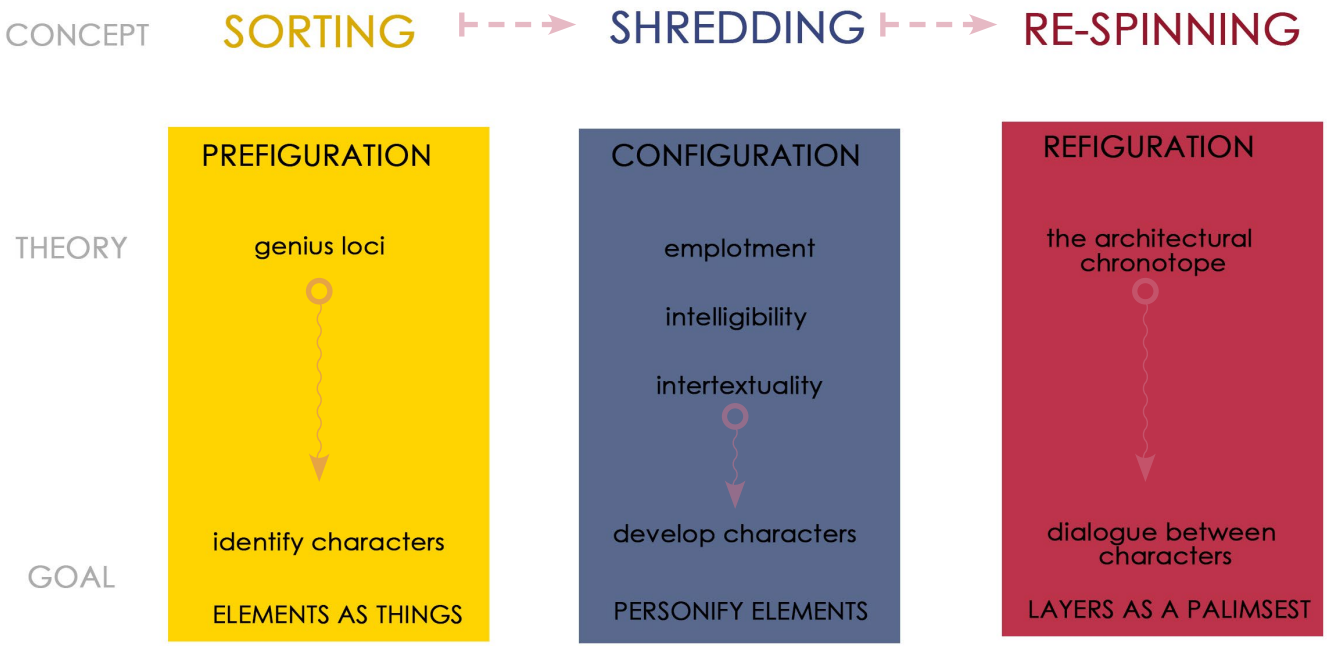


Fig. 106: Conceptual diagram linking with theoretical discourse (Author, 2021).

3.5 Prefiguration- sorting (Identifying characters)

This first part of narrative theory relates to the step of sorting: identifying the existing condition of Rex Trueform as the lived experience.

"Prefiguration is therefore the 'burying' of the narrative in life, in the form of ordinary conversation. At this stage, the narrative is genuinely involved in our own most immediate awareness" (Ricoeur, 2016: 34).

This relates to the initial understanding of what makes the building unique. In terms of the built environment, Ricoeur linked this stage to the act of "inhabiting there", pertaining to the Heideggerian sense of: How do we dwell? What is our awareness of that which already exists here? How is this perceived and experienced?

"… it is inhabiting which the architectural project redesigns and which we are going to reread" (ibid: 34).

Ricoeur stated that inhabiting is ultimately the answer to building. In essence, prefiguration determines the way in which the new will be built. If prefiguration is essentially the lived memory of the past, then this will become the answer to the new.

Discussing memory, Ricoeur stated, ***"…there is competition between the two types of memory. For the repetition-memory, nothing is worth anything except the well-known, and the new is odious; for the reconstruction-memory, the new must be welcomed with curiosity and with the desire to reorganise the old with a view to making room for this newcomer. It is no less a question of de-familiarising the familiar than of familiarising the unfamiliar"*** (ibid: 40).

Therefore, building the new to be inhabited in the same way as before would result in unpleasantness. Instead, when critically defining the familiar memory (prefiguration), through a process of "de-familiarisation" and "familiarisation" (refiguration as a means of imagination) would result in a reconstructed memory, which creates the new to be different, yet it recognises the old.

3.5.1 Genius loci

Architect, author and architectural theorist Christian Norberg-Schulz (1980: 418) interpreted the ideas of German philosopher Martin Heidegger to construct a comprehensive theory of architecture. He proclaimed that to be able to dwell, man must fully grasp the genius loci, "the spirit of place", which conveys the essential character of place. This character is determined by the material and core principles that shaped the site and artefact in time (ibid: 420).

The characteristics of the genius loci convey a concrete and logical understanding of the place within its context. It is the totality of the environment, consisting of concrete things that have material, colour and texture that determine the qualities, individuality and memory of the place. These things become elements that can be used to interpret the characters when developing the narrative. However, these elements do not necessarily constitute meaning within the artefact, instead the relationship between the artefact, the things, and urban change in a city give credibility to the significance of its heritage.

The existing state of permanence, unchanged over the decades, describes the prefigured memory of Rex Trueform. What truly makes the building unique (from its lived experience through memory) is the character of the building. Geometry in terms of semi-circles, circles, triangles and squares manifests the essence of the genius loci (see fig. 107). The rhythm of the saw tooth roof holds the connection to the surrounding industrial area. The playful window arrangements create a brief connection to the outside world. A view of Devil's Peak is seen behind the building, up Queens Park Ave – a visual reminder of the history of Cape Town's development. The way one moves through the building is experienced through the prominent semi-circular stairs connecting the ground floor to first. Large open spaces, supported by innovative structural interventions and with minimal decoration, remind one of the modernistic qualities of the place. It is also impossible to forget the memory of separated spaces relating to apartheid constructs, even though these are not tangible from the outside experience.

These observations provide insight into how the new morphology must be designed to maintain the essence of the prefigured memory of Rex Trueform. In other words, the changes should allow the user to find meaning in past connections by utilising the elements that constitute the memory of the place. The building's cultural significance requires that its existing character be maintained and remain uninterrupted, which enforces a further degree of duration within the architecture. However, as the building is also strictly architecture of duration due to its lack of connection to the surrounding urban fabric, partial change to the existing is necessary to enable a degree of succession that would allow its reintegration with the surrounding fabric.

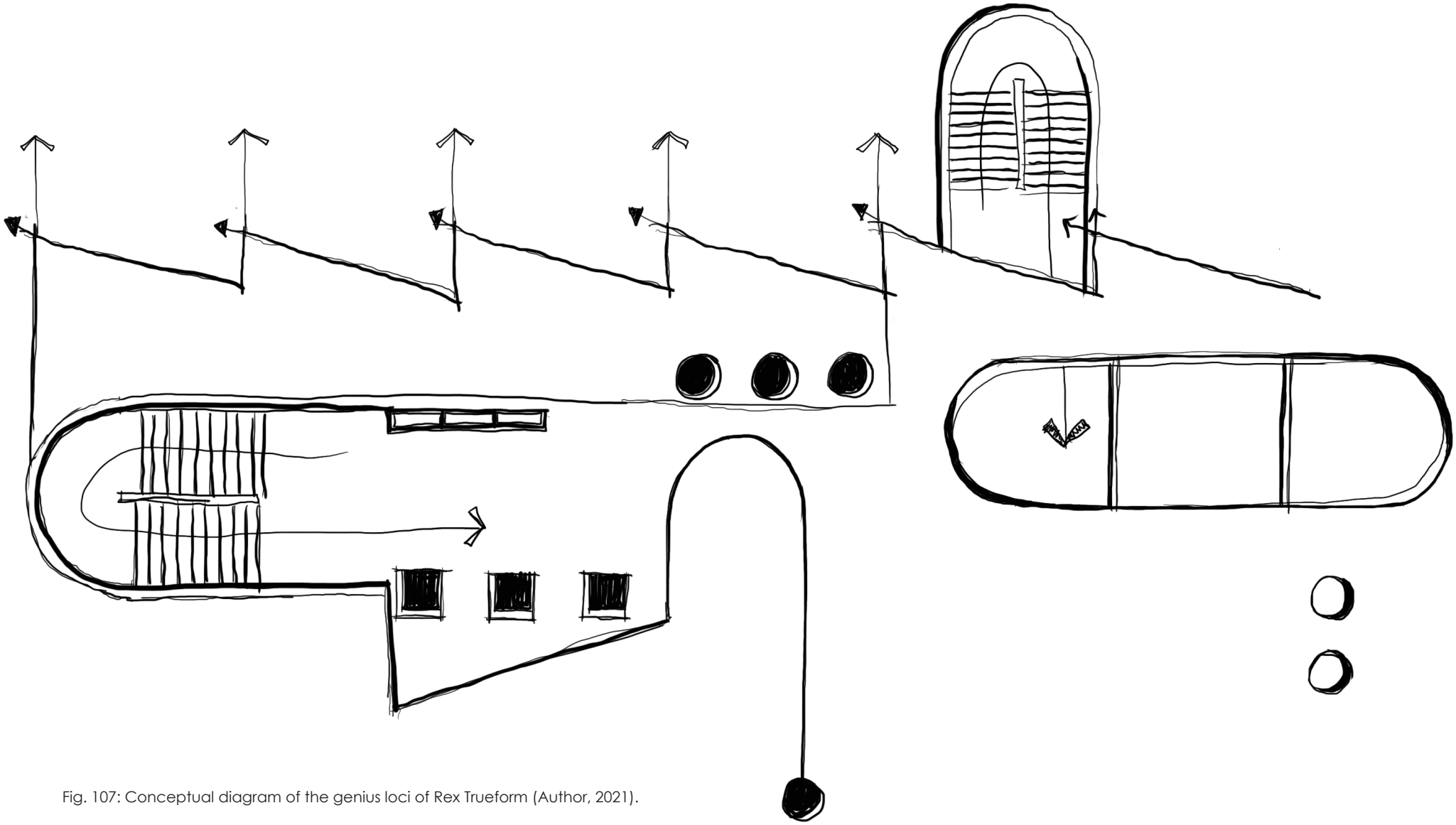


Fig. 107: Conceptual diagram of the genius loci of Rex Trueform (Author, 2021).

Sorting strategies

- The existing exterior walls will be maintained as far as possible to enable duration of the character of the existing.
- The existing exterior walls will, therefore, only be changed to create new connections to the surrounding urban fabric.
- The new architecture will reimagine the significant existing elements, maintaining the lived memory of the past as a way to find meaning in past connections.

The elements identified as things, constituting the genius loci are the saw tooth roof, the view of the Devil's Peak, the existing building façade, the existing structure, and one intangible the separated spaces (see fig. 108). These elements will manifest as characters in the narrative, interpreted as architectural elements becoming things. They will be developed in the configuration phase, in which one reflects on the history to give personality to the characters.

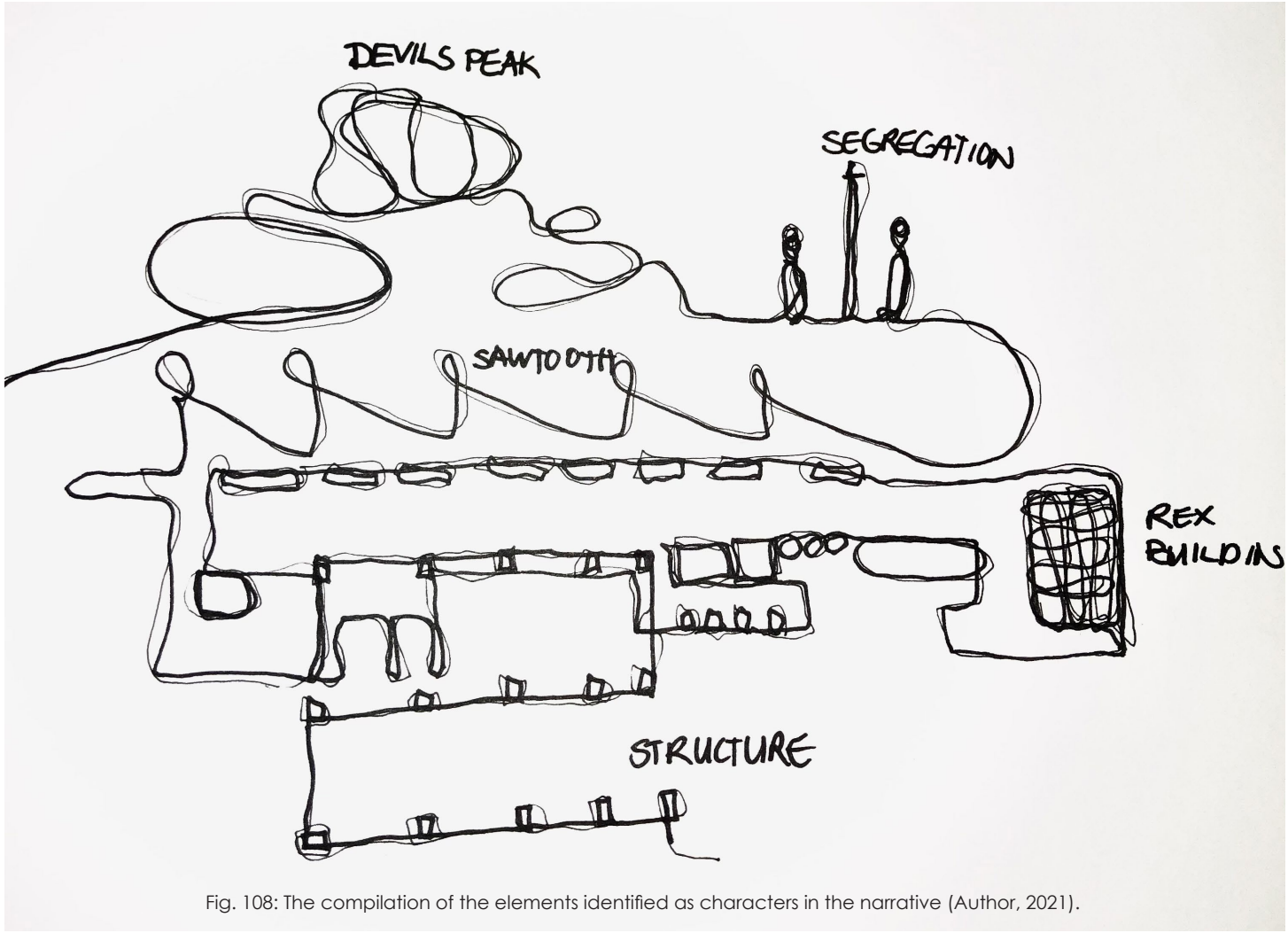


Fig. 108: The compilation of the elements identified as characters in the narrative (Author, 2021).

3.6 Configuration- shredding (developing the characters)

Although shredding relates to tearing the fabric apart and reducing it to fibres, the main focus adopted from this concept is the process of transformation. In other words, transformation through change and by adding new fibres (right before the stage of re-spinning). The distinction between old and new is emphasised through transformation, which responds to the prefigured memory of the place. The second stage of narrative is configuration, where the narrative is recounted, remembered and, through this, interpreted to become written narrative. In terms of the built environment, this stage is comparable to the act of building. The act of building is thus no longer at liberty to its context, as the narrative has already been recounted and interpreted as a preconceived reaction to its context during the identification of the characters.

Configuration is divided into three parts that constitute progression in the act of recounting (Ricoeur, 2016: 34). The first is "**emplotment**", which combines and gathers the diverse narratives and ways of doing that are influenced by the prefigured – giving reasons to act and change. The second is "**intelligibility**", which clarifies the essential theme of the narrative – the essence that forms the inseparable stories. The third is "**intertextuality**", which compares the characters of the narrative to evoke new interpretations of the characters and the relationships between them (ibid: 35). The stage of configuration will thus develop the characters in a way that **transforms** the **interpretation** of the elements to progress the narrative.

When applying the phases of configuration (emplotment, intelligibility and intertextuality) to the concept of shredding, it would follow the process of how to write the story, which reveals significance by transforming lived memory through reinterpretation. This entails considering all the significant memories gathered from sorting and identifying reasons to change certain parts of the building. Then, the core aspects, which cannot be changed, are identified. Finally, what can be changed and what cannot are compared. From that interpretation, the building is transformed in a way that enhances the present through its significant relation to the past.

The present becomes rendered within the place after translating what it was (past) to what it could be (future) in the presence of the past. This is where the time of the narrative comes into play. In other words, when writing the narrative, the experience of the past is enhanced through the transformation, which simultaneously creates an experience of the new present. This will be done by referring to the **memory** of the **past**, reconstructing that memory in **anticipation** of the **future**, and turning it into built (**present**) space and structure.

The stories from emplotment are seen as the fibres of the old: emplotment brings together "**events**" as plots of the story (Ricouer, 2016: 35). The essential theme relates to intelligibility, which suggests the part that cannot be changed or ignored. In terms of recycling, this relates to the condition of the textile that influences the requirements of the new fibres when recycling the garment. In other words, intelligibility is the theme that will determine how the narrative progresses and give the characters an "**action**" to which to respond. Following is intertextuality: the old fibres are compared and confronted with new fibres to strengthen the recycled thread. In other words, a dialogue is created between the characters to strengthen the meaning of the individual characters. As a result, characters will be confronted (using "**tropes**") with one another, based on the essential theme, to create a scene (as a "**dialogue**" between characters) where the narrative is offset.

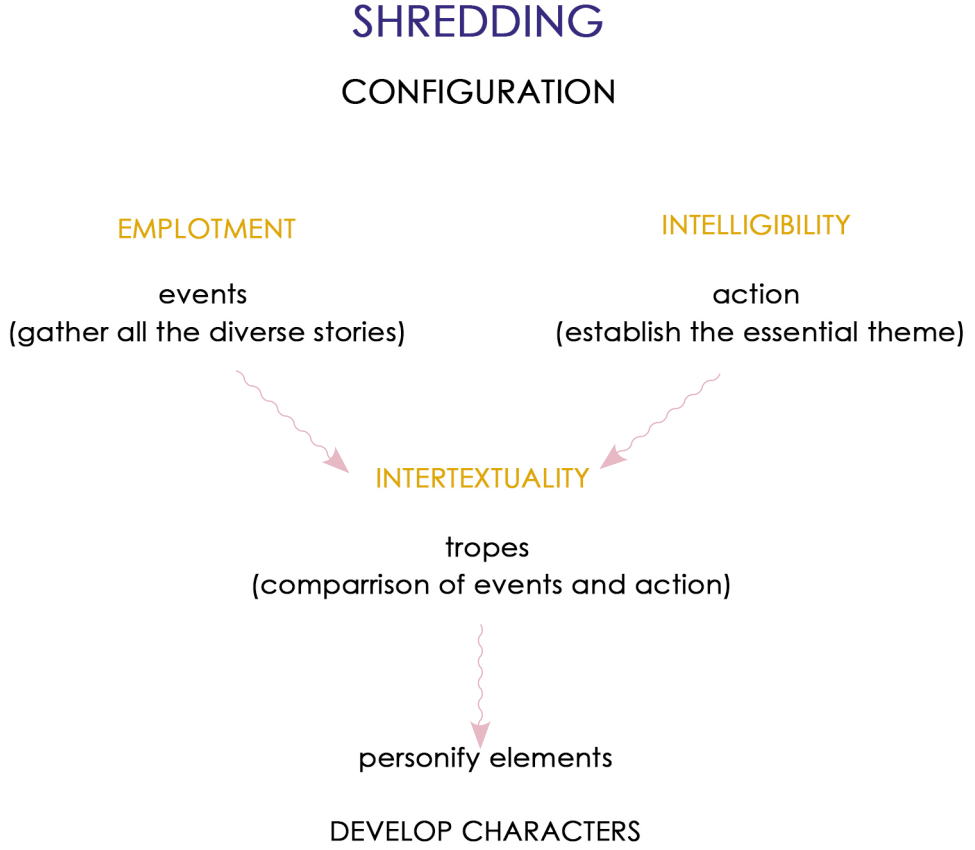


Fig. 109: Theoretical diagram explaining the stage of shredding/ configuration (Author, 2021).

3.6.1 Emplotment (as “events”)

This stage of configuration looks at the history of Rex Trueform and how events can develop to embody personalities within the narrative. The characters identified during prefiguration will ultimately embody these personalities or characteristics.

a) Salt River: the start of modern industrialisation

Salt River initially consisted of a small number of farms, which stretched to the foot of Devil's Peak from the 18th to the start of the 19th century (see fig. 110). Parts of Salt River were reclaimed as the location for railway lines and a station in 1862. Urban development was inevitable with the introduction of the railway lines, and by 1928, the area was densely urbanised and eventually experienced the aftermath of modern industrialisation in Cape Town (Wolff, 2014:9).

In 1937, the Rex Trueform Company obtained vacant land just outside a distinct triangle of open space within Salt River. The chosen architect for the design and construction of the new factory was a young architect called Max Policansky, who later became one of South Africa's leading modernist architects (ibid: 11).



Fig. 110: Interpretation of the historical Salt River farmlands (Author, 2021).

b) The building

Policansky was tasked to design a building of pure functionalism – where form follows function. This resulted in the building having a flat roof, elongated façade, two balconies and a dramatic entrance at the corner of Main Rd and Queens Park Ave (see fig. 112). The windows were either rectangular or round portholes, puncturing the façade and creating a rhythm of variation (Wolff, 2014: 16, 17).

At the time, the character of the immediate surrounds was ornate Victorian/ Edwardian architecture, which contrasted with the new erratic free façade of Rex Trueform. The sample room and protruding balcony displayed modernist principles through the use of modern materials, uninterrupted spatial flow, and lack of ornamentation (ibid: 17, 20).

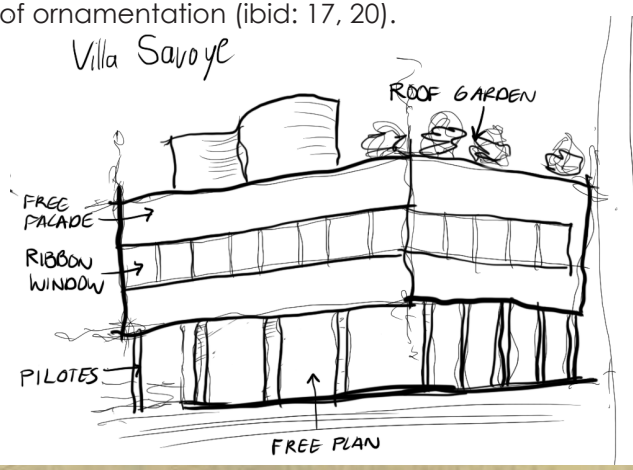


Fig. 111: Le Corbusier's Villa Savoy illustrating the 5 point plan capturing modernist design principles (Author, 2021).



Fig. 112: Artist rendering of the 1938 Factory showing similarities to the modernist diagram above with the elongated facades, pilotes and the flat roof
-Cape Argus, (1938), in Wolff (2014: 26).

The main entrance on Queens Park Ave is where a semi-circular stairwell takes the user around and up to the first floor. Behind the playful facades, the building starts to reveal its strange logic: an unorthodox doubling of spaces becomes apparent. Here spaces are duplicated and labelled according to gender and race. "Change rooms for European Men", "Change rooms for European Women", "Change rooms for Non-European Men" and finally the largest space allocated to "Change rooms for Non-European Women" (ibid: 21).

This duplication and separation can also be seen in the layout of the "mess rooms" fronting Queens Park Avenue. These spaces were allocated for workers' rest times, where they would have tea and breaks (see fig. 113). It is apparent that the building was designed based on the need to separate the workers based on race and gender. In the mess rooms, specially designed tea wagons were placed to ensure the efficient distribution of tea during breaks, promoting the company's aim of modernisation and efficiency (ibid: 25).

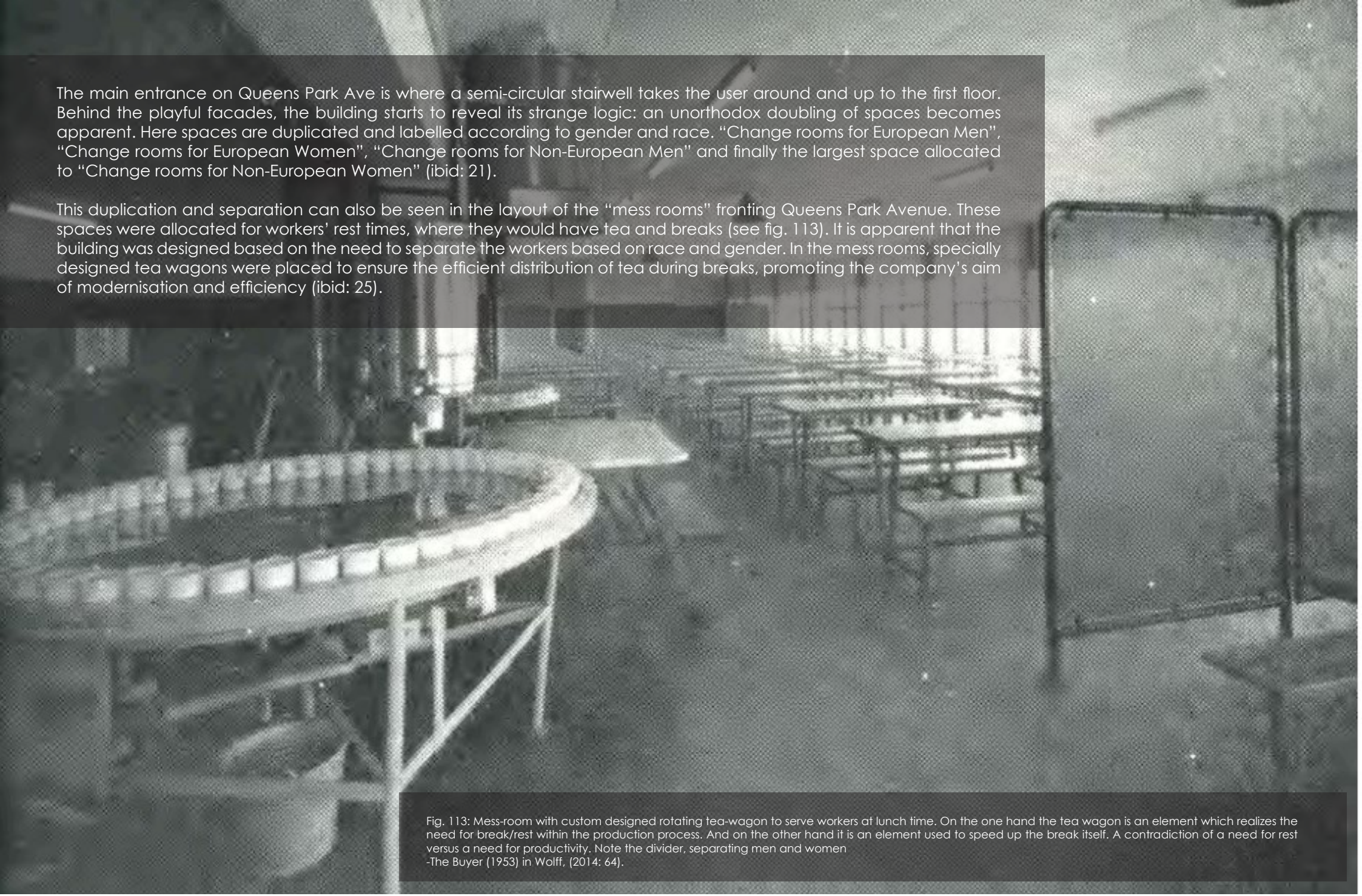


Fig. 113: Mess-room with custom designed rotating tea-wagon to serve workers at lunch time. On the one hand the tea wagon is an element which realizes the need for break/rest within the production process. And on the other hand it is an element used to speed up the break itself. A contradiction of a need for rest versus a need for productivity. Note the divider, separating men and women
-The Buyer (1953) in Wolff, (2014: 64).

c) The law on segregation

Although racial segregation was already in place in Cape Town in the 1930s and 1940s, few spaces implemented the physical segregation of people. The Factories Act, No 28 of 1918 did not initially require the racial separation of workers, however, the legislation was amended in 1931 to consider the separation of individuals. It stated "…when in the opinion of an inspector conditions exist in a factory which lead to undesirable contact between persons of different races or sexes" (Factories Act No 26 of 1931).

This ambiguous wording led to debates that called for another amendment to the Factories Act regarding racial segregation in 1941. "We cannot maintain our white civilisation if the present bad conditions continue in our factories. We are pleading with the Minister to reconsider these serious questions… White South Africa demands it" (1941 parliamentary debates around the amendment of the 1931 Factory Act no 26, Government Publications of the Union of South Africa).

Counter arguments insisted that racial segregation was influenced by "emotional subjectivity" and that the duplication of spaces was uneconomical and would only result in excess construction cost that would ultimately inflate "the cost of the industry". "…you cannot run a policy of segregation of black and white in factories without doing two things. One of them is that you must raise the costs of industry… and the other is that you displace people who are already in the industrial field" (1941 parliamentary debates around the amendment of the 1931 Factory Act no 26, Government Publications of the Union of South Africa, 4202).



Fig. 114: Graphic illustration of people in power, manipulating human rights because the law permitted it during the apartheid era (Author, 2021).

A compromise was reached and the regulation amended through a new act. The Factories, Machinery and Building Work Act, No 22 of 1941 called for separate staff amenities and entrances in all factories (1941 parliamentary debates around the amendment of the 1931 Factory Act no 26, Government Publications of the Union of South Africa, 4205)

It is conspicuous that Rex Trueform had already emplaced this separation through the design of the first factory, prior to finalisation of the debates regarding the implementation of racial segregation (Wolff, 2014: 29).

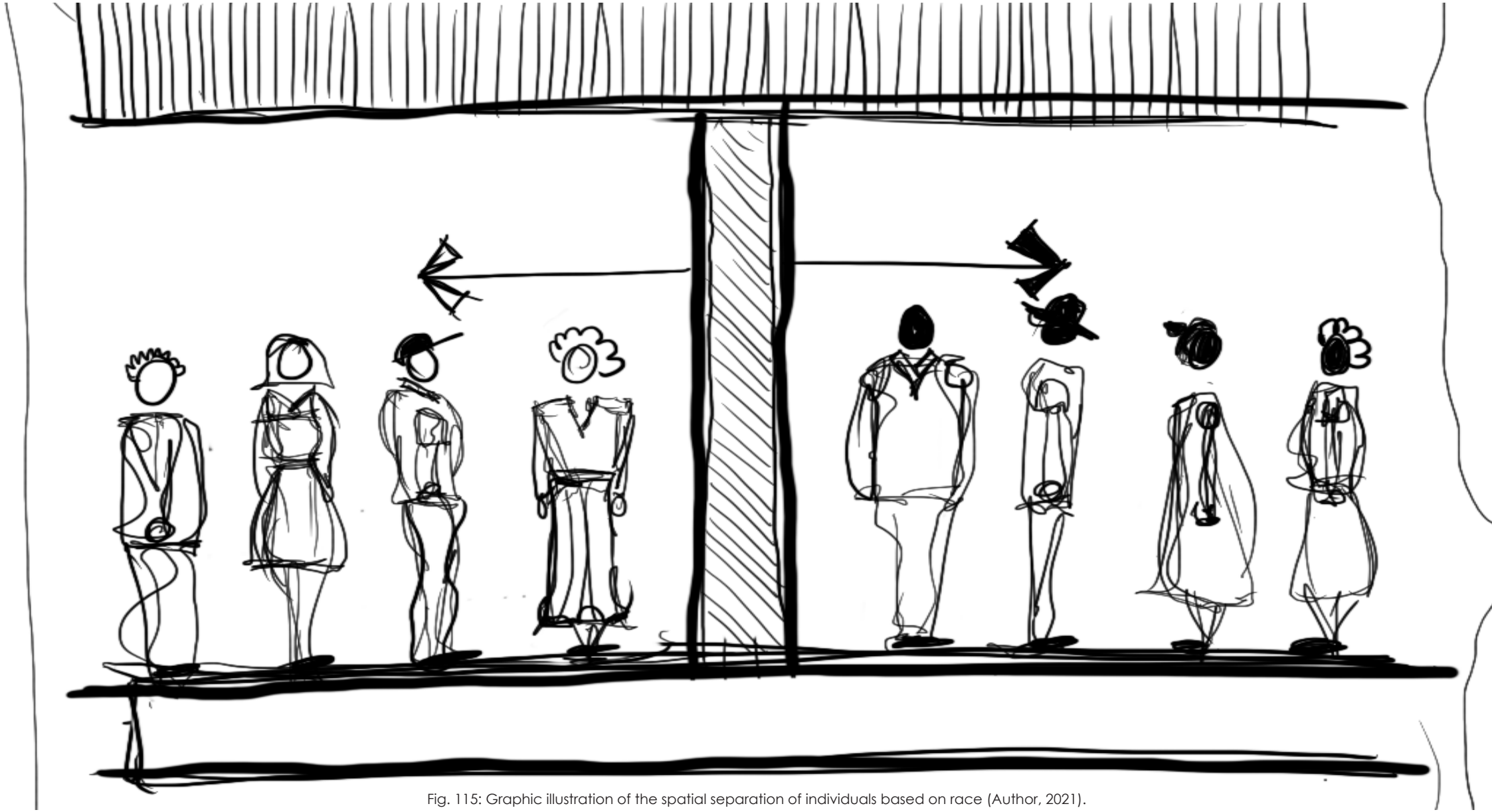


Fig. 115: Graphic illustration of the spatial separation of individuals based on race (Author, 2021).

d) Mural art

A number of murals were installed in the factory. They were colourful and depicted various scenes: some of landscapes with people spinning wool (see fig. 116) and some of dancing men and women (see fig. 117, 118, 119 & 120). The murals were done by Phay Hutton, who belonged to an influential countercultural art movement called the "New Group". The group followed the ideals of Gregoire Boonzaier, Lippy Lipshitz and Walter Battiss. Hutton determined the placement of the murals, and interesting observations can be made from these placements. Murals depicting figures with lighter skin were placed at the entrances of spaces allocated to non-Europeans and murals depicting figures with darker skin were placed at the entrances of spaces allocated to Europeans. This might be an observation that complicates a simple reading, however, it could also have been a form of resistance art (Wolff, 2014: 37).



Fig. 116: Mural placed at the second entrance hall
-Chantal van Staden, (2013) in Wolff (2014: 35).



Fig. 117: Mural of dancing figures with darker skin and hair placed above the entrance of the rest rooms for 'European men and women'
-Chantal van Staden, (2013) in Wolff (2014: 38).



Fig. 118: Mural of dancing figures with lighter skin and hair placed above the entrance for the rest rooms for 'non-European men and women'
-Chantal van Staden, (2013) in Wolff (2014: 38).



Fig. 119: Mural of dancing figures with lighter skin and hair placed above the entrance for the rest rooms for 'non-European men and women'
-Chantal van Staden, (2013) in Wolff (2014: 39).



Fig. 120: Mural of fishermen placed above the entrance to the canteen.
-Chantal van Staden, (2013) in Wolff (2014: 39).

e) The company's economic success

The Rex Trueform company profited greatly from making apparel during World War II. This empowered the company to further expand and a second factory was constructed across the road from the first building in 1948. This building was a much larger, six-storey building and would soon become the company's main building, relegating the 1937 factory primarily to sorting and storage space (Wolff, 2014: 44). The company was at an all-time high – ranked the sixth-largest clothing manufacturer in the world in 1953. With this success, the new building was further extended in 1963 and in 1980 a new factory was erected in Atlantis on the West Coast, north of Cape Town (Pather, 2017: online).

Rex Trueform was described as a model factory/workspace, utilising the best materials, mechanisms and, importantly, factory space – with its spatial divisions of power supported by the ruling government (see fig. 122). The factory conveys a sense of modernity in its approach to mechanising bodies to produce capital efficiently. Rex Trueform capitalised on power to modernise by using time, space and bodies as their main resources (Wolff, 2014: 120).


We look ahead with confidence in the future of our Country

This magnificent new factory incorporating the most modern clothing plant in the world is evidence of Rex Trueform's faith and confidence in the future prosperity of our Country

The new building to be completed by the end of 1963, is part of our continuing develop and growth; and will enable us to meet the ever increasing demand for our internati famous "Balance-line" clothing.

We are proud to feel that over and above our important exports to many countries we become accepted as the MASTER TAILORS TO THE NATION.

REX TRUEFORM

Fig. 121: Extract published in the cape times about the success of Rex Trueform as a statement of national economic confidence - Cape Times, (1963) in Wolff, (2014: 73).



Fig. 122: Graphic illustration of Rex Trueform claiming the rank of being the 6th largest garment manufacturing company worldwide (Author, 2021).

3.6.2 Intelligibility – (essential theme as the "action")

In this stage of configuration, the essential theme of the project is established. The characters are developed in reaction to the essential theme of the project to progress the narrative. As the project is based on the adaptive re-use of a post-apartheid industrial site, this is the main focus in discovering the essential theme.

a) The ethical function of architecture

"Only the measure provided by the human body lets us feel at home on the earth: only when we cease to consider the physical environment as material to be manipulated and controlled, but open ourselves to the natural language of place and time will we receive hints which may lead to a re-establishment of the lost ethos, of environments which will make a genuine dwelling possible. But no one is better equipped than the architect to contribute to such a re-establishment, even if the condition of our culture leaves little room for optimism." -Harries (1975: 396).

German philosopher, Karsten Harries (1975: 396) suggested that dwelling is not possible without both intimacy and distance. This distance does not refer to separation but to distance in the relationship between architecture and place. It thus refers to the importance of neighbourhoods and regions in influencing architecture to articulate their character and occasion unity.

Objectivity and modernity has become a source of degradation of contemporary life. Harries asserted that the physical environment has come to be material through manipulation, and instead of facilitating dwelling, architecture has become a "machine for living" (ibid: 397).

Margueurite Pienaar (2017: 38) wrote on how the work of local modernist architect Norman Eaton attempted to value place, tradition and identity. She cited Eaton's work as an example where "the idea of an African identity plays out on the surfaces of the modernist envelopes as abstractions of the original textures" (ibid: 40). Through memory, Eaton created a visual correspondence between aspects on surfaces. Reference can then be made to alternative forms of identity, imbued by the presentation of new meaning, represented through symbols (ibid: 40). Eaton himself was marginalised due to his homosexuality. Although modernism was used as a tool to inscribe identity, Eaton was able to create a positive assertion within a system that denied it to him (ibid: 46).

In contrast, the design of Rex Trueform exploited notions of control and manipulation, diminishing the experience of life and identity through segregation. The ethical function of architecture is to articulate and to establish man's ethos. However, the development of the railway lines in Salt River led to the spring of the industrial development in this area. This was not only the birth of constructed apartheid modernity in Cape Town but also the death of ethical human ethos within the place.

Today, although plenty of these industrial buildings are abandoned (as Rex Trueform is), they hold a certain potential. "Resistant to classification or rules, these post-industrial landscapes, according to renowned Architect Rem Koolhaas (1988: 322), contain 'unrecognised beauty' worthy of further contemplation".

b) Reclaiming post-industrial landscapes

The 95th Association of Collegiate Schools of Architecture (ACSA) annual meeting, titled Fresh Air, was held in 2007. At the meeting, David Leatherbarrow asked the question of whether architectural education has become stale in our time. He suggested that the renewal of what lies within the field of architecture depends on opening to what is outside the field of architecture. From the first year of architectural studies, the student is introduced to the concepts of the cosmic landscape, the romantic landscape, and the urban landscape. But what about the post-apartheid industrial landscape?

"Once we face up to the actual conditions of our cities and landscapes, their deep toxicity. We'll see the need to break free from old assumptions about the first premises of design. The neutral site, its pastoral qualities and once freed from stale doctrine in gardens or public activities, new life can be breathed into both design practice and disused places" (Leatherbarrow, 2016: online).

In other words, places and cities should be viewed through a lens which removes restrictions imposed by past rules and beliefs about what architecture should be. Instead, Leatherbarrow suggests that places and cities should be viewed by architects according to their condition and critically consider the true needs of a place. Only then can architecture renew and react to improve the state of places that lack care and use.

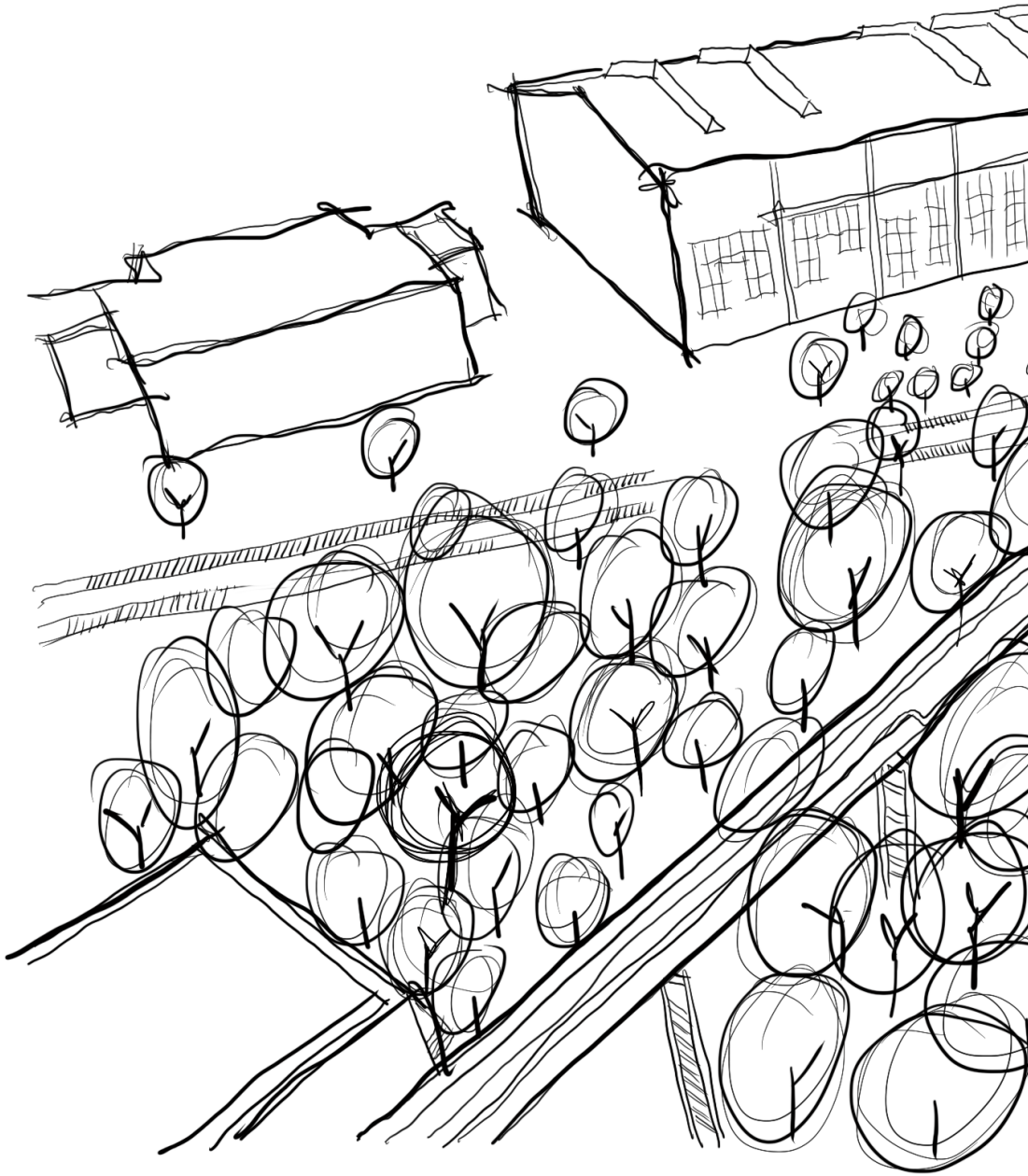
Theoretical case study 1: Duisburg Nord- Landscape Park (1991)

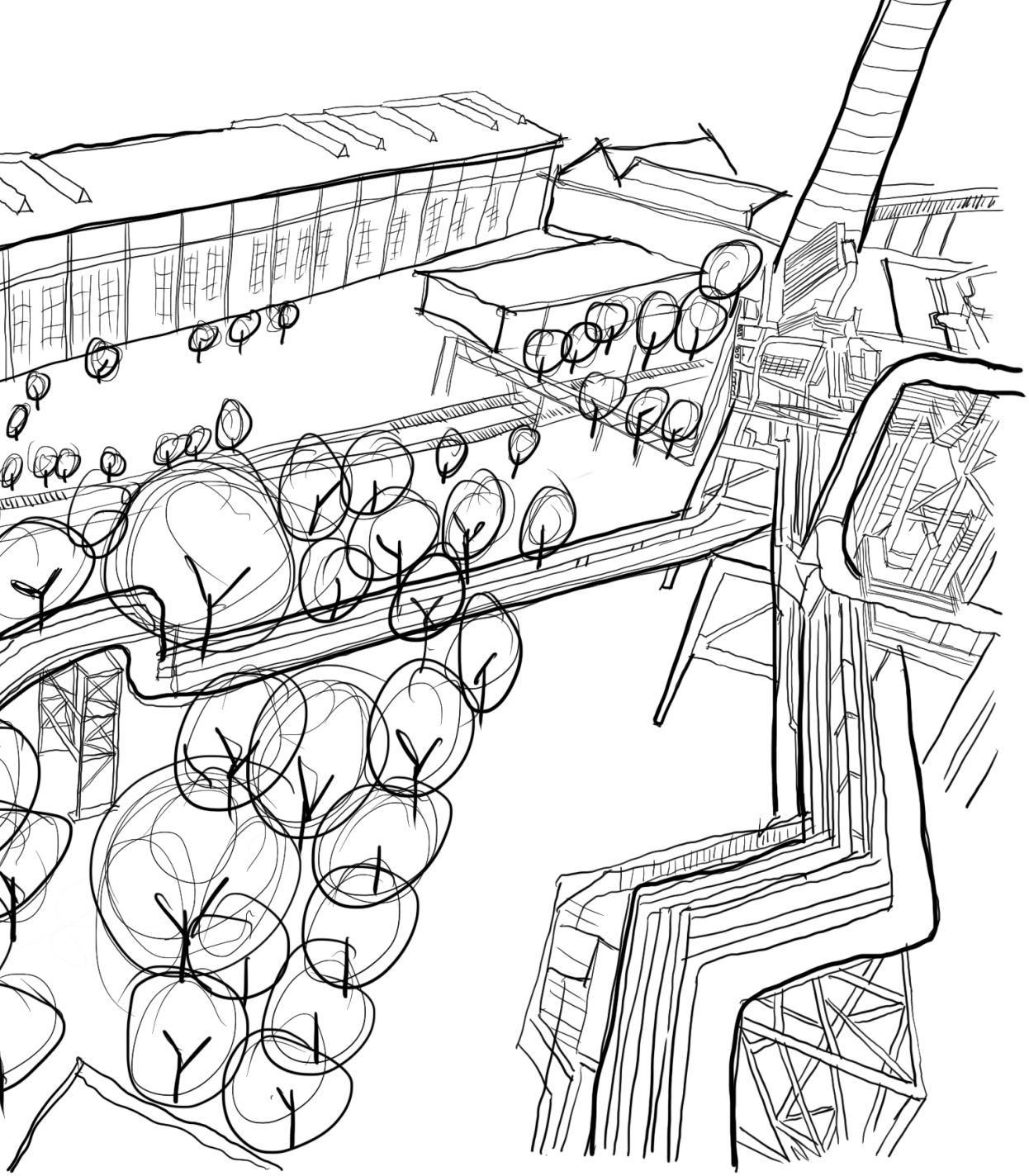
Peter Latz's Duisburg Nord Landscape Park in Germany is a pivotal example of breathing new life into disused places.

According to Latz, "The symbol of this park is the metamorphosis of the existing hard and rugged industrial structures to a public park" (Latz and partners: online). Latz was tasked to integrate, shape, develop and interlink the patterns formed by the place's previous industrial use by finding new interpretations to reimagine the site in a new syntax. The idea was that the existing fragments interlace into a new landscape (see fig. 123) (Latz and partners: online).

In the park, there are various systems that operate independently. A promenade at street level connects parts of the town that had been separated for many decades. The railway park with its high level promenade and the rail harp connect at certain visual points. These systems collectively form an artwork reflecting the centennial history of the place. There is also a low-lying water park and a field with clumps of vegetation showcasing diversity in flora. Iron plates, previously used in the iron casting work, are reused to form the heart of the park (Latz and partners: online).

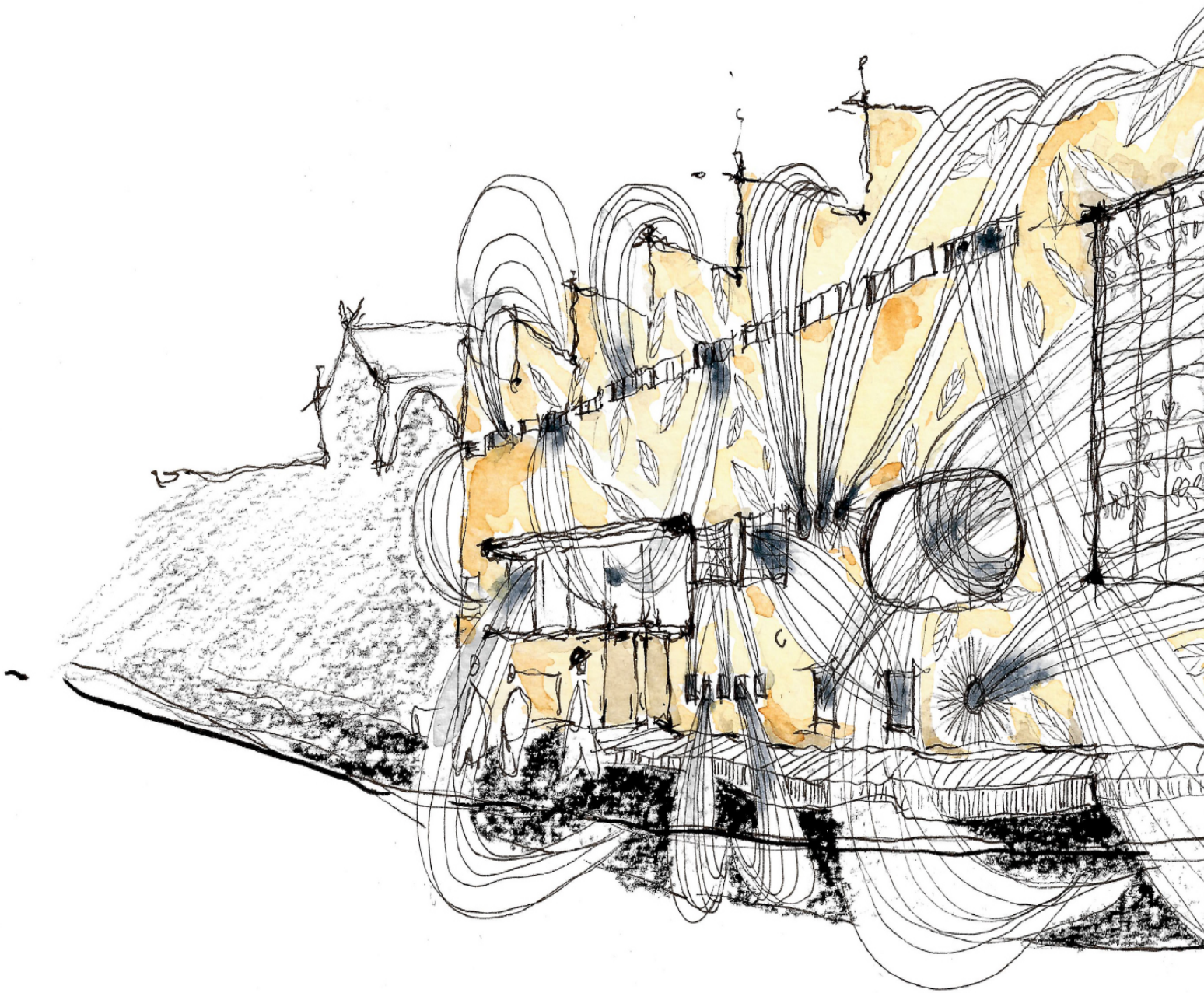
"Accepting a fragmented world means doing without the complete overall picture and leaving room for the coincidence nature in the web of the layout. Specific architecture for specific uses does not need to be built. The imagination lets the existing ones be re-interpreted and used in new ways. That can mean uncovering old rules and combining them with new elements and new goals. Artefacts can develop that pursue natural processes in derelict surroundings. According to ecological rules initiated and maintained by technological processes. These artefacts symbolise ecology, both of natural and technical systems "(Latz, 2000: 95).





Lessons learnt

New architecture does not have to focus solely on new functions, instead the existing must be reimagined and reinterpreted within its new use (see fig. 124, 125, 126, 127 & 128). The design must interlace the fragments of the site. So, in the case of Rex Trueform, the existing will be fragmented and reconnected with both the city and the new functions within the existing mass.



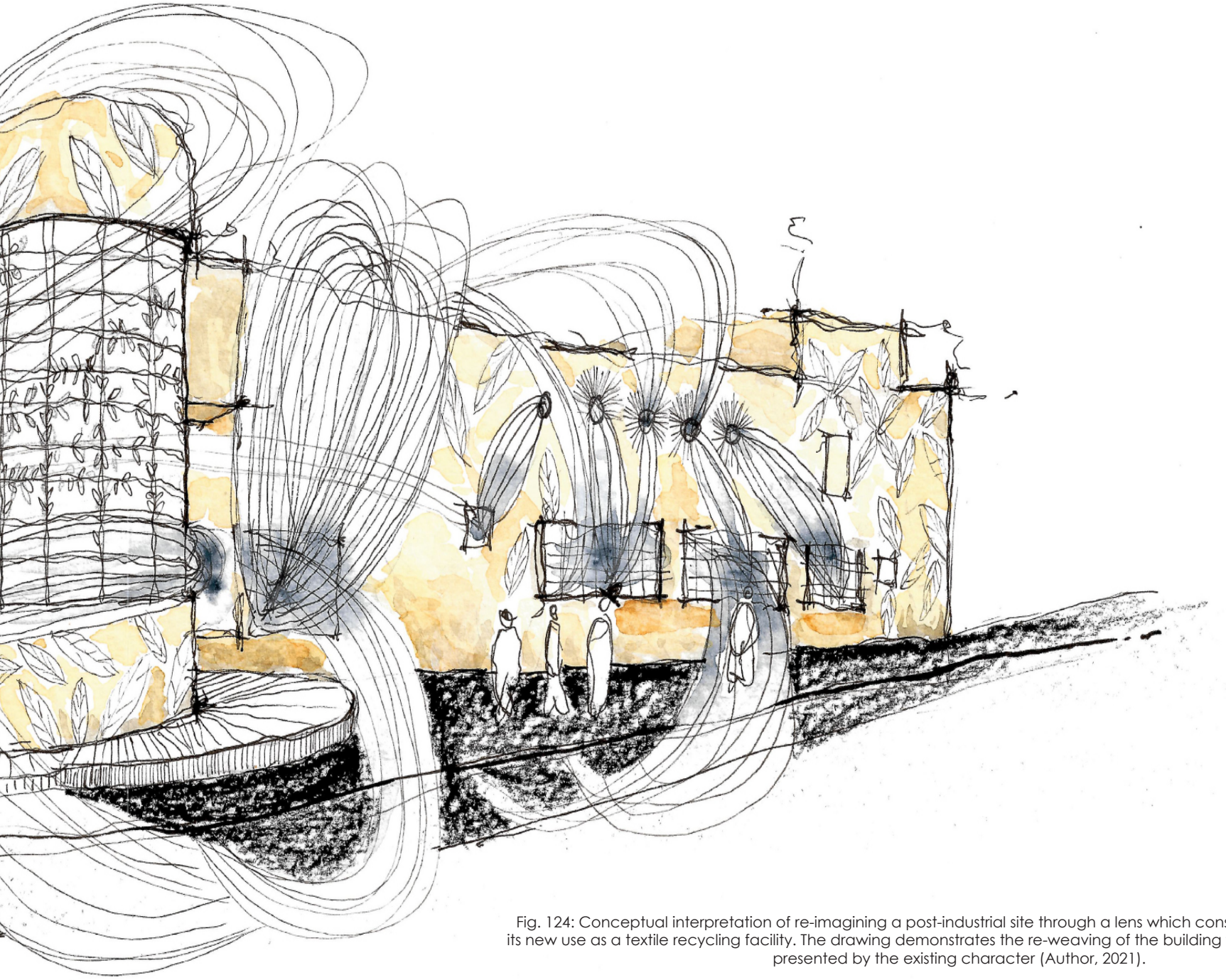


Fig. 124: Conceptual interpretation of re-imagining a post-industrial site through a lens which considers ecology as well as its new use as a textile recycling facility. The drawing demonstrates the re-weaving of the building through the opportunities presented by the existing character (Author, 2021).

conceptual exploration 1: Reimagining Rex Trueform through an Ecological lens

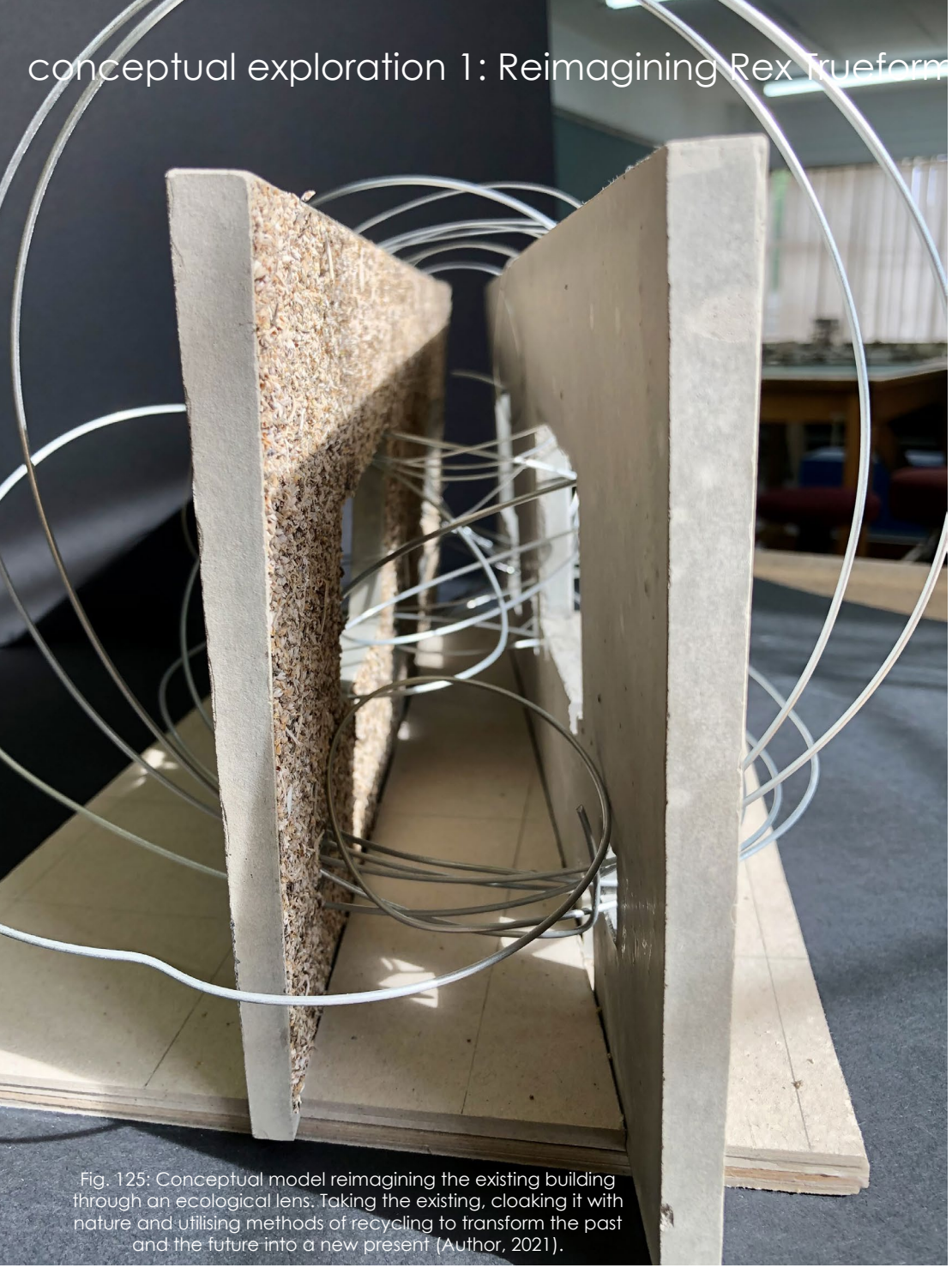


Fig. 125: Conceptual model reimagining the existing building through an ecological lens. Taking the existing, cloaking it with nature and utilising methods of recycling to transform the past and the future into a new present (Author, 2021).

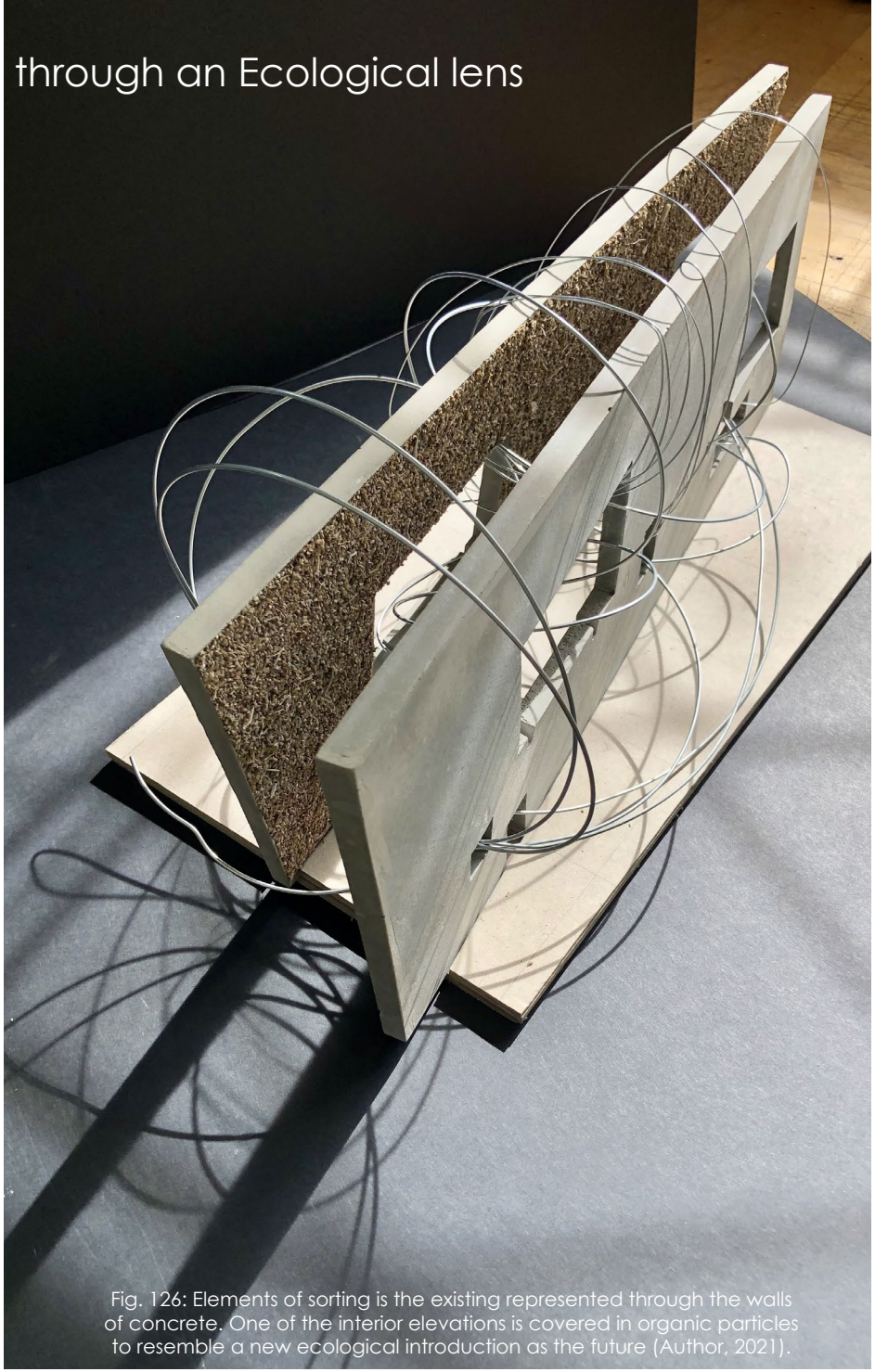


Fig. 126: Elements of sorting is the existing represented through the walls of concrete. One of the interior elevations is covered in organic particles to resemble a new ecological introduction as the future (Author, 2021).



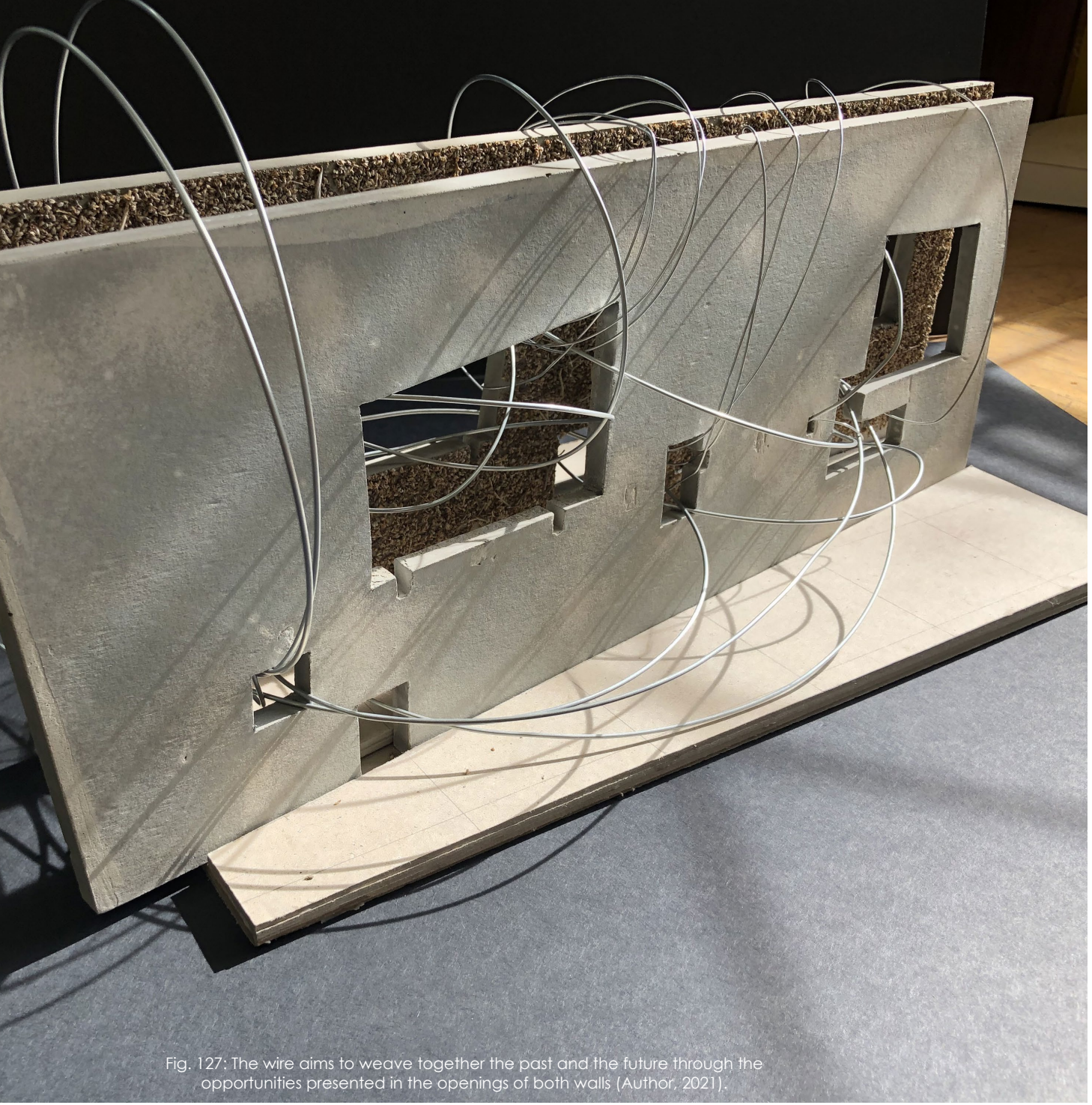


Fig. 127: The wire aims to weave together the past and the future through the opportunities presented in the openings of both walls (Author, 2021).



Fig. 128: The result is creating a new syntax which reimagines the old industrial building through a view of environmental ethics (Author, 2021).

Theoretical case study 2: Parc de la Villette- cultural park (1984)

A second example of a reclaimed post-industrial site is Parc de la Villette, France designed by Bernard Tschumi.

Tschumi was chosen as architect for the revitalisation of the abandoned and undeveloped land from the French national wholesale meat market and slaughterhouse in Paris. Tschumi envisioned Parc de la Villette as a space where natural and artificial are forced together in a state of constant reconfiguration and discovery – a place of culture. To the visitor, the park is a large defined space maintaining complete freedom of interpretation. Tschumi used three principles to design the park: points, lines and surfaces. A grid of 35 points, called follies, organise 135 acres of space. The follies become points of reference that give the site a dimensional and organisational quality. Scattered around the park are 10 themed gardens represented as surfaces, which induce movement, interaction and exploration along pathways as lines (see fig. 129). The gardens give visitors the opportunity to relax, meditate and play (Souza, 2011: online). Tsumi's design visually explains the layering of the concept and communicates his intentions brilliantly. He reimagined a pastoral landscape into a park open to various interpretations and experiences.

From an ethical point of view, however, Tschumi's design is lacking, as land ethics do not inform it. Everything within the park was designed for man, disregarding ecology in its high-tech, high-energy landscape. It goes against Kant's theories, which suggest that respect for the genius of a place is of the essence. Tschumi's Parc de la Villette is lacking in that it does not respect ecology as does Latz's design for Duisburg Nord Landscape Park (Gardenvisit, 2021: online).
One might expect the site of a slaughterhouse to be dead beyond the scope of ethics, however, the ecosystem could have been resurrected. One can question our own post-apartheid industrial landscape and ask: Are these sites dead beyond the scope of ethics? Can we reimagine or even reinvent them?

Lessons learnt

Despite the criticism towards the lack of regard for ecology, the visual representation of Tschumi's concept is an exceptional example of the layering of ideas which explain the subtle cues taken in the design approach. The main take away from this case study is that a concept does not have to be two dimensional and in some cases the layer of ideas can communicate intent more successfully (see fig. 130, 131, 132, 133 & 134).

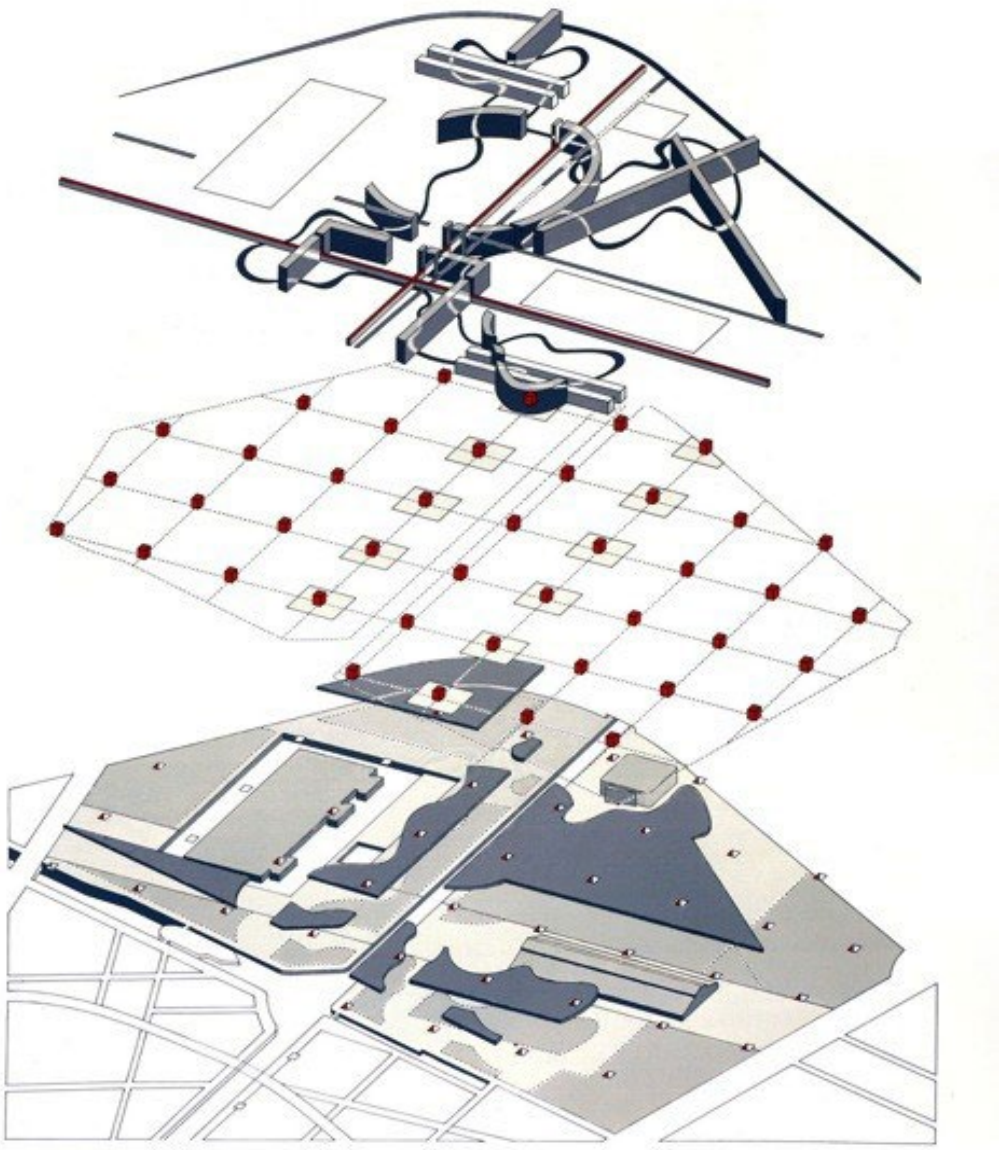


Fig. 129: Bernard Tschumi's conceptual diagram of points, lines and surfaces depicting a layered conceptual approach to design (Archdaily, 2021: online).

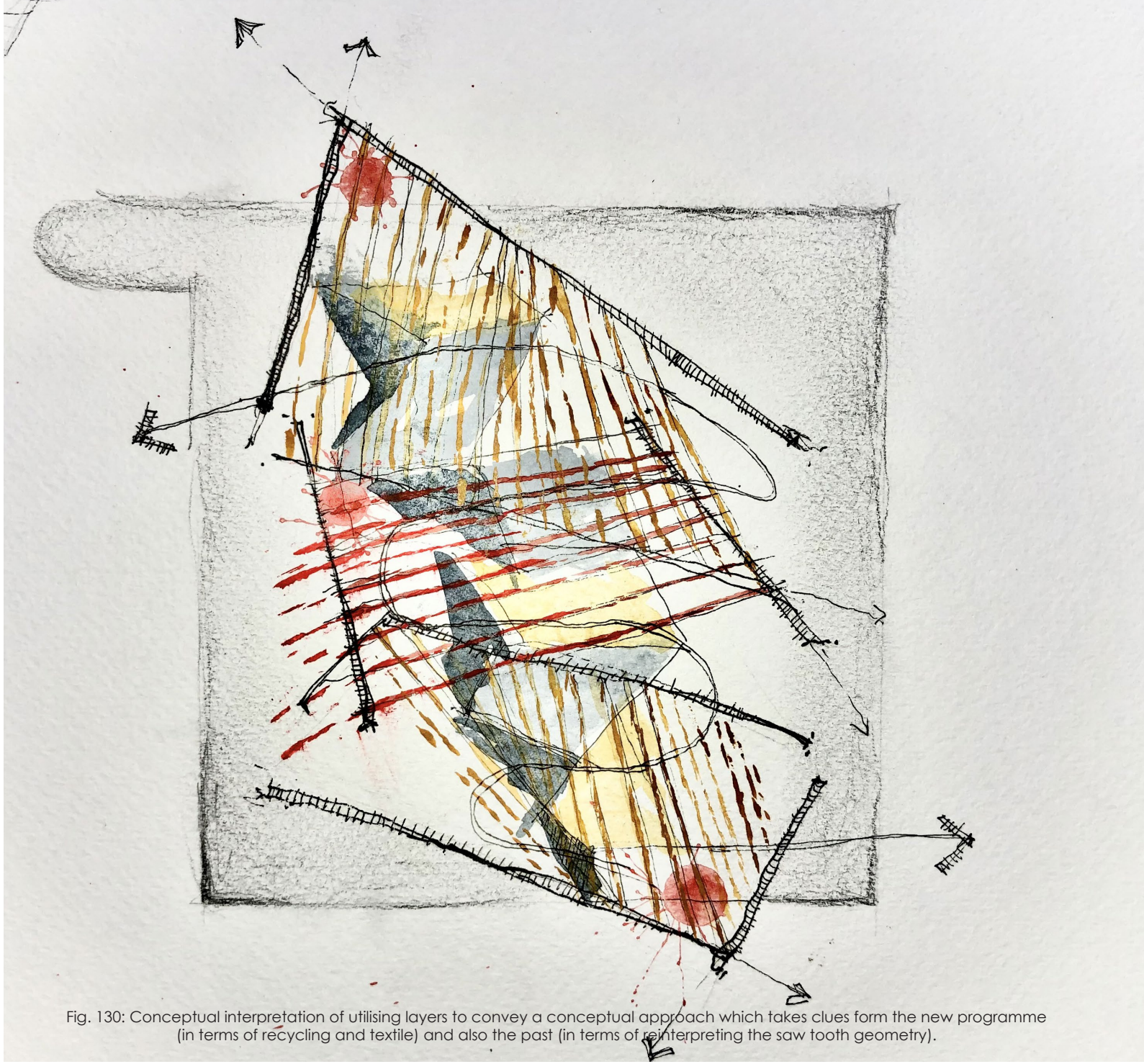


Fig. 130: Conceptual interpretation of utilising layers to convey a conceptual approach which takes clues form the new programme (in terms of recycling and textile) and also the past (in terms of reinterpreting the saw tooth geometry).

conceptual exploration 2: Syncronised layering of ideas

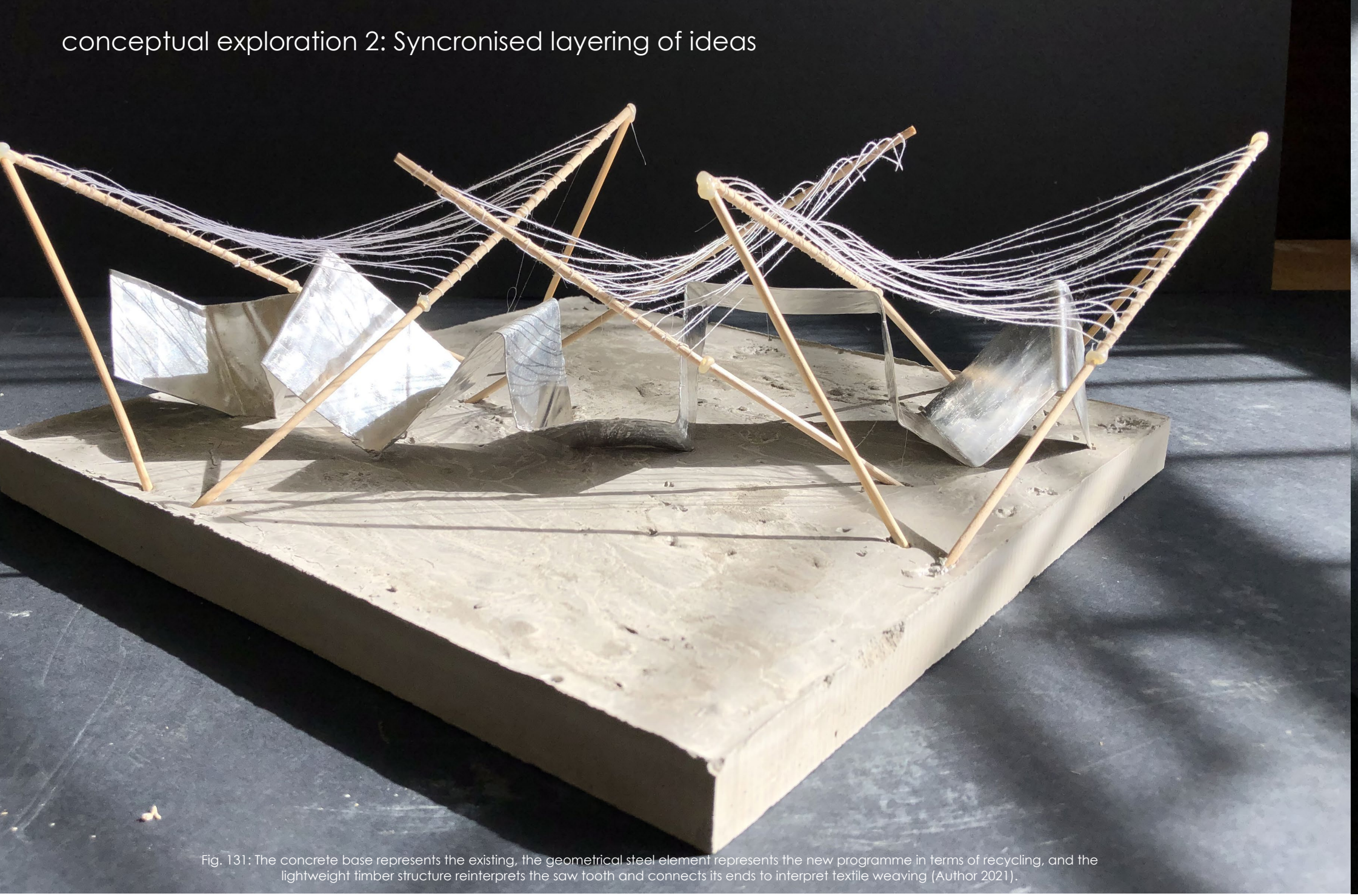


Fig. 131: The concrete base represents the existing, the geometrical steel element represents the new programme in terms of recycling, and the lightweight timber structure reinterprets the saw tooth and connects its ends to interpret textile weaving (Author 2021).



Fig. 132: The various elements are represented individually, however the overall composition of the model is reliant on the combination of all the elements to include all the aspects of the project into one representation (Author, 2021).

conceptual exploration 2: Syncronised layering of ideas



Fig. 133: Overlaying all the elements creates new interpretations of the overall experience by combining the effects created by the individual elements (Author, 2021).



Fig. 134: The experiential model created new a new perspective on finding ways to integrate the various parts of the project to become a synchronised representation of all (Author, 2021).

Theoretical case study 3: Zeitz Mocca- contemporary art museum (2017)

The Zeitz Museum of Contemporary Art Africa (MOCAA), designed by Heatherwick Studio, is a contemporary South African example of reclaiming a post-industrial site.

In its previous life, this newly designed, mixed-use cultural art museum was an industrial grain silo complex. It comprised silos, an elevator tower and storage annex. The structure is located by the V&A waterfront and has been sitting on the harbour since 1921.

In their redesign, the architects wanted to create a central meeting space. This resulted in reimagining the interior as carved from within an infrastructural object (see fig. 136) (Dobbins, 2018: online). In their execution, the interior space becomes a sculptural interpretation that relates to its new function whilst celebrating the building's past character. The design reveals the structural nature of the silos, enabled by the physical view of the hollow character of the tubed structure. The building's elevator tower has been reimagined as a lighthouse (see fig. 135), signifying regeneration and change (Dobbins, 2018: online). This is similar to Latz's approach of completely reimagining the structures to create connection to context.

Zeitz MOCAA is an example of a South African post-apartheid industrial site that has been successfully reimagined and reinvented. Its primary new function as a contemporary art museum is dedicated to promoting and celebrating ethnic culture and identity by creating a platform to exhibit, preserve and collect art from Africa and its diaspora.



Fig. 135: Photo of Zeitz Mocaa showing the convex windows and raw concrete material after the architects decided to strip the building's paint (Baan, n.d.: online).

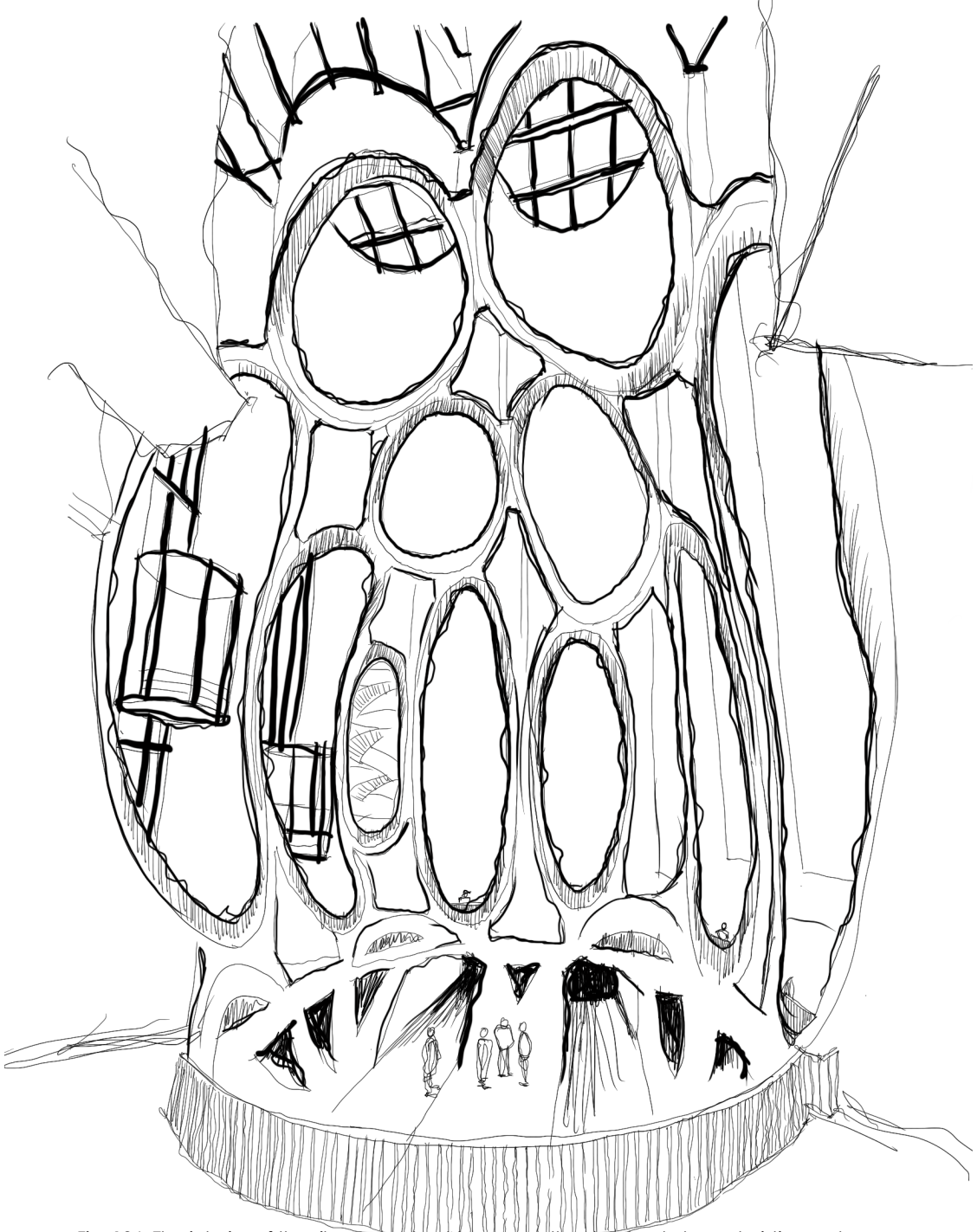
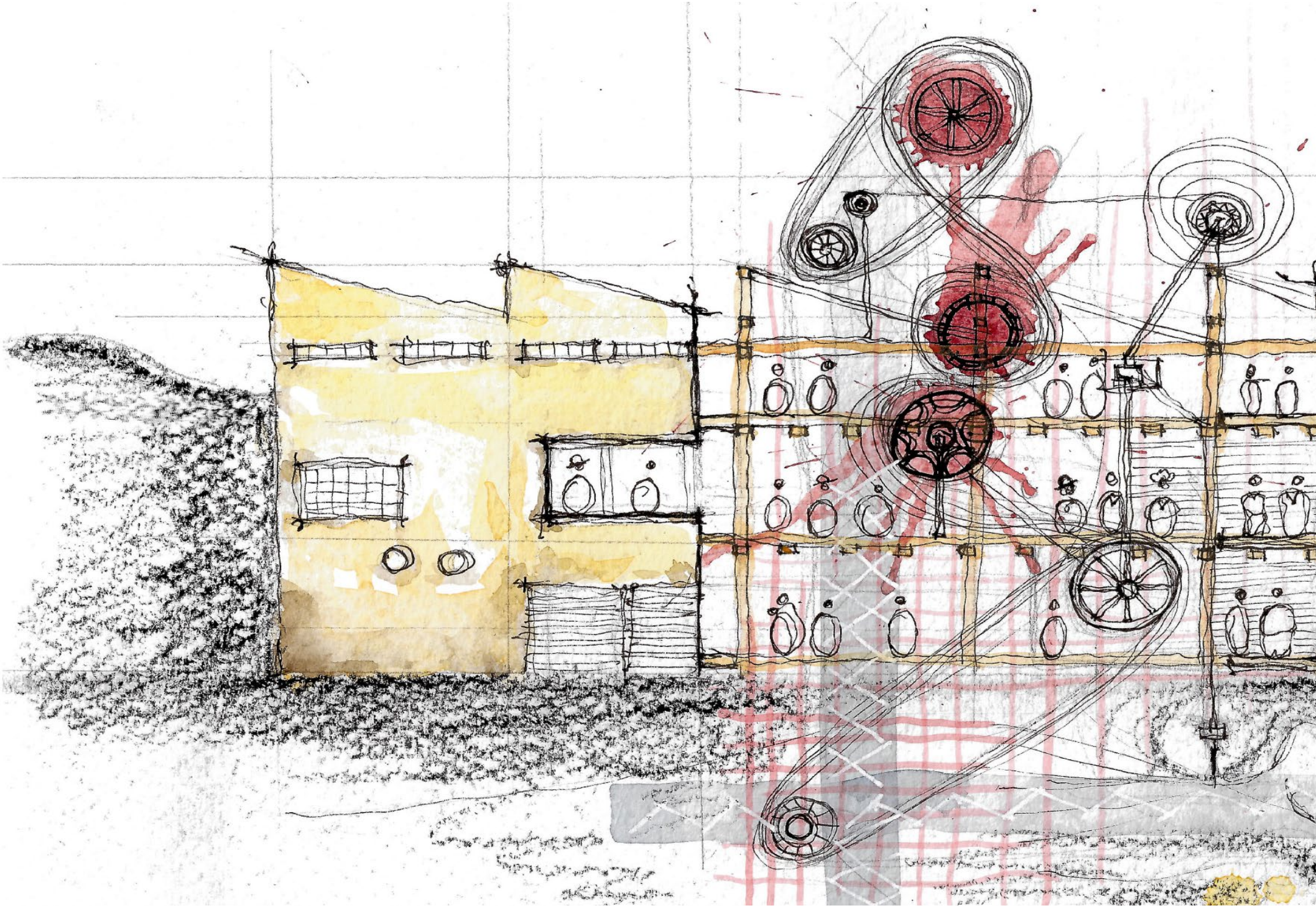


Fig. 136: The interior of the silos carved out to expose the structural characteristics and create a central meeting space (Author, 2021).

Lessons learnt

Transform the existing to relate to its new function, whilst maintaining the character of the original. Taking an approach that reveals layers instead of removing of hiding them (see fig. 137, 138, 139 & 140) would celebrate the cultural significance of the old whilst adapting to the needs of the new use.



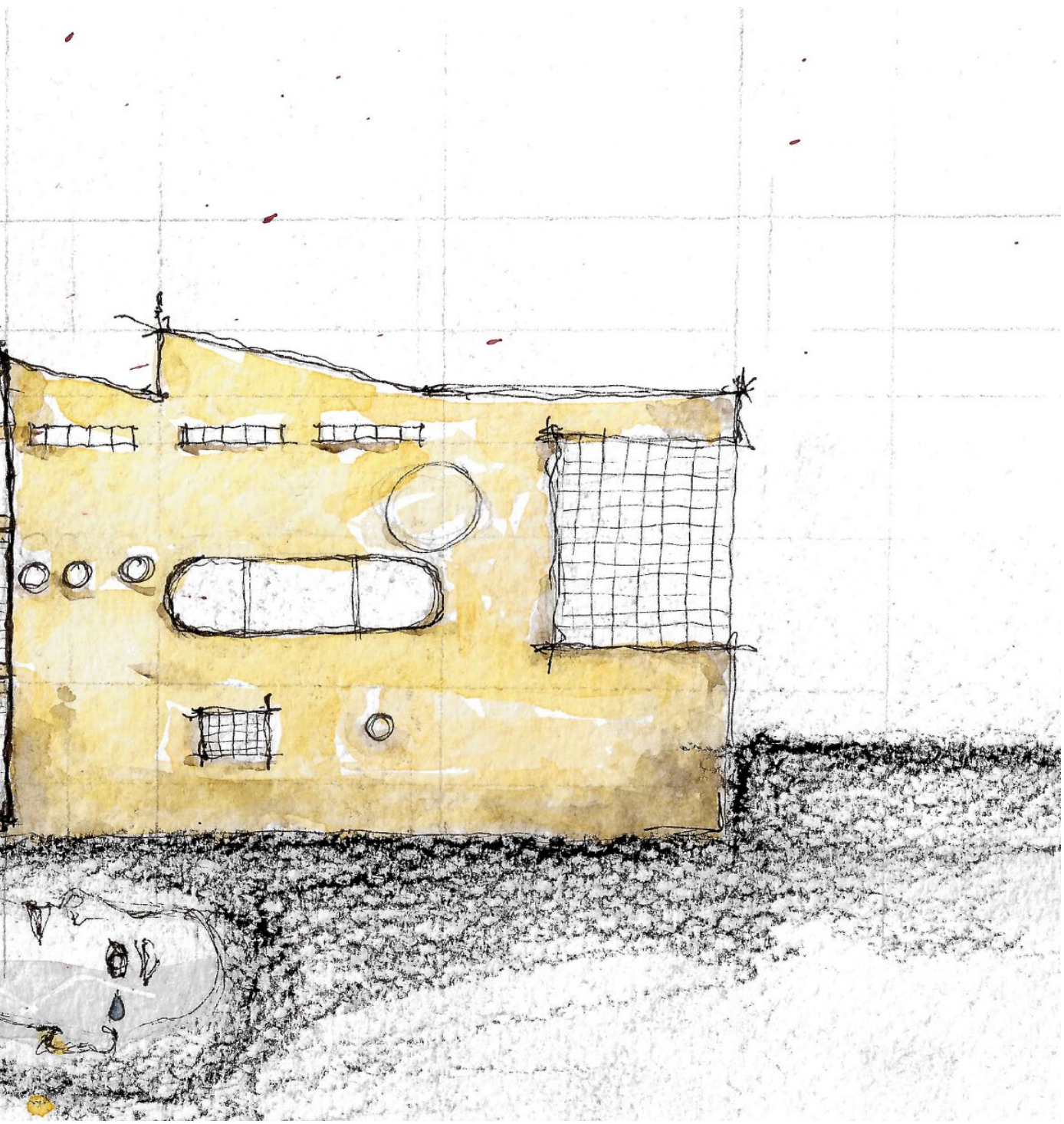


Fig. 137: Conceptual interpretation of revealing layers to expose other layers of significance (Author, 2021).

conceptual exploration 3: revealing layers to expose and celebrate the significance

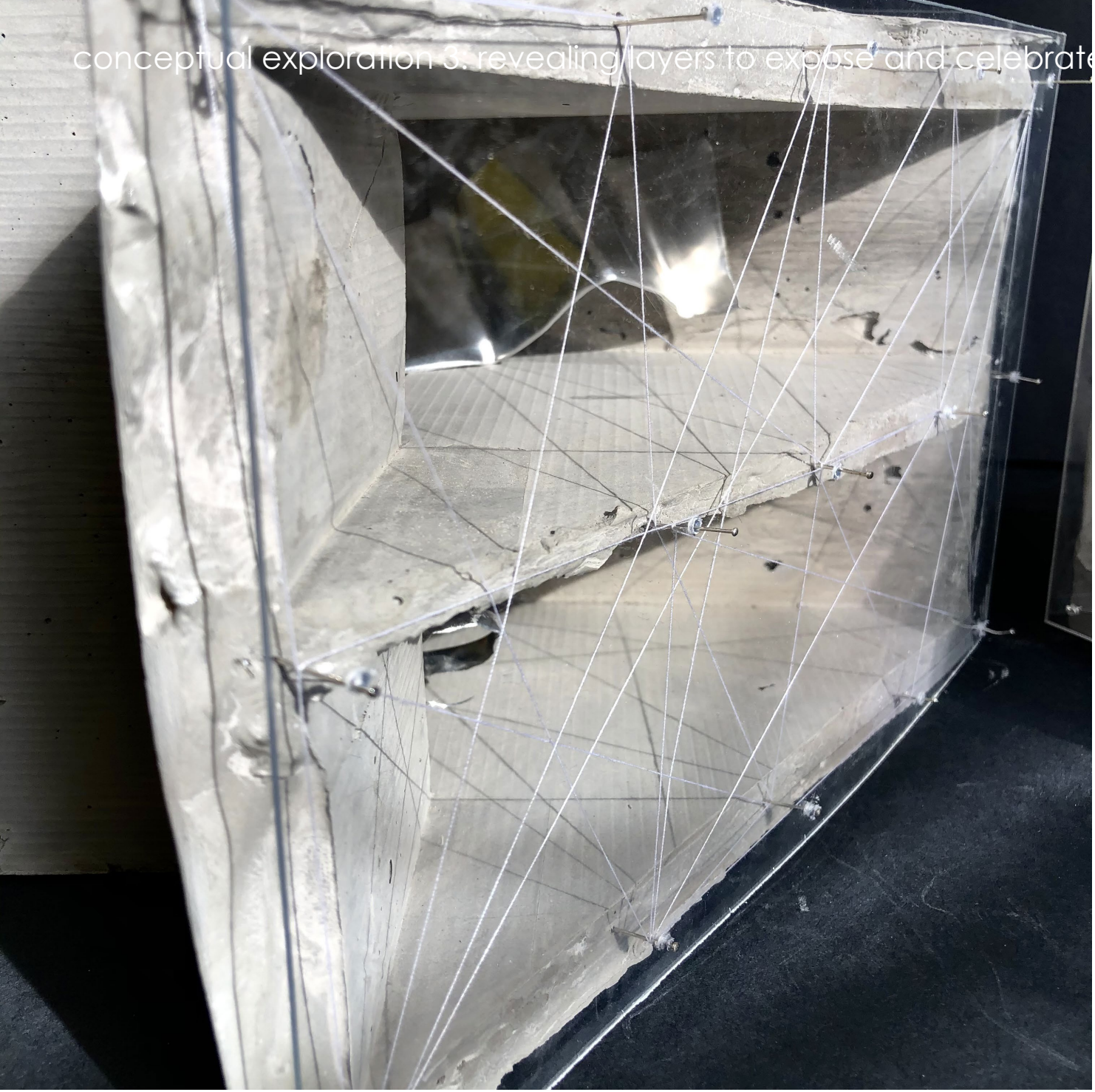
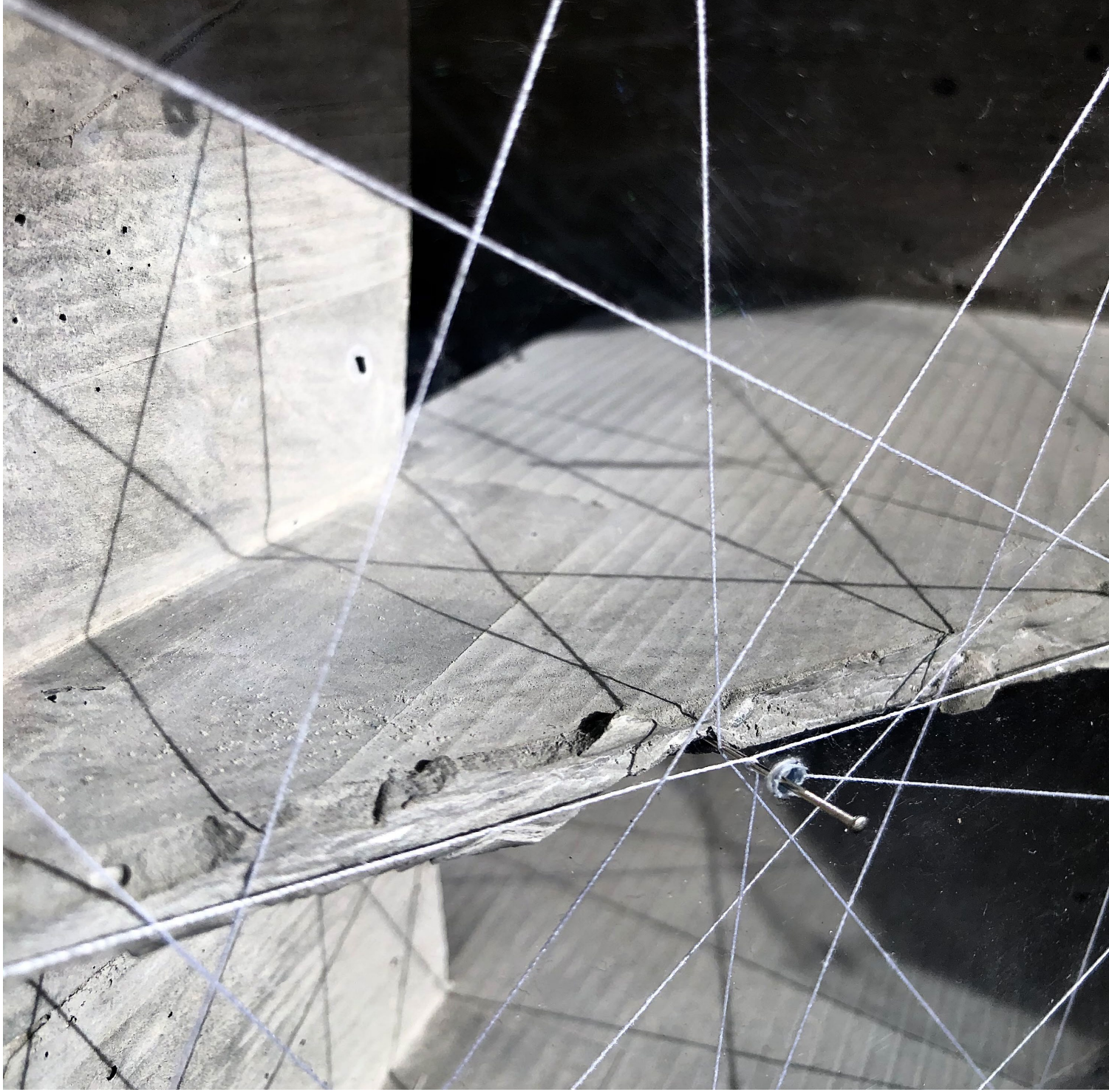






Fig. 138-140: The conceptual takes a part of the building and creates a cut which separates the two parts. A piece of perspex is used to resemble a window or a display element where the cut out layer can be seen and celebrated as something valuable. The thread creates a net which resembles various complex connections exposed through the cut. The materiality of the concrete is exposed and the parts previously hidden are celebrated through this exposure (Author 2021).



c) Lasting effects of marginalisation

Beukes, de Villiers and van Marle (2012) are three women who wrote on the complex relationship between space, gender and the law in the post-apartheid state. Spatial regulation, segregation and allocation and the organisation of spaces through law have left a mark on South African history. They suggest that there is no difference between geographical and built environment stories and social control through segregation in terms of race (ibid: 566). Moreover, law and history have manifested gendered spaces, where women have been silenced. Consequently, women must be encouraged to rethink, reimagine and re-enchant these spaces of oppressed silence (ibid: 571).

Cultural experience serves as architecture's prefiguration – its basic subjects allow for configuration and interdisciplinary studies that point to architecture's possible refiguration (Leatherbarrow, 2007: online). In other words, the history of culture within place is the grounding of architectural making. Architecture also has the power to influence cultural experience. Through design that integrates fields outside of architecture, it has the ability to reimagine the experience of culture in society.

The essential theme is rooted in ethics – cultural ethics and environmental ethics – that address the way of living in the past and its effects on urban development and society today. The cultural ethics responds to the idea of apartheid modernity where power and control misused and manipulated members of society based on class, race and gender. Environmental ethics responds to the misuse, depletion and pollution of natural environments and resources for capital benefits and power. The opposite of control and mis-use can be describe in one word as support. **Support** therefore becomes the action giving the characters something to respond to which relates to the essential theme of ethics.

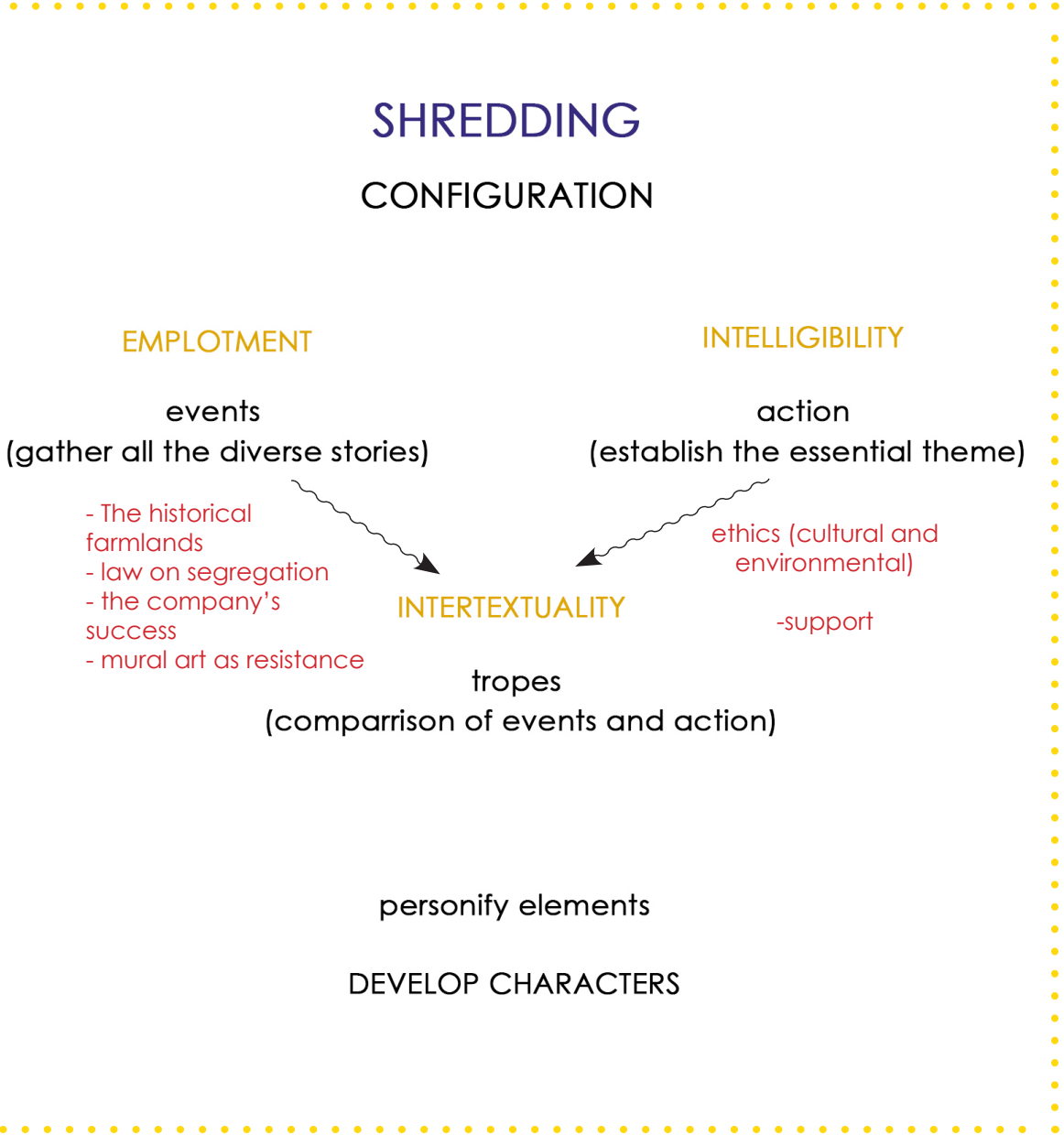


Fig. 141: Theoretical diagram illustrating the progress of the stage of shredding/ configuration (Author, 2021).

3.6.3 Intertextuality: ("tropes")

This stage of configuration compares and confronts the various stories identified during emplotment to become characters. This comparison of stories creates opportunities to reveal aspects of the narrative previously hidden or unseen. It is a process where new interpretations are created by using, according to Ricoeur (2016: 35), "tropes" meaning, such as figures of speech and irony, which allow the narrative to not only be constructed but also deconstructed in its meaning.

This is a process whereby various events of the past are related to one another based on the essential theme, thus giving action to the narrative. Ethics was identified as a core theme during the intelligibility phase. It, therefore, distinguishes the relationship between the various characters to progress the narrative.

An ethics of culture and environment described through action suggests that the term to use here is "support". Firstly, in the support of nature in industry as environmental ethics. Secondly, in the support of cultures and people of various backgrounds as a form of inclusivity. And, lastly, in the support of the voice of silenced, oppressed workers and the success of Rex Trueform. The evocation of this theme of integration ought to be experienced as re-spinning during the final part of refiguration. Re-spinning is then a dialogue between the characters.

a) Segregation vs modernism – the box of tricks

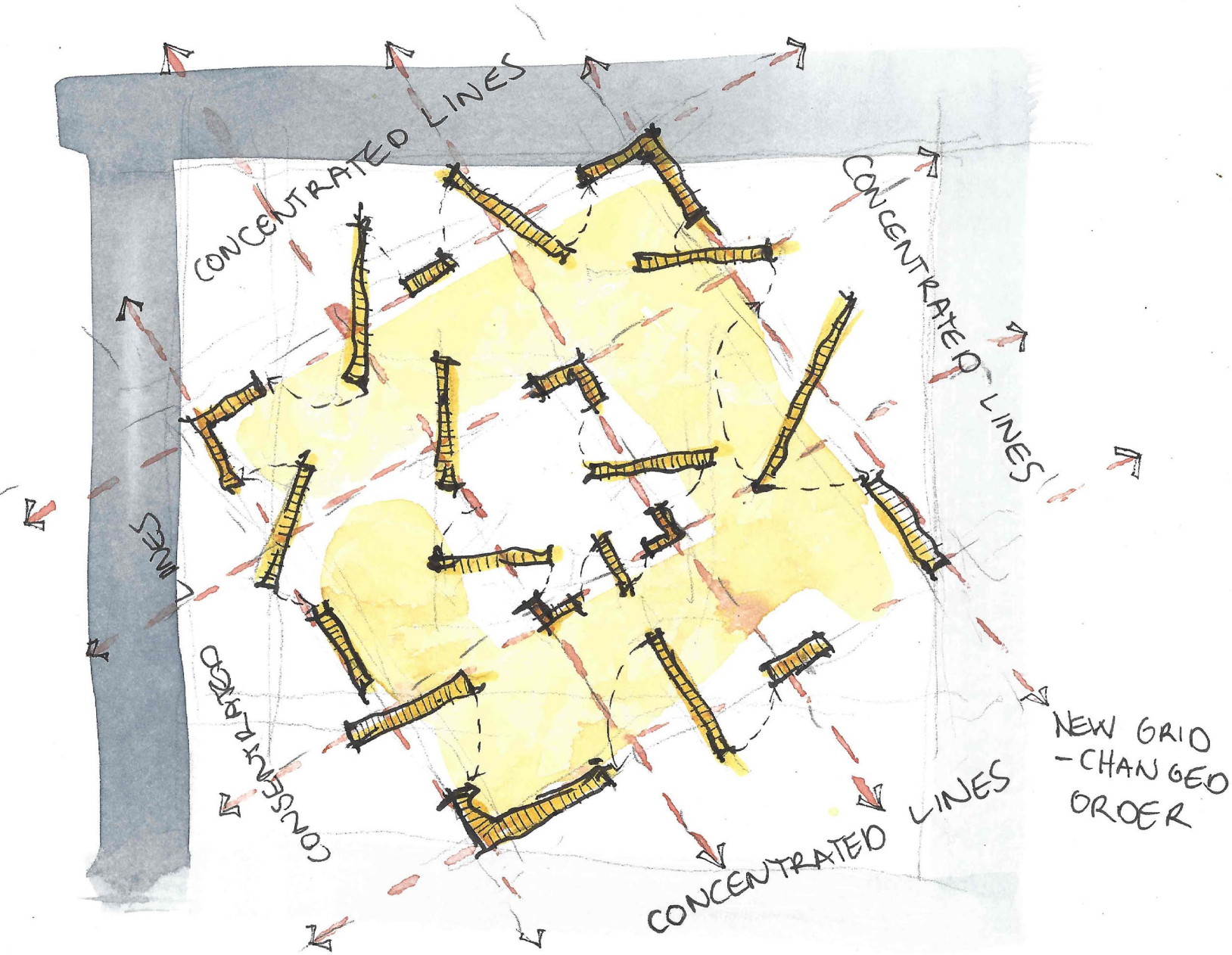
The law on segregation combined with the spring of the modernist movement in Cape Town can be described as the construction of apartheid modernity. Apartheid modernity refers to the way in which the built environment was constructed to separate individuals based on race and gender. Identity was ascribed through this segregation and profits made at the cost of workers compelled by control and power. The duplication of services, such as cloak rooms, cafeteria spaces and circulation, undermined the value of the workers. Effectively, this remains as a permanent reminder on tarnished infrastructure and comments on the socio-economic ethics of the past. However, the separated spaces that previously existed in Rex Trueform have been removed, and the new spaces should respond to this part of the narrative in order to acknowledge the difficult past.

Sub-question 1: How can modernist principles be used to reinterpret spatial organisation in a way that communicates equality and inclusivity that disregards notions of past divides whilst providing socio-economic opportunity to current users?

If the new walls are characters of the apartheid government as separators, the spaces between them constitute the place of misused labour. The characteristics of these elements and spaces ought to suggest inclusivity and connectedness in the new present. The perception of demarcated space to separate should conform to the idea of changing past motifs. In other words, the building will be able to change its parts according to its occupants' needs, unlike previous modernist buildings.

If this design element can create opportunities for interaction between individuals, it can also become infrastructure that utilises economic opportunity. Small businesses are a large part of the South African informal trade sector, and, consequently, opportunities will be provided for these entrepreneurs.

Trading spaces will thus be provided to these users along concentrated lines of opportunity to form an infrastructure of economic opportunity. The idea of the old modernist open plan factory floor will be retained and concentrated lines of opportunity will be added. These lines will create a shift in geometry that creates liminal spaces between boundaries, which instead of merely separating, provide opportunity for gathering, meeting and conversing (see fig. 143). The result is a newly imposed grid over the old existing grid creating a dichotomy between old and new.



Designing large open spaces with free façades (echoing modernist principles) with transformative qualities can demarcate spaces and simultaneously provide successive qualities. Moveable walls allow for transformation and create opportunities for access and permeability – allowing for change and adaptability (see fig. 142). Walls that separate and concurrently facilitate connection through transformation become a reminder of past divides and an indication of future expectations of change through opportunities to connect and engage. This architectural move can be represented as a box of tricks creating opportunities by permitting constant change and acessability.

Introducing a green roof gathering space as another modernist principle reimagines modernism in a contemporary present. Multiple access routes to central spaces permit connectivity between various functions – integrating the programme and allowing inclusivity. The design of connected, integrated spaces contradicts the past's application of separated spaces. In the new building, the idea of segregation is thus signified as a contradiction of integrated connections. The idea for this design move was inspired through reimagining the past in the present as explored during conceptual exploration 1 (see fig. 125-128)

Fig. 142: Conceptual diagram illustrating a shift in geometry along concentrated lines imposing a new order onto the old. Moveable elements creates porosity and opportunity for movement between the various segments of spaces (Author, 2021).

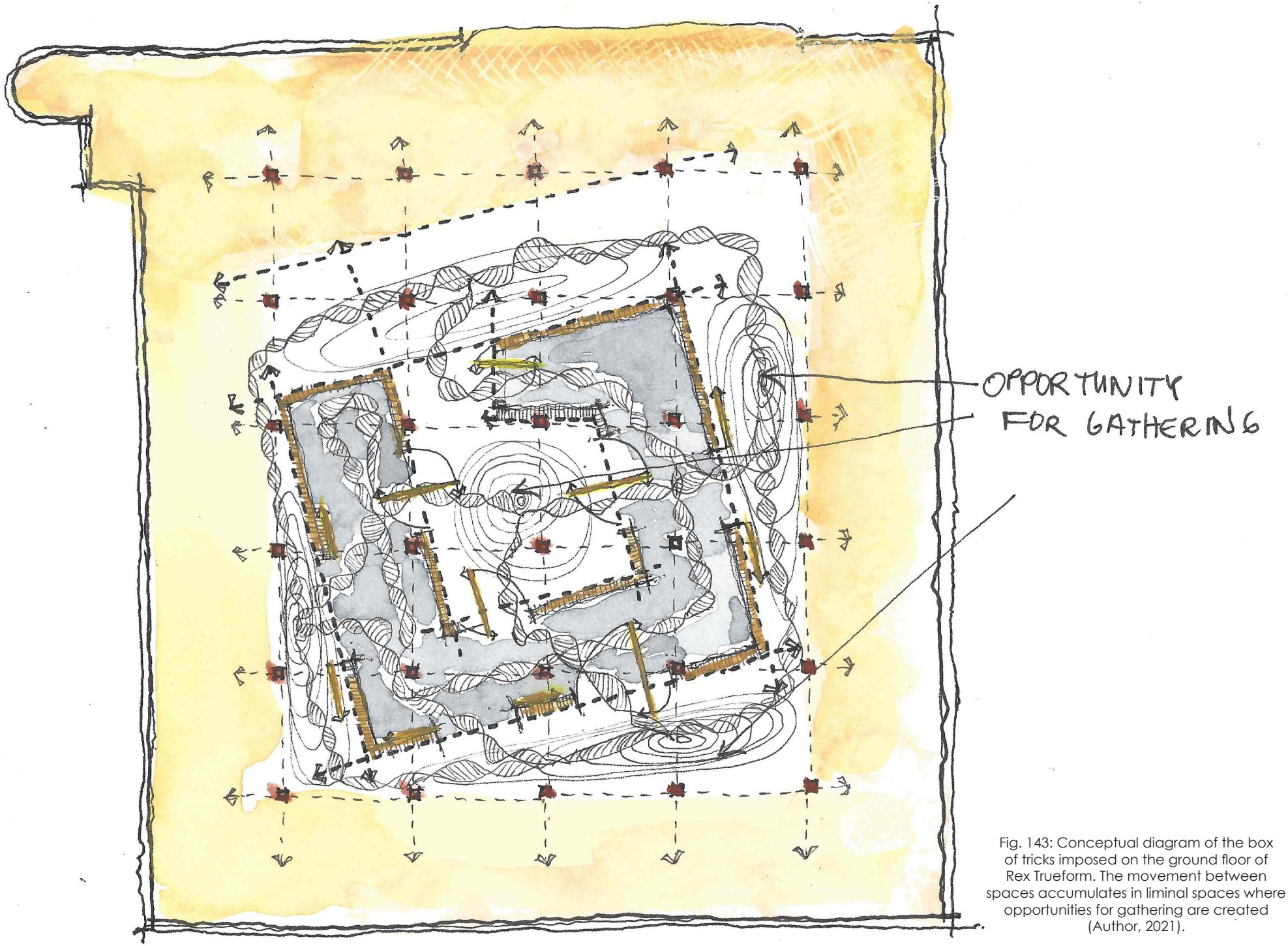


Fig. 143: Conceptual diagram of the box of tricks imposed on the ground floor of Rex Trueform. The movement between spaces accumulates in liminal spaces where opportunities for gathering are created (Author, 2021).

b) Workers vs Rex Trueform- the celebrating void

The Rex Trueform company was glorified for its economic success and modernity in industry. The narrative of Rex Trueform, however, suggests that the company was the antagonist misusing control of and power over the oppressed protagonist played by the workers. Ironically, the company would never have prevailed without the loyalty of the hands manufacturing the essence of its success (see fig. 144). Since the main workforce of the company were women of colour, the focus is mainly on representing this marginalised group in the design response.

Black feminist activist Bell Hooks (2015: 103) wrote:
"***Women are exploited economically in jobs, but they are also exploited psychologically. They are taught via sexist ideology to devalue their contributions to the labour force. They are taught via consumerism to believe that they work solely out of material necessity or scarcity, not to contribute to society, to exercise creativity, or to experience the satisfaction of performing tasks that benefit oneself as well as others. Feminist focus on rethinking the nature of work would help women workers resist psychological exploitation even though such efforts would not change the economic situation. By attributing value to all the work women do, whether paid or unpaid, feminist activists would provide alternative self-concepts and self-definitions for women***."

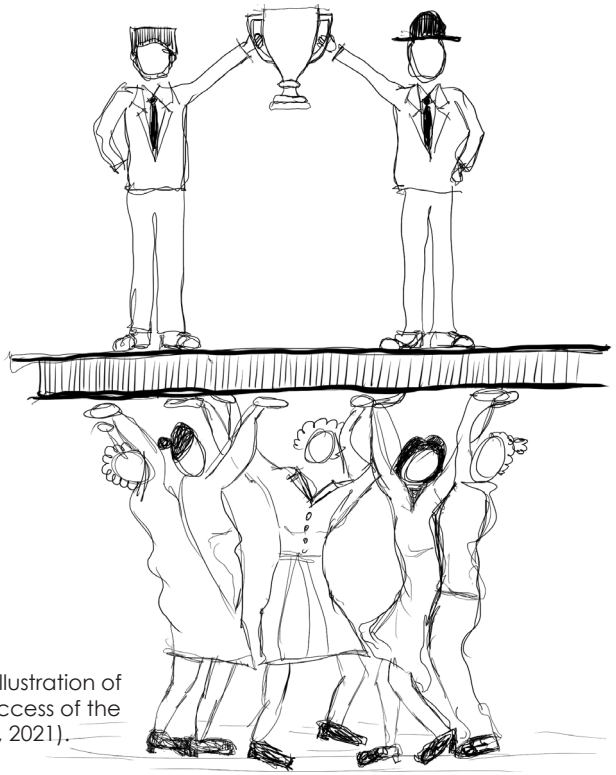


Fig. 144: Metaphorical illustration of workers carrying the success of the company (Author, 2021).

The company is recognised within the building, which itself is a physical representation of the company that does not acknowledge the workers. It can almost be imagined as a disguise, hiding the efforts of the backbone. The comparison between the glorified success of the company and the conditions of morality towards its workers comments on the social ethics of the time. So, how can the workers be dignified within the physical memory of the company as it exists today?

Sub-question 2: How can a reduction in the solidity of the existing building reveal the layers of its history by exposing the structure in order to celebrate the workers as the backbone of the company?

With the Zeitz MOCAA, Heatherwick Studio utilised the idea of carving out the structure to reveal the layers of its history. It is the idea of partially removing what is there to reveal the hidden parts thereof. The structural system of Rex Trueform metaphorically and physically holds the building together (see fig. 145) – without it the building would collapse. The partial removal of solid elements to reveal the structure could be a way to memorialise the workers as the core of the company. This space can be specifically designed to become a memorial to the workers. Removing solid elements of the existing in other areas would also bring light into the building's darker spaces and further expose the structural integrity of the existing.

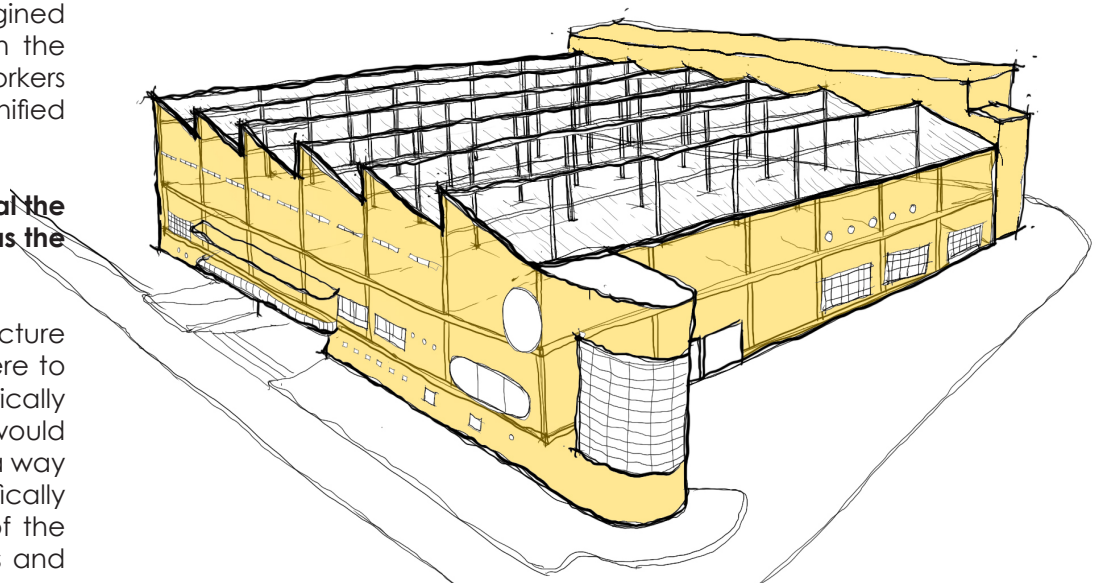


Fig. 145: Drawing revealing the structural system holding the existing building together (Author, 2021).

Much like Heatherwick Studio's approach of creating a sculpture out of the existing, the structure of Rex Trueform could symbolically become an artistic sculpture exposed as an act of resistance, which is influenced by the murals found in the old building. The structure thus becomes a character interpreted as the workers – the backbone of the building. The new structure will also be constructed to suggest that the new builds on the strength of the old, which is analogous of the coming together of old and new fibres during the recycling process.

The workers are represented through the existing structural system. Exposing the structure will celebrate the loads carried thereby, comparable to the labour of the workers in the past. The necessity of the structure is thus made visible and celebrated, instead of hiding it behind floors, walls and roofs. Accrediting value to the work of especially the women provides for alternative self-conceptions and self-definitions of previously devalued non-white female factory workers. Ultimately a physical void is created to celebrate the previously voided contributions of the workers to the success of the company (see fig. 146).

The creation of voids that expose structure can interpret the complexity of the history as a palimpsest of layers. The effect of this can also be interpreted as textile patterns, alluding to the patterns of history creating multiple curious interpretations of the characters. The idea for this design move sprung from conceptual exploration 3 (see fig. 138-140).

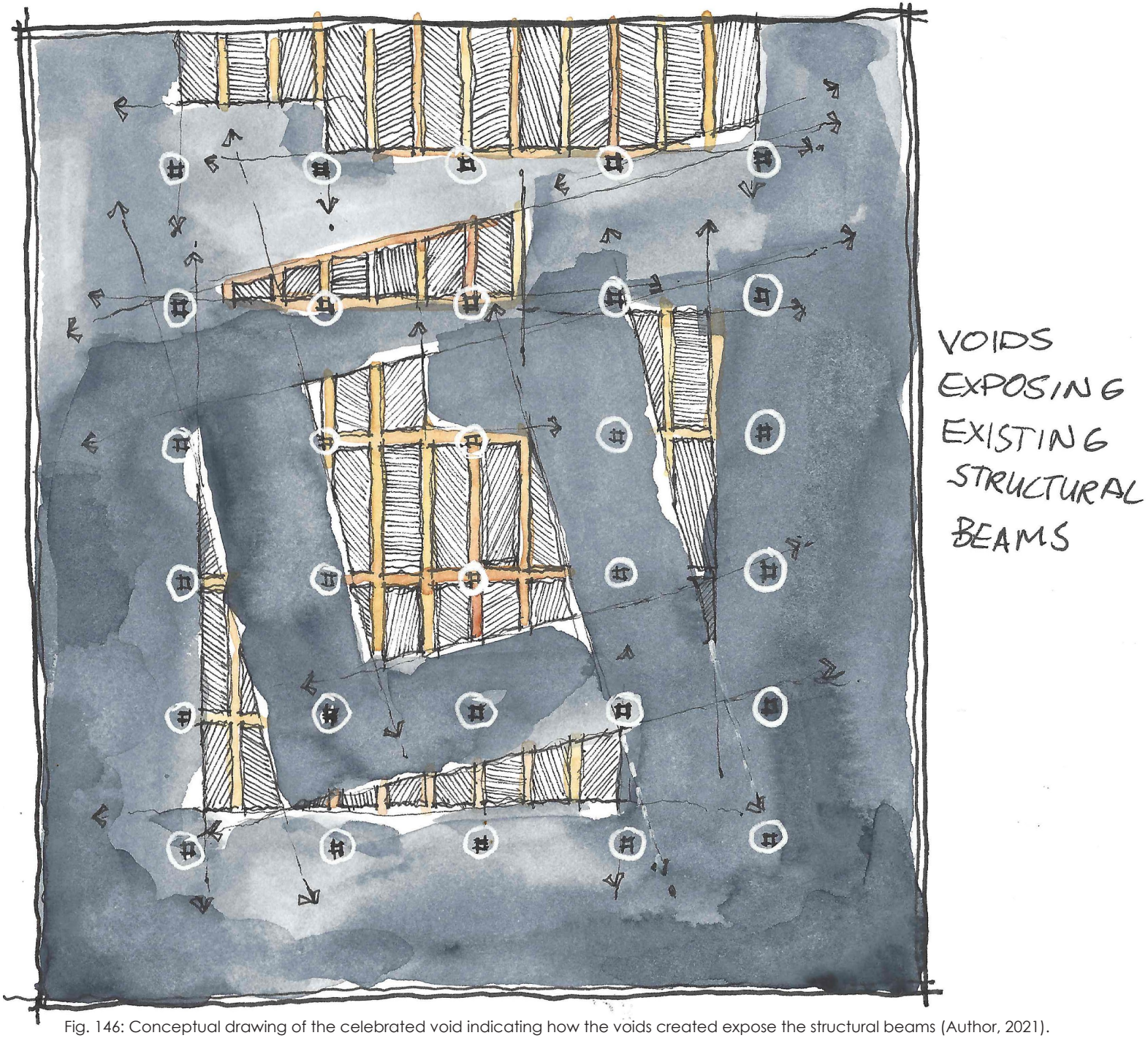


Fig. 146: Conceptual drawing of the celebrated void indicating how the voids created expose the structural beams (Author, 2021).

c) Industry vs nature- the knotted saw tooth

The genius of the place, before it became a part of Cape Town's modernist evolution, was farmlands: the life before the life of the past. Referring to Latz's Duisburg Nord Landscape Park, one can say that its life before the life of the past was also a natural habitat (or maybe even a farm). Latz's approach was not to disregard the industrial structures but rather to utilise them to give a piece of the site back to what it once was. He thus gave the site new life that reimagined the place before industry on that industrial site. The site was treated as a continuous recycling process of nature to technology to nature.

In terms of Rex Trueform, this raises the questions: How can a post-industrial building be reimagined as the life before the life of the past? How can industrial characteristics be utilised to resurrect the memory of the place before it became the current memory of the past? This almost becomes a comparison between nature and technology. Both are important, and symbiosis between the two is essential to the society we live in today.

Technology and nature are often seen as polar opposites. Hence, the relationship between the two ought to say something about ethics in industry. Although the Rex Trueform building represented a giant step forward in the evolution of modern architecture, it simultaneously contributed to constructing modernity in the built environment as an apartheid factory ruled by power and control over people.

Sub-question 1: How can the genius loci of the place be re-imagined by reintroducing its architectural elements to represent and celebrate a sense of environmental ethics in the current industry?

One could compare nature with industry by reinterpreting the narrative of historical farmlands through the character of the industrial saw tooth roof (see fig. 147). Utilising this connotation of the saw tooth roof and imposing greenery on its materiality could create a dialogue between industry and nature, which suggests that nature ought to be at the core of industry. In this way, the post-industrial site is reimagined in the scope of environmental ethics.

Therefore, industry becomes a character in the narrative, one that celebrates nature at its core. It is identified by reinterpreting the industrial saw tooth – by seeing it through an ecological lens.

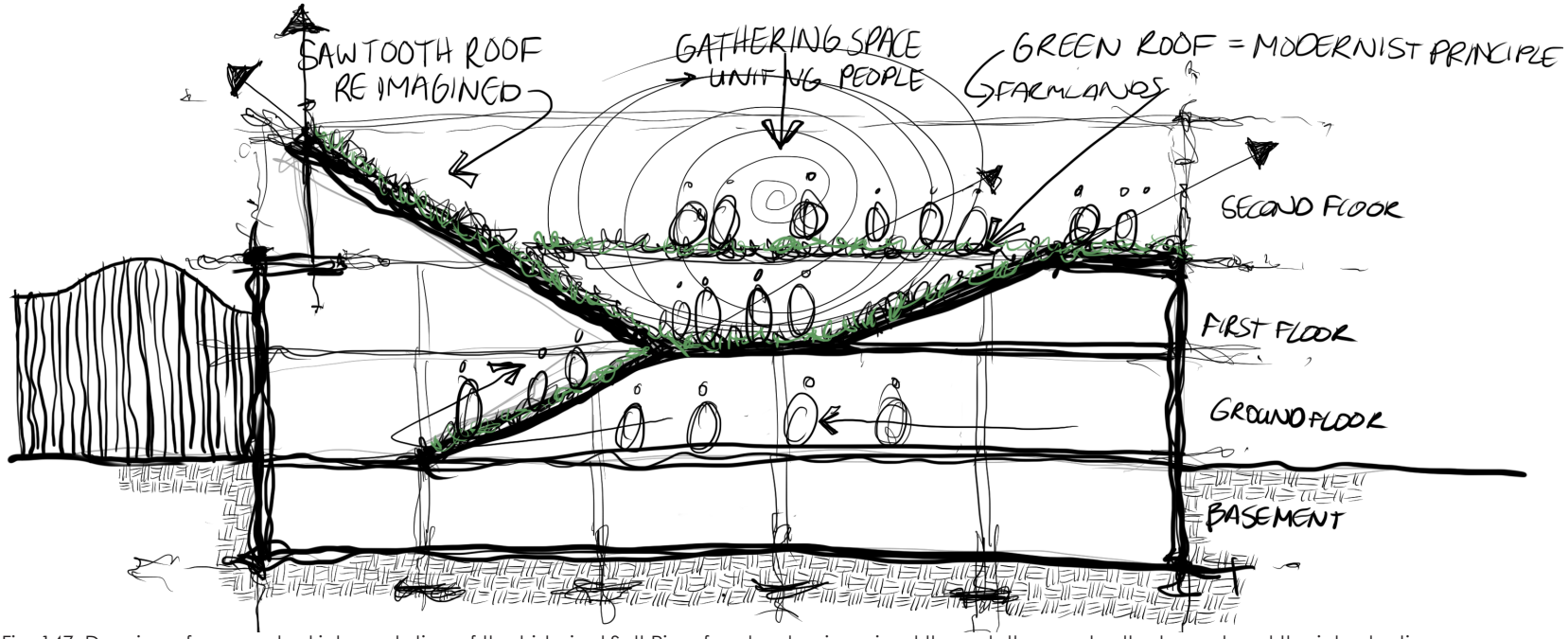


Fig. 147: Drawing of conceptual interpretation of the historical Salt River farmlands reimagined through the saw tooth element and the introduction of green spaces which function as gathering spaces (Author, 2021).

This could firstly be done by applying this approach to the landscaping of the green roof. The existing grid imposed on the grid created by shift in geometry creates triangular segments which could reimagine the geometry of the saw tooth roof as a garden space which embraces plants and nature.

However the old industrial saw tooth roof is reminiscent of the old garment factory. The new program consists of a textile recycling facility and a textile design school. Therefore if the saw-tooth roof can be re-imagined to represent the current industry would suggest the change of industrial ethics within the new building.
One could suggest the introduction of new structures, such as lattices, to support the surface on which these greeneries grow. The lattice design is interpretational of the textile industry through its material character.

The saw tooth shape is re-implemented in opposing directions. The opposite ends are connected by round timber battens to create a new visualisation of the saw tooth element (see fig. 148). This establishes a parametric structure in which different fibres visually overlap and are weaved together (see fig. 149). The interpretation of this geometry appears to spin fibres and weave together new geometrical interpretations. From below and above, the overlapping battens create a knot-like interpretation (see fig. 150).

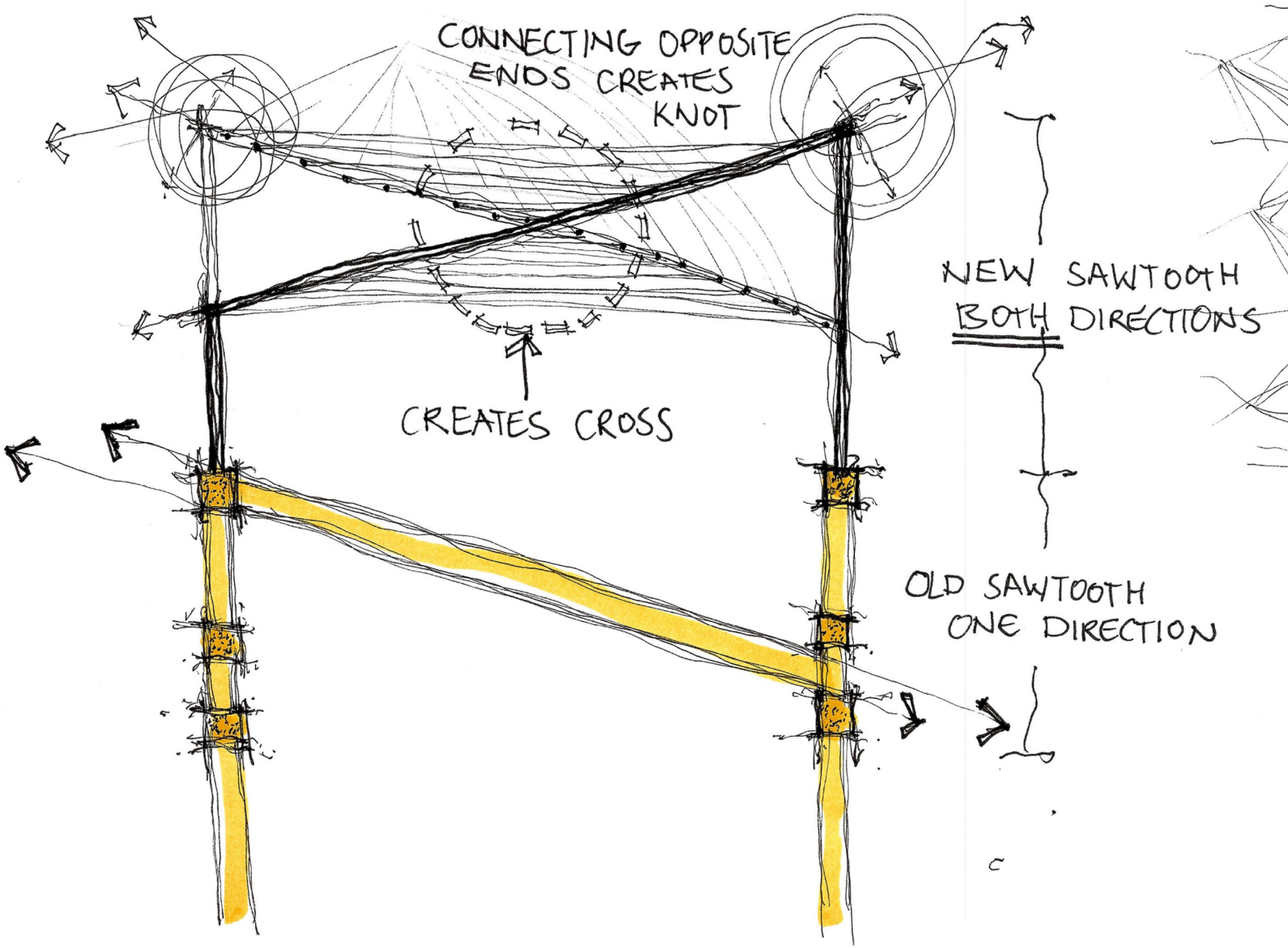


Fig. 148: The knotted saw tooth created by using two opposing saw tooth structures and connecting the opposite ends thereof to create the interpretation of a cross or a knot (Author, 2021).

The design of this canopy structure was thus born out of the old saw tooth structure, reimagined to create a tensile organic new structure on which green elements can grow. The new tensile structure represents the textile industry and reimagines the old industrial structure as farmlands. It creates a layered perception of the old industry (garment factory – saw tooth roof), the new industry (textile recycling – re-spinning threads) and the historical industry (farmlands – ivy vines). The idea for this design move sprung from the conceptual exploration 2 (see fig. 131-134).

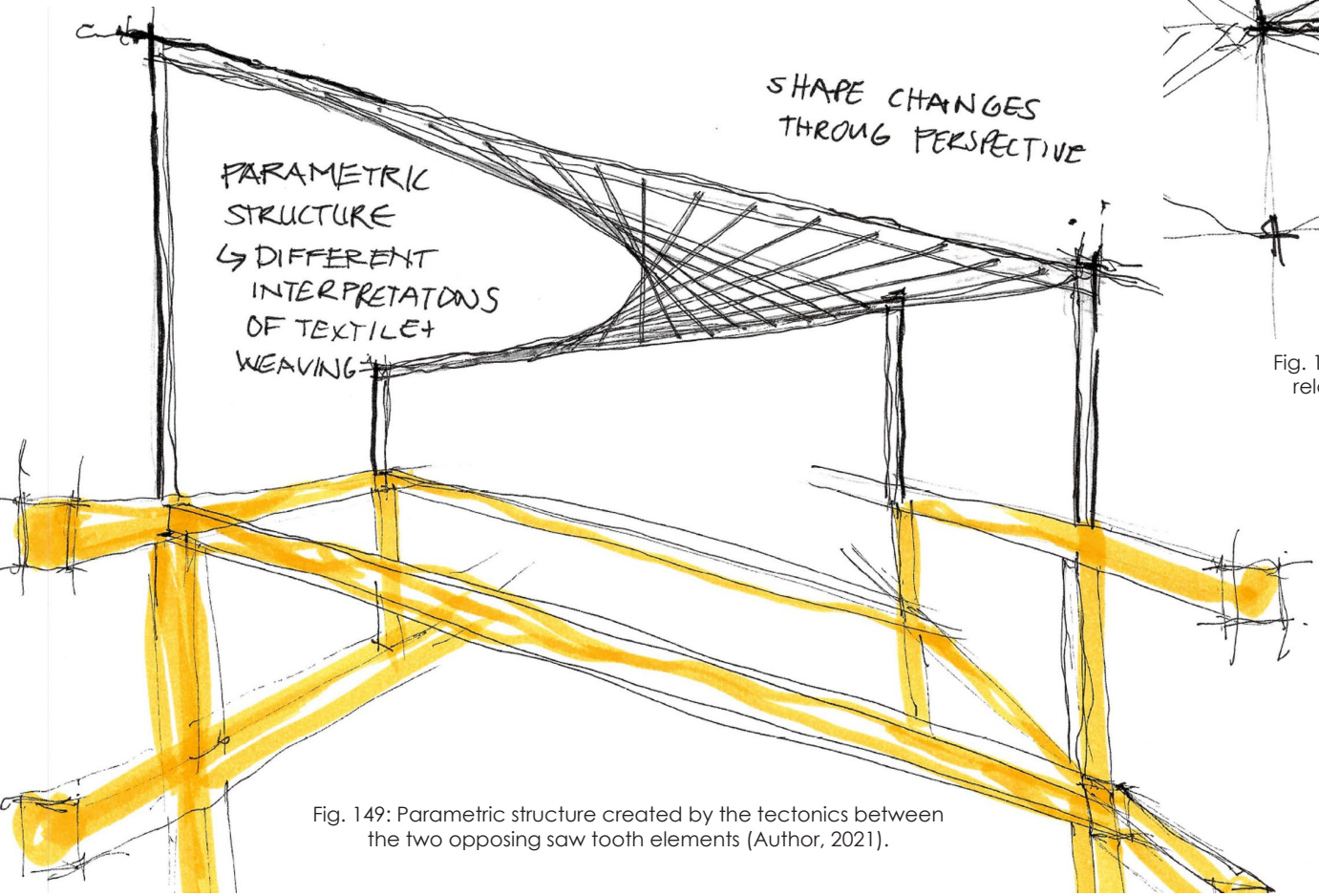


Fig. 149: Parametric structure created by the tectonics between the two opposing saw tooth elements (Author, 2021).

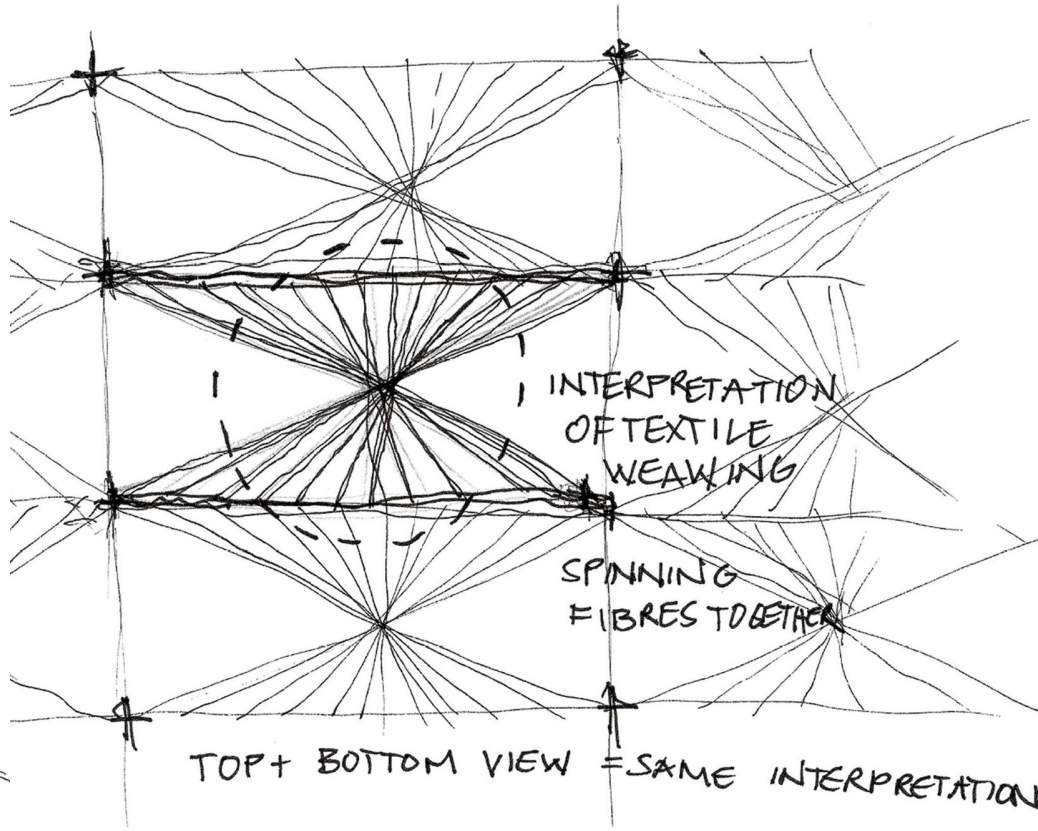


Fig. 150: The top and bottom perspective of the structure interprets a knot relating to textile weaving and spinning fibres together (Author, 2021).

The newly introduced green spaces start to function as lungs of the industrial area; reimagining industrial spaces in the urban environment much like Tshumi's way of reimagining natural landscapes and Latz's way of reimagining industrial landscapes.

Shredding strategies:

- reinterpret historical farmlands through industrial elements as a means to **integrate** nature and industry through a textile inspired parametric knotted saw tooth structure

- **celebrate** the existing structure by exposing it through voids created by removing parts of floors, as a way to celebrate structural integrity as the personified efforts of the marginalised workers

- **create** opportunities through a box of tricks allowing connection and inclusivity, whilst providing economic infrastructure

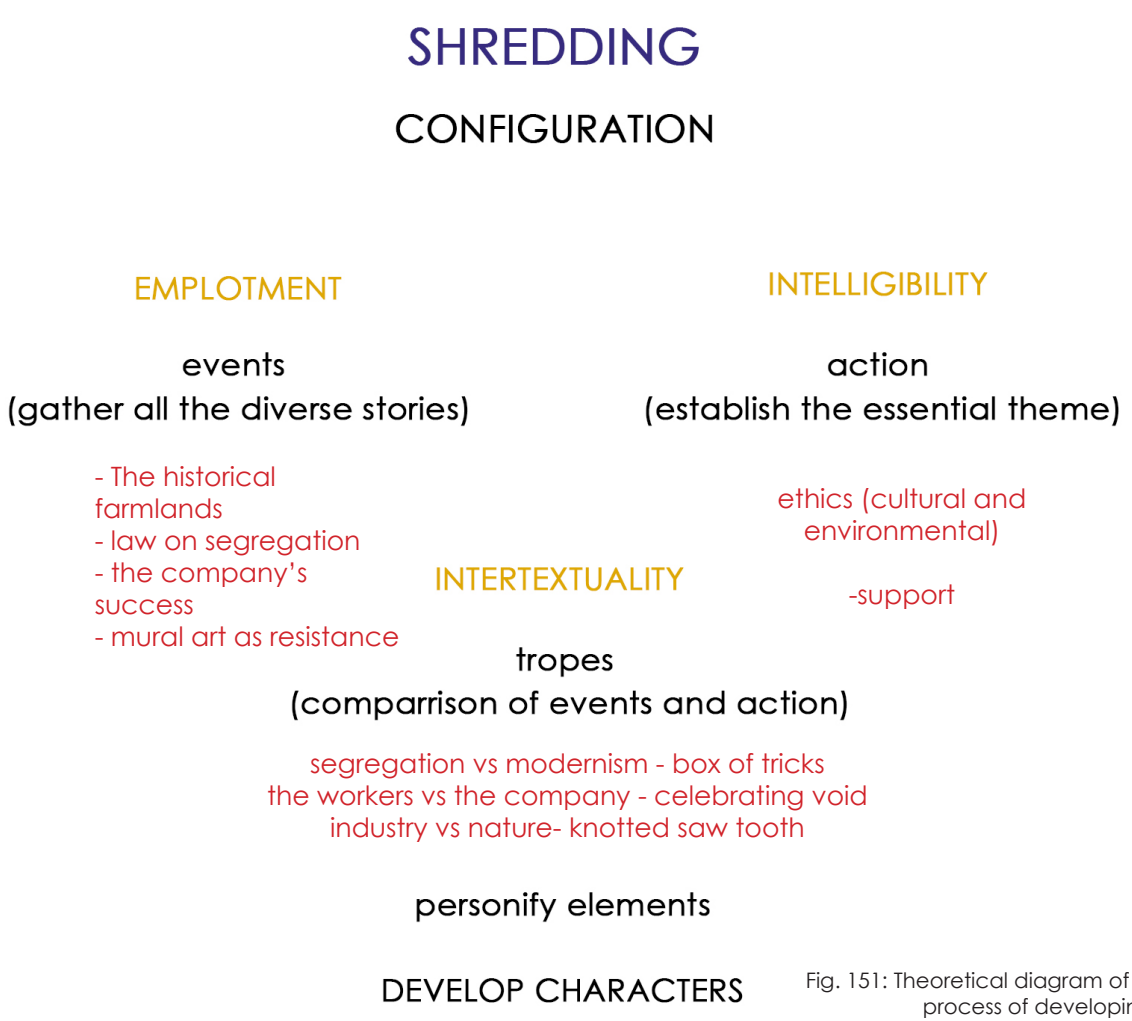


Fig. 151: Theoretical diagram of configuration/ shredding after following the process of developing the characters (Author, 2021).

3.7 Refiguration- re-spinning (dialogue between the characters)

The refiguration stage relates to reading and rereading. During the act of reading the narrative has the possibility to illuminate, reveal, or unfold aspects of itself that had been hidden or previously gone unnoticed.

"***Recounted time and constructed space exchange their meanings***" (Ricoeur, 2016: 38).

In other words, a dialogue is created between the narrative of the past and the narrative of the present created through transformation. Thus, within the experience of space, the relationship between the past and present is an interchange of their narratives.

What has been rebuilt is now the derivative of the memory of the place through various characters. The rebuilt structure reflects the accumulated composition of time in space as the effect of memories from various times that have been recaptured in the place.

Re-spinning

Re-spinning relates to reading and rereading as part of the stage of refiguration. The existing is changed and the experience of the change can be read as one interpretation. When considering the remnants of the past that are evident within the place, the narrative of the present can be read again through a view of the past, much like old fibres that are re-spun with new fibres.

When the old and the new coexist, an interconnectedness between them arises through dialogue as a completely new experience. The one is dependent on the other for the dialogue to emerge. Crucially, it is not the sum of the two narratives of past and present but rather the relation between the two that creates the dialogue. The connection between the past and present is thus experienced through space – creating new imaginative ways of interpreting the significance of the intervention.

Characters have now been developed and the architectural chronotope constructed in terms of time, plot and history. The concepts of duration and succession advance the experience of the architectural chronotope. Further, the narrative reveals layers of history and significance through a palimpsest of interpretations (see fig 152).

3.7.1 Palimpsest of layers

Reading the narrative reveals layers of history and significance through a palimpsest that exposes the architectural chronotope of the narrative. The first layer is visible in the existing structure and building (see fig. 153). The walls create a frame or boundary and the existing structural system creates a grid. The character of the law on segregation and modernism introduces a new grid to devise both lines of opportunity and access and inclusivity as a **box of tricks,** which creates the next visible layer on the ground floor. A dialogue is initiated between the old structure and the new structure (see fig. 154 & 155).

On the first floor, the character of the workers and of Rex Trueform proposes the removal of part of the floor to celebrate the existing structure as well as the workers and backbone of the company. The first and second layers organise the plan and, as a result, also the spaces where voids can be created (see fig. 156 & 157). Once again, imposing the old grid on the new grid indicates the landscaping organisation, shaping green spaces in the triangular shape of the old industrial roof (see fig. 158). Exposing the structure by creating voids and organising the landscaping, as a result of imposing the old on the new, therefore becomes the third layer to reading the palimpsest.

The second floor is an entirely new floor situated where the old industrial saw tooth roof used to be. Reimagining the old saw tooth roof to represent the current textile recycling industry creates a parametric structure that spins together various threads as a knotted saw tooth. The canopy itself becomes an element that weaves together the various surrounding spaces and forms the final layer of the architectural palimpsest, representing the textile recycling industry (see fig. 159).

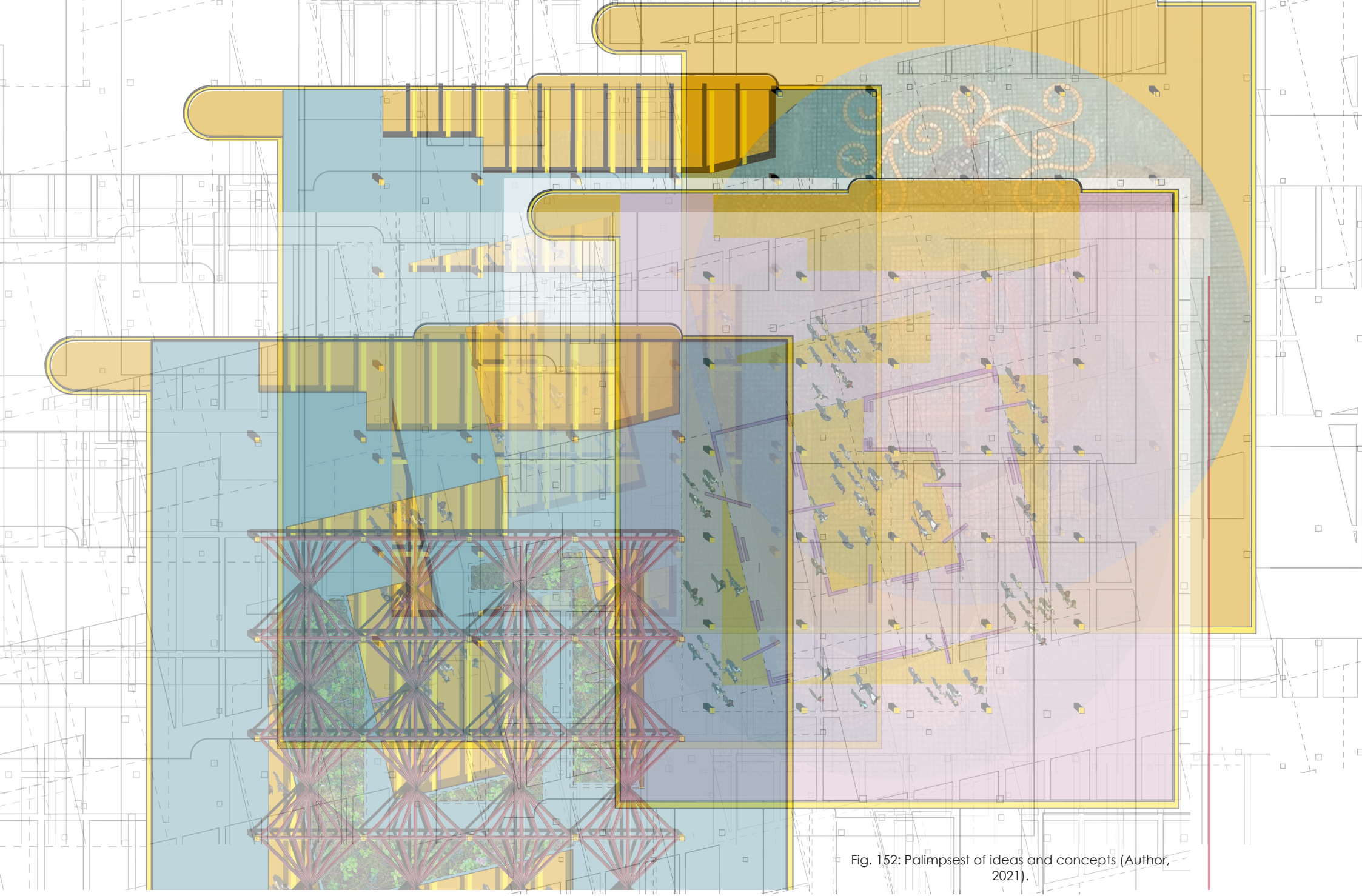


Fig. 152: Palimpsest of ideas and concepts (Author, 2021).

3.7.1 Palimpsest of layers



Fig. 153: Existing building with its structural grid forms the first layer representing the past (Author, 2021).

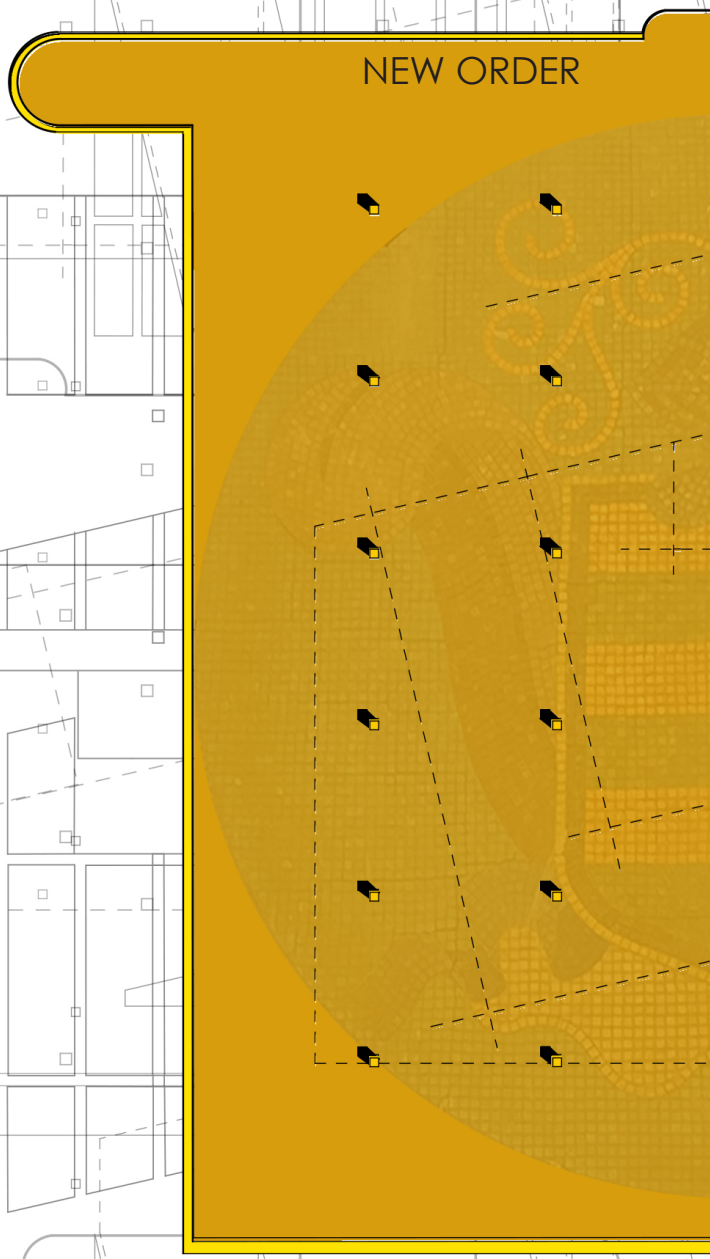


Fig. 154: A new grid is imposed on the first layer suggesting a change from the past (Author, 2021).

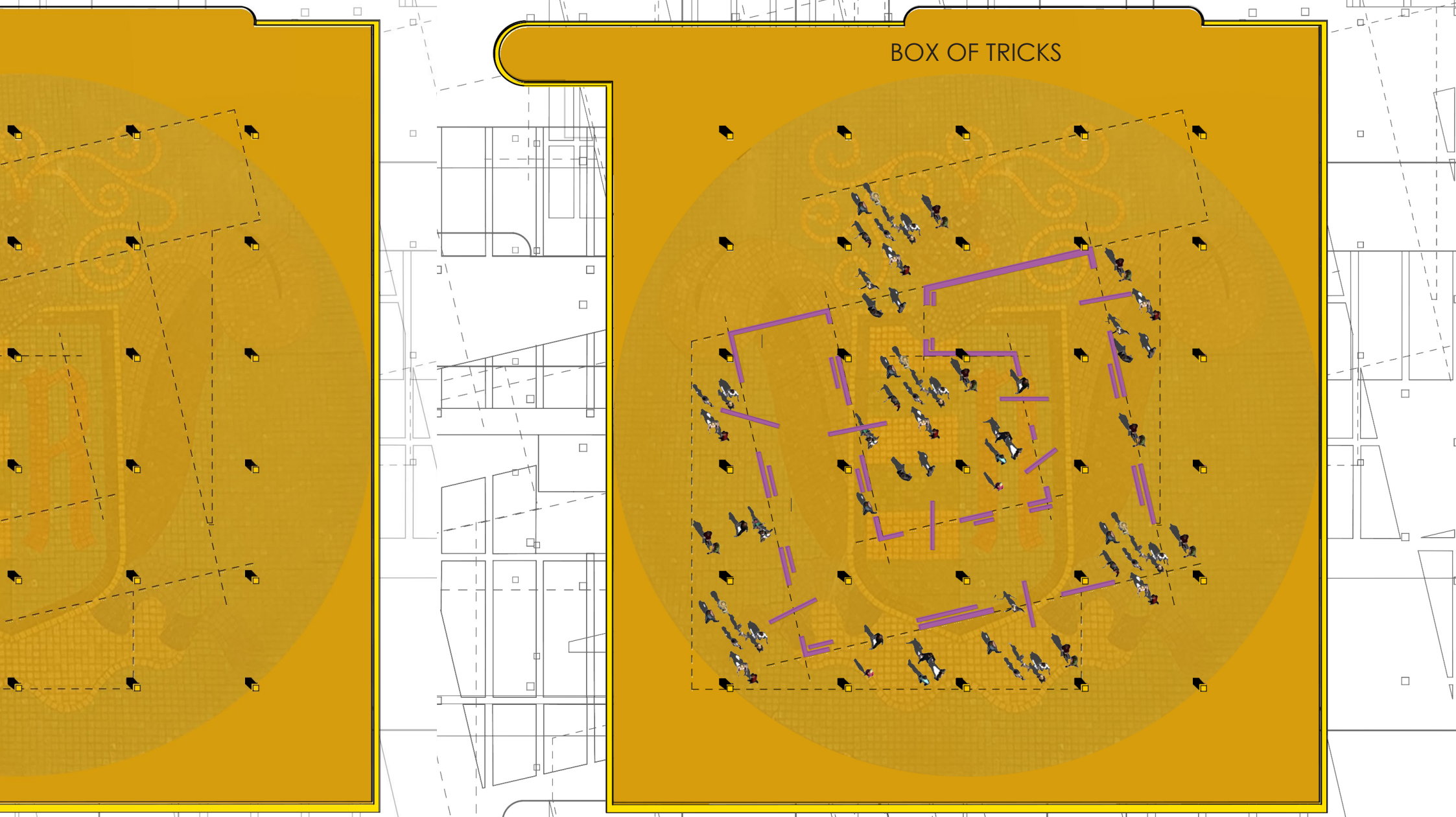


Fig. 155: The box of tricks is implemented creating the second layer through walls that are transformative allowing movement and connectivity which contradicts past notions of separation. A dialogue is created between the old order and the change in geometry (Author, 2021).

3.7.1 Palimpsest of layers

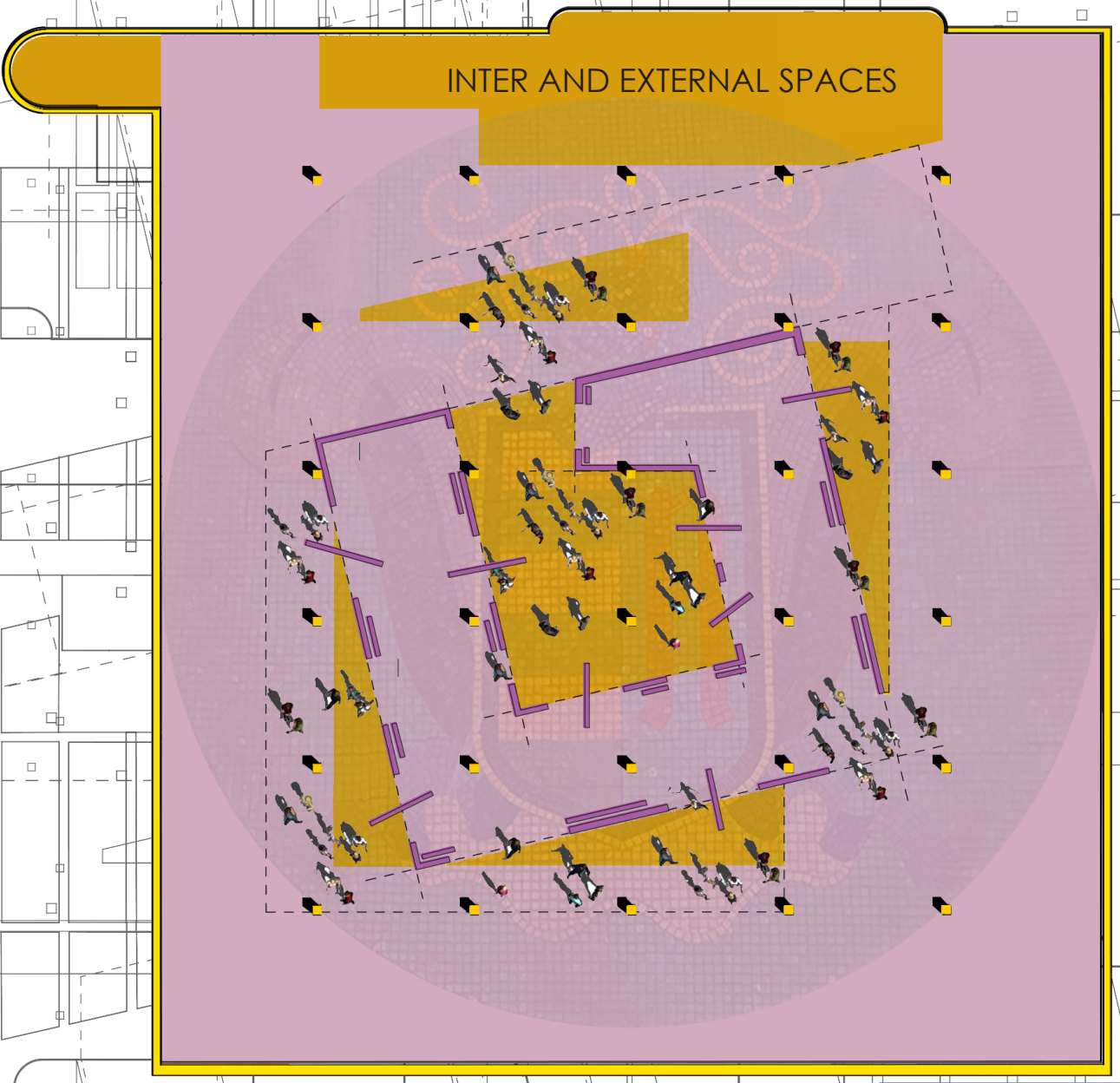


Fig. 156: The box of tricks creates internal and external spaces with the dividing (yet moveable) walls which become suggestive of where to implement the second layer of the narrative (Author, 2021).

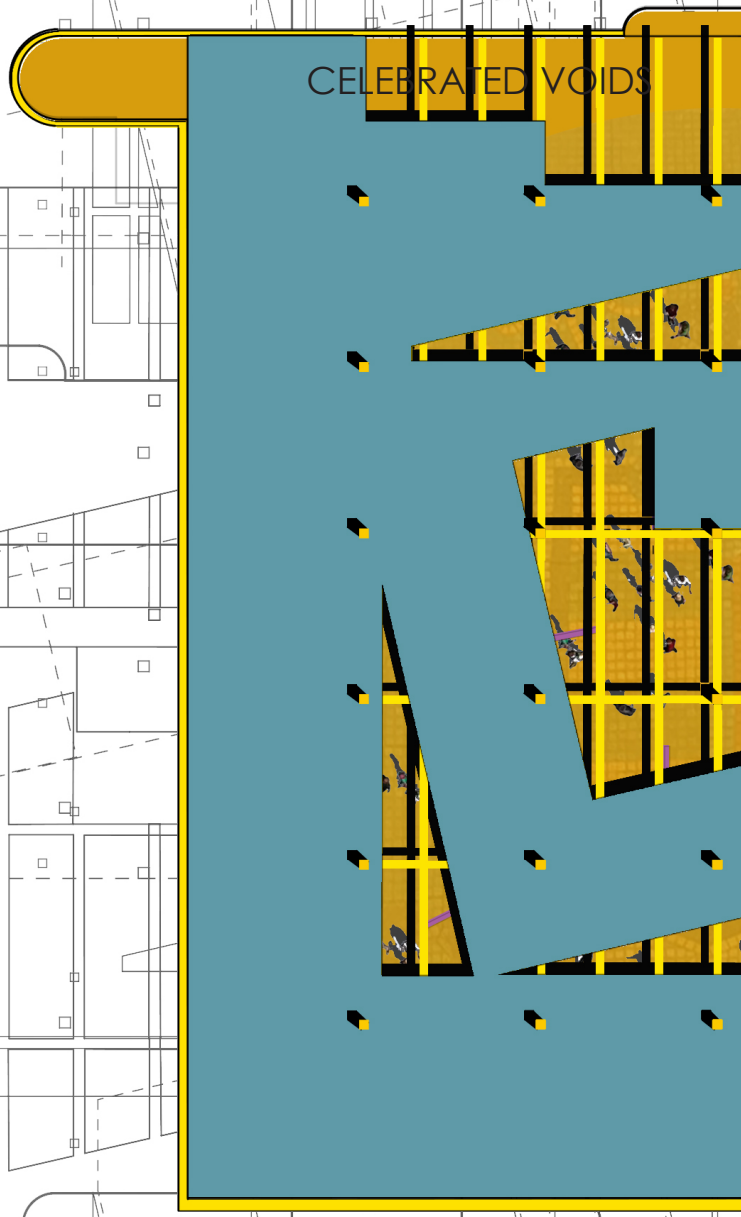


Fig. 157: Voids are created in the first floor to expose the existing structural beams and celebrate its materiality (Author, 2021).

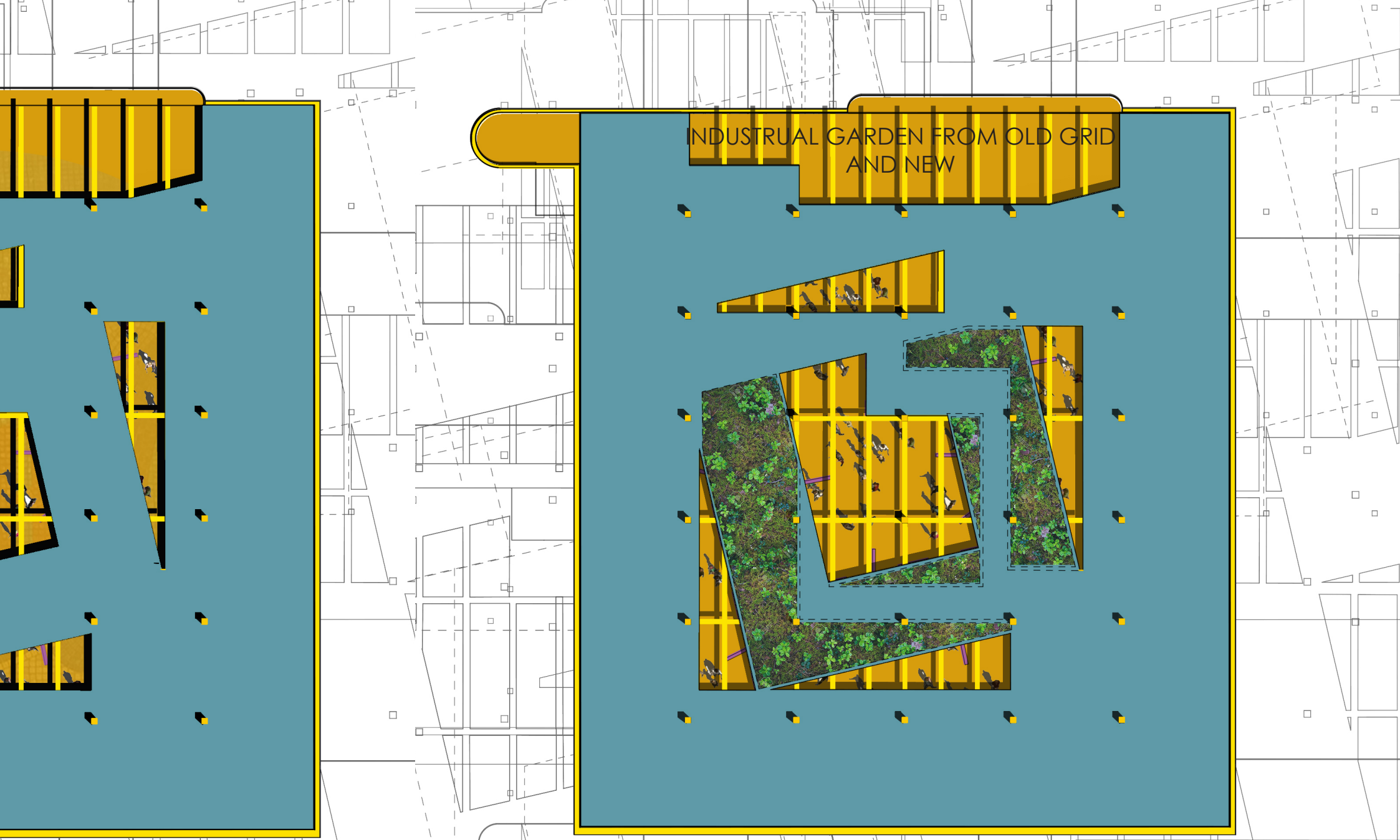


Fig. 158: A garden roof terrace is incorporated through the flux between the existing grid and the new geometry which creates garden spaces in the shape of a triangle suggestive of the industrial saw tooth. This becomes the first comparison between industry and nature within the narrative (Author, 2021).

3.7.1 Palimpsest of layers

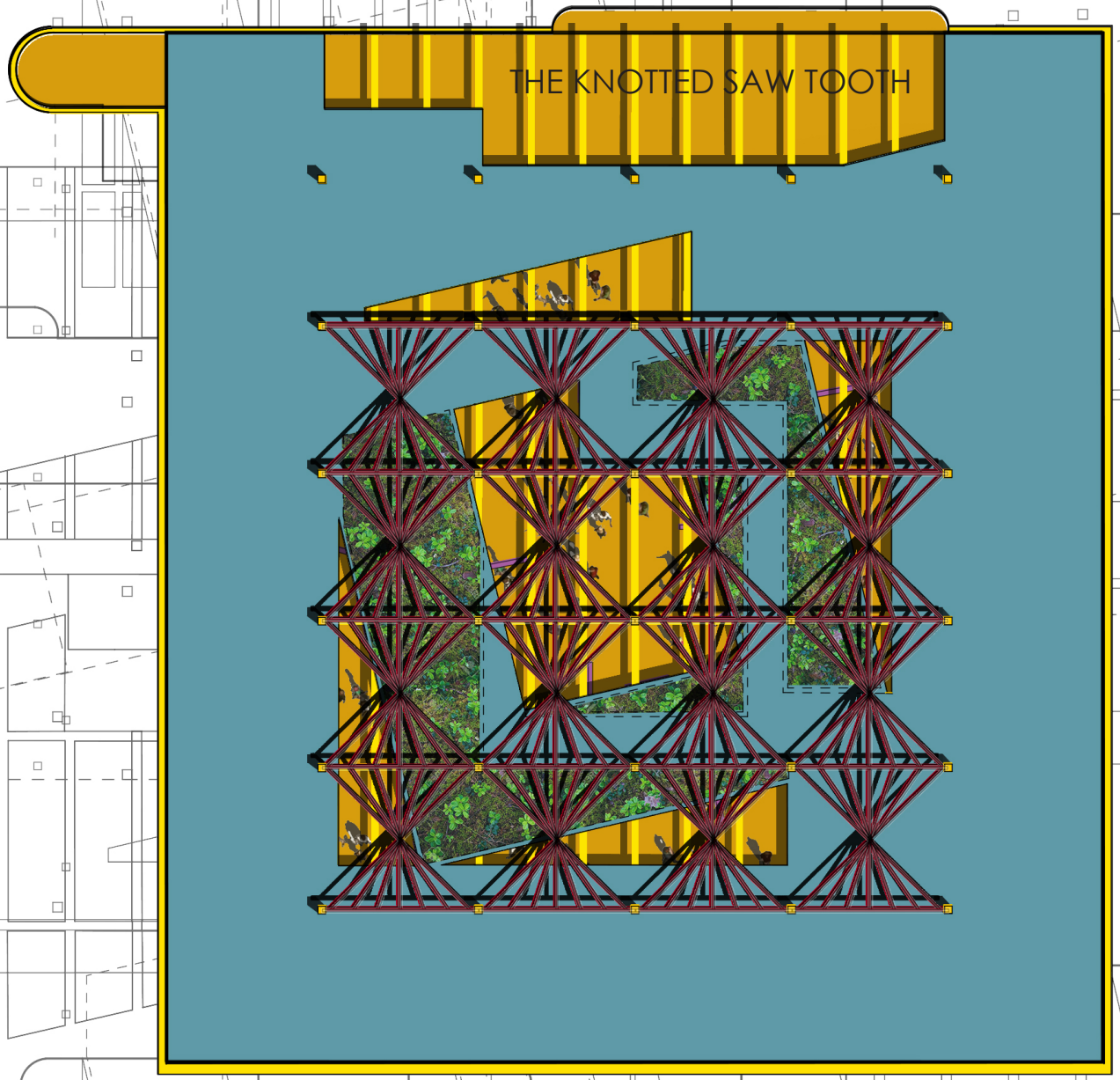


Fig. 159: The knotted saw tooth is implemented above the first floor as a canopy tying together the various parts of the building (Author, 2021).

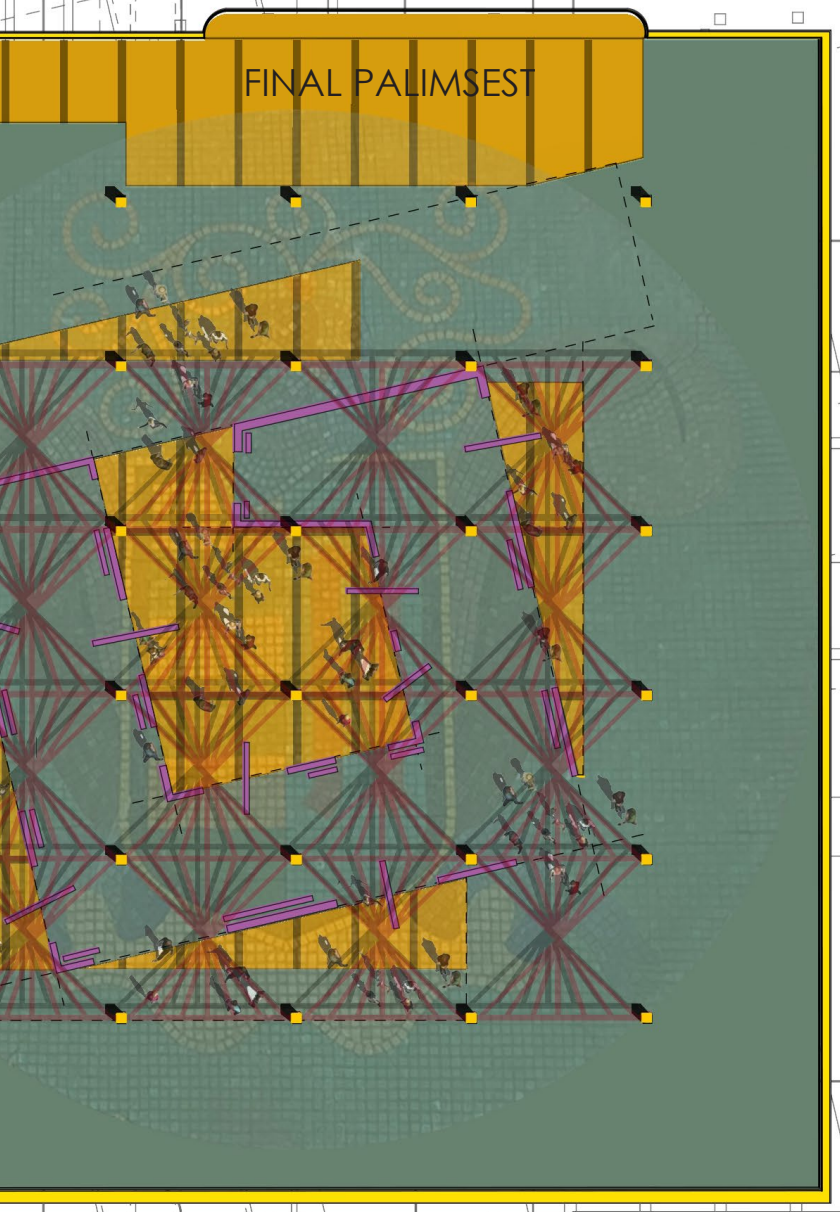
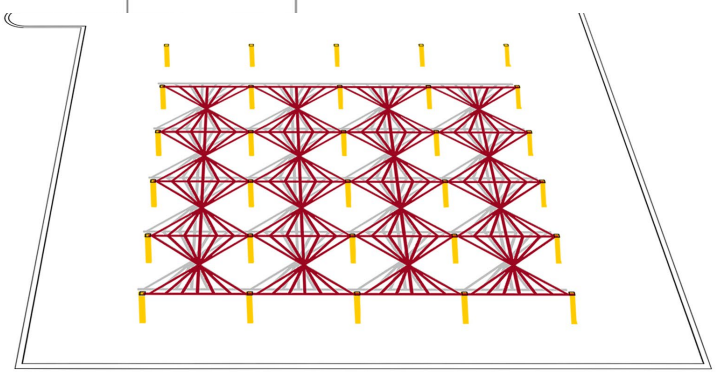
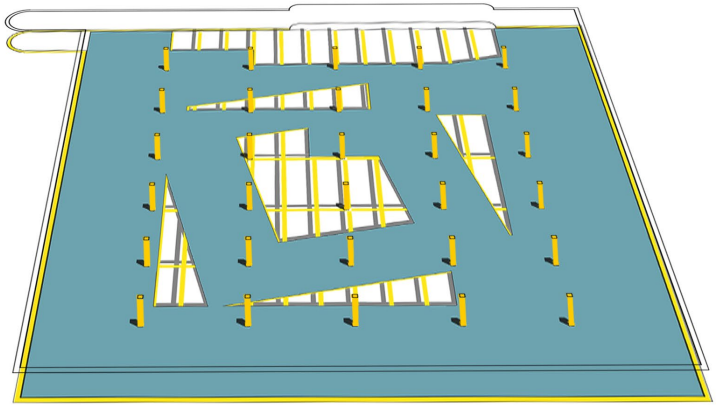


Fig. 160: A final palimpsest superimposing all the various layers at the same time as a palimpsest of meaning visually represented (Author, 2021).

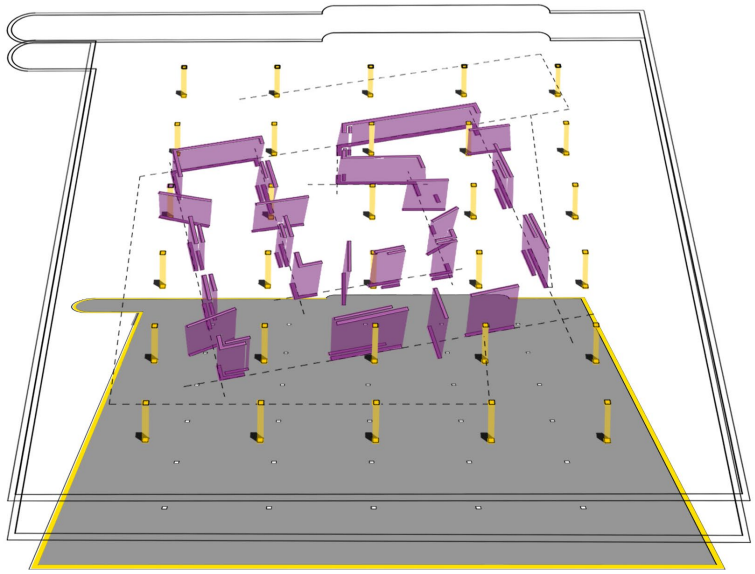
LAYERS TO THE NARRATIVE



THE KNOTTED SAW TOTH



THE CELEBRATED VOID



THE BOX OF TRICKS

Fig. 161: An axonometric illustration of the various layers that make up the narrative. The rest of the programme will be placed around the conceptual design elements to complete the design response (Author 2021).

3.8 Summary of the conceptual approach as conclusion to chapter 4

Sorting identified the individual architectural elements of significance, which relate to permanence in memory and were reinterpreted as characters of the narrative. These elements form the duration of time in the reconstructed place. **Shredding** transformed the elements to give personality to the characters and progress the narrative. Methods of exposing, subtracting, connecting, transposing and revealing gave successive qualities to the characters. **Re-spinning** the dialogue of the characters through temporal moments of succession constitutes the experience of the architectural chronotope of connections connections between past present and future.

Successive elements are exploited when other aspects are given qualities of duration. Therefore, one can say that succession and duration are reliant on one another (Carr, 2017: 109). Concepts of duration and succession have been applied in this design to enhance the experience of time and space through movement, dynamic elements and circadian rhythms casting changing shadows.

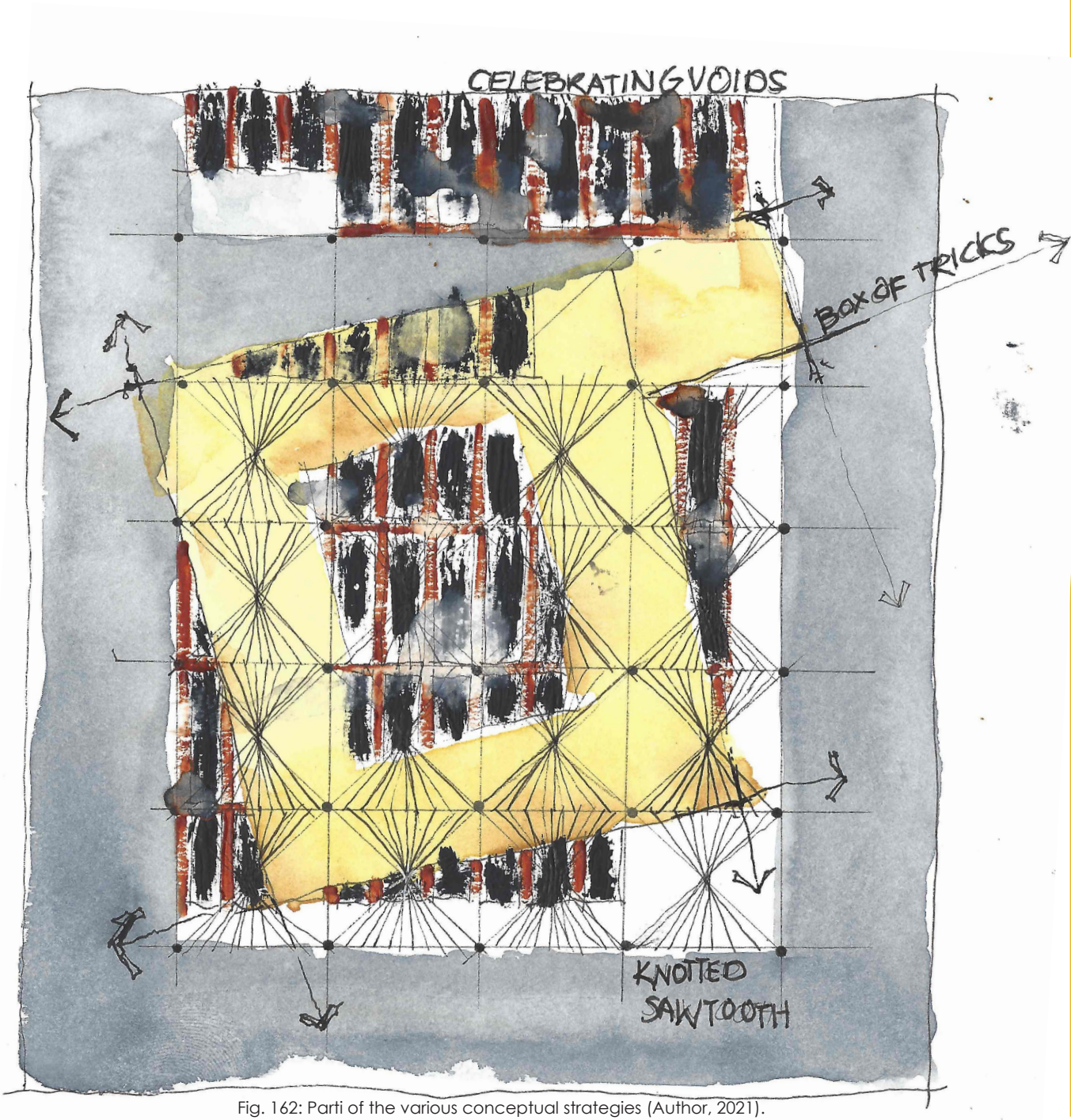


Fig. 162: Parti of the various conceptual strategies (Author, 2021).

Chapter 4 precedent analysis

This section consists of identifying and analysing various precedent studies relevant to the proposed intervention. These studies informed the design and construction approach. They focused on examples, which directly influenced the conservation approach, and functional requirements that informed the programme client and user of the proposed project.

4.1.1 Oslo school of architecture

4.1.2 Shipyard 1862

4.1.3 SA Breweries Visitors Centre

4.1.1 Oslo school of architecture

JVA (2001), Oslo, Norway (adaptive re-use conservation)

The building currently occupied by the Oslo School of Architecture was originally used as a workshop and warehouse built in the late 1930s. The building previously housed a light manufacturer and later an energy producing company. The building is a good example of the functionalist modernist architecture of the 1930s, as evidenced by its pure cubic forms, large windows, and grid system with columns and slabs that allow for flexible use of space. This is why this building was worth preserving and came to be listed on Oslo's "yellow list", which prohibits any substantial changes to the façade or original structure (Ioannidis, 2016: online).

Conservation

JVA's proposal aimed to maintain the character and style of the existing building and improve on that which was already there. The exterior façade was left untouched and changes were made mainly to the interior of the complex (see fig. 163).

Floor plan organisation

Sections of the existing first floor were cut out, bringing light into the deeper parts of the building. This created an interior courtyard – an access court that connects the building with the riverside bank across the site. The new programme was combined with the logic of the existing structure. As a result, the new connects to both the surrounding and existing fabric in one spatial sequence (see fig. 163).

Materiality

The new parts and walls are transparent to ensure a degree of social transparency within the institution. The external transparent walls consist of double-glazing units in three different colours. The existing structure was sandblasted to reveal the consistency of the concrete materiality (see fig. 165). Some of the interior wall partitions on the first floor are covered with varnished fibrocement boards.

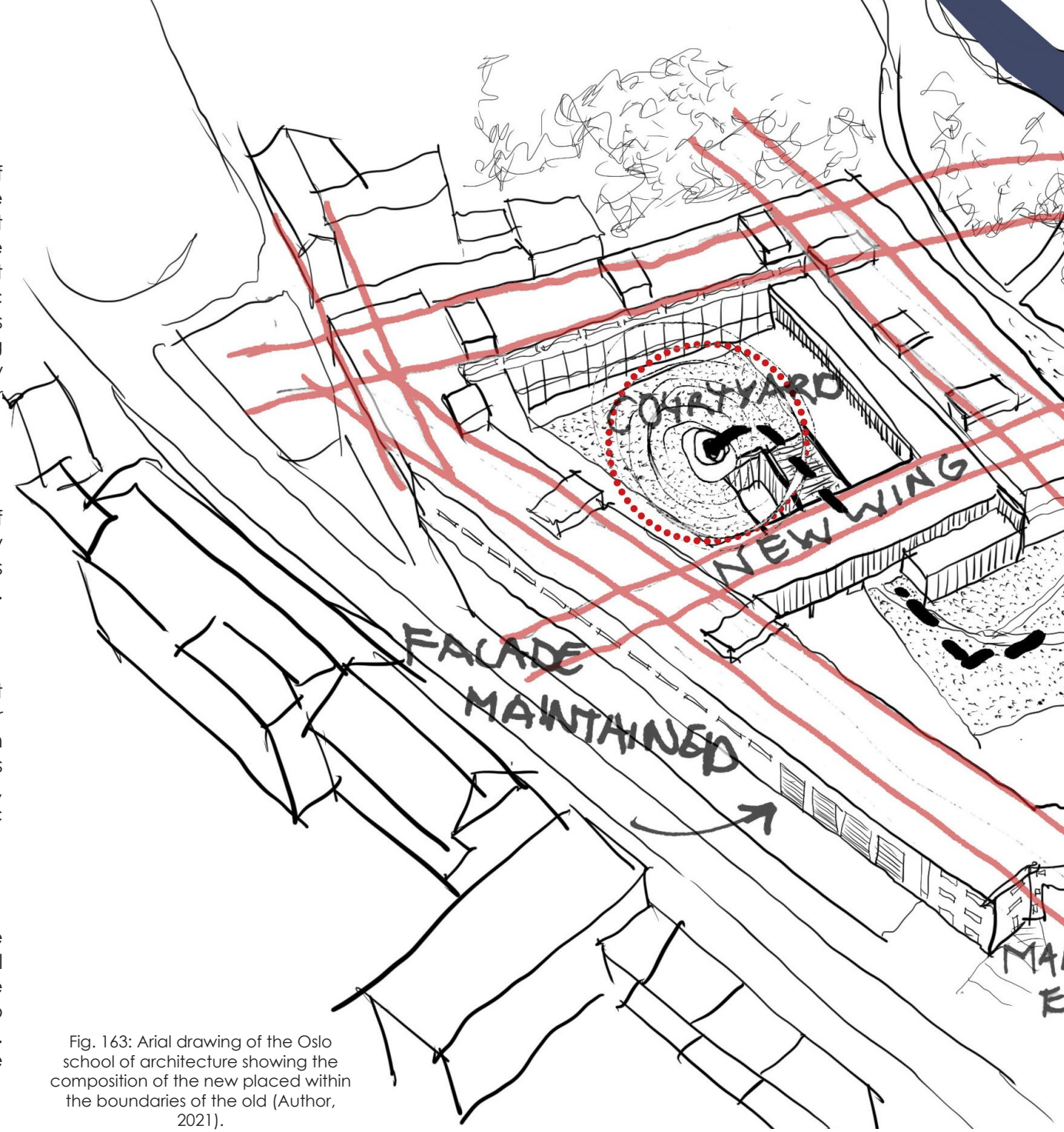


Fig. 163: Arial drawing of the Oslo school of architecture showing the composition of the new placed within the boundaries of the old (Author, 2021).





Fig. 164: Stairs leading up to the central green square on the first floor (Archdaily, 2021: online).



Fig. 165: The offset between the existing column and the glass wall. The structure has been sandblasted to reveal its raw concrete materialiality (Archdaily, 2021: online).

Building programme:

Communal activities on the first floor:

- Cafeteria
- Library
- Labs
- Workshops

Spaces on the second floor include:

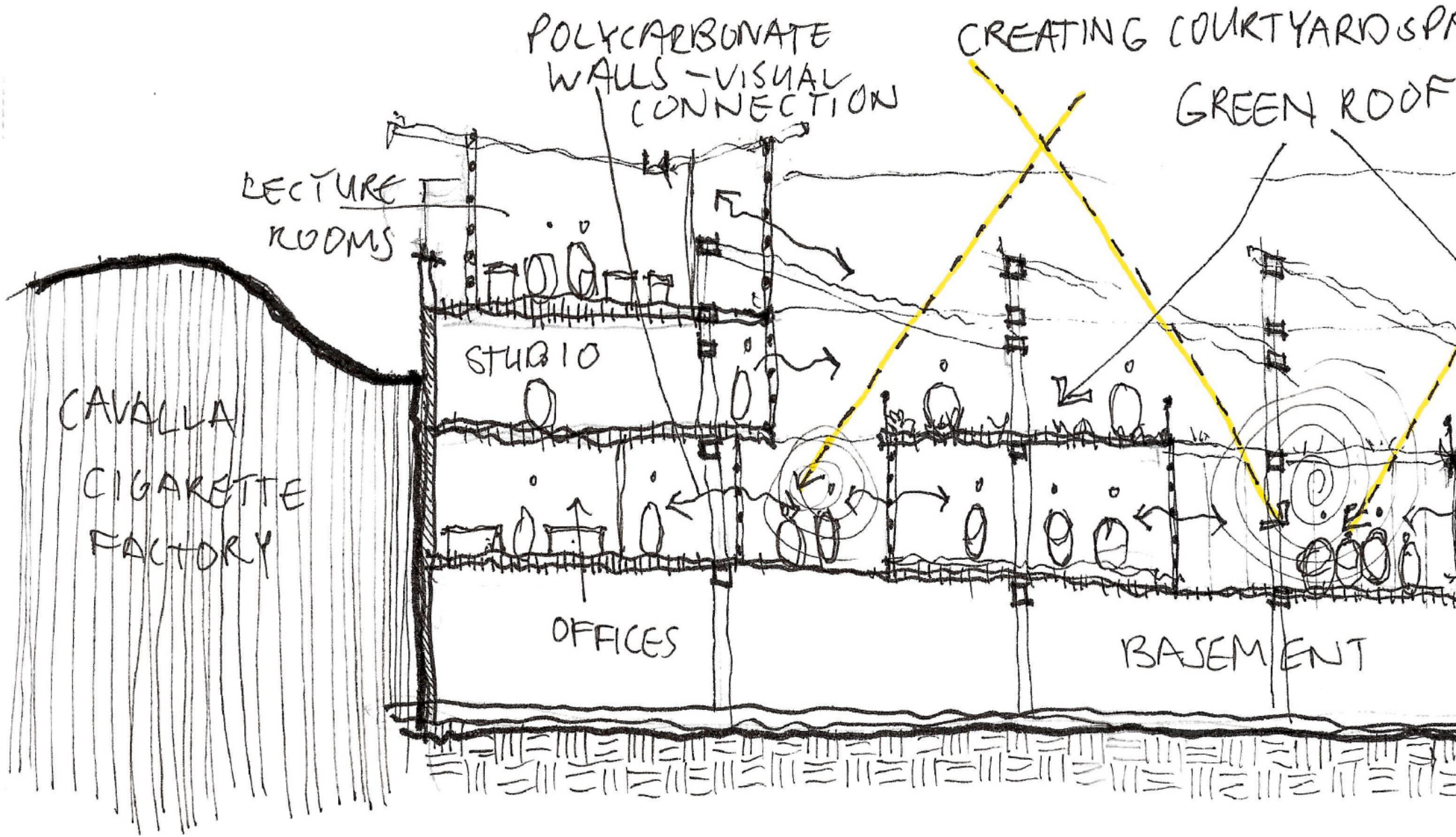
- Studios
- Group rooms
- Semi-private spaces
- Green roof as the heart of the building and meeting point

The third floor houses mainly services.

Lessons learnt

- Maintain the character of the exterior façade as far as possible as an act of conservation
- Integrate the programme to connect with the existing and surrounding topography
- Cut out a section of the first floor to allow light to enter deeper parts and establish a gathering space
- Utilise transparent partitioning walls to allow a degree of transparency and connect the interior spaces to the exterior
- Sandblast the existing structure to reveal the character of the concrete materiality

(see fig. 166)


POLYCARBONATE WALLS - VISUAL CONNECTION
CREATING COURTYARD
GREEN ROOF
LECTURE ROOMS
STUDIO
CAVALLA CIGARETTE FACTORY
OFFICES
BASEMENT

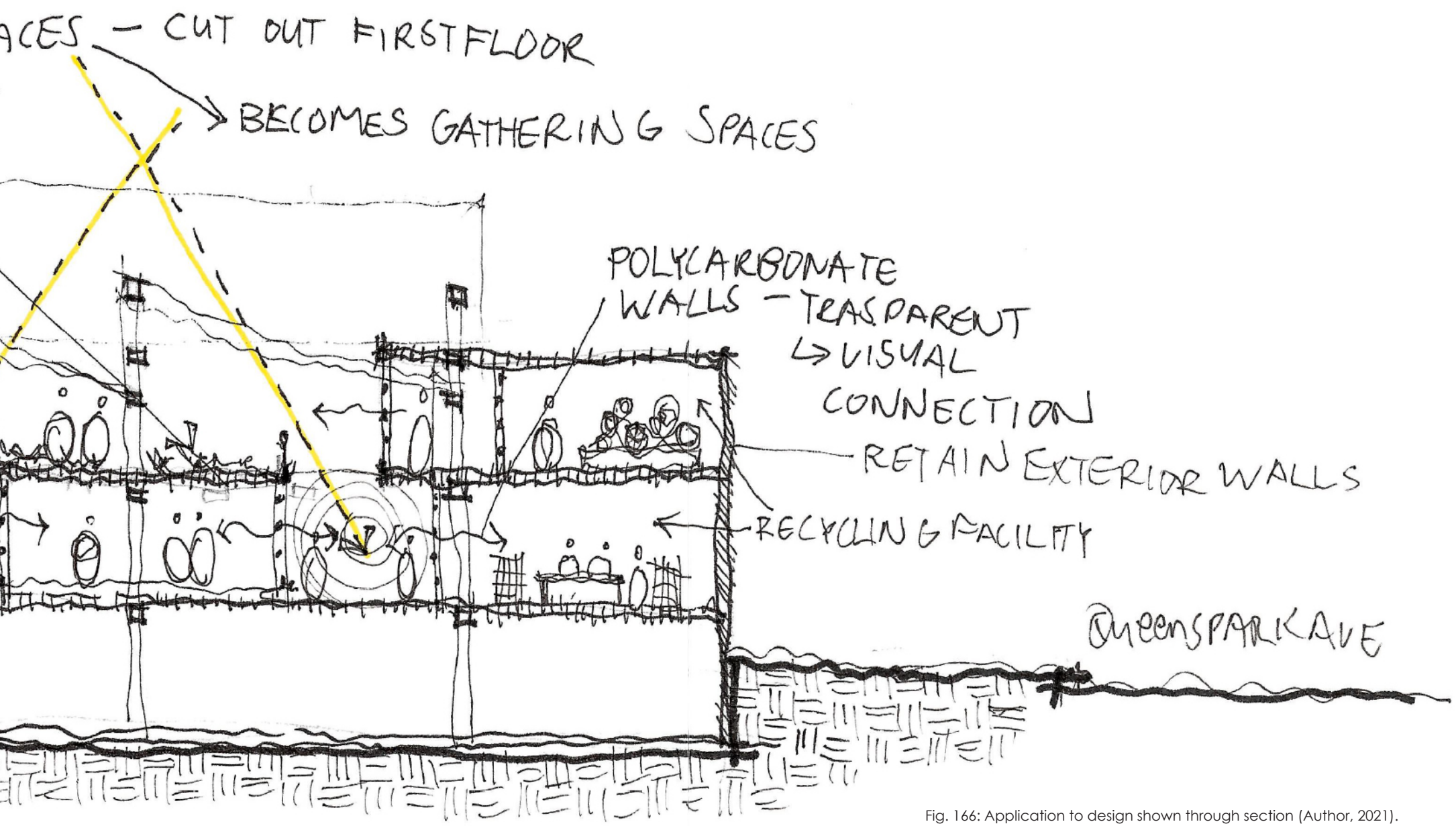


Fig. 166: Application to design shown through section (Author, 2021).

4.1.2 Shipyard 1862

Kengo Kuma (2011-2017), Shanghai, China (adaptive re-use and conservation project)

According to architect Kengo Kuma, "Materiality transcends beyond the visual experience, as it requires all five senses of the human body to engage it, to remember it." (Bachmann & Lutz, nd: online).

In Shanghai, the district of Lujiazui, Pudong used to be an industrial area, but it has been transformed into a financial district. The shipyard structure was the last building that still belonged to the industrial past (Gerfen, 2018: online). The building used to be a large-scale ship manufacturing facility, built in 1862, but has been transformed into a mixed-use complex comprising a theatre, a multi-purpose hall, and commercial spaces. The architect's goal was to create an architectural response that would preserve the original structure's monumentality and rediscover the building's materiality (Bachmann & Lutz, nd: online).

Floor plan organisation – void and structure

The architect connected the city with the Huangpu Riverfront by creating two atriums along the north-south axis. Another five storey atrium along the east-west axis links to these atriums. Within the three atriums is a void and structure concept. The atrium evokes an ascending vertically with its full-height void creating an encounter of human scale with the monumental structures. The void exhibits the original columns and girders and also redefines them as the building's core. The concept of void and structure opposes the general approach where structure recedes into the background to frame the emptiness of atriums. Instead the architect inverted the relationship between the two to frame the "raw", load-bearing structure as built in 1962 (see fig. 169) (Bachmann & Lutz, nd: online).



Fig. 167: What the existing building looked like before construction (Kano, n.d.: online).

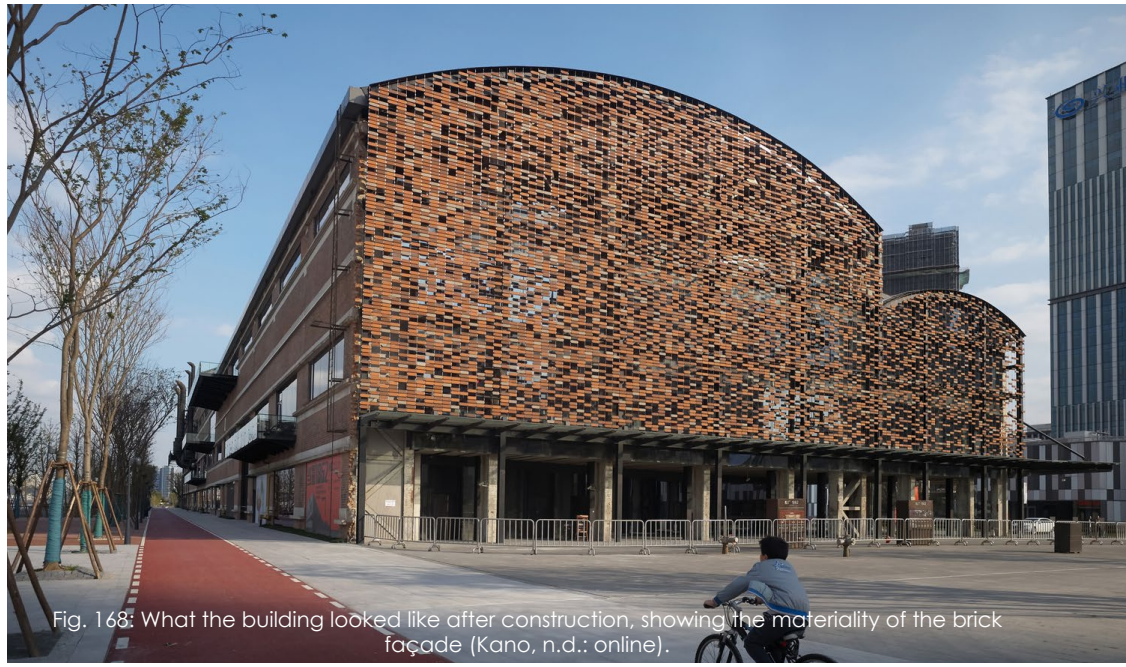


Fig. 168: What the building looked like after construction, showing the materiality of the brick façade (Kano, n.d.: online).

Materiality

According to the architect, texture bears the uniqueness that defines every building and materiality evokes a deeper impression than form. Texture leaves a clear impression behind, therefore materiality transcends beyond the visual experience. The materials of the new addition, such as the oxidised steel panels, aerated concrete and stainless steel mesh, create a dialogue with the roughness of the historical weathered brick structure. Existing elements, such as the markings on the rusted iron stairs and columns, were left in their original state to retain the historical atmosphere of the place as a factory (Bachmann & Lutz, nd: online).

Brick façade and memory

For the architect, a critical consideration in terms of adaptive reuse architecture was to rediscover the building's materiality. Further focussing on the texture that evokes memory, the architect implemented a permeable brick wall comprising four different colours of brick along stainless steel wire fixtures (see fig. 168). The porosity recalls the memory of the original wall through weathered and particle-like qualities (Bachmann & Lutz, nd: online).

Lessons learnt

- Expose the original structure instead of hiding it – frame the old to become a memory of the factory's past
- Utilise texture to rediscover the building's materiality and recall the original where new elements have replaced the old

(see fig. 170 & 171).

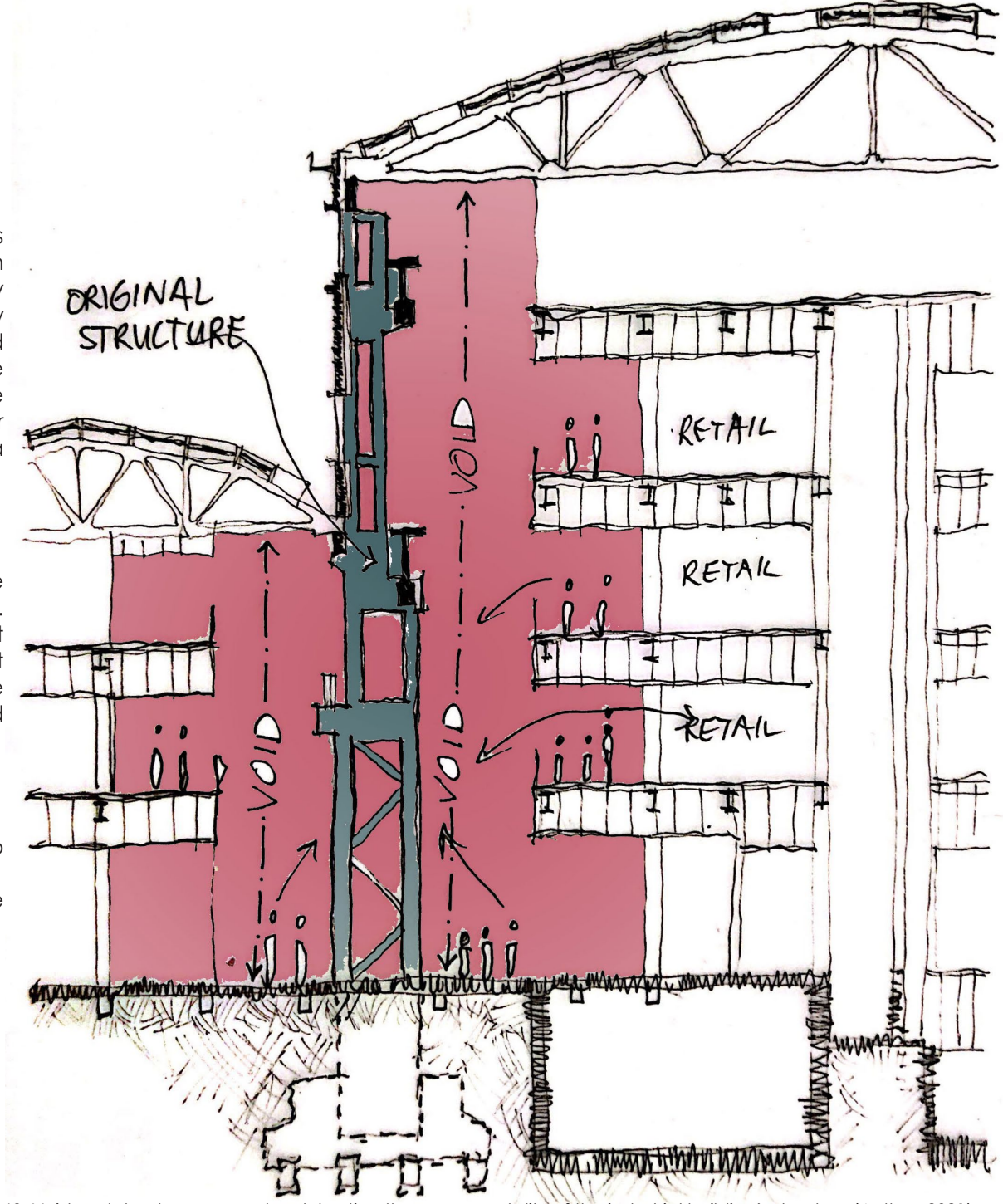


Fig. 169: Void and structure concept, celebrating the monumentality of the industrial building's structure (Author, 2021).

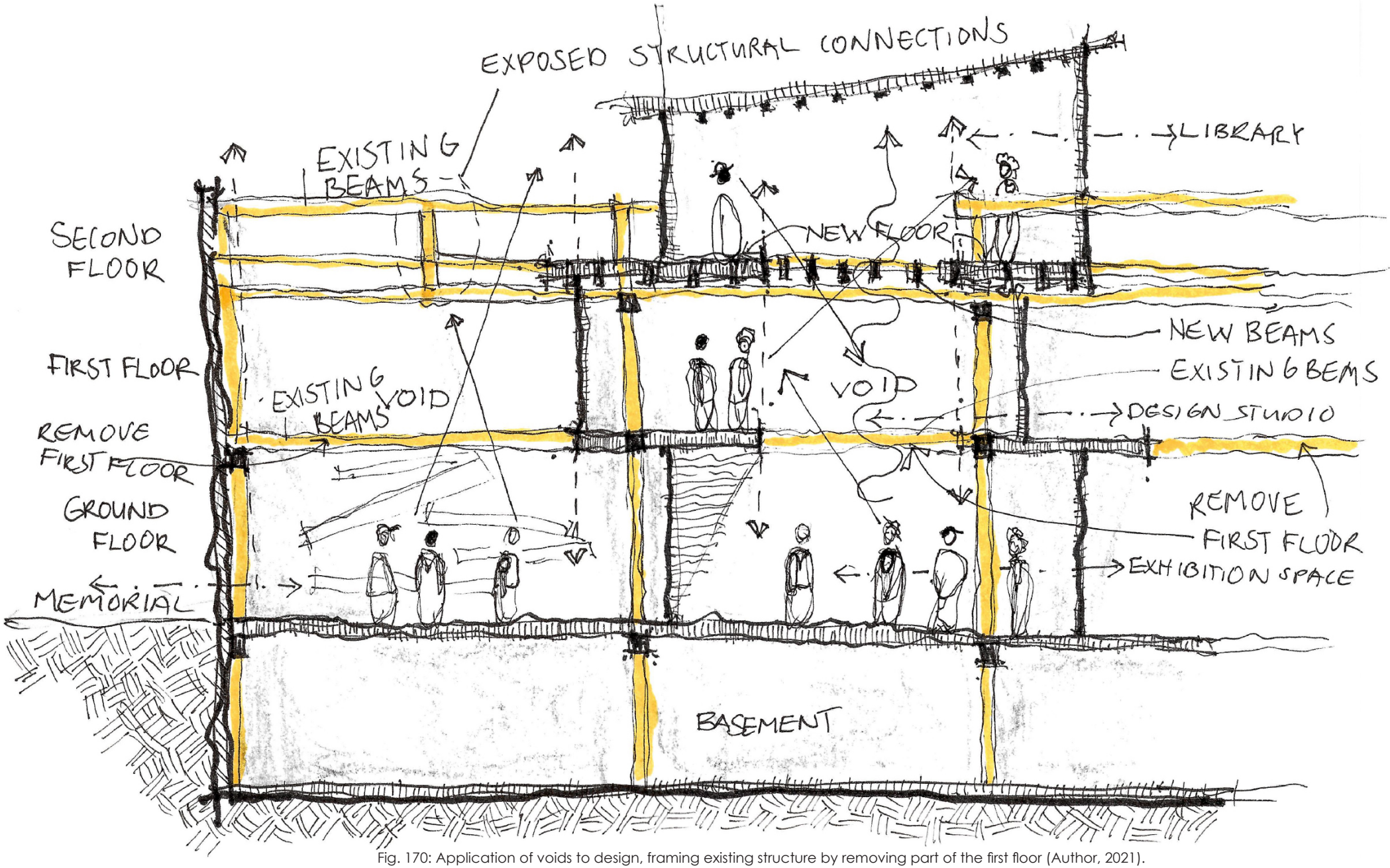


Fig. 170: Application of voids to design, framing existing structure by removing part of the first floor (Author, 2021).

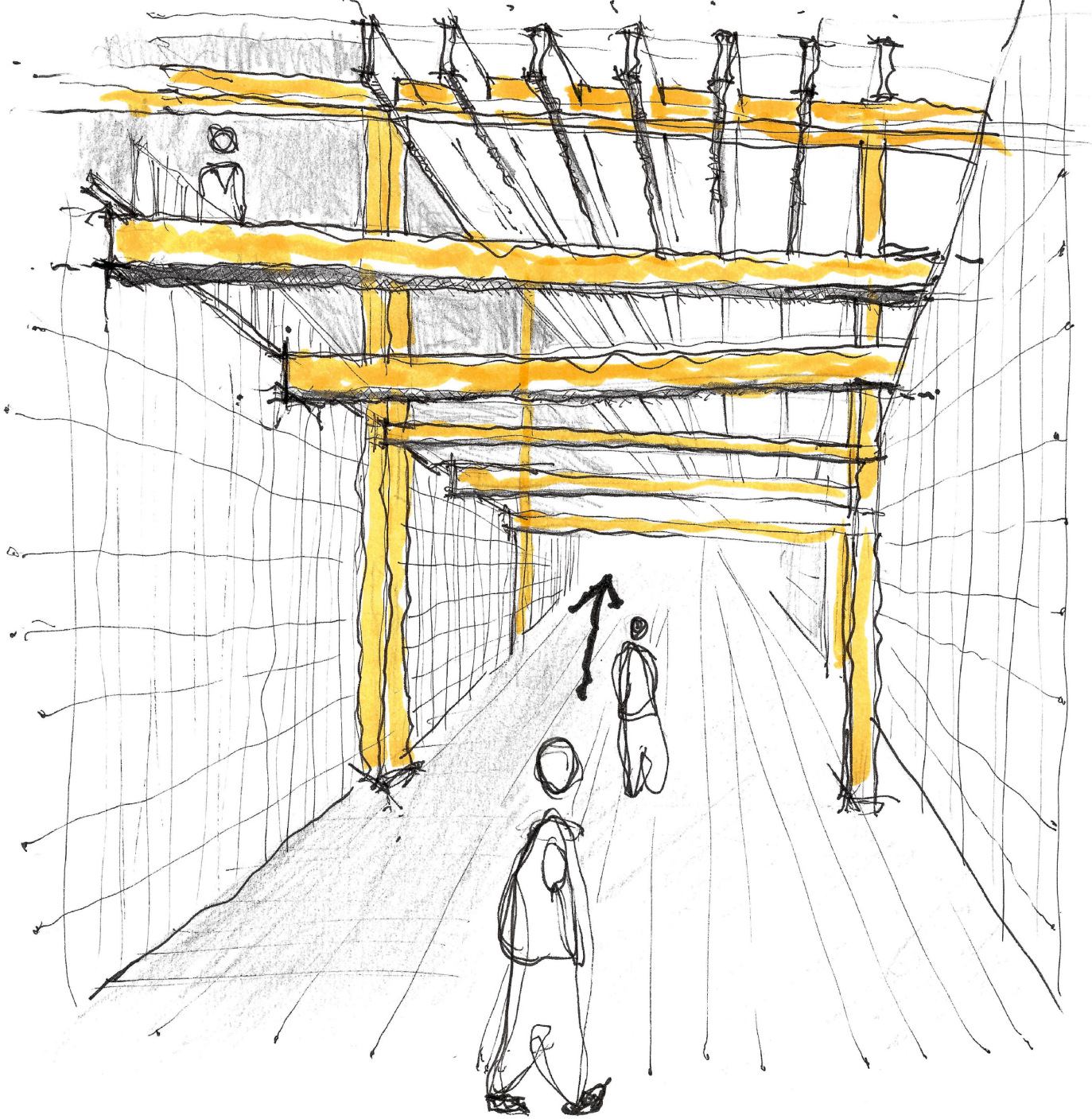


Fig. 180: The timber in contrast to the existing concrete creates various opposing perceptions of texture and materiality and an overlap of geometries between old and new (Author, 2021).

4.1.3 SA Breweries Visitors Centre

Gabriel Fagan (1997), Newlands, Cape Town (conservation project)

Fagan's brief was to create a visitors centre for SAB that tells of the history of beer-making in the Cape through the buildings and industrial archaeology on display (Martinson, 1997: 18).

Adding layers

The process of vertical distilling is remembered through the addition of the tower and reconstruction of the chimney. In this way, Fagan added vertical layers to establish a distinct sense of place (see fig. 186). Although experts advise against reconstructing heritage buildings, in this case, the reconstruction of the chimney was essential to the significance of the historical fabric.

Old and new

Fagan created a clear distinction between old and new. The hydraulic lift shaft is constructed of steel and glass (see fig. 183), contrasting with the historical elements, such as the reconstructed chimney (see fig. 186). The old and new are separated to clearly distinguish between the two. The movement route is colour coded with blue steel and timber structures (see fig. 182) (Martinson, 1997: 18).

Movement

Fagan created movement through the additional glazed lift and movement spine, which takes the visitor on a narrative journey through the history of the beer-making process (see fig. 181). In doing so, Fagan not only fulfilled functional requirements but almost created another building that circulates through the complex, enhancing the interactive complexity of the design (Martinson, 1997: 19).

Memory

A water feature symbolises the significance of water to the quality of beer in the beer-making process (see fig. 184). In order to minimise damage to the existing structure, hanging wooden boards are used to display illustrations of the beer-making process (Martinson, 1997: 19).

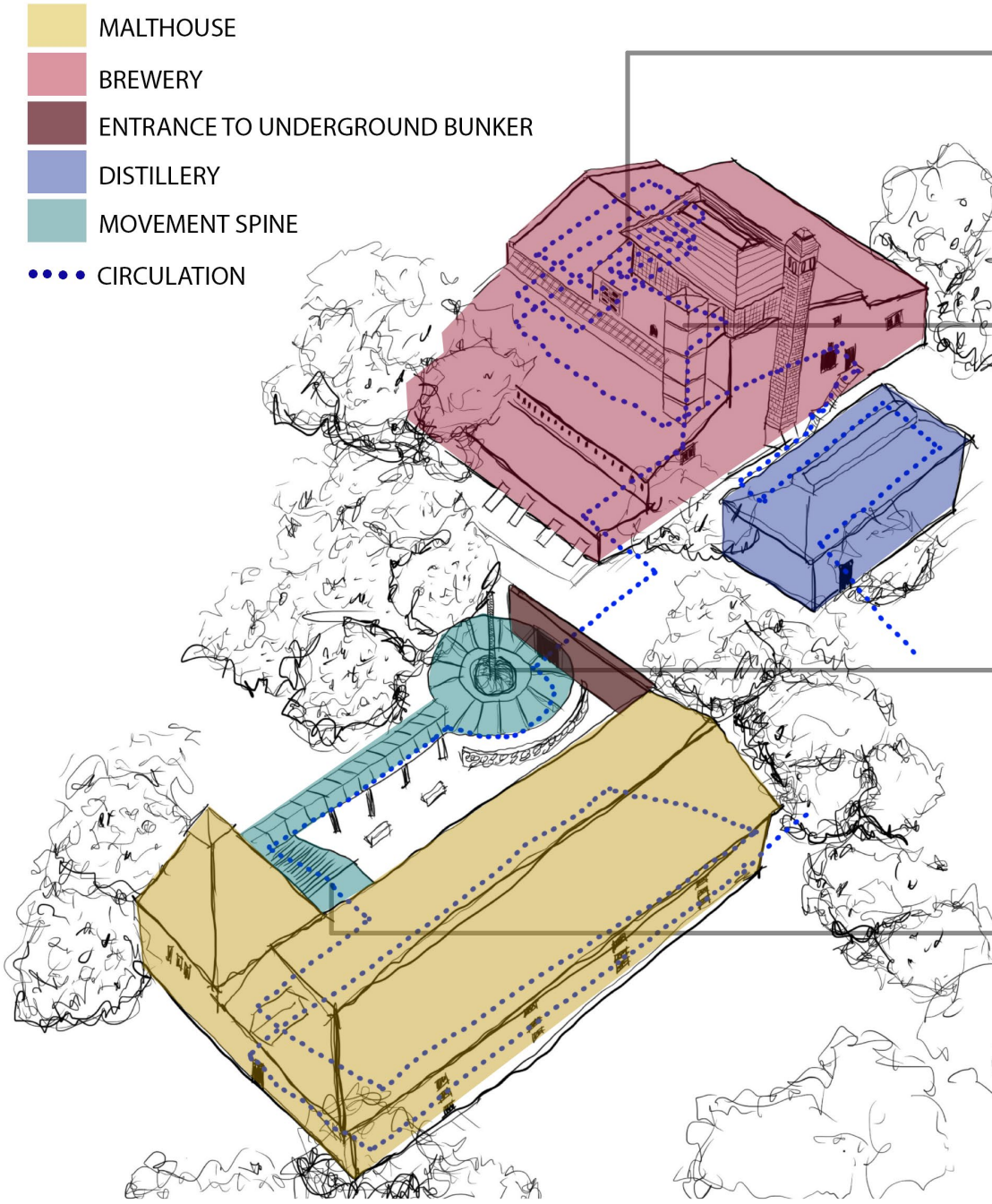


Fig. 181: SA Breweries complex, showing the exhibition route through the programme (Author, 2021).



Fig. 182: Piranesi-like staircase following route of beer making process (Clarke, 2016: online).



Fig. 183: hydraulic lift from bunker to upper floor of the brewery (Clarke, 2016: online).



Fig. 184: Copper still along the water feauture spine (Clarke, 2016: online).



Fig. 185: Staircase down from Malthouse to water feauture route (Clarke, 2016: online).

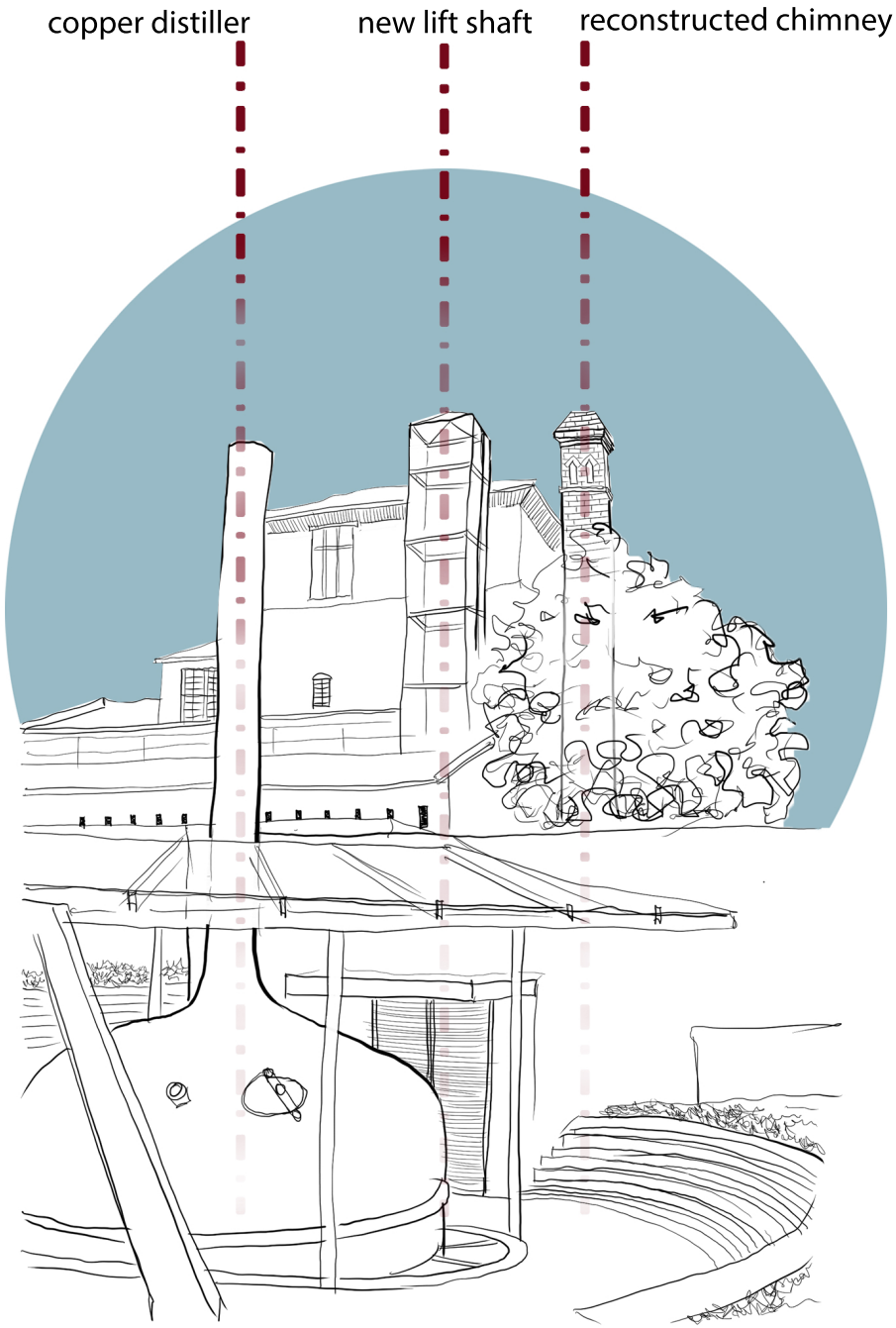


Fig. 186: Layering of vertical elements (Author, 2021).

Lessons learned

-Create a route that enables the visitor to move through the building and experience the significance of the place (see fig. 188)

-Utilise the idea of adding layers that correspond to the existing to create a sense of place (see fig. 187).

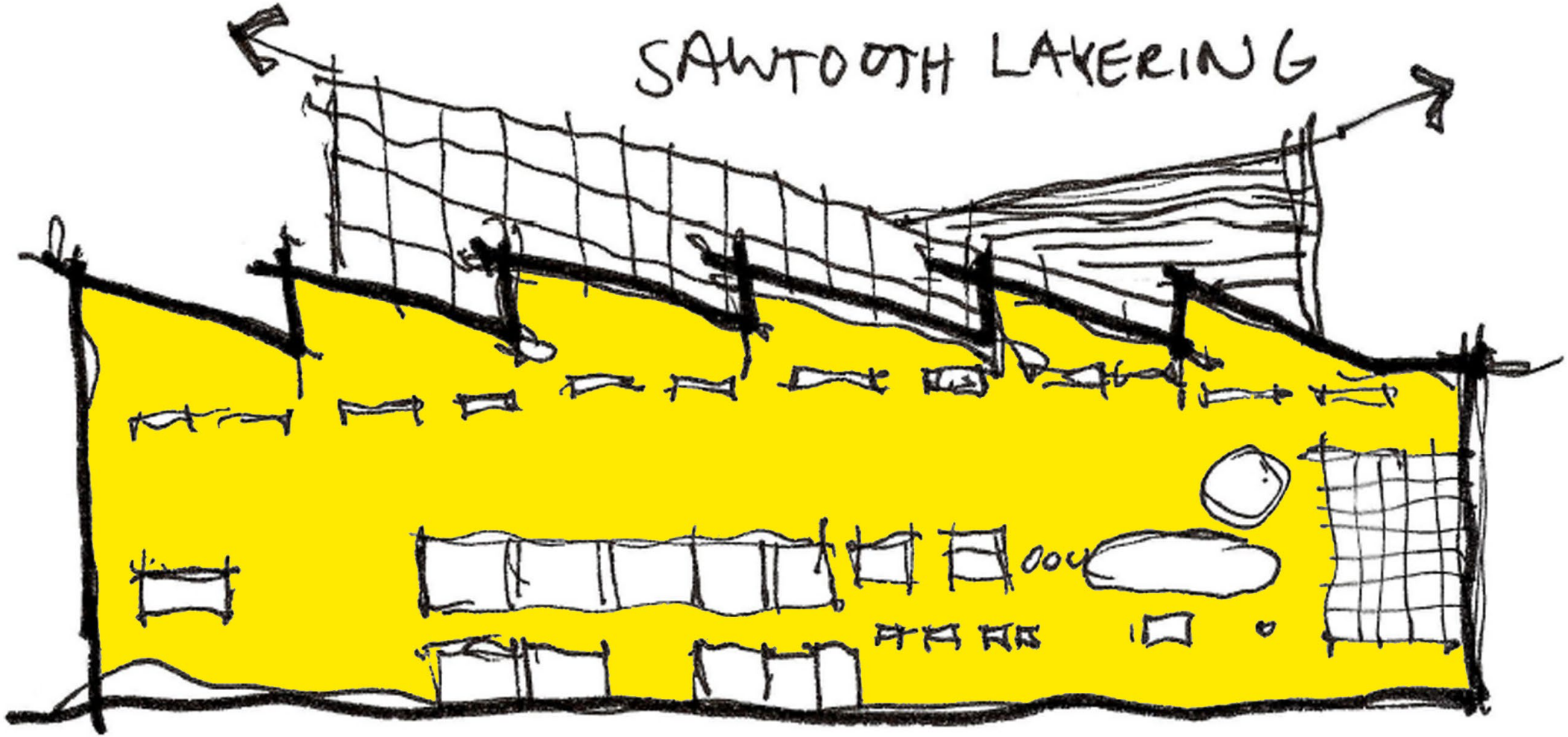


Fig. 187: Application of layering elements to design (Author, 2021).

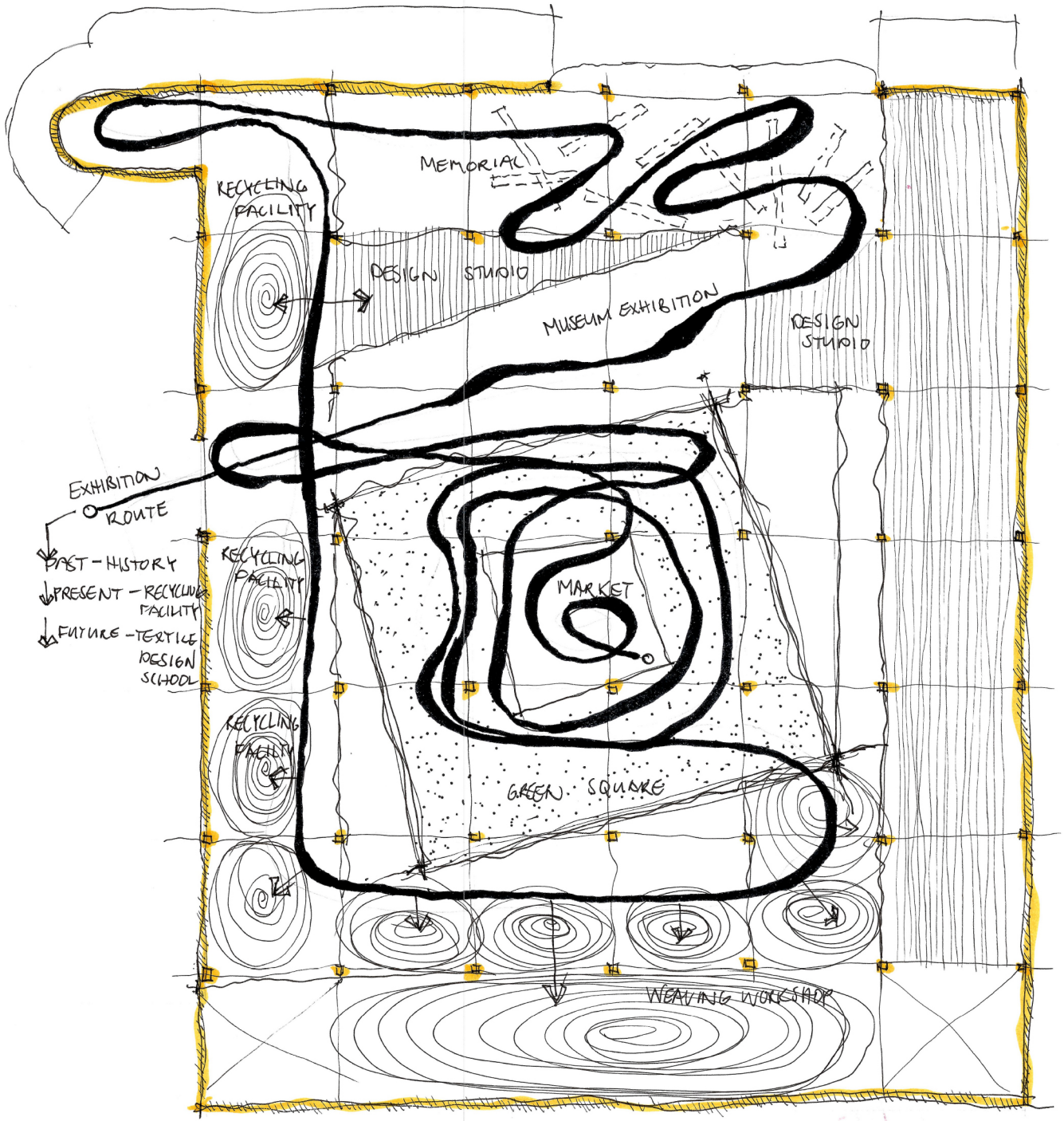


Fig. 188: Application of exhibition route throughout the building displaying the various parts of the programme (Author, 2021).

Conclusion

The Oslo school of architecture gives a clear example of an architectural approach rooted in sensitivity and conservation. By mainly working on transforming the interior and retaining the exterior allows the existing to remain pristine in its transformed state. By taking a sensitive approach focussed on user experience through implementing a central green square, creates opportunities to reintegrate the building with its surrounding context without disrupting the existing character. By grouping the programme around a central public space connects the various parts of the building programme.

Shipyard was a good example of an approach which illustrates how an architectural response can celebrate the existing by framing the structural integrity of the old through voids. It is also a good example of how to choose new materials in a way which clearly distinguished it as new but also reminiscent of past materiality.

S.A.B. designed by Gabriel Fagan is a good example of a local example which indicates how memory, adding layers and movement can be used to formulate a design strategy. Adding layers gives insights on how to apply the knotted saw tooth element and how this element can be enhanced to contribute to the experience of the place. Movement as a strategy focuses on enhancing the narrative of the old through the experiential route moving throughout the building. Memory can be used to interpret the textile industry to structural weaving techniques applied to the tectonics of the saw tooth element.

CHAPTER 5: Design synthesis.

As the project progressed, the conceptual and theoretical approaches took shape in the design development. The initial understanding and interpretation of the required outcome (in terms of the architectural approach) evolved through response to critique received during external moderations.

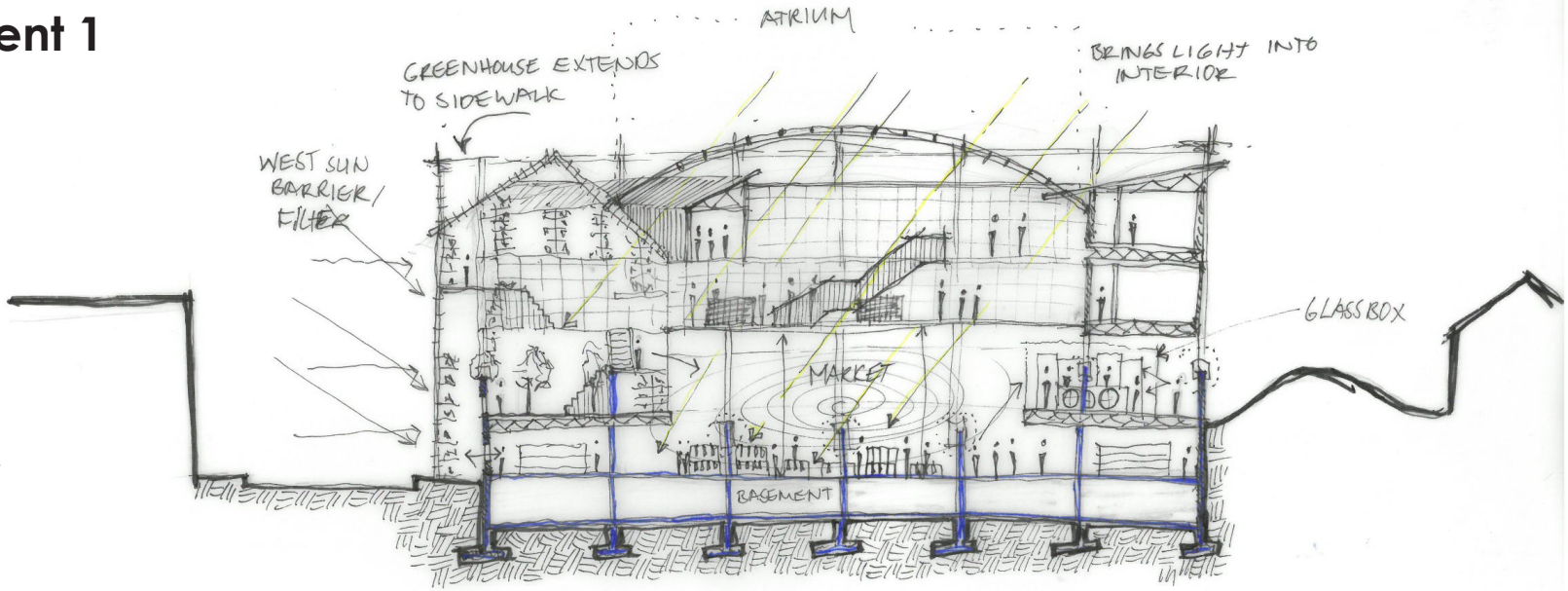
Therefore, the design development does not accurately indicate all of the concepts and approaches discussed in chapter 3 and 4. Rather it shows how the conceptual thinking in itself developed from its initial stages and what steps were taken to improve the design approach based on the critique during external examinations.

The final design is therefore the conclusion of the ideas generated and explored in chapter 3 and 4. The project evolved and explored multiple ideas and concepts to write the narrative of the intervention in a way that responds respectfully to the existing, which was the biggest challenge throughout the process.

5.1.1 Development 1

The first development was grounded in concepts of integration through intersections, transformative deconstruction as recycling, and the creation of a "cut" in the building to reference division and textile cutting. At this stage of the project, the conceptual approach was vague and lacked clarity as to what the architecture wanted to say.

Through the volumetric model and massed composition, an attempt was made to interpret views from the site to organise the plan and attempt a deconstructed order. This resulted in extreme disorganisation and wasted space. Thus, the realisation dawned that the conceptual and theoretical approaches had to be adapted to respond appropriately to the project's needs.



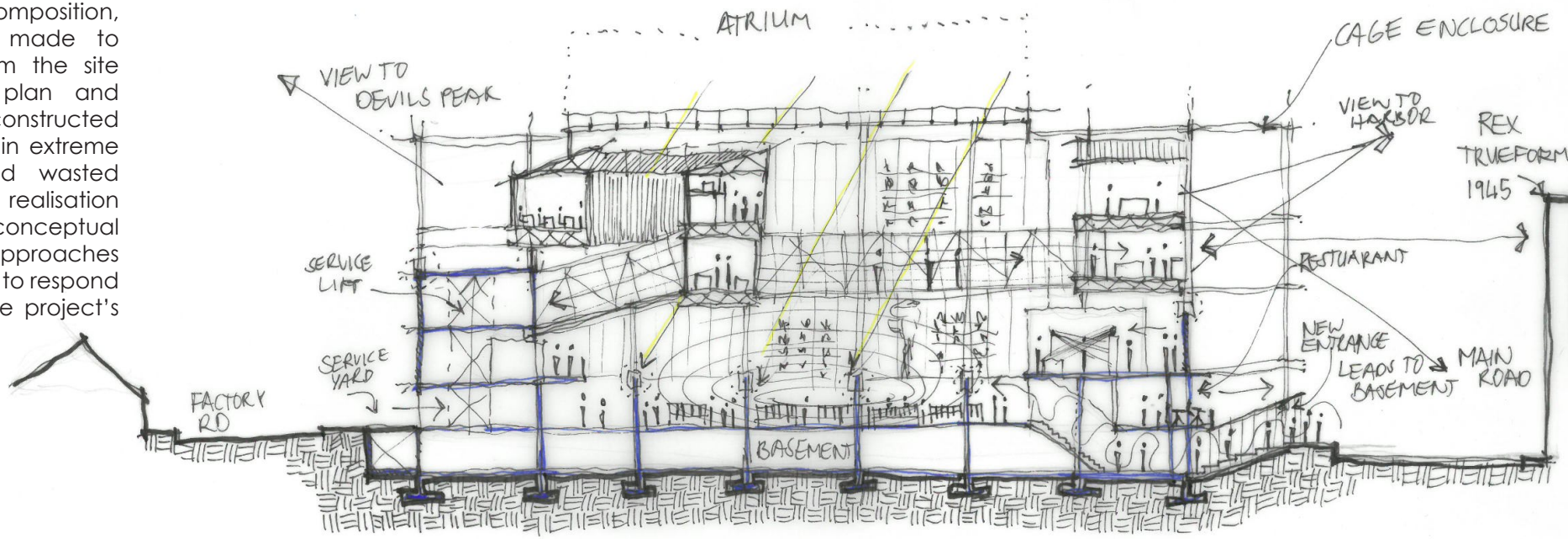
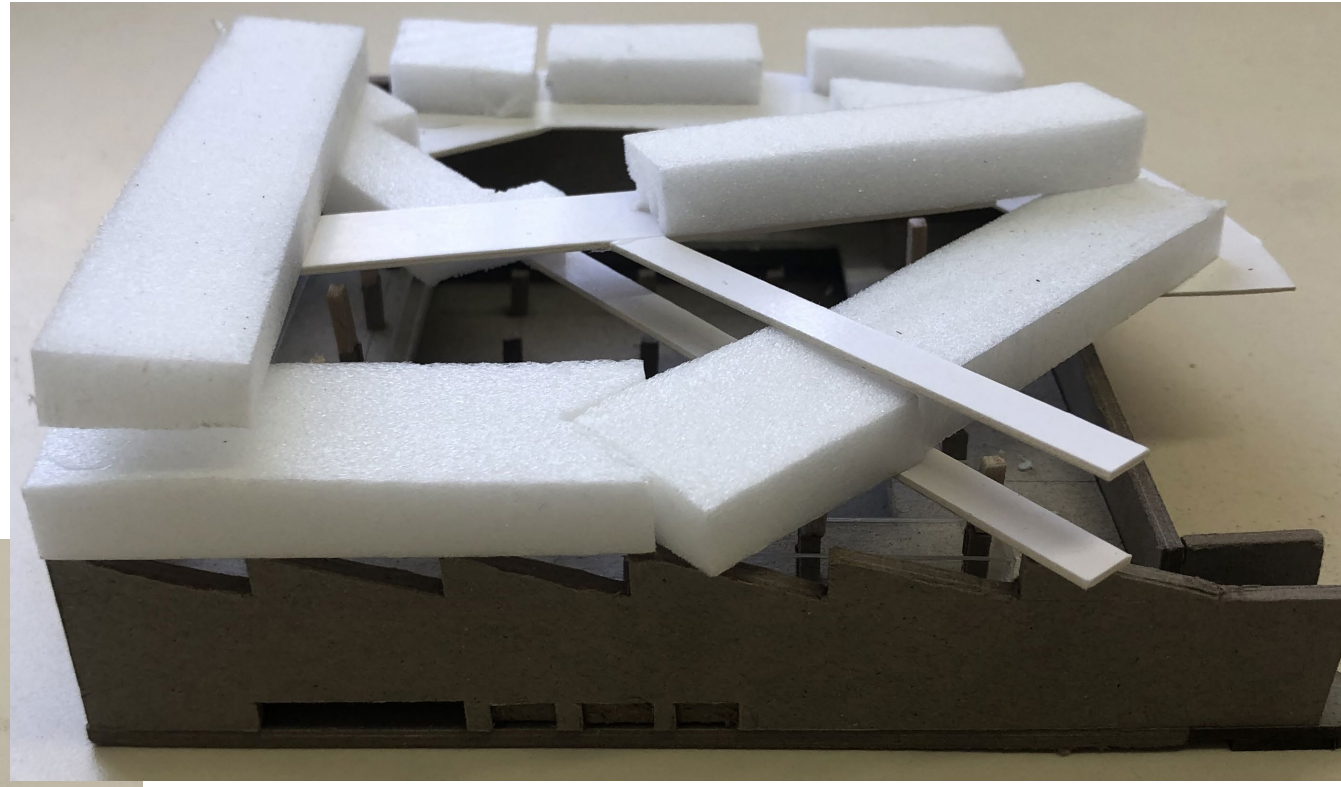


Fig. 189 & 190: First sectional drawings exploring the design (Author, 2021).



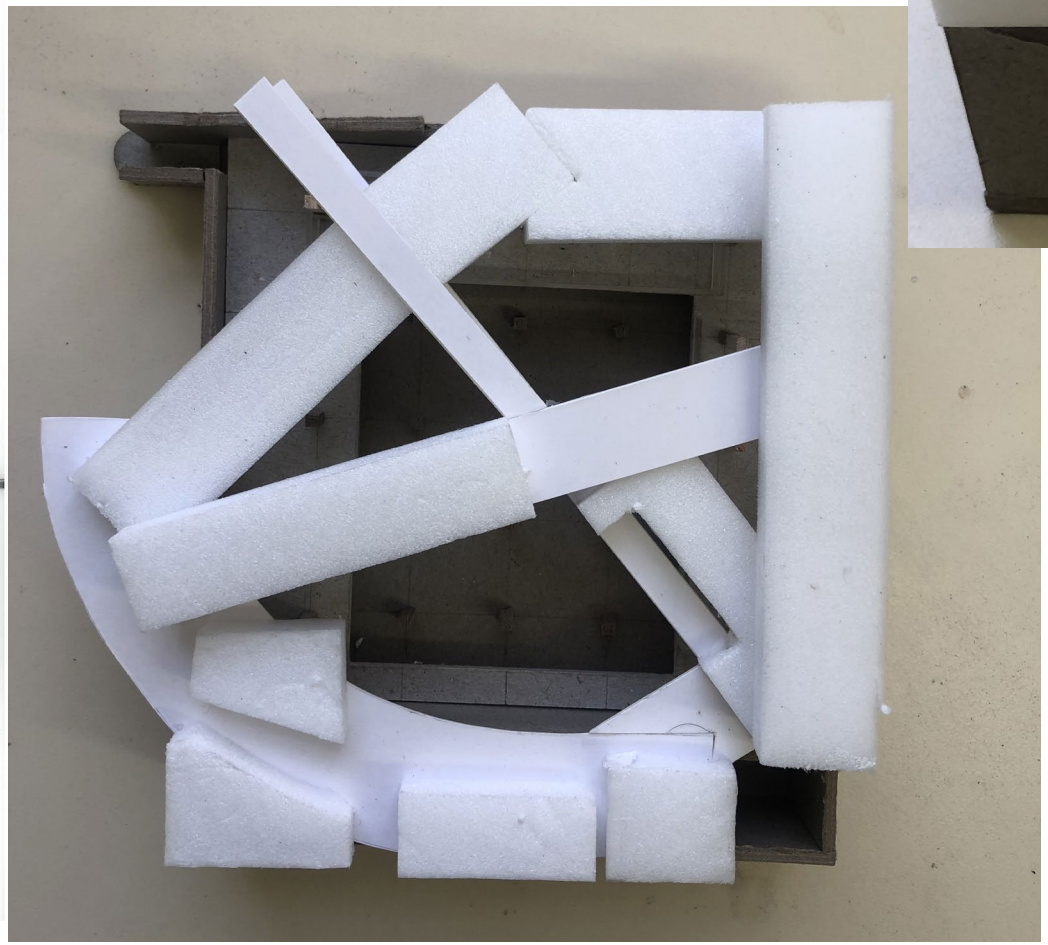
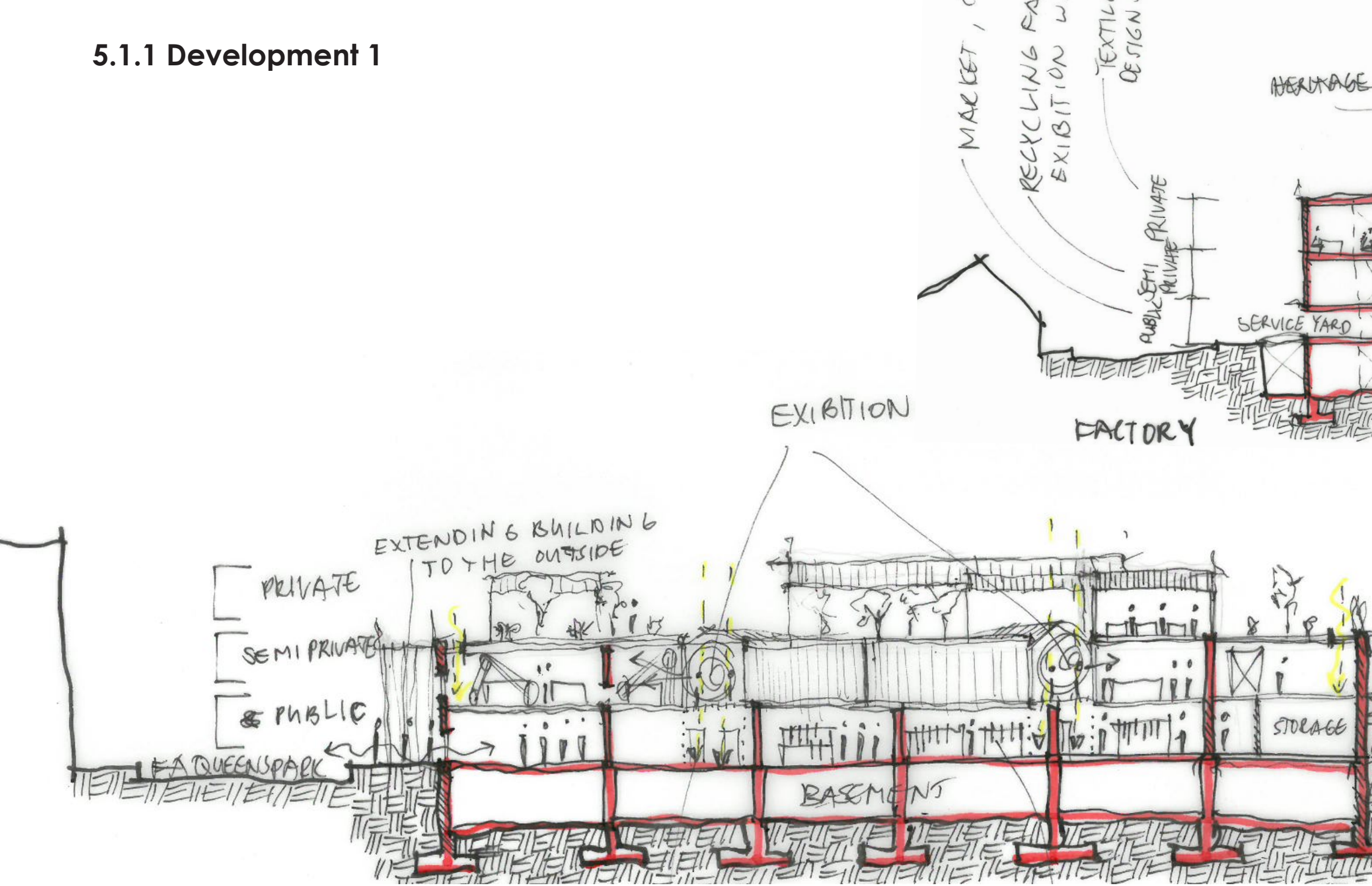


Fig. 191 & 192: Conceptual massing models of development 1 (Author, 2021).

5.1.1 Development 1



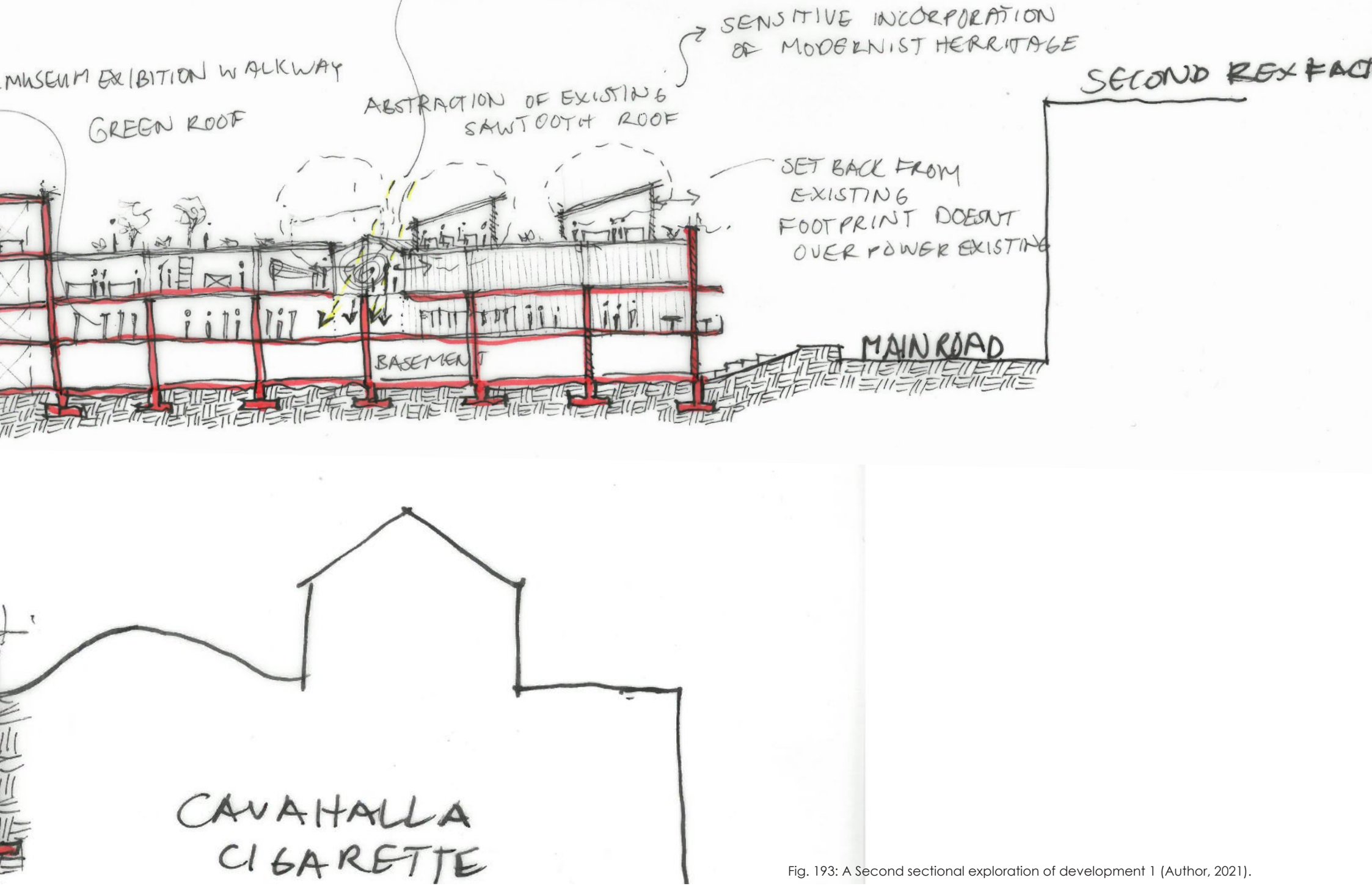
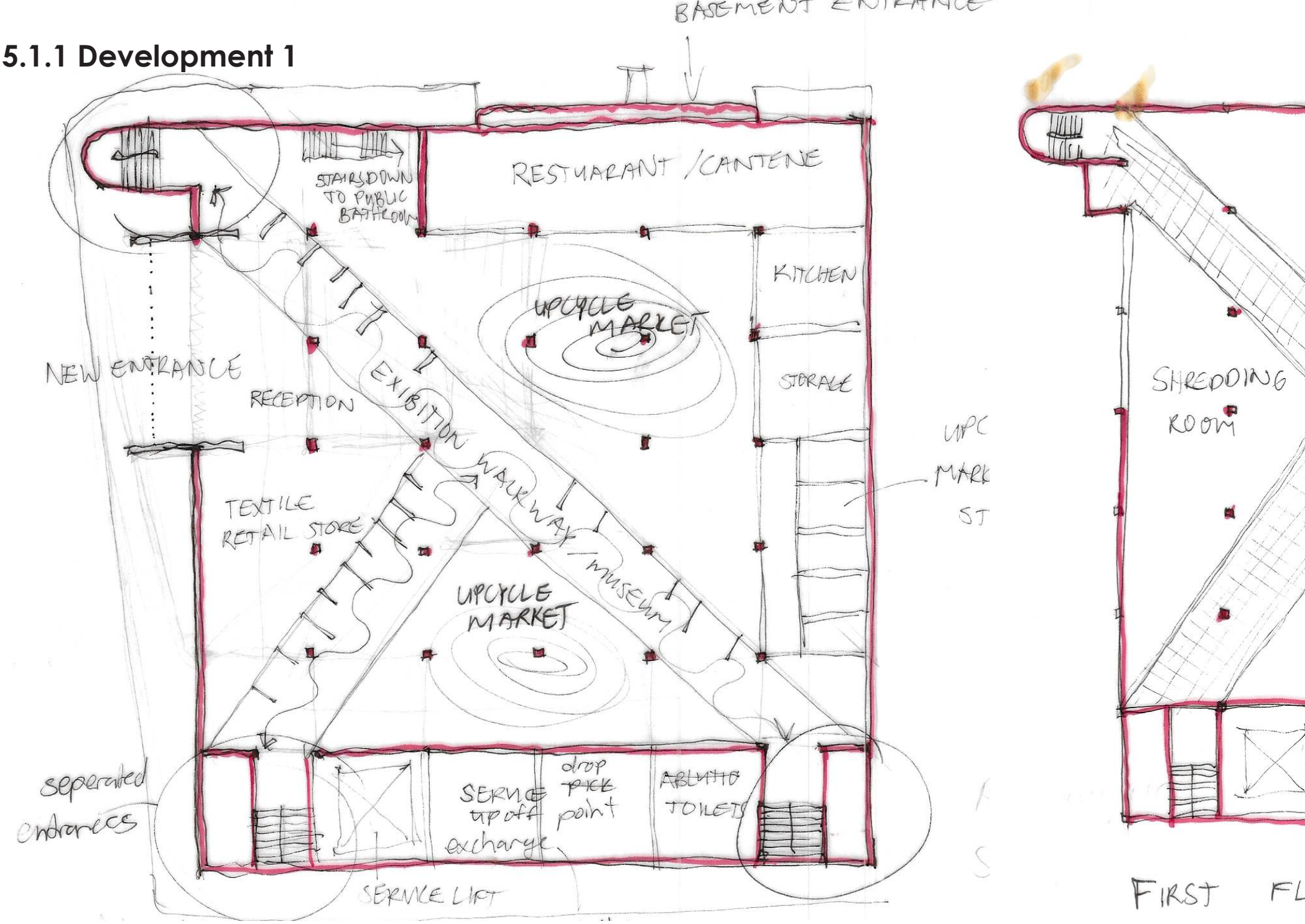


Fig. 193: A Second sectional exploration of development 1 (Author, 2021).

5.1.1 Development 1



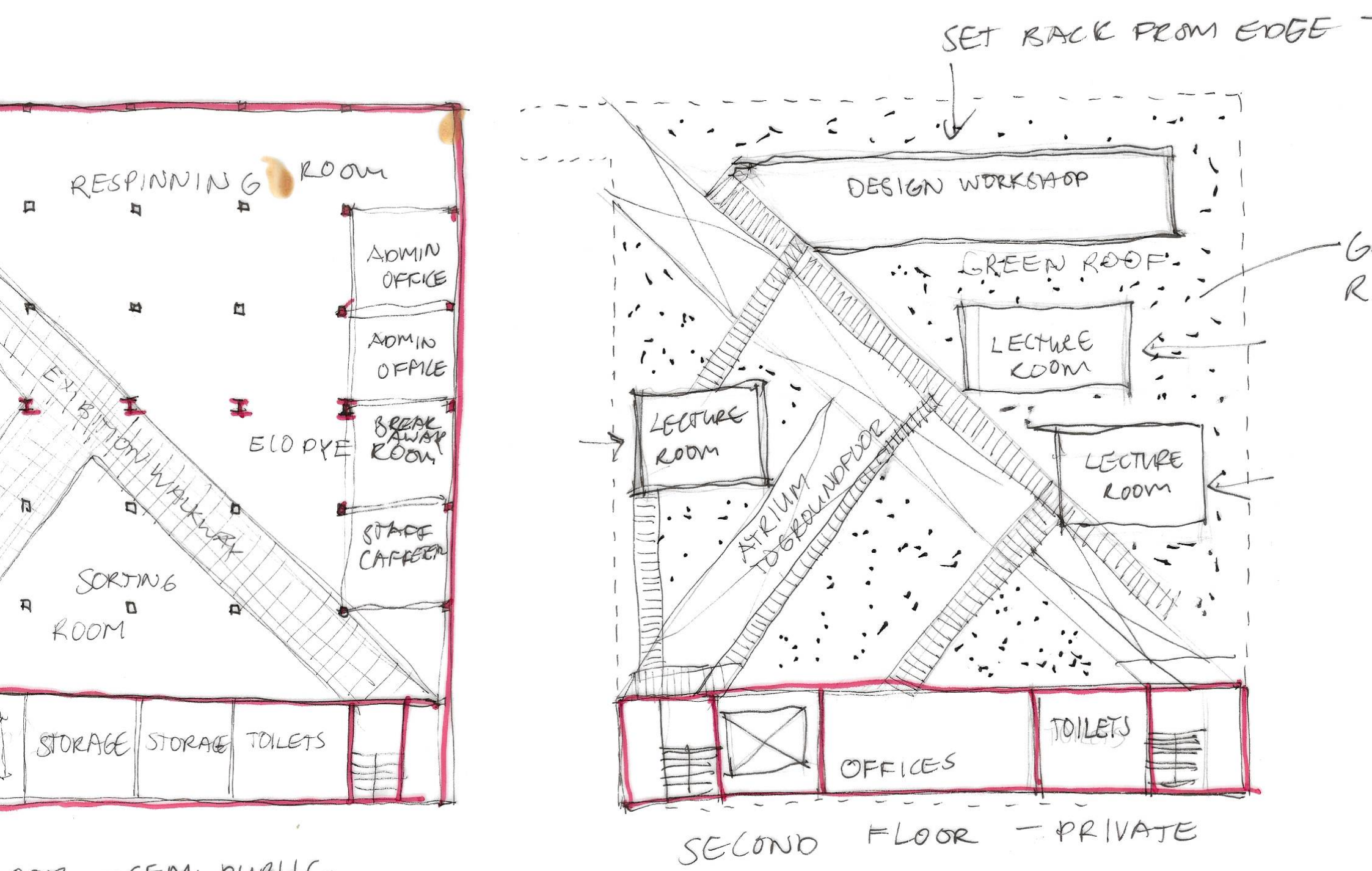


Fig. 194- 195: Ground floor, first floor and second floor plans of development 1 (Author, 2021).

5.1.2 Development 2

In this stage, the conceptual approach started to manifest in the concept of recycling as sorting, shredding and re-spinning supported by narrative theory (see fig. 198- 201). The idea was to divide the building into two spaces – the recycling facility and the textile design school – as the act of sorting. A sustainable realm and polluted realm were created in which a twist connected the separate functions on opposite sides of the building. The way in which these elements punctured through the central green walls created interpretations of shredding and re-spinning (see fig. 208- 210). An experiential walkway weaved around and through the building to bring the different elements together. The criticism received for this approach highlighted the fact that the character of the new did not respond to the character of the existing building (see fig. 212). It was also clear that the scale of the new overwhelmed the scale of the old – creating competition instead of poetic dialogue (see fig. 211 & 212). Unavoidably, this approach was summarised as insensitive, and it was imperative that these issues be addressed in the design.



Fig. 196: Top view of development 2 (Author, 2021).

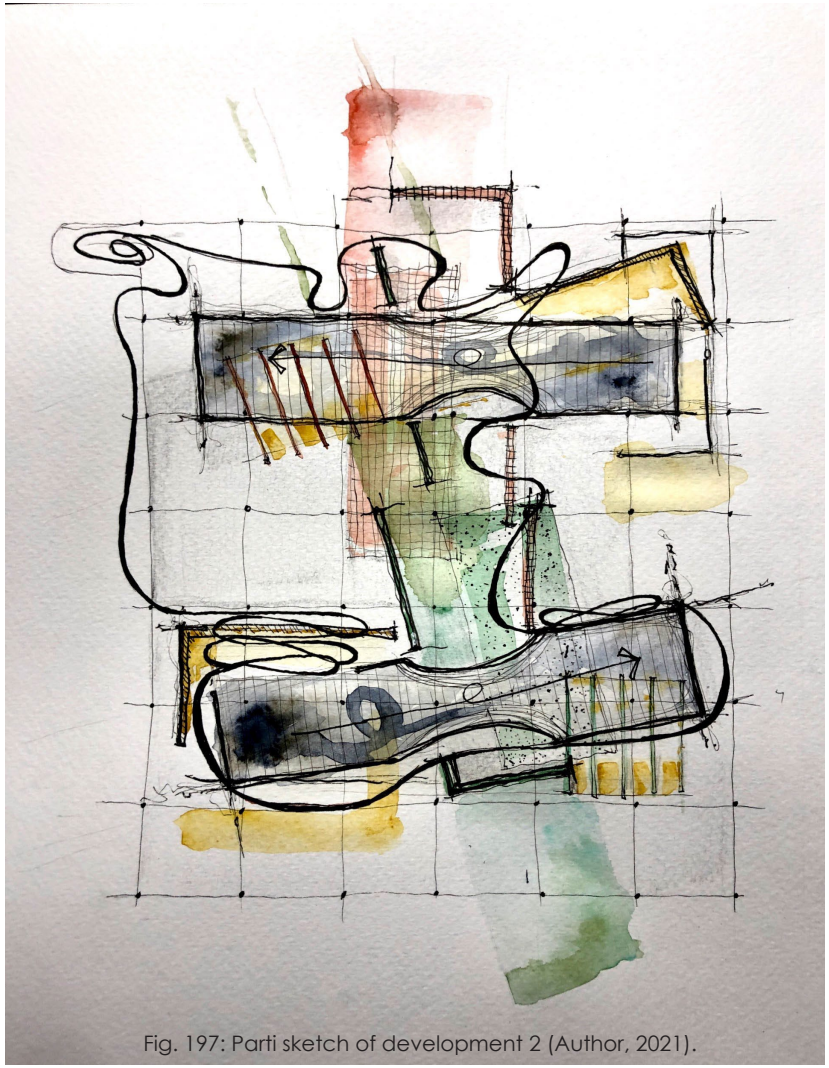
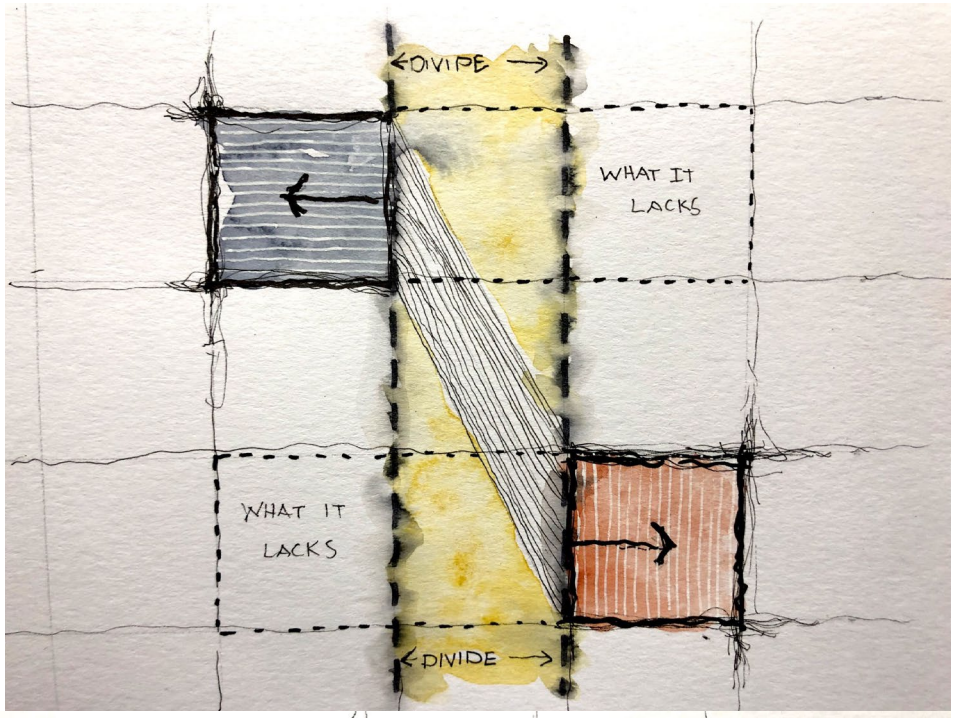
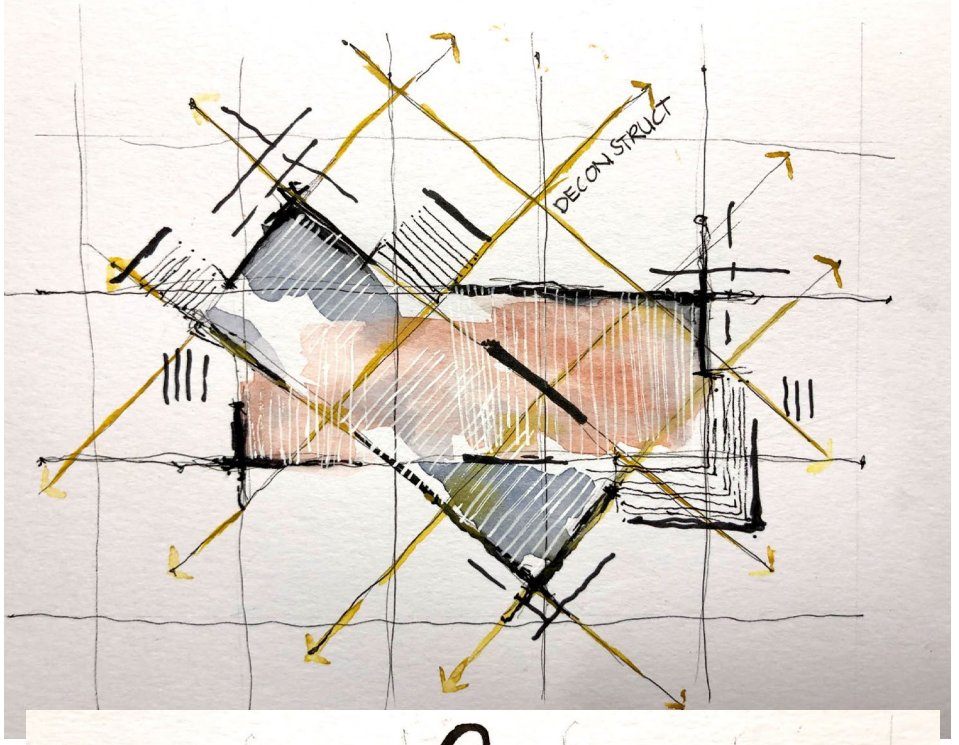
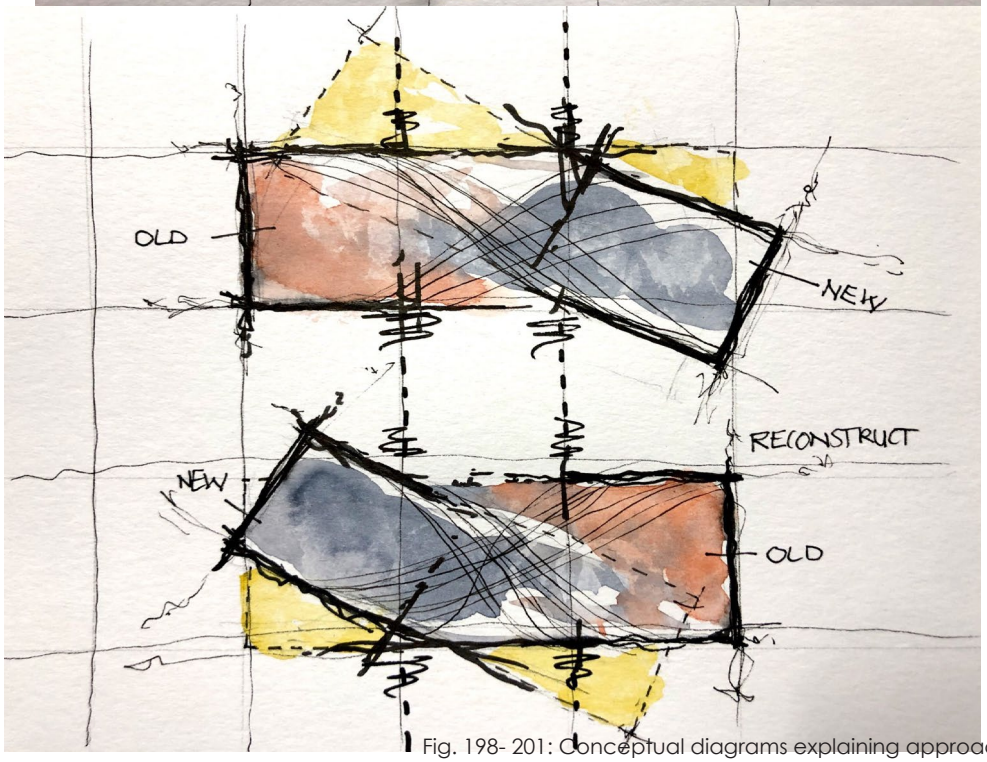


Fig. 197: Parti sketch of development 2 (Author, 2021).







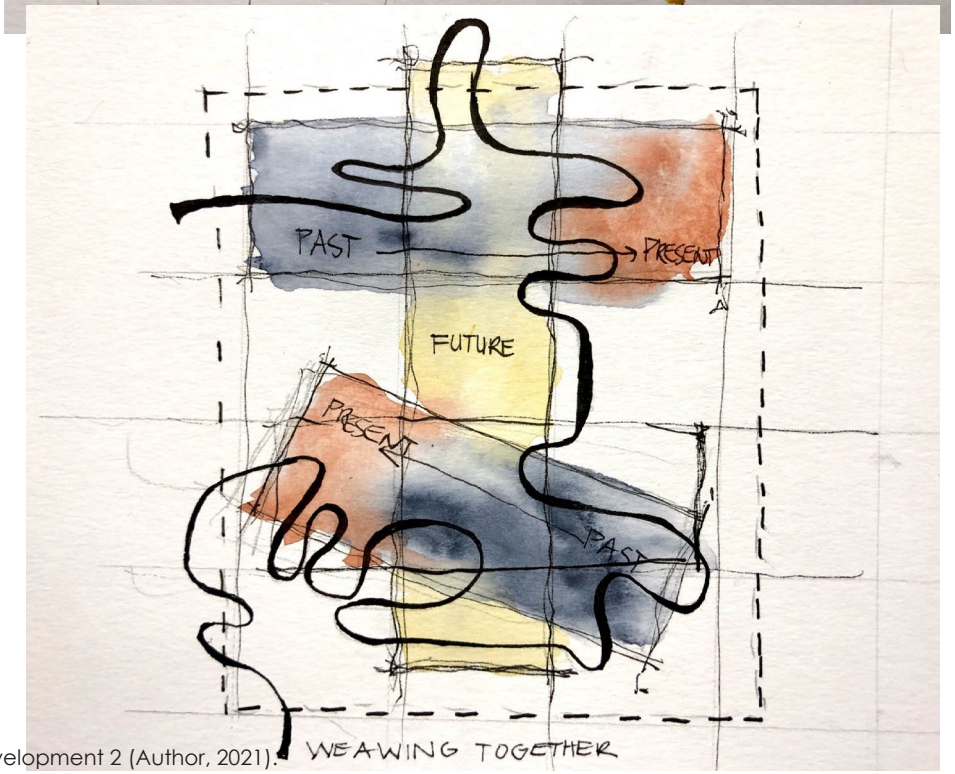
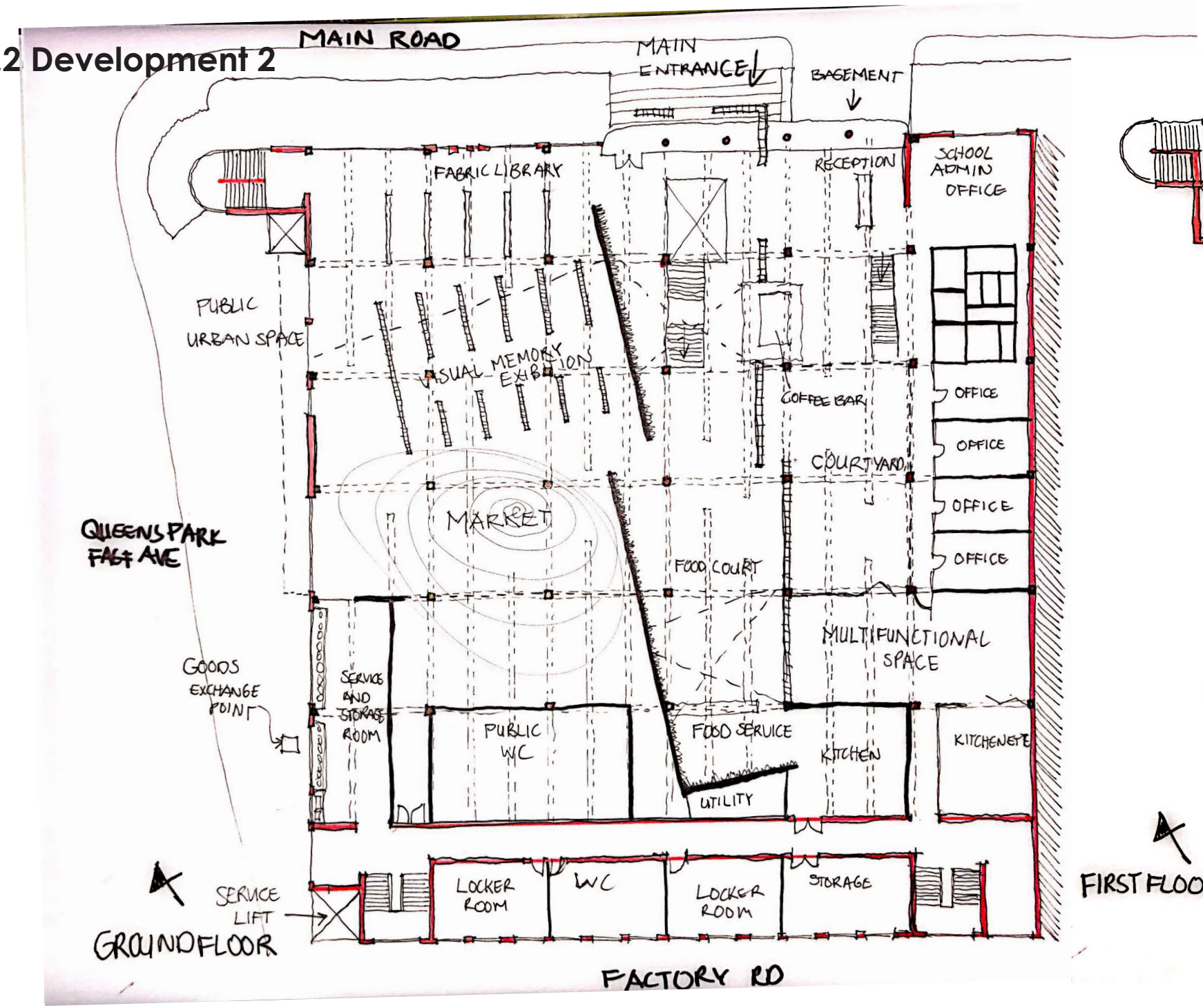
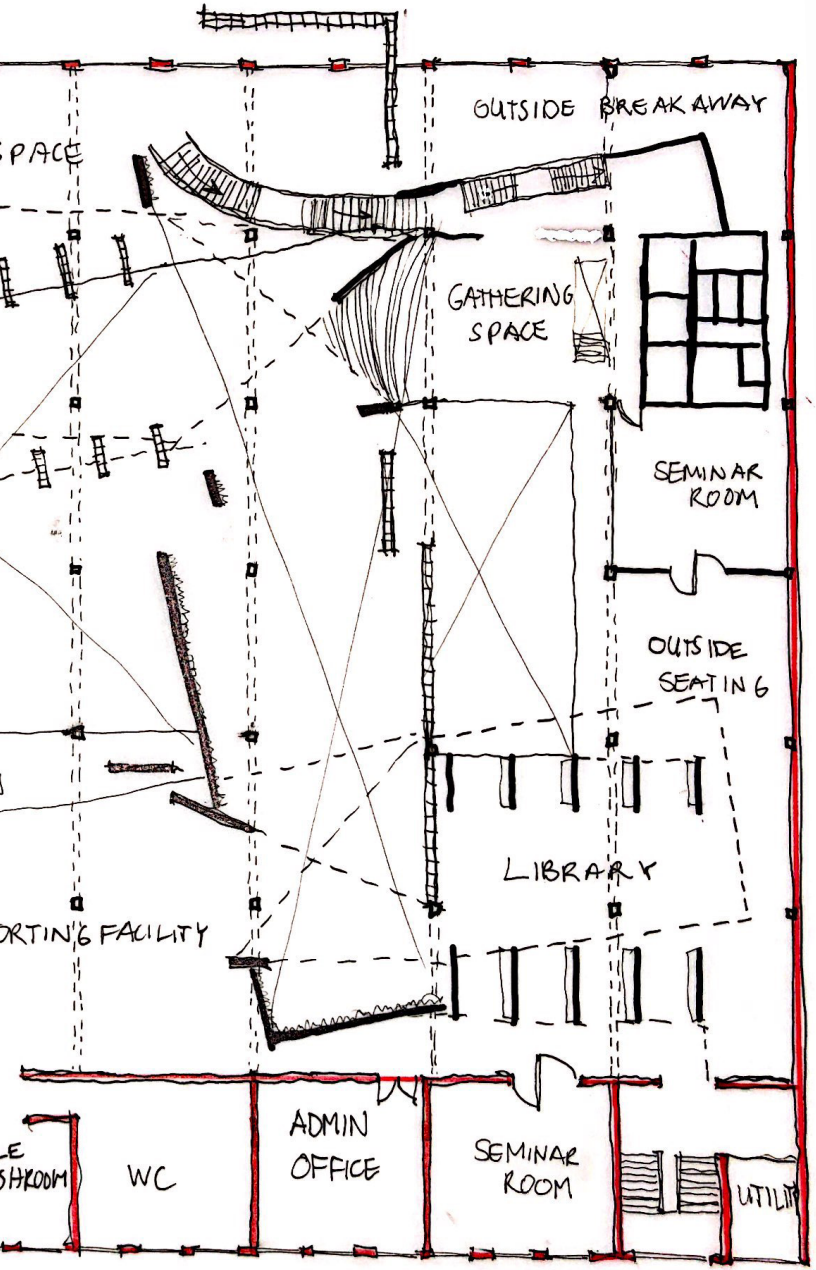


Fig. 198- 201: Conceptual diagrams explaining approach during development 2 (Author, 2021).

5.1.2 Development 2





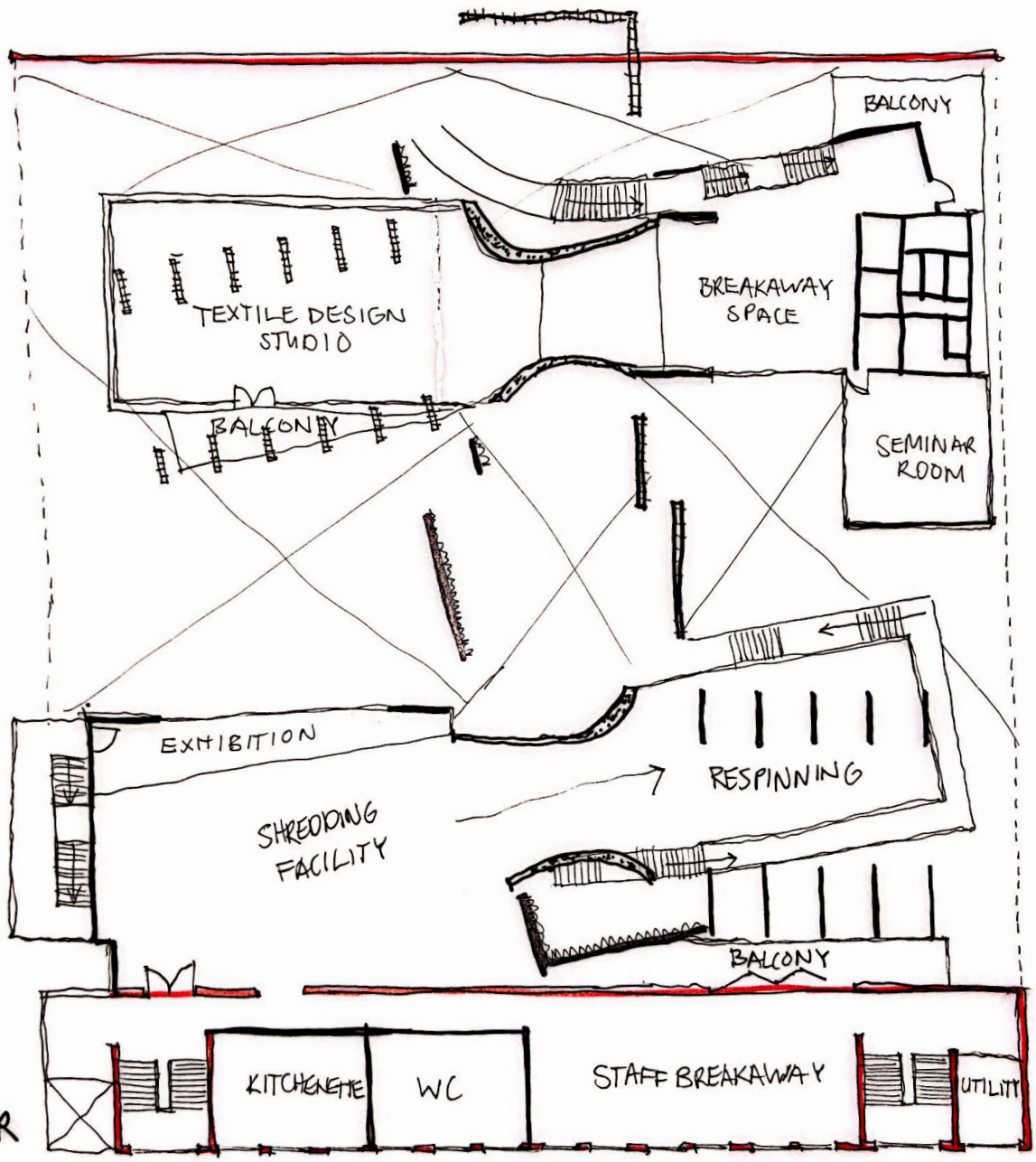
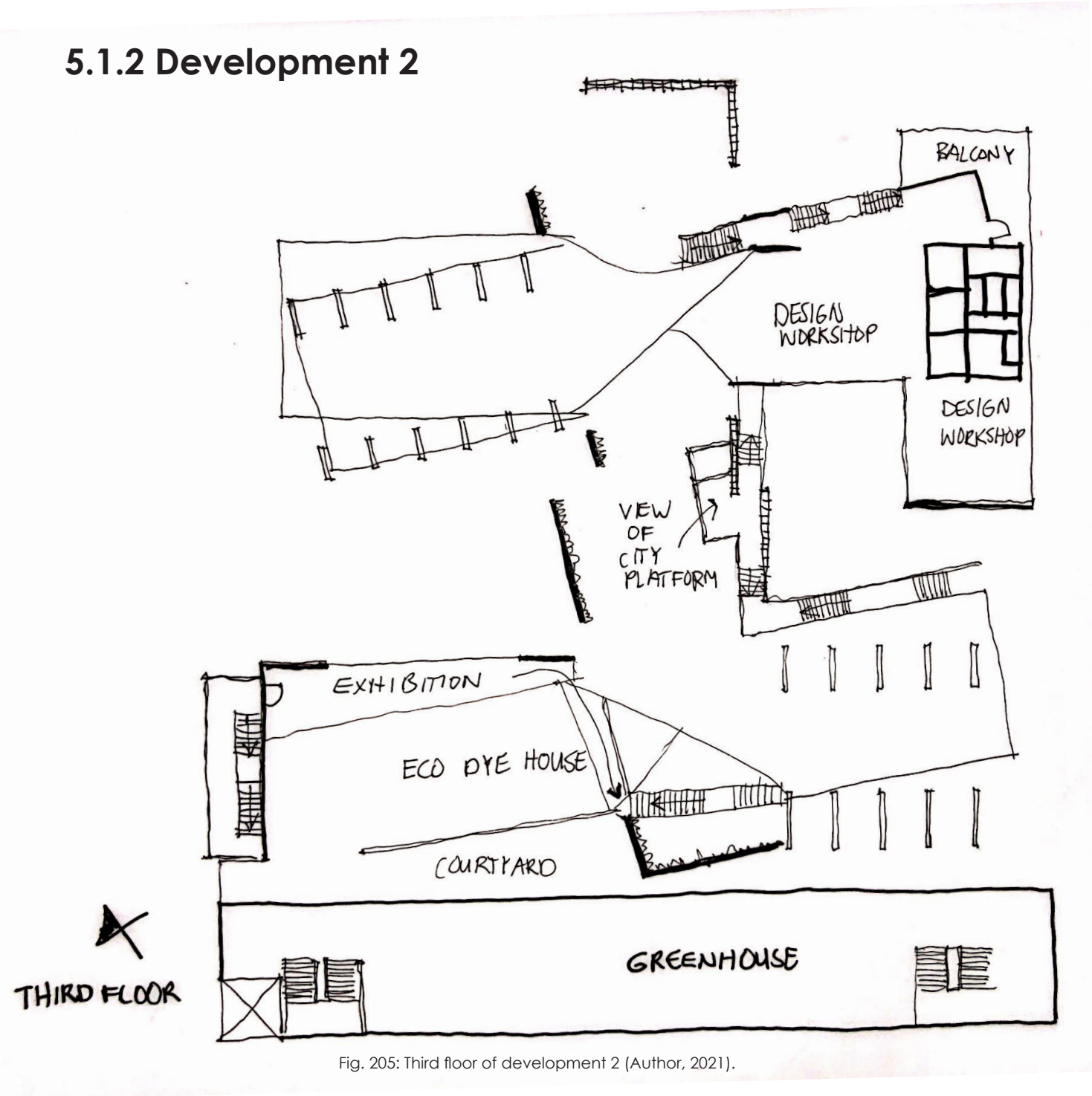
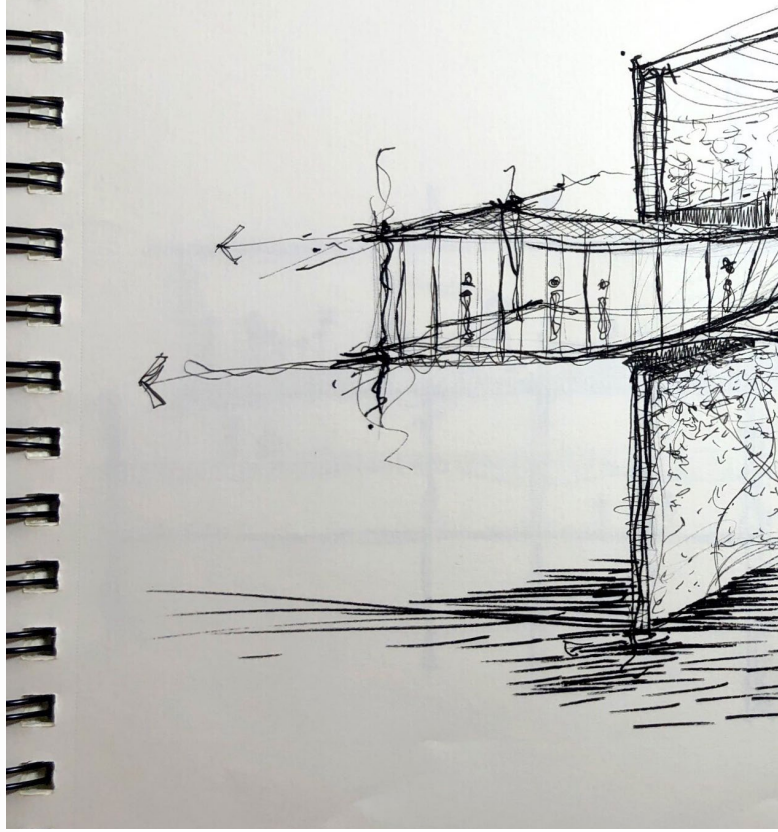


Fig. 202- 204: Floor plans of development 2 (Author, 2021).

5.1.2 Development 2





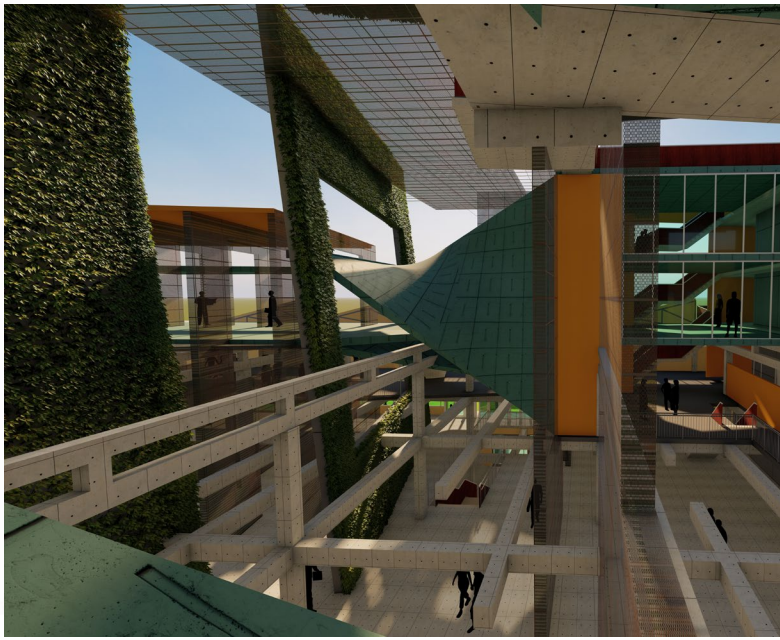
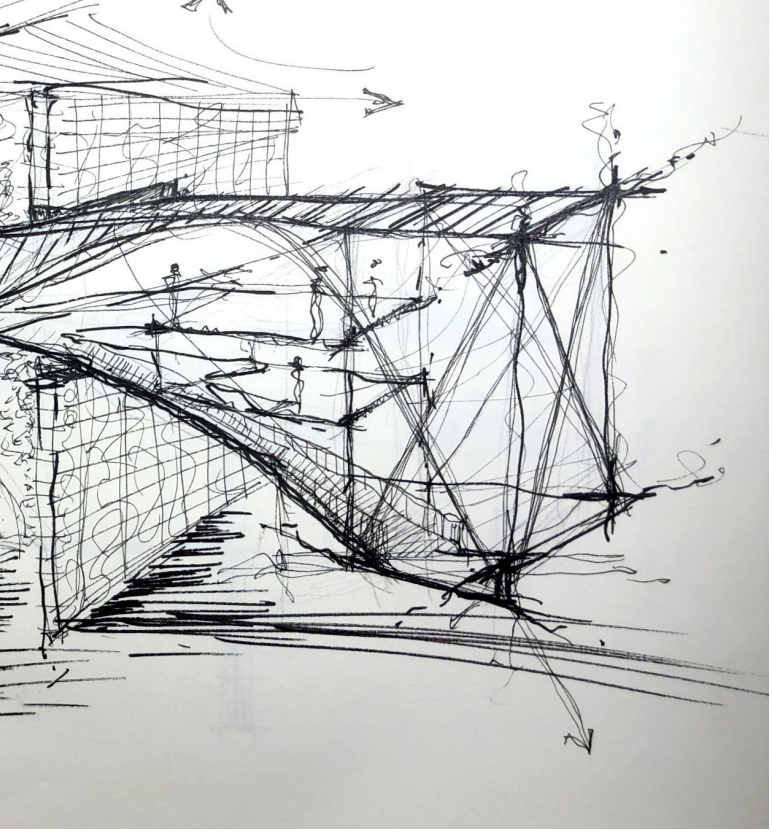


Fig. 205: Third floor of development 2 (Author, 2021).



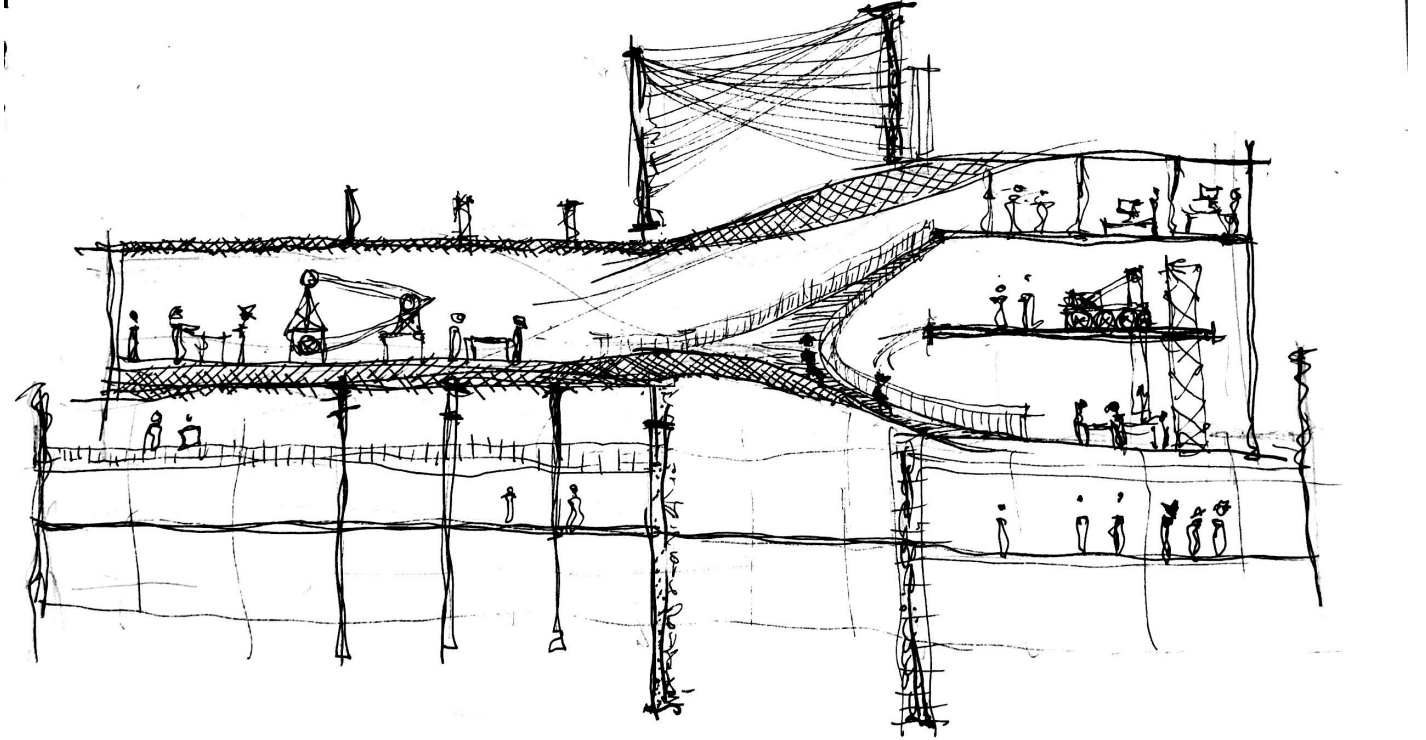
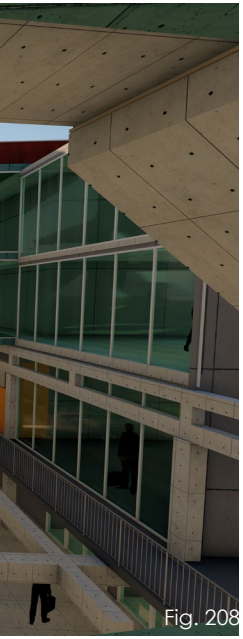


Fig. 206 & 207: Perspective and sectional drawing of the twist design during development 2 (Author, 2021).



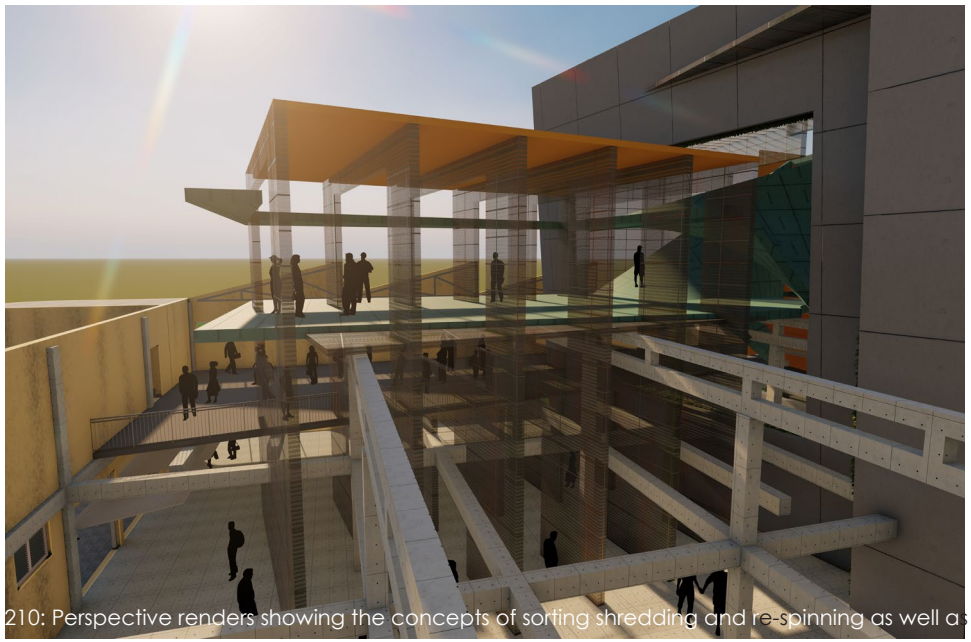




Fig. 208 - 210: Perspective renders showing the concepts of sorting shredding and re-spinning as well as the sustainable and polluted realm through which elements move (Author, 2021).

5.1.2 Development 2



Fig. 211: Street level perspective of development 2 (Author, 2021).



Fig. 212: Birds eye view of development 2 showing the discordance as well as the overbearing scale between old and new (Author, 2021).

5.1.3 Development 3

In this stage, the theory was revised to find clues as to how the issues of Development 2 could be addressed without losing the essence of the conceptual approach. It became clear that it was essential to revisit the history of the building to uncover the essence of narrative theory and how this could speak in the design. This resulted in the interpretation of the historical farmlands to respond to environmental ethics and artistic sculptural deconstruction of the existing as a means of manifesting cultural ethics. The existing structure became the metaphorical backbone of the building, and the workers were interpreted as the backbone of the company. Removing parts of the existing walls and floors became a strategy to reveal, expose and frame the existing structure. Timber was chosen as the new structure to contrast with the old, and the connection was articulated to suggest that the new is supported by the old.

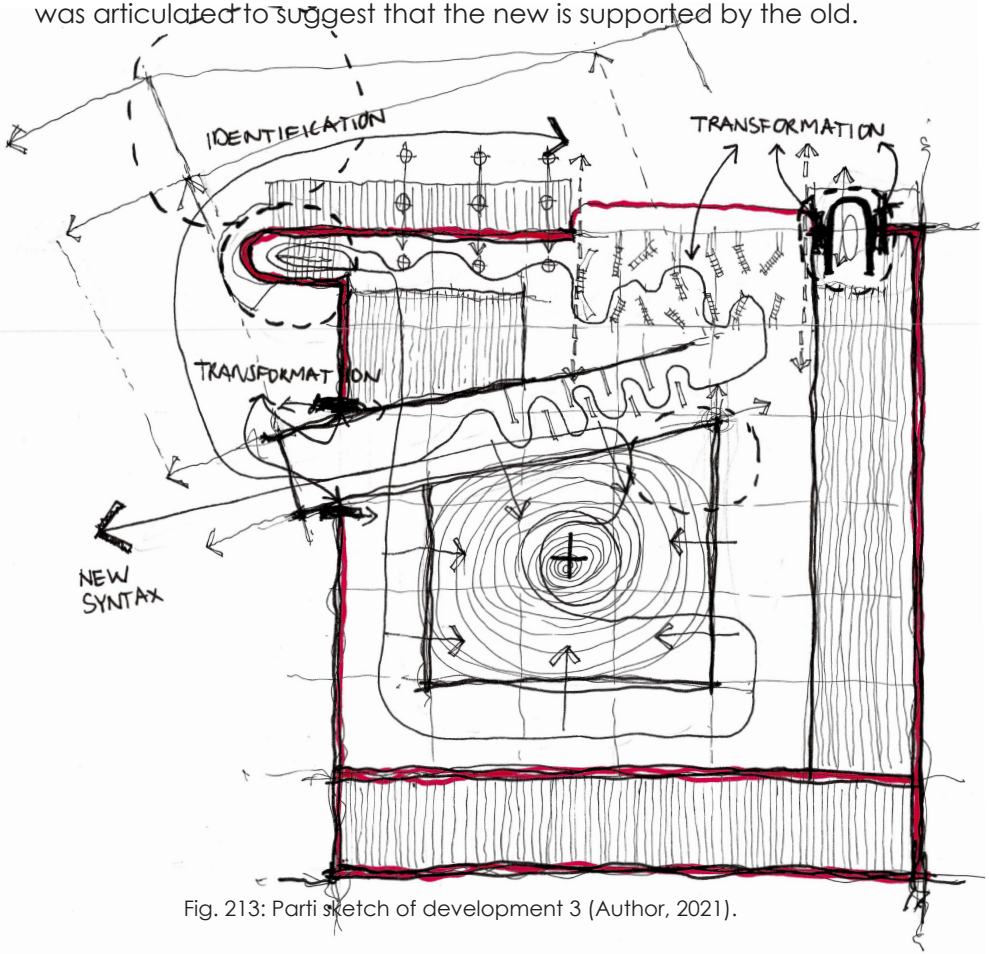


Fig. 213: Parti sketch of development 3 (Author, 2021).

A central meeting place, by the square, was created to connect people by devising space for engagement and socialisation. Circles, squares and triangles were used to reinterpret the character of the old and enhance the dialogue between old and new.

The raised platform on the north façade was utilised to host the sorting facility (see fig. 215 & 216). The reasoning behind this decision was to activate the north façade by allocating a function that simultaneously puts the recycling facility and the north façade of the old building on display. However it was shortly after decided that a fully enclosed space, even if it is fully transparent glass windows, might hide the existing façade and take away from its character. The diagonal axis was implemented as a means to create a change in order suggestive of a change in spatial organisation of the past. In other words the shift in geometry goes against the grain of the existing geometry and creates a dialogue between the two (old and new). The angle of the shift in geometry strategically frames a view of Cape Town's city between two green walls as a temporal vision for a sustainable future.

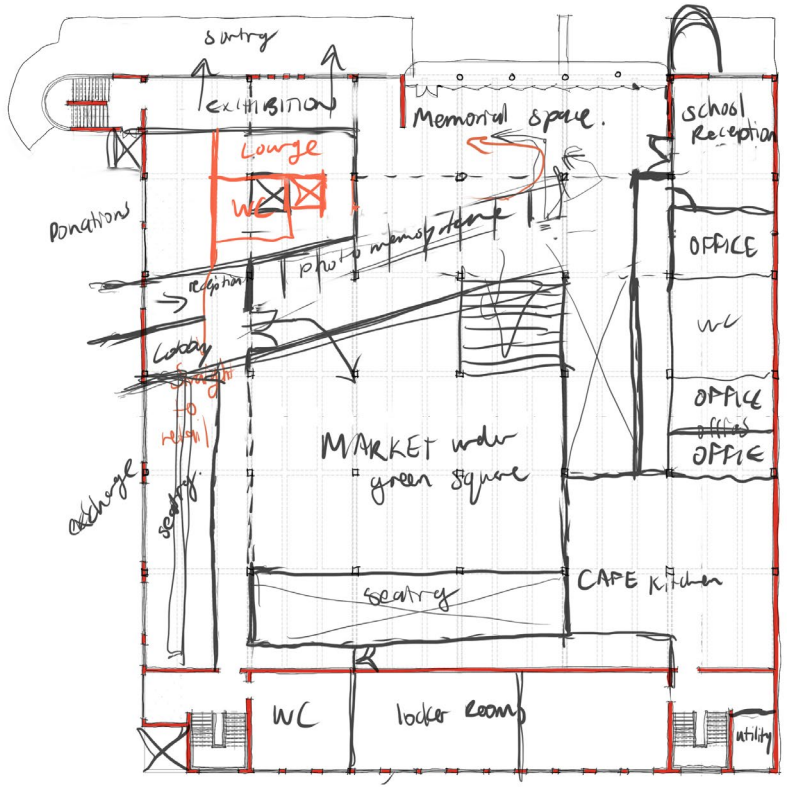


Fig. 214: Ground floor diagram of development 3 (Author, 2021).

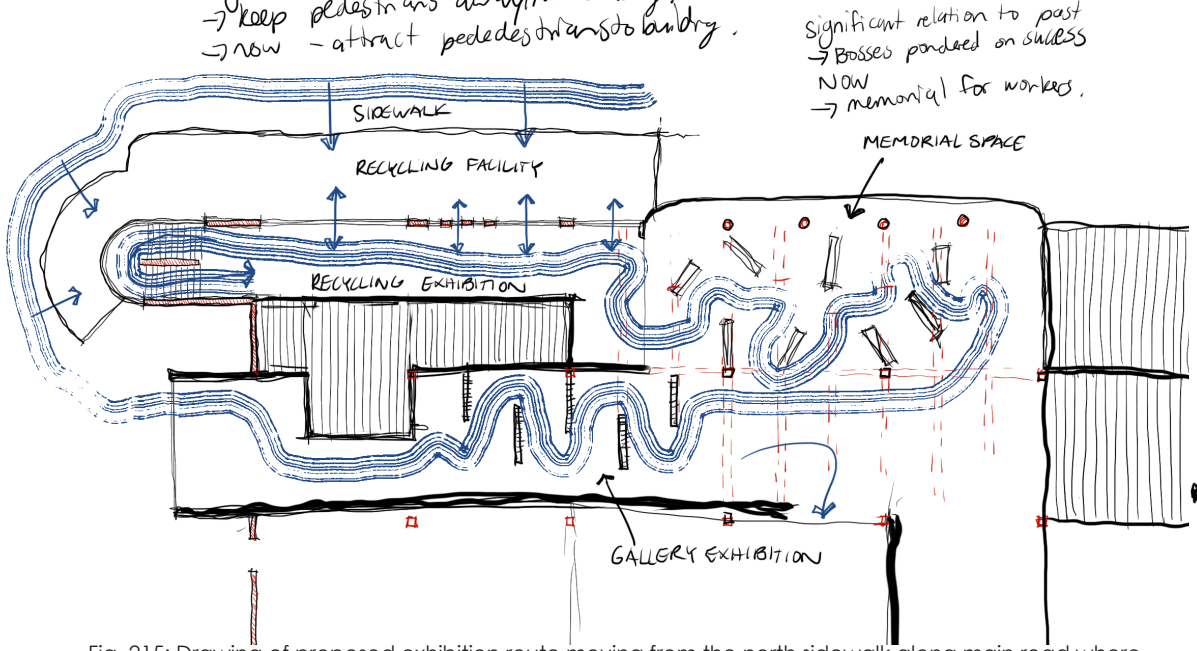


Fig. 215: Drawing of proposed exhibition route moving from the north sidewalk along main road where the sorting facility starts into the building (Author, 2021).

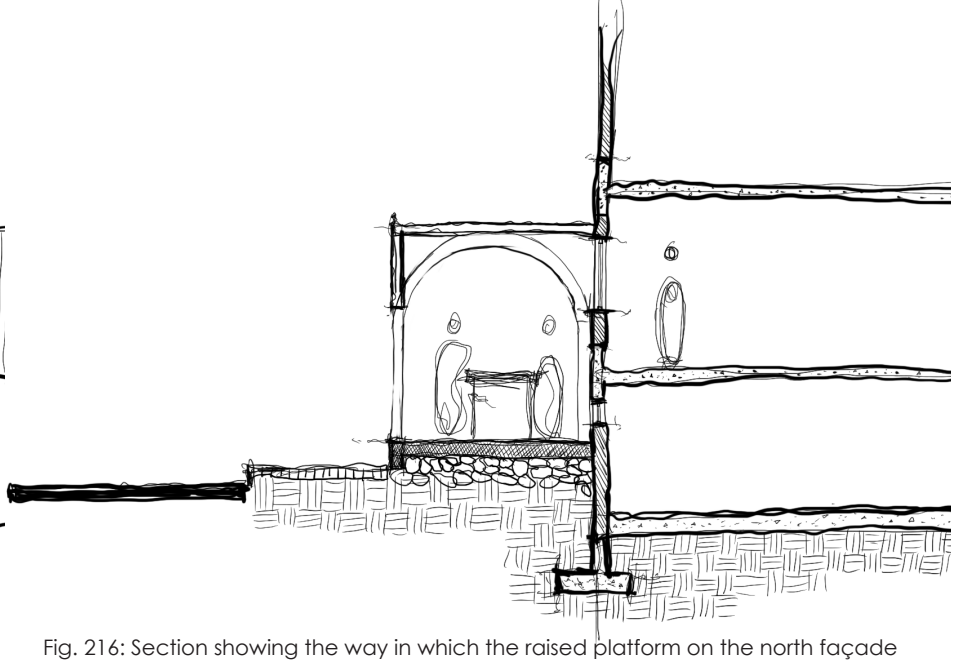


Fig. 216: Section showing the way in which the raised platform on the north façade will be occupied for the sorting facility (Author, 2021).

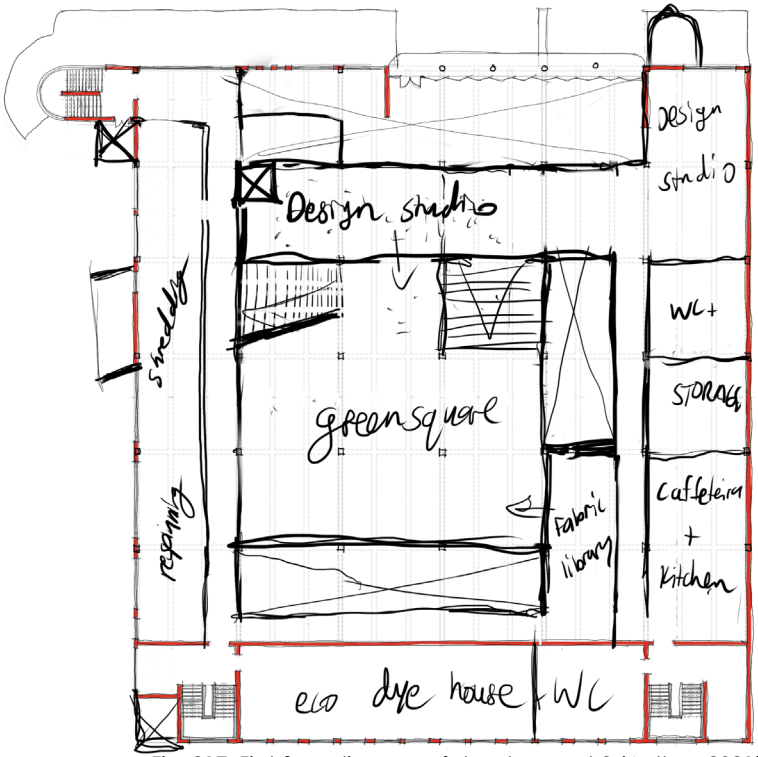


Fig. 217: First floor diagram of development 3 (Author, 2021).

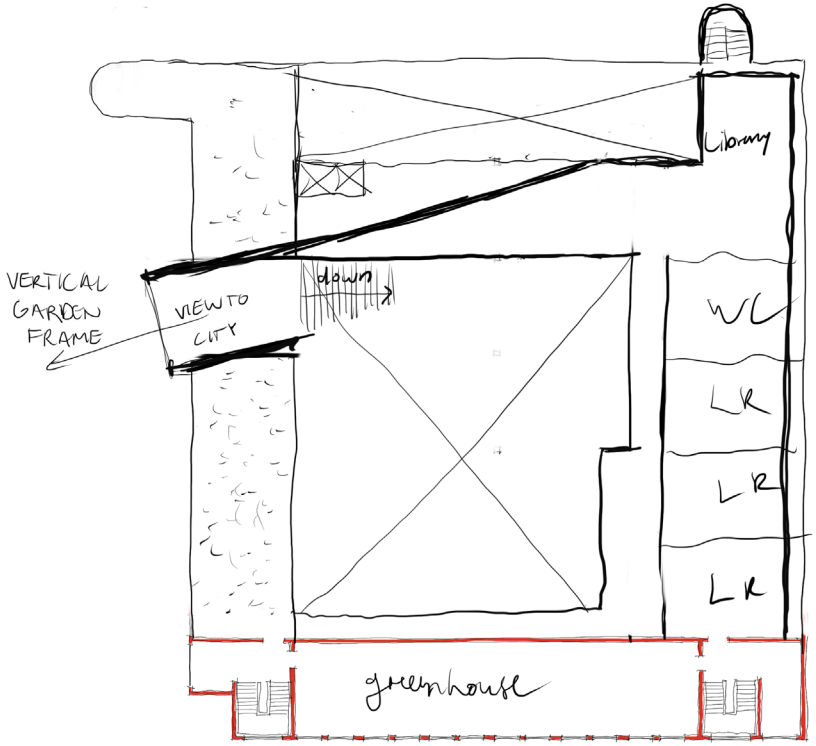
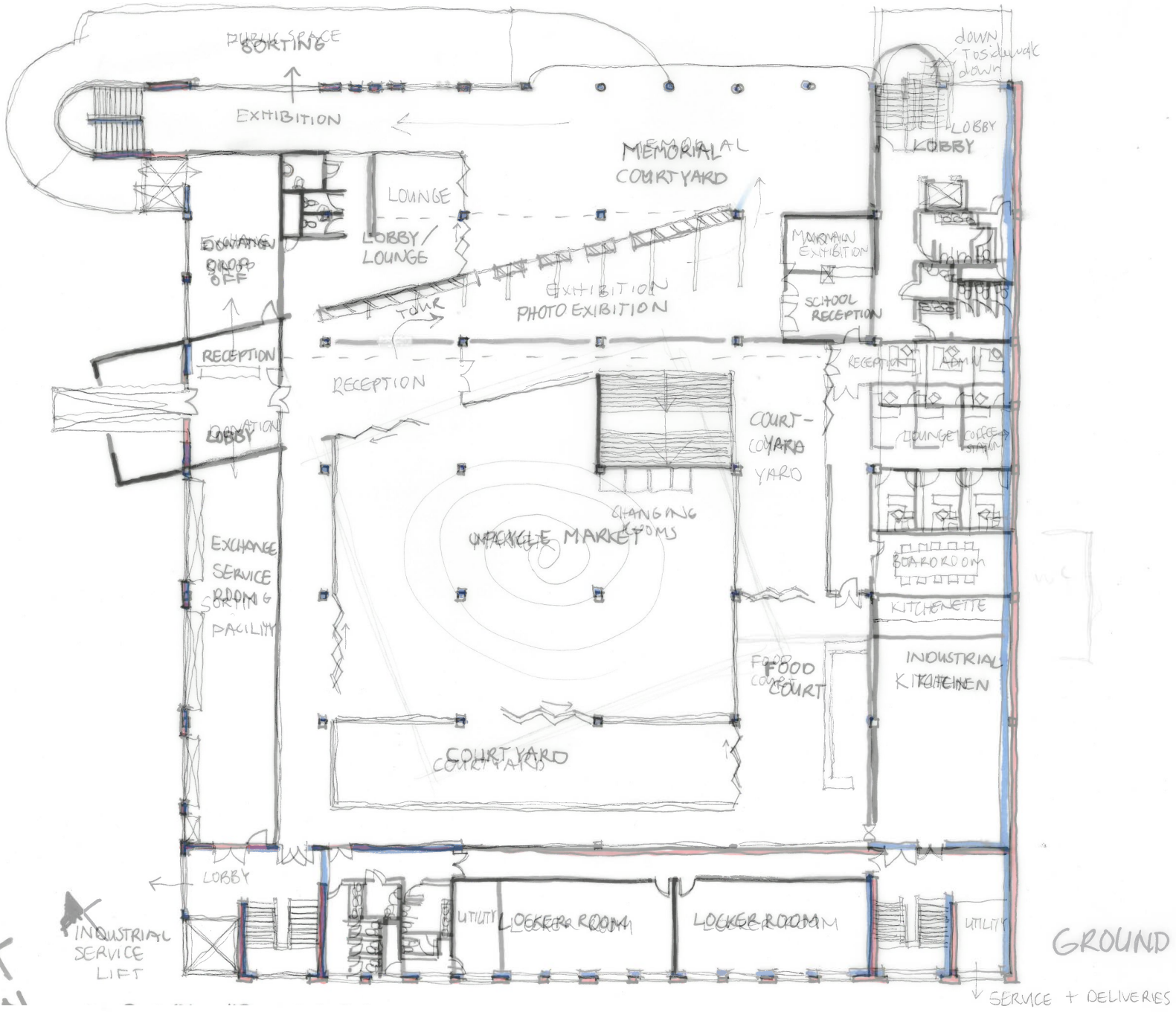
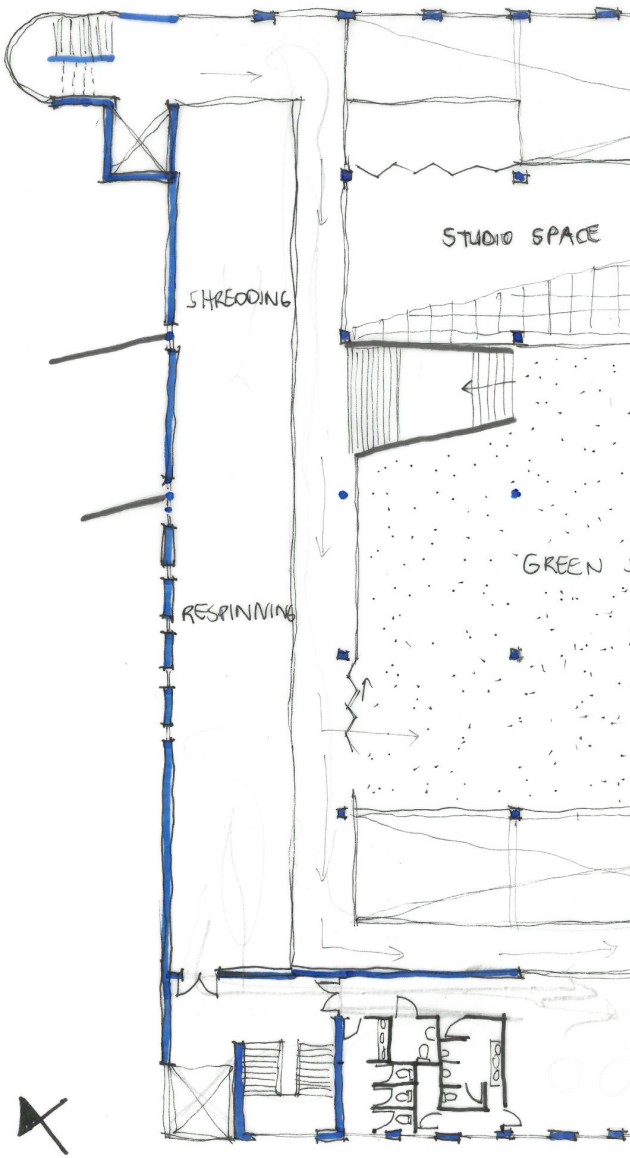
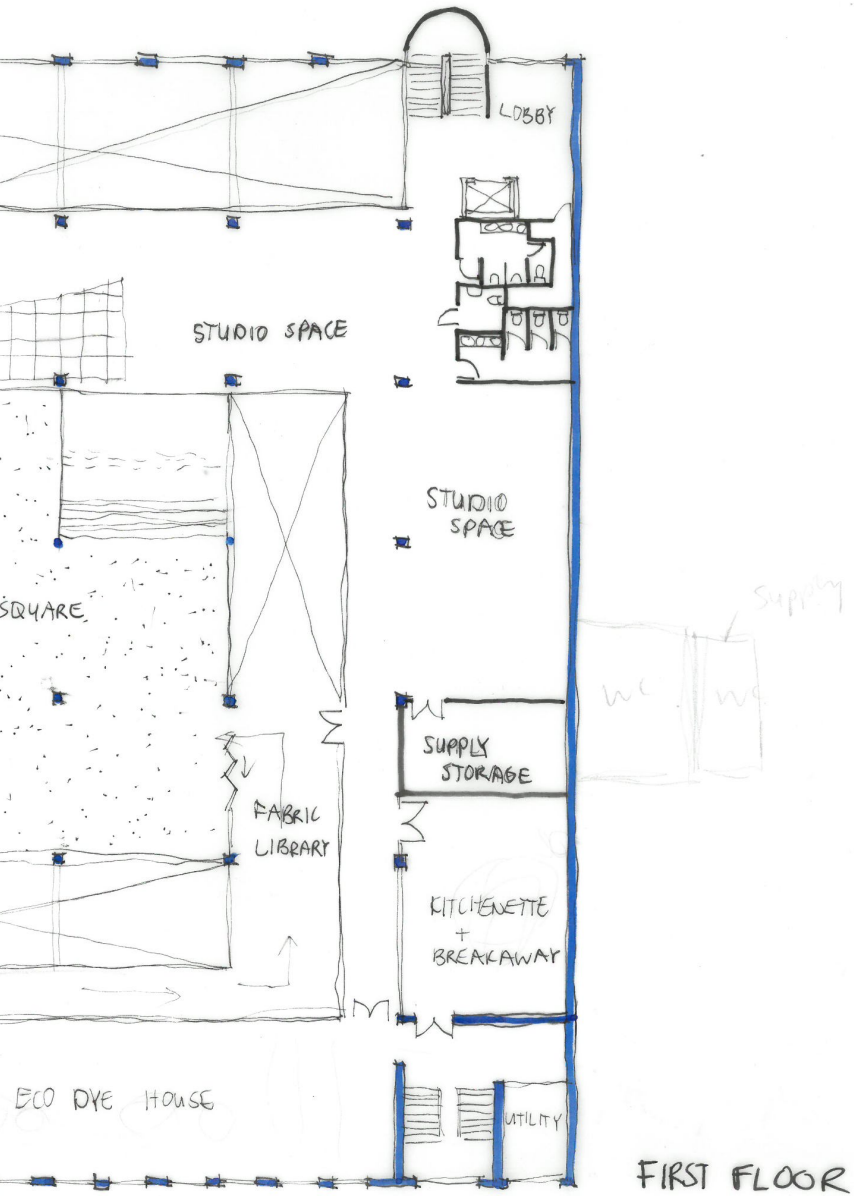


Fig. 218: Second floor diagram of development 3 (Author, 2021).

5.1.3 Development 3







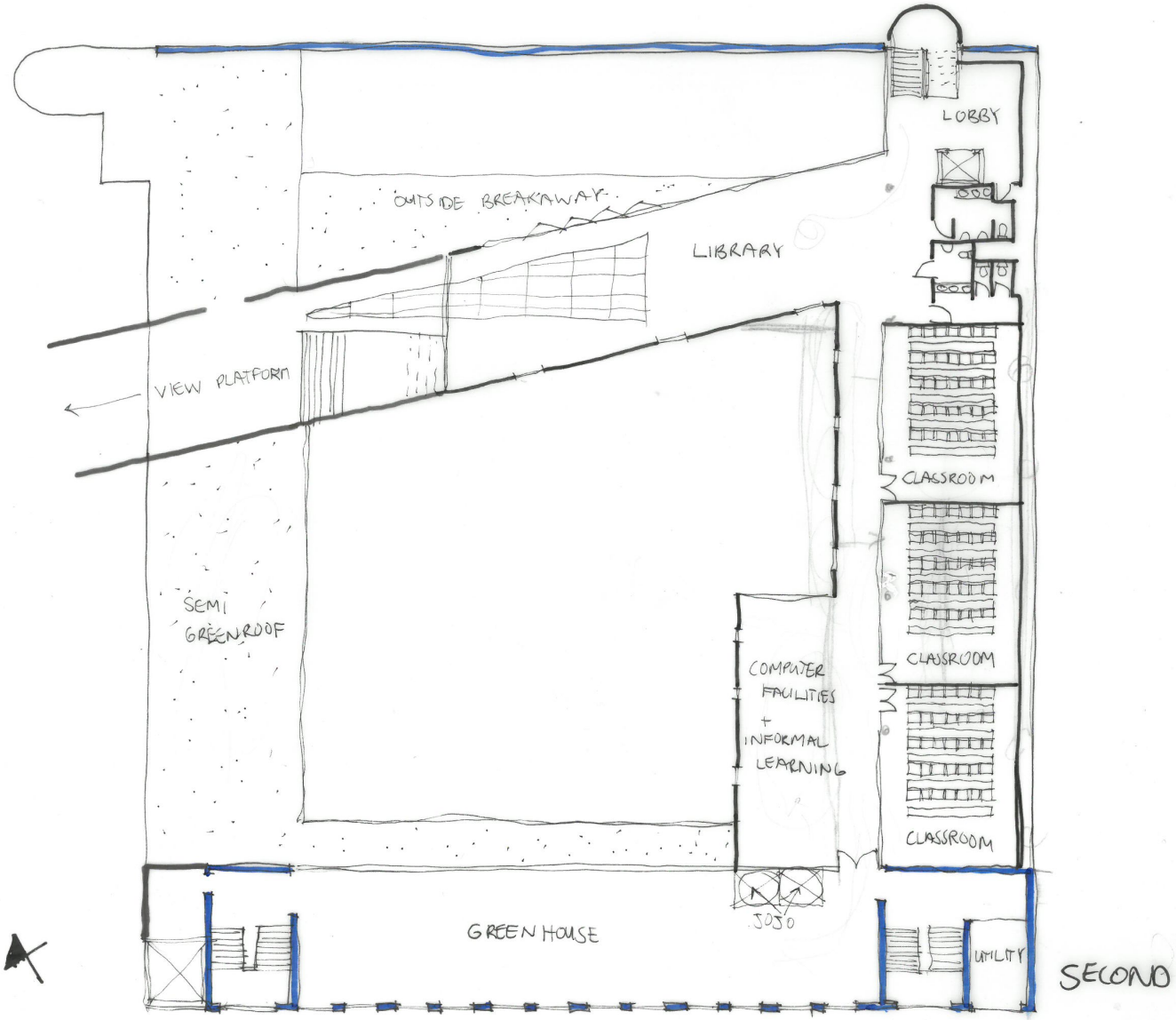


Fig. 219-221: Ground floor, first floor and second floor plans for development 3 (Author, 2021).

5.1.3 Development 3



Fig. 222: Working model for development 3 (Author, 2021).

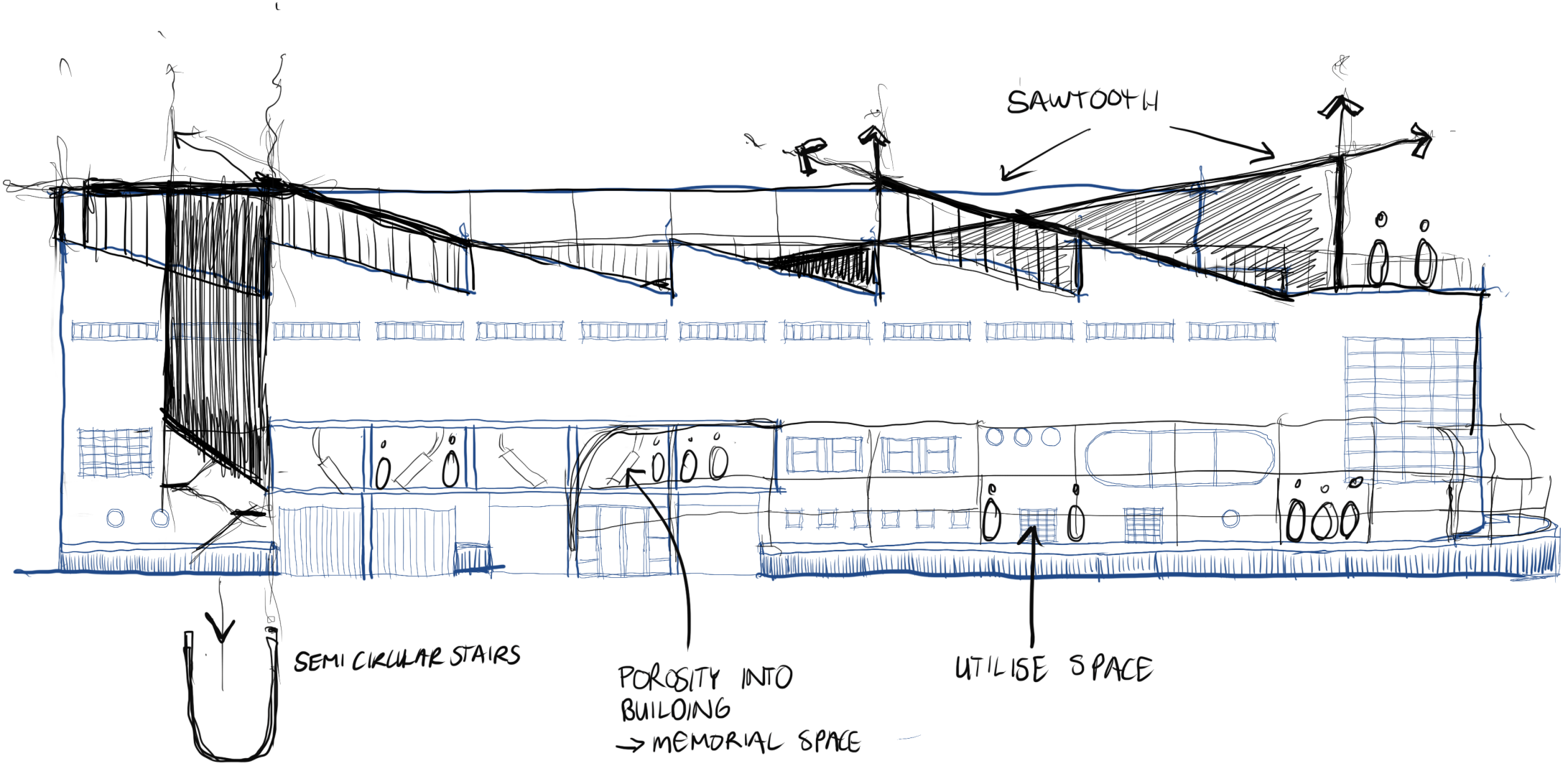
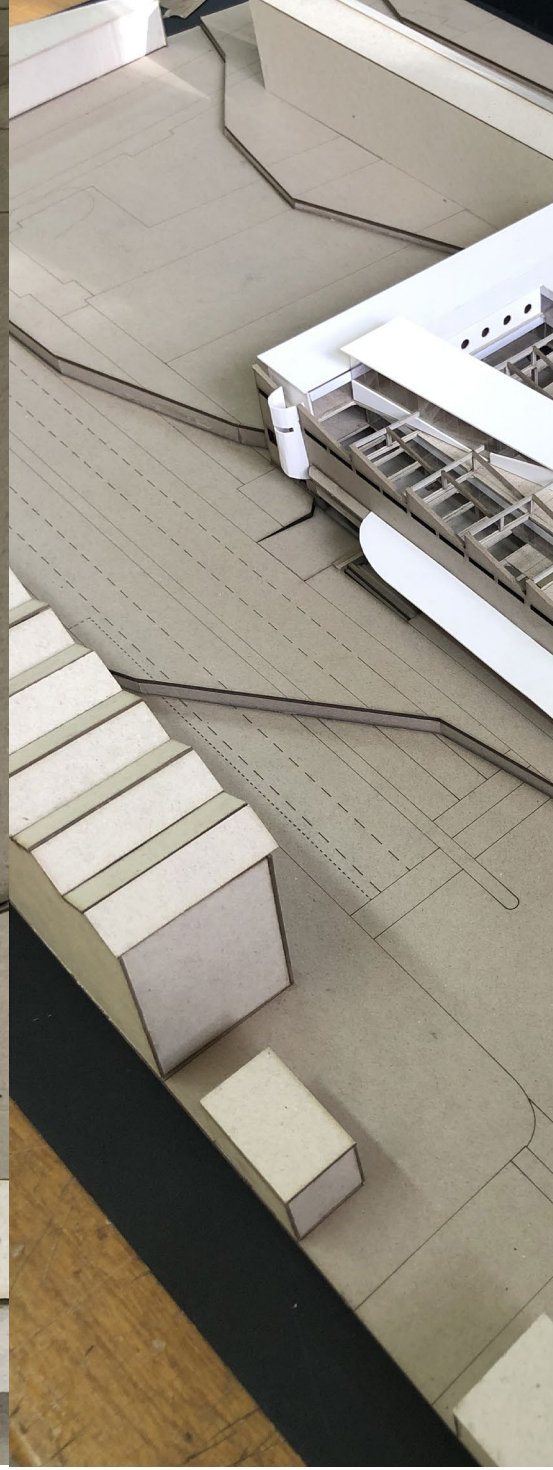


Fig. 223: North Elevation (Author, 2021).

5.1.3 Development 3





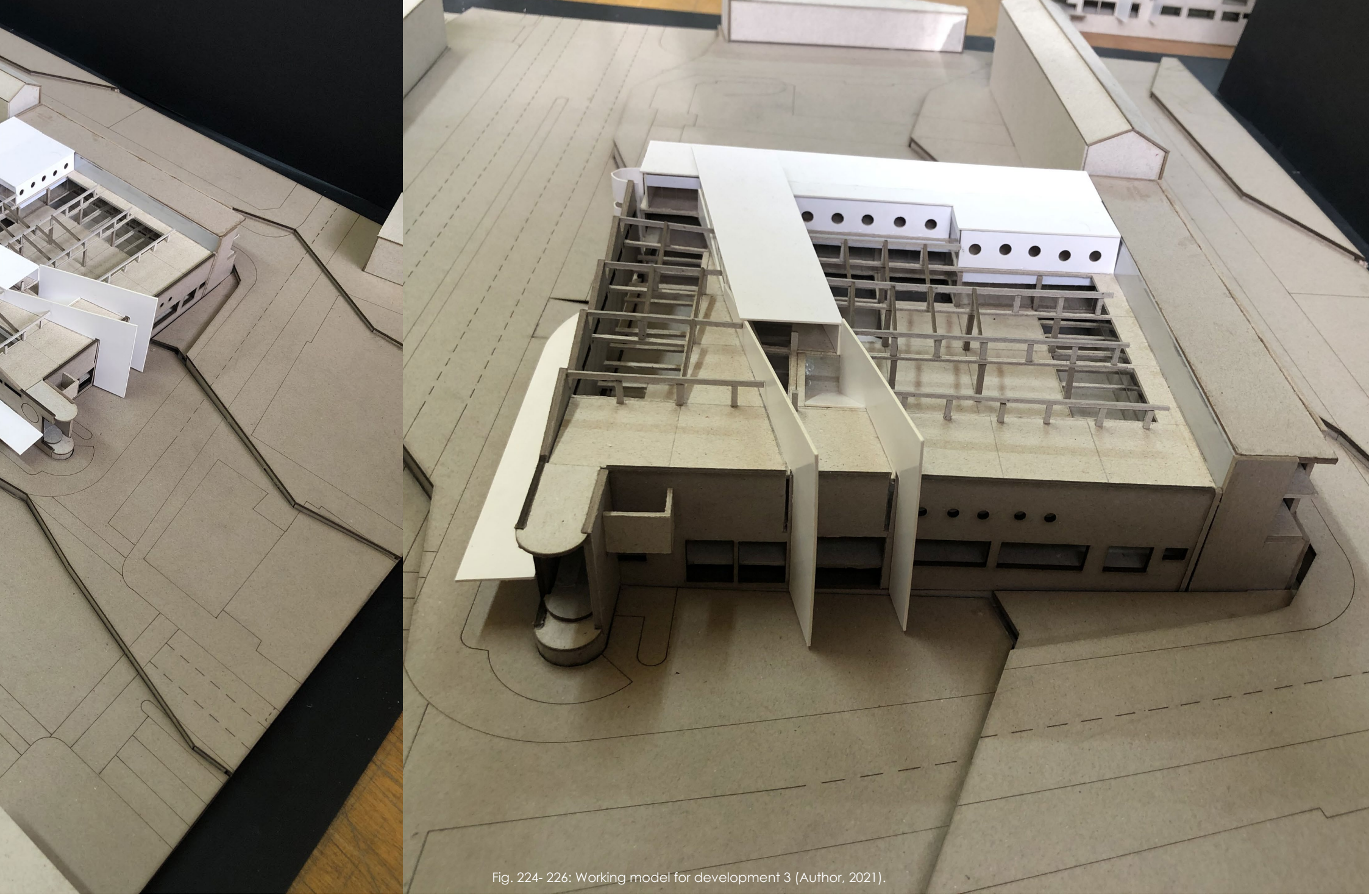


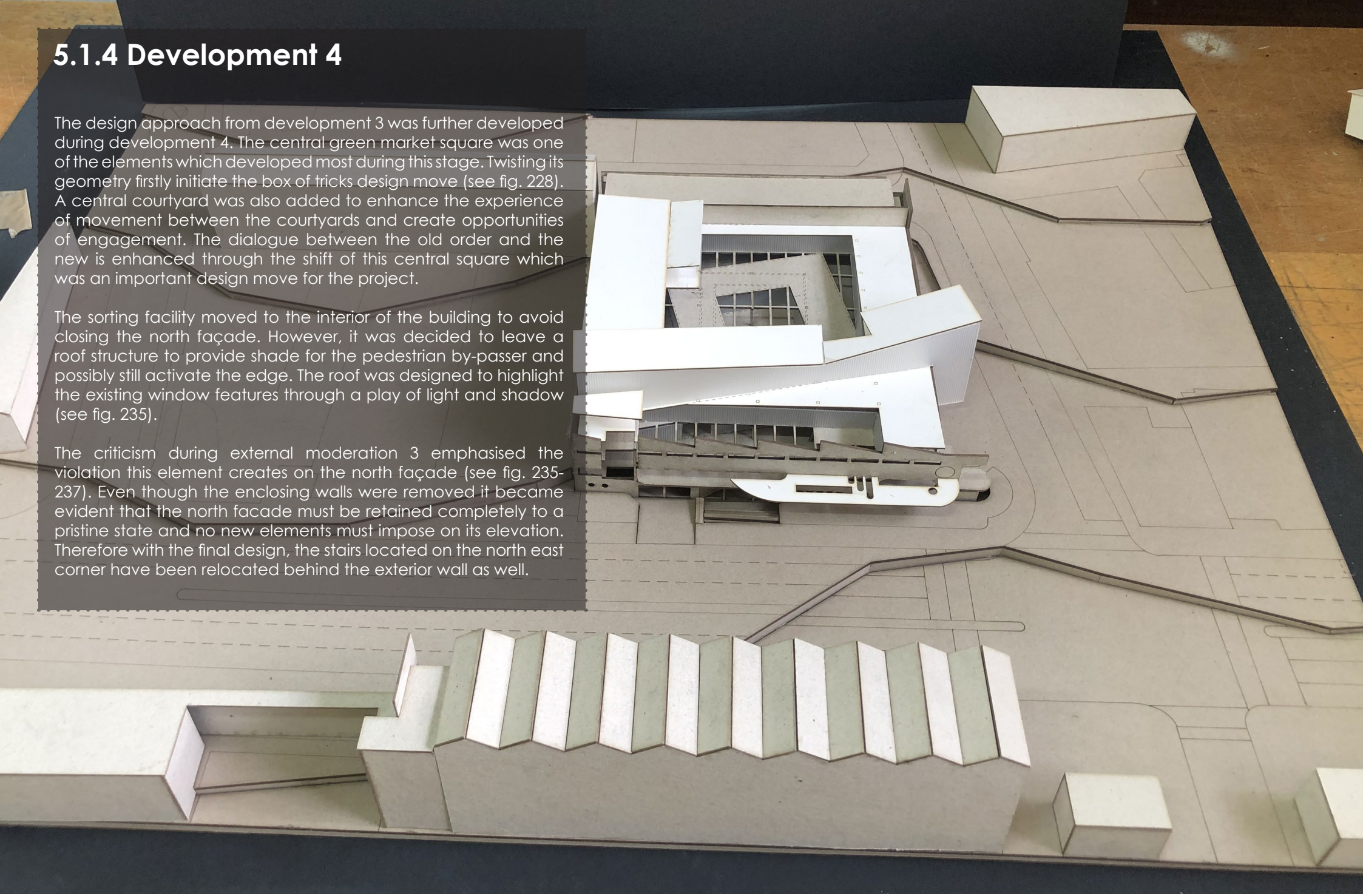
Fig. 224- 226: Working model for development 3 (Author, 2021).

5.1.4 Development 4

The design approach from development 3 was further developed during development 4. The central green market square was one of the elements which developed most during this stage. Twisting its geometry firstly initiate the box of tricks design move (see fig. 228). A central courtyard was also added to enhance the experience of movement between the courtyards and create opportunities of engagement. The dialogue between the old order and the new is enhanced through the shift of this central square which was an important design move for the project.

The sorting facility moved to the interior of the building to avoid closing the north façade. However, it was decided to leave a roof structure to provide shade for the pedestrian by-passer and possibly still activate the edge. The roof was designed to highlight the existing window features through a play of light and shadow (see fig. 235).

The criticism during external moderation 3 emphasised the violation this element creates on the north façade (see fig. 235-237). Even though the enclosing walls were removed it became evident that the north facade must be retained completely to a pristine state and no new elements must impose on its elevation. Therefore with the final design, the stairs located on the north east corner have been relocated behind the exterior wall as well.



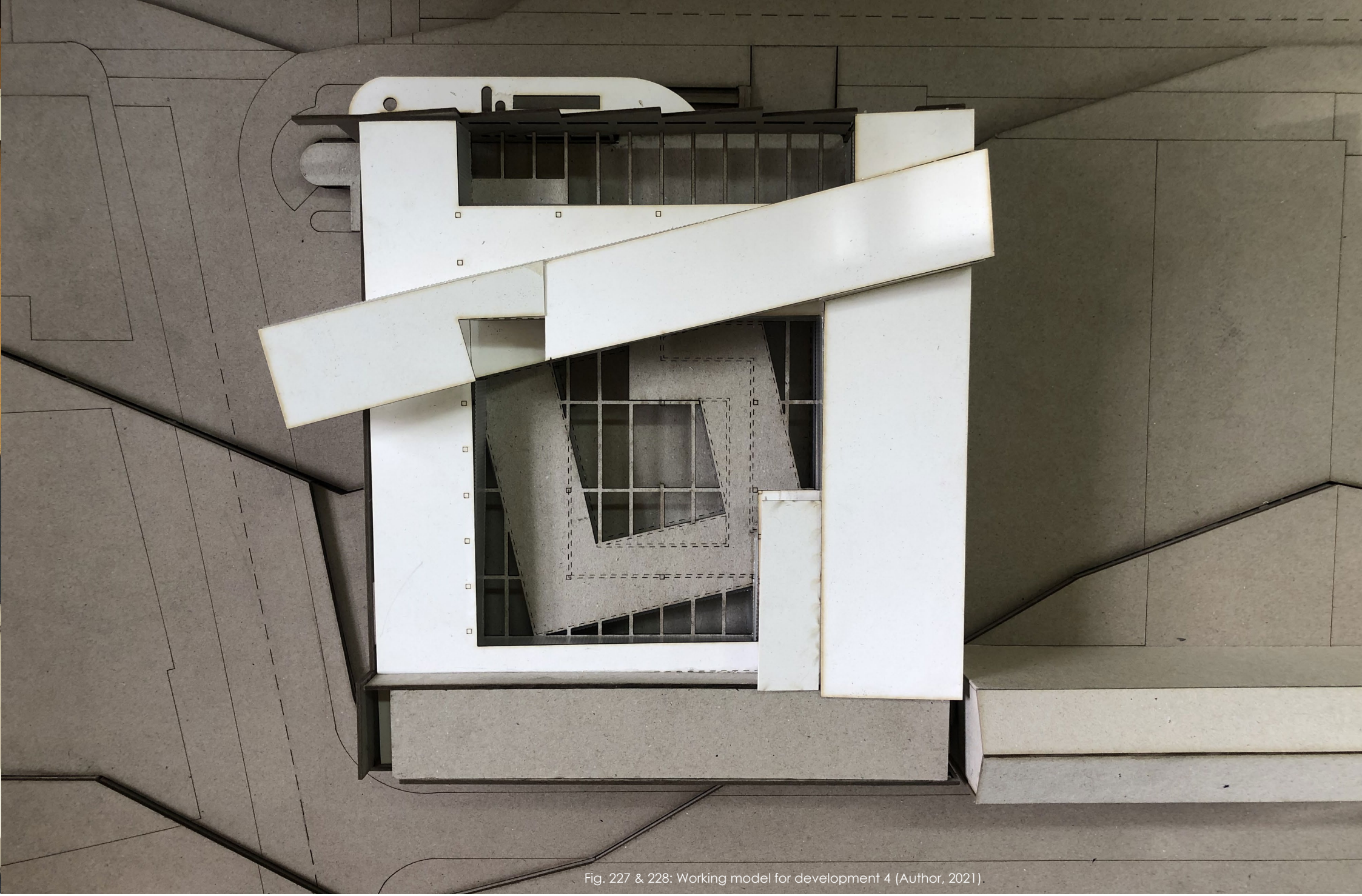
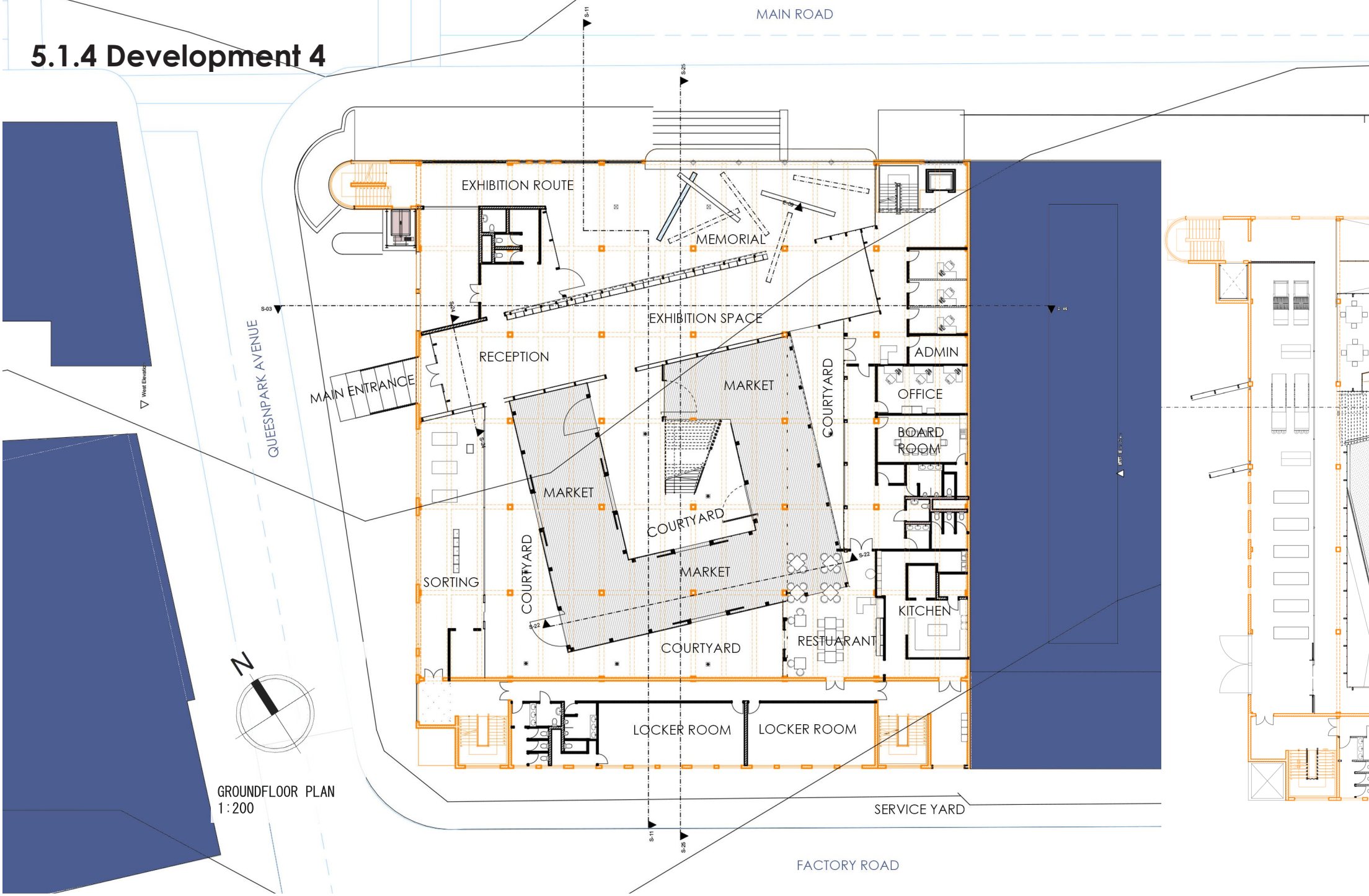
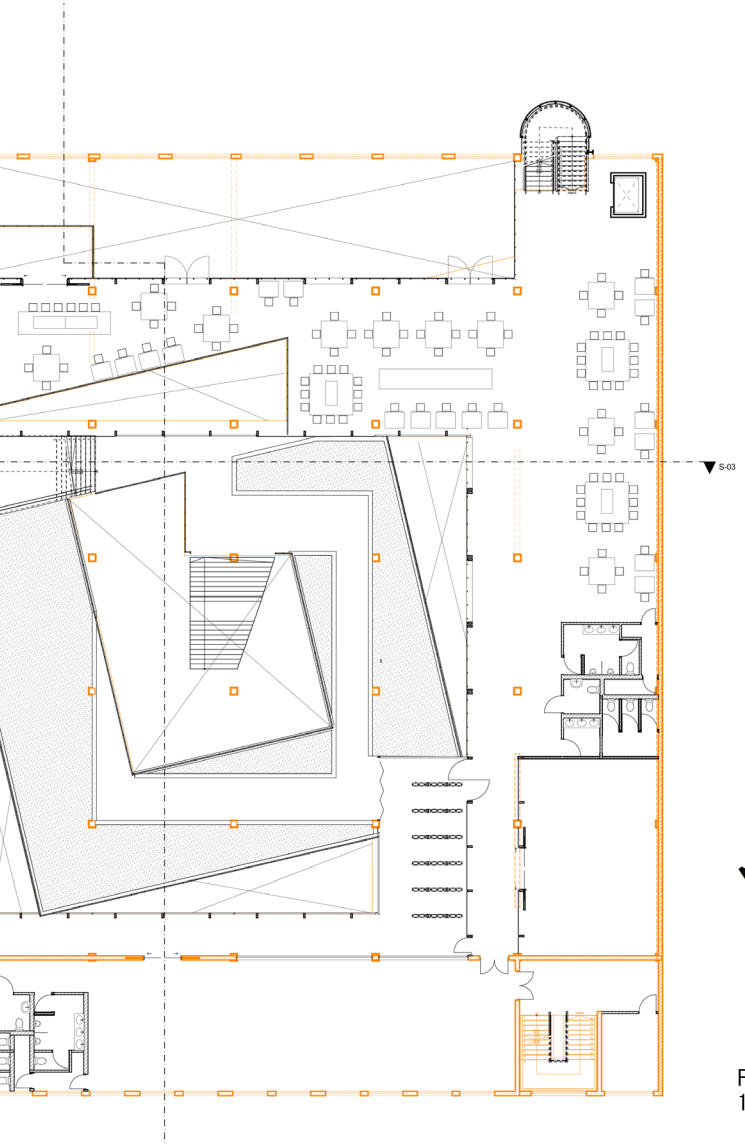


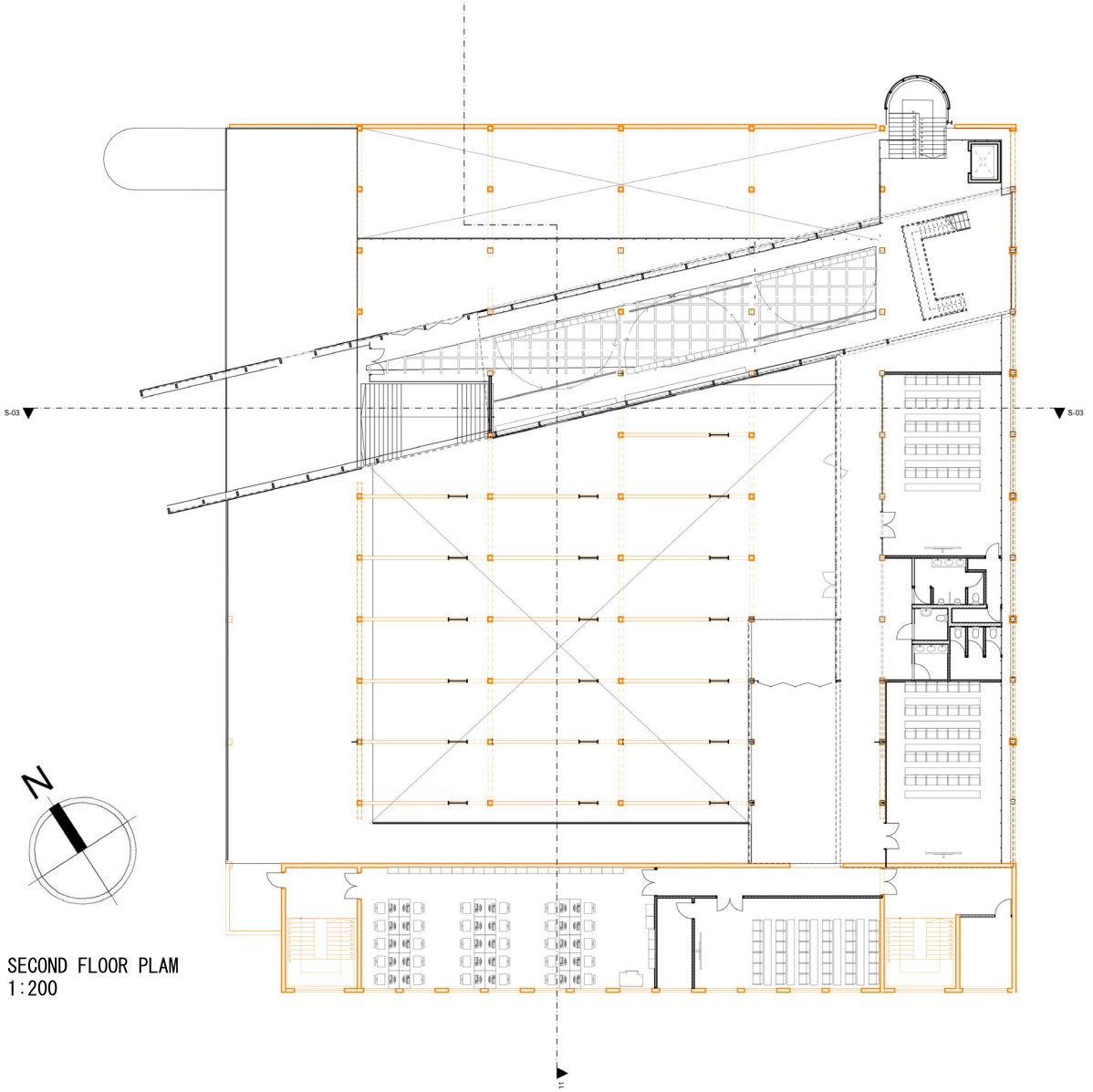
Fig. 227 & 228: Working model for development 4 (Author, 2021).

5.1.4 Development 4





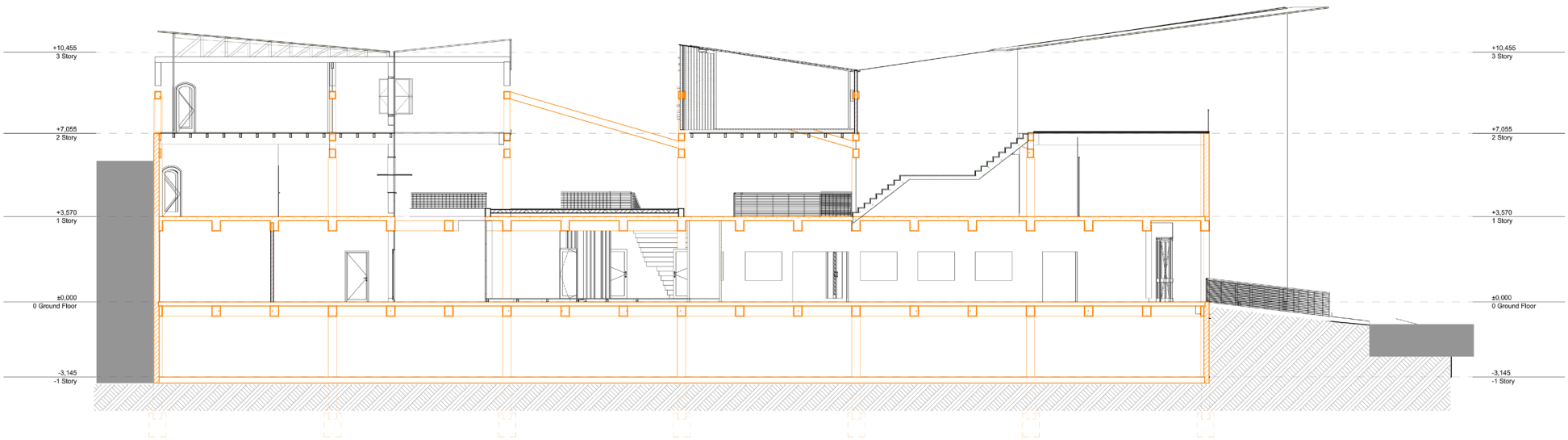
FIRST FLOOR PLAN
1:200



SECOND FLOOR PLAM
1:200

Fig. 229- 231: Ground floor, first floor and second floor plans for development 4 (Author, 2021).

5.1.4 Development 4



S-03 Building Section (6) 1:100

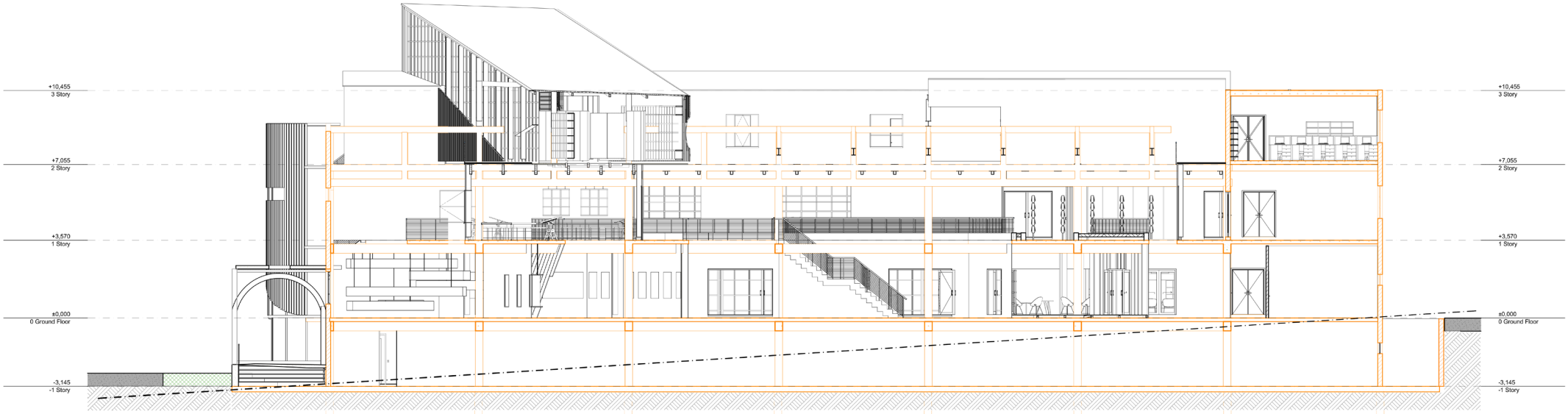


Fig. 232 & 233: Sections for development 4 (Author, 2021).

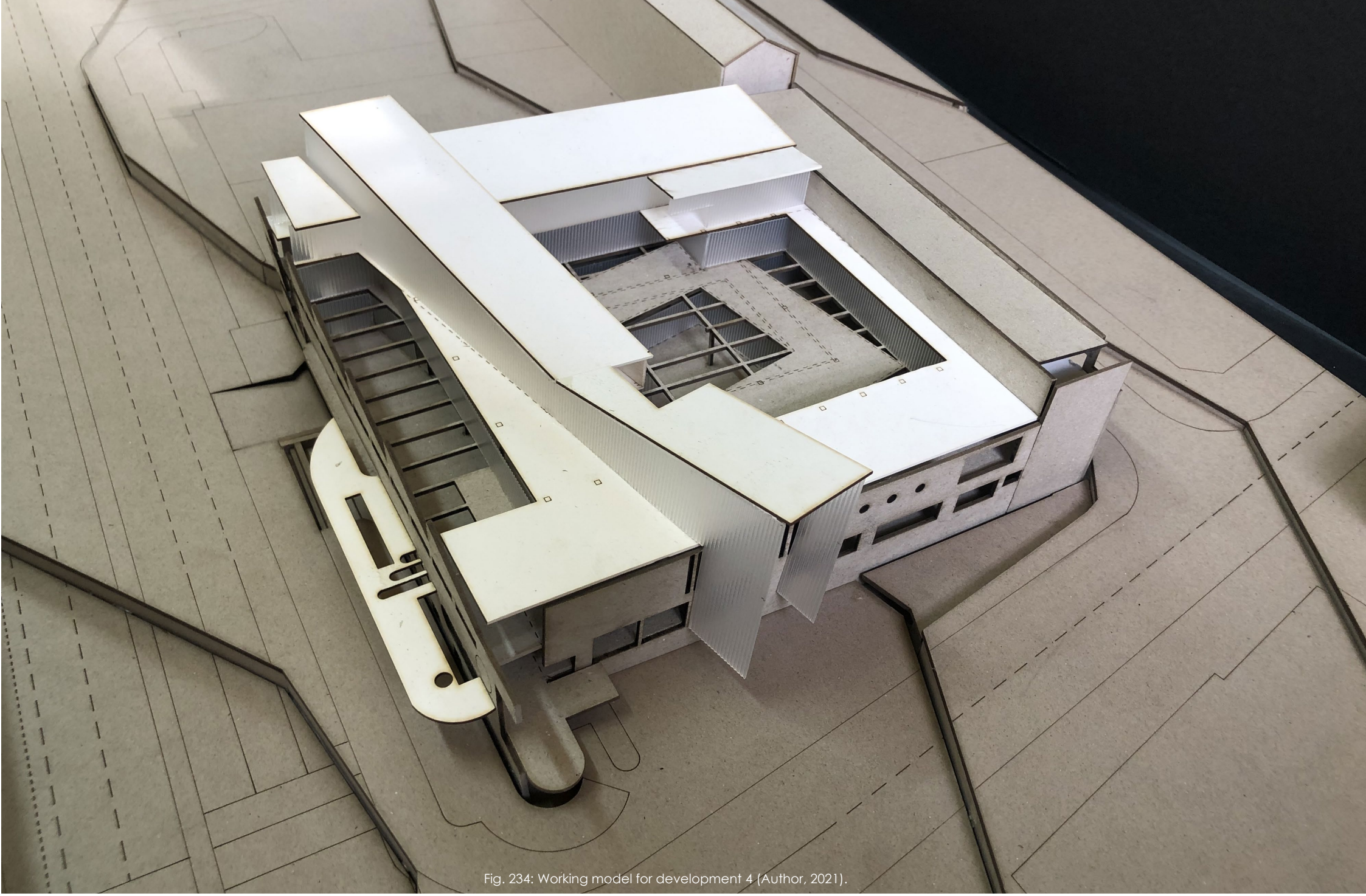


Fig. 234: Working model for development 4 (Author, 2021).

5.1.4 Development 4



Fig. 235: North elevation (Author, 2021).



Fig. 236: West elevation with main entrance (Author, 2021).



Fig. 237: Perspective from north east corner (Author, 2021).

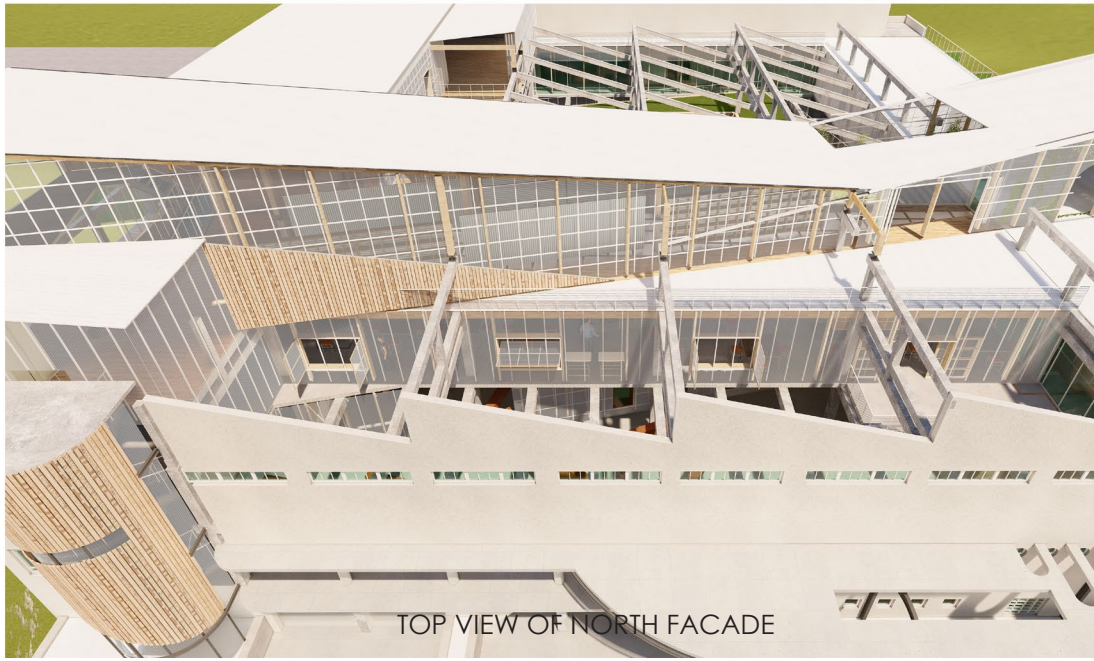
5.1.4 Development 4





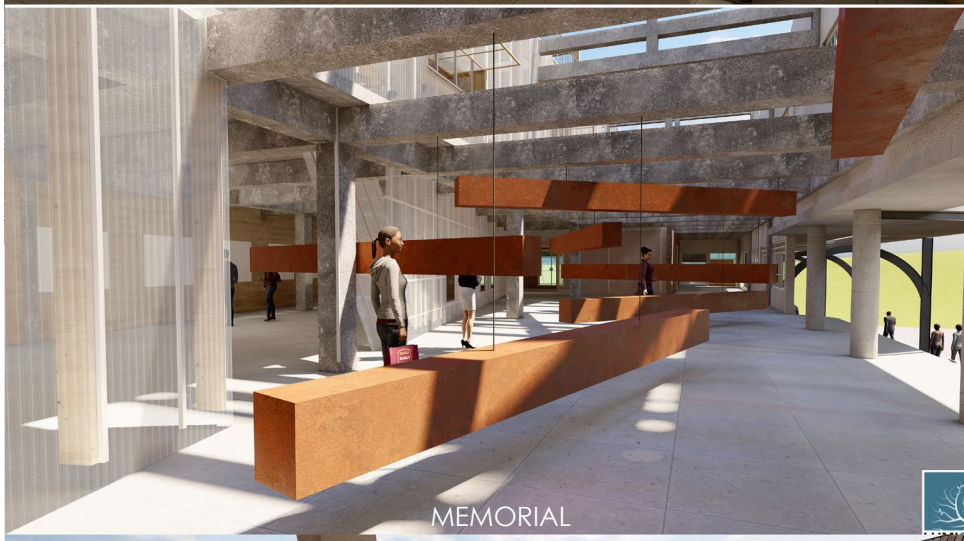
Fig. 238- 246: Renders showing various designed spaces and details of development 4 (Author, 2021).






LIBRARY TIMBER CLADDING DESIGN FOR
WEST WFACING WALL


MUSEUM EXHIBITION

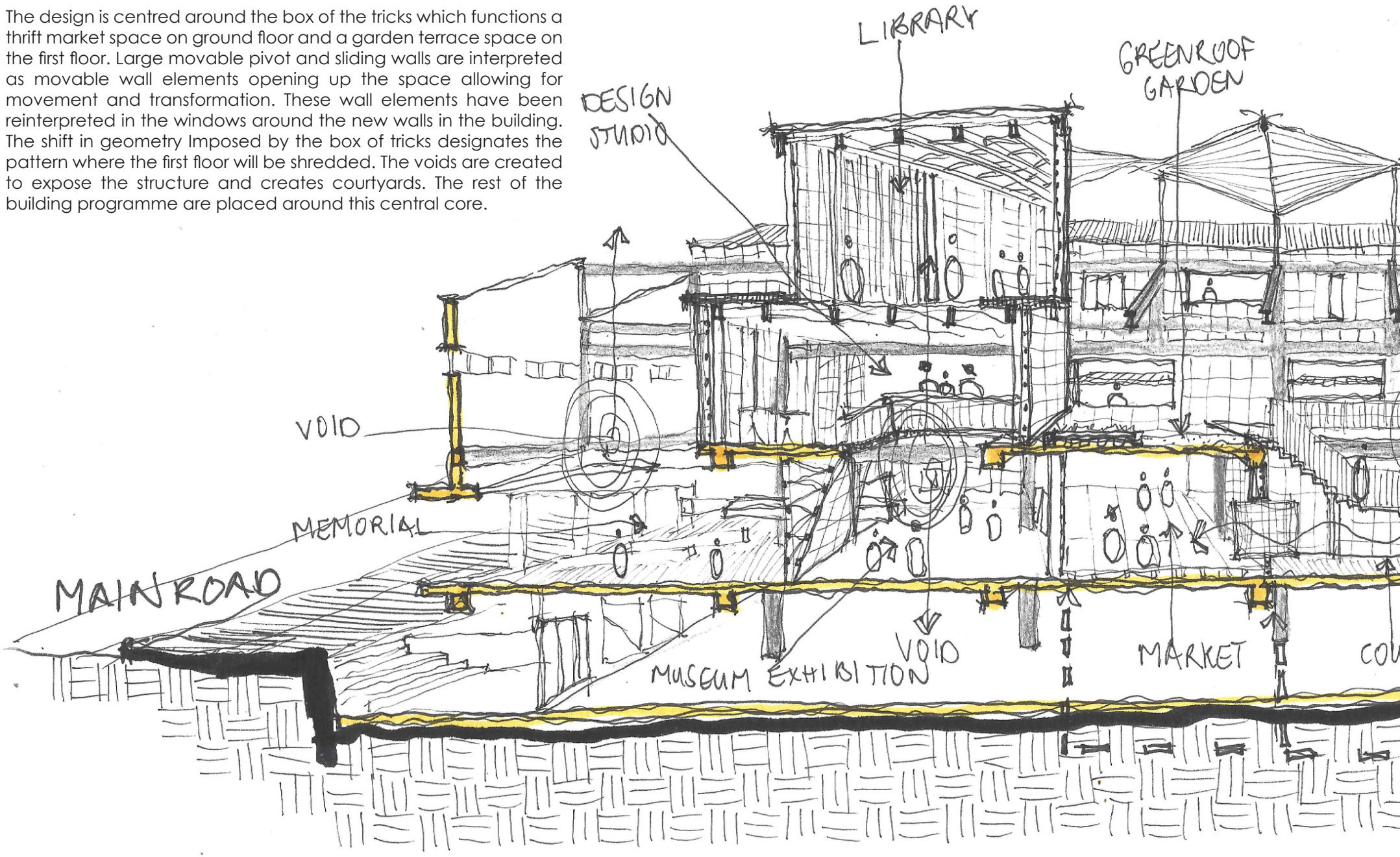

MEMORIAL


VOID ON FIRST FLOOR


DETAILING

5.2 Final design

The design is centred around the box of the tricks which functions a thrift market space on ground floor and a garden terrace space on the first floor. Large movable pivot and sliding walls are interpreted as movable wall elements opening up the space allowing for movement and transformation. These wall elements have been reinterpreted in the windows around the new walls in the building. The shift in geometry Imposed by the box of tricks designates the pattern where the first floor will be shredded. The voids are created to expose the structure and creates courtyards. The rest of the building programme are placed around this central core.



An exhibition route is incorporated to allow the visitors to experience an exhibition commemorated to the past as well as the current recycling facility. The knotted saw tooth canopy becomes a feature which covers the central space and also knits together the various parts of the programme. The knotted saw tooth is also interpreted with the roof of the library on the second floor. From street level it peaks above the existing roof line as a reinterpreted as an exploded saw tooth creating a layer of memory related to the old roof line.

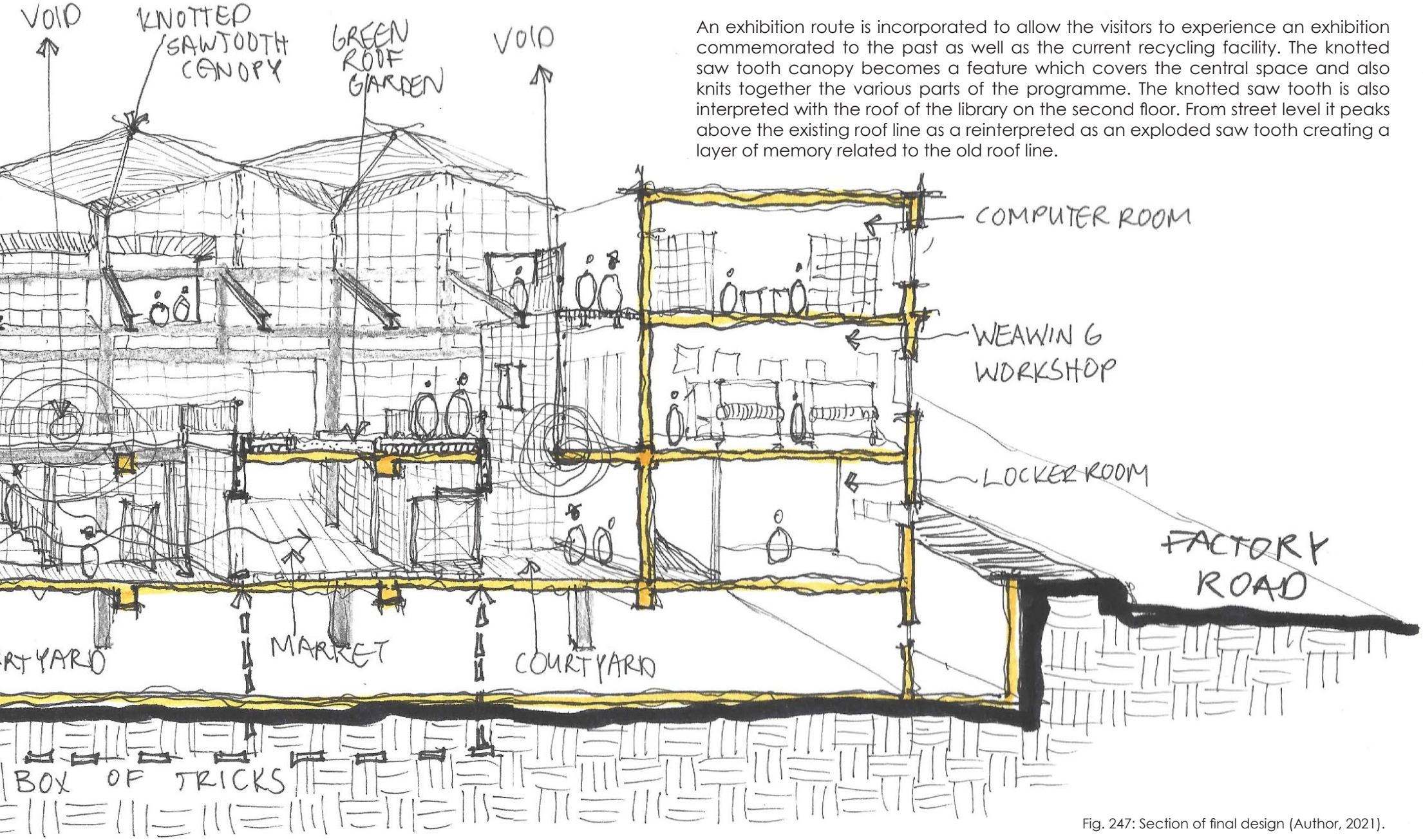


Fig. 247: Section of final design (Author, 2021).

5.2.1 Programme and spatial requirements

SQM	ACCOMMODATION LIST
	PUBLIC SPACES
328.3	MARKET SPACE
43.5	FABRIC SHOP
170.2	EXHIBITION MUSEUM
171	MEMORIAL SPACE
49.8	FABRIC LIBRARY
72.8	RESTUARANT DINING AREA
58.4	RESTUARANT KITCHEN AREA
320.6	TOTAL PUBLIC GATHERING SPACES
328.3	GARDEN ROOF
54.7	TOTAL ABLUTION SPACE
9	UTILITY STORAGE
41	RECEPTION
85.7	SERVICE YARD
166	BASEMENT PARKING
	RECYCLING FACILITY
96	SORTING ROOM
195.2	PROCESSING ROOM
69	TOTAL ABLUTION
23	TOTAL STRORAGE SPACE
73.6	BREAK AWAY SPACE
48.5	SERVICE YARD
110	STAFF LOCKER ROOM SPACE

SQM	ACCOMMODATION LIST
	TEXTILE DESIGN SCHOOL
16.8	RECEPTION
10.9	ADMINASTRATIVE OFFICE
59.5	STAFF OFFICES
24.7	STAFF BOARDROOM/ KITCHENETTE
88	TOTAL ABLUTION SPACE
148	WEAVING WORKSHOP
339.8	DESIGN STUDIO SPACE
180.3	LECTURE ROOMS
188	LIBRARY/ EXHIBITION SPACE
197	INDOOR BREAKAWAY SPACE
100	OUTDOOR BREAKAWAY SPACE
110	COMPUTER ROOM
13.9	UTILITY STORAGE
10.8	GENERAL STORAGE

The past building's spatial planning favoured certain user groups, therefore the new programme will be as equally divided as possible between the different floors.

The thrift market, museum exhibition, memorial, staff locker rooms, part of the recycling facility, food court, and textile design school's administrative functions are located on the ground floor. The ground floor also features a separate reception area for the school and an additional circulation staircase located at the north-east corner of the building.

A service lift assists the textile recycling facility in transporting goods from the ground to the first floor. An opening created in the west wing of the building features a service crane to move industrial machinery from the ground to the first floor.

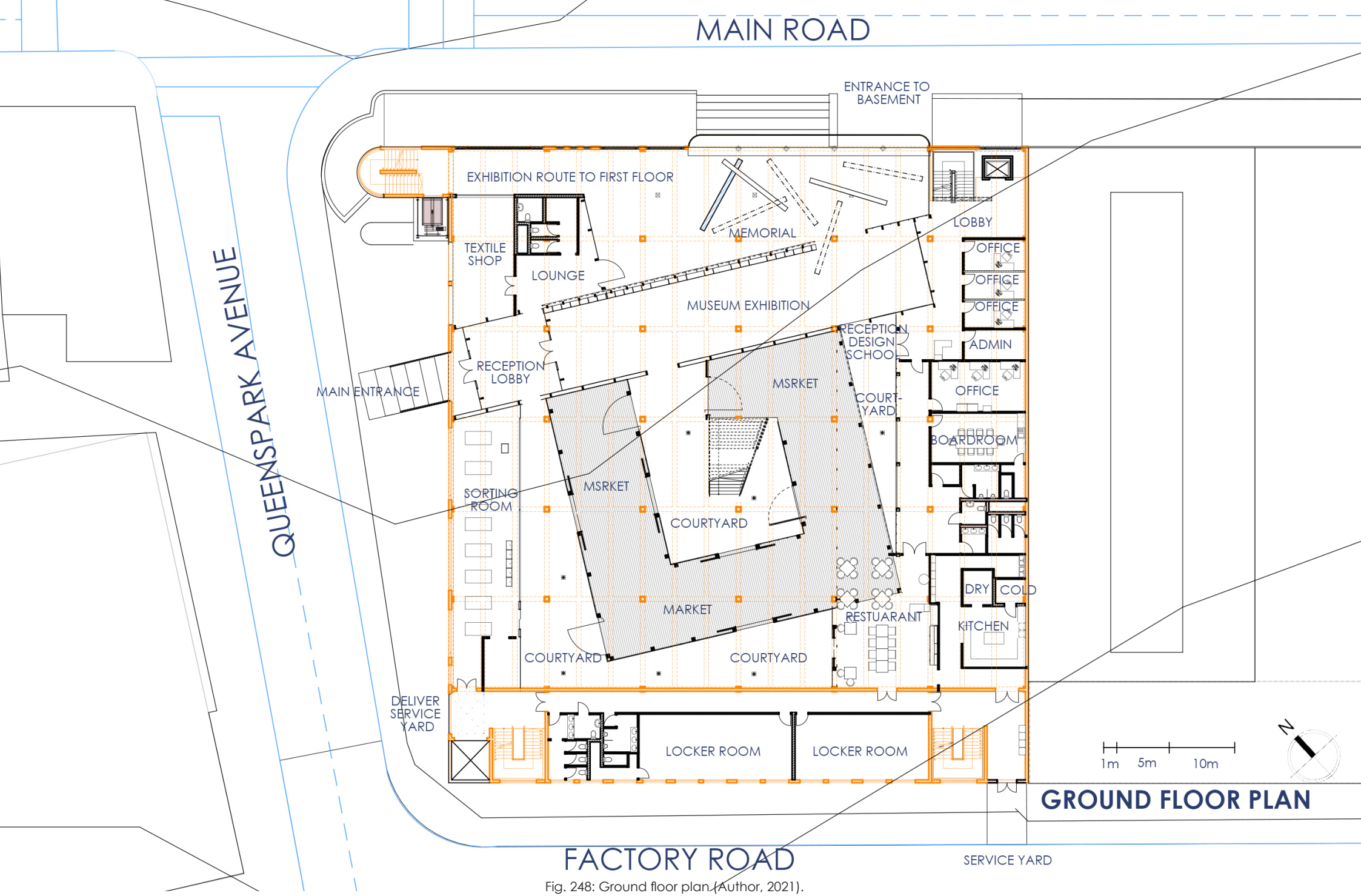
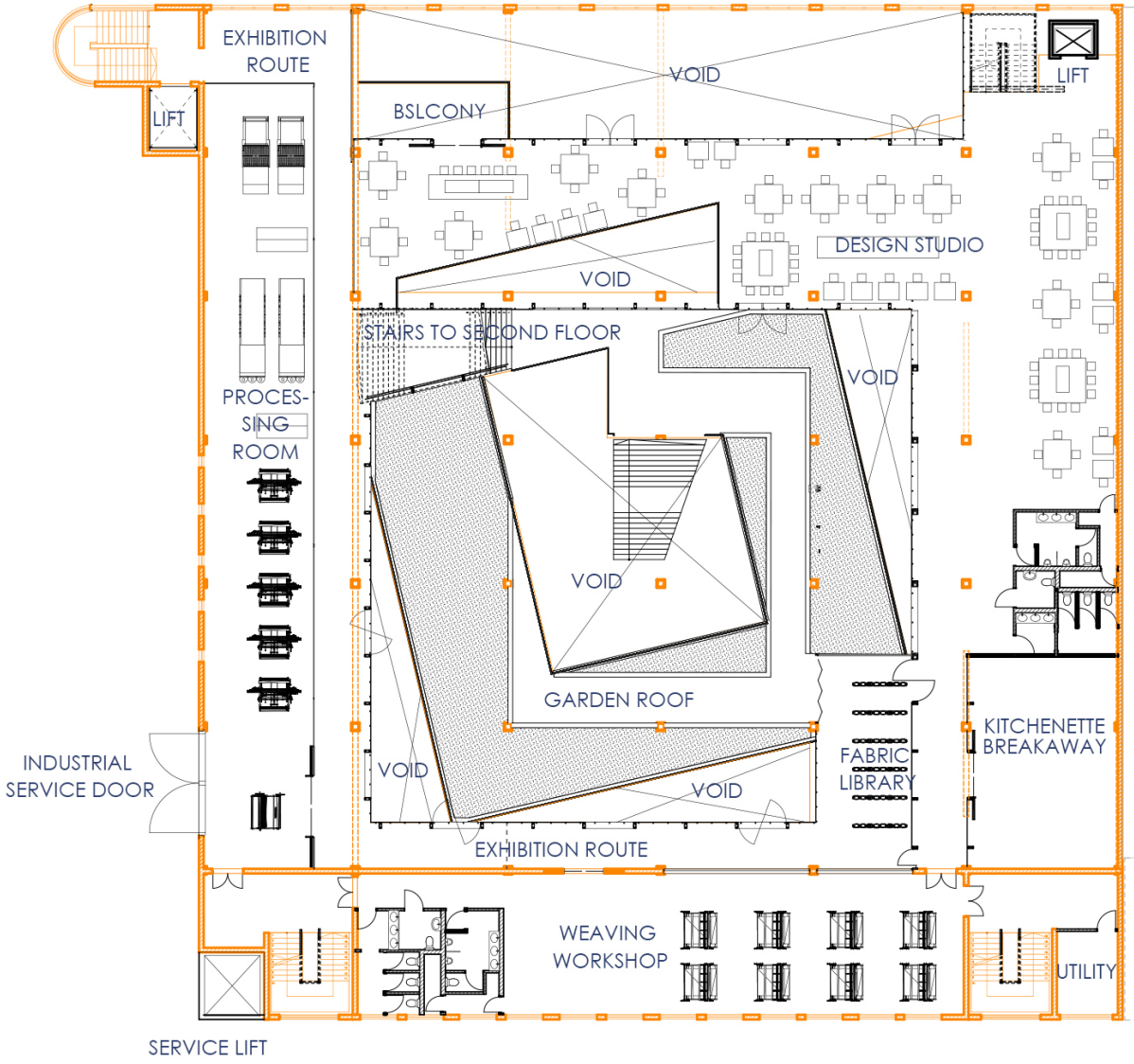


Fig. 248: Ground floor plan (Author, 2021).

5.2.1 Programme and spatial requirements



On the first floor, the programme consists of textile design studios, recycling facilities, a weaving workshop, and the green roof gathering space. The lecture rooms, computer rooms, multifunctional library and exhibition space are located on the second floor. In the south-east corner, a service yard is allocated to the restaurant for deliveries and garbage disposal.

Movable bookshelves in the library space rotate along a pivot point that is connected to the floor and roof structure. These moveable shelves transform the library space to become a multifunctional exhibition space.

Fig. 249: First floor plan (Author, 2021).

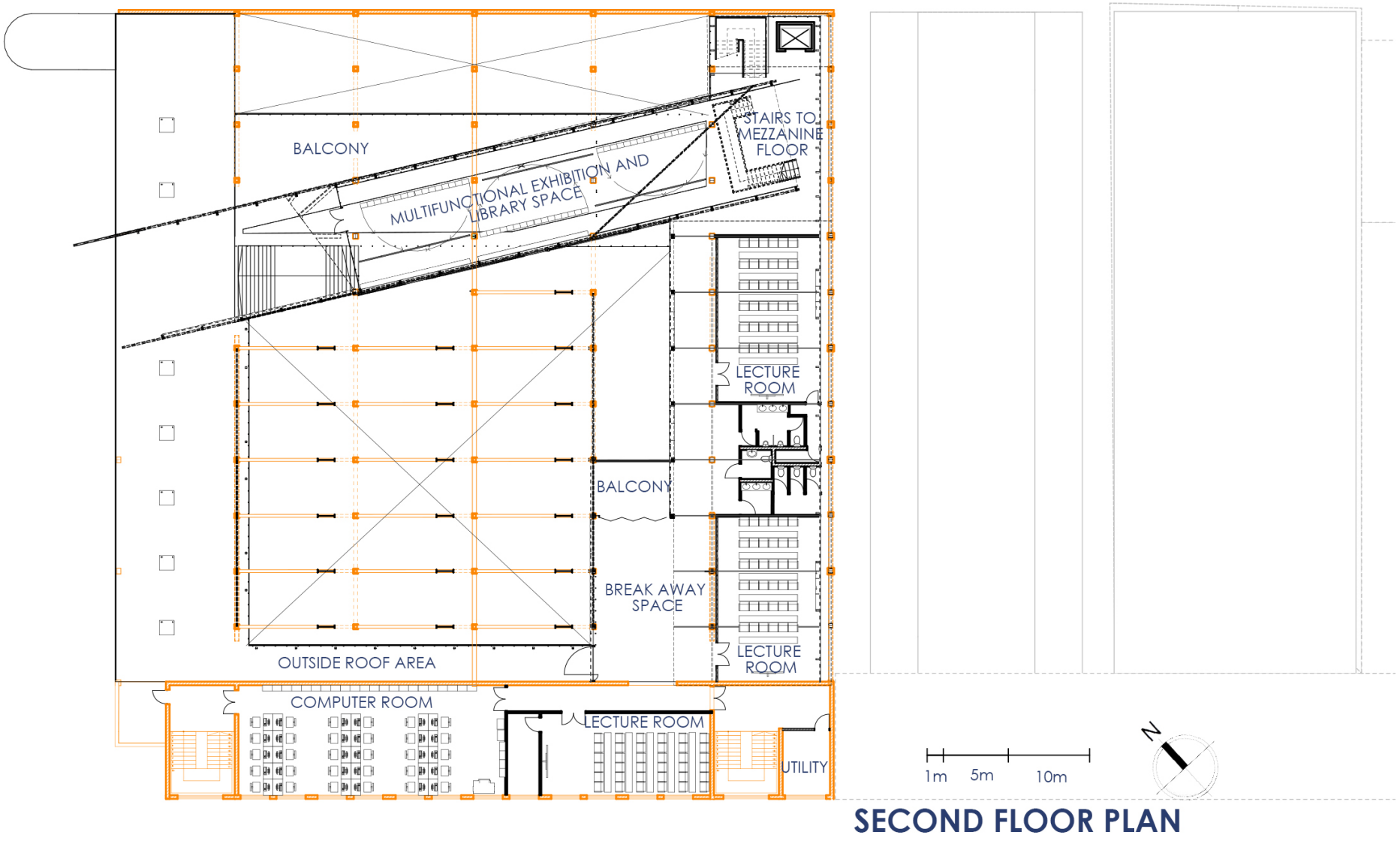
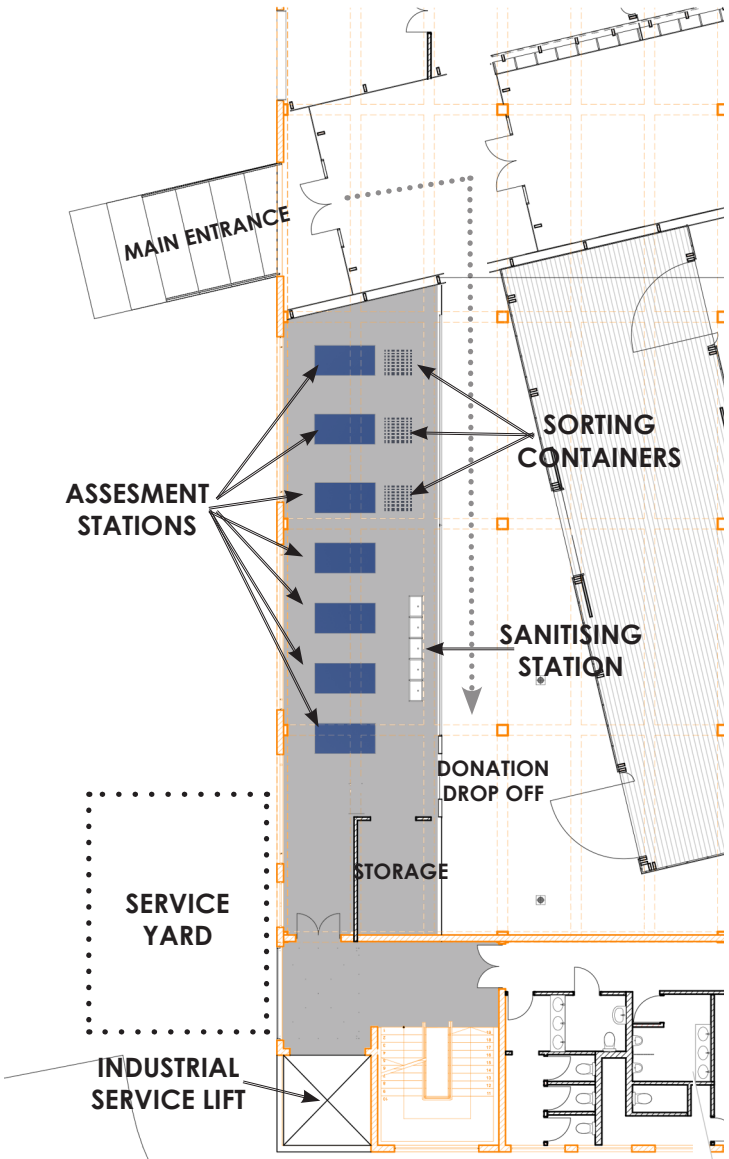


Fig. 250: Second floor plan (Author, 2021).

5.2.2 The recycling facility.

By locating the sorting room on ground floor allows the facility to collect donated materials and instantly start processing. In doing so eliminates the need to provide extra storage space at a separate collection point and saves time for moving large amounts of materials to this department. The storage room functions as a space where materials are assessed and investigated for any accessories that must be removed. Tables are provided where workers can make these assessments. The materials are then sorted by colour and condition and grouped in various containers. The containers have wheels and can easily be moved around the room. Cleaning equipment is included to sanitise and clean the materials.

Since the processing room is located on the first floor, a service lift is included at the end of the sorting progression line. On the first floor the processing room includes garneting machines (which shred the textiles to produce yarn fibres), carding machines (which combs the fibres to produce roving fibres) and spinning machines (which spins together fibres to produce thread). These mechanical machines are large and generate a lot of movement and noise. Therefore, the machines are placed on rubber platforms to absorb vibrations generated by the movement. By locating the recycling facility on the west wing further away from lecture rooms and admin functions creates multiple barriers to minimise noise throughout the rest of the building.



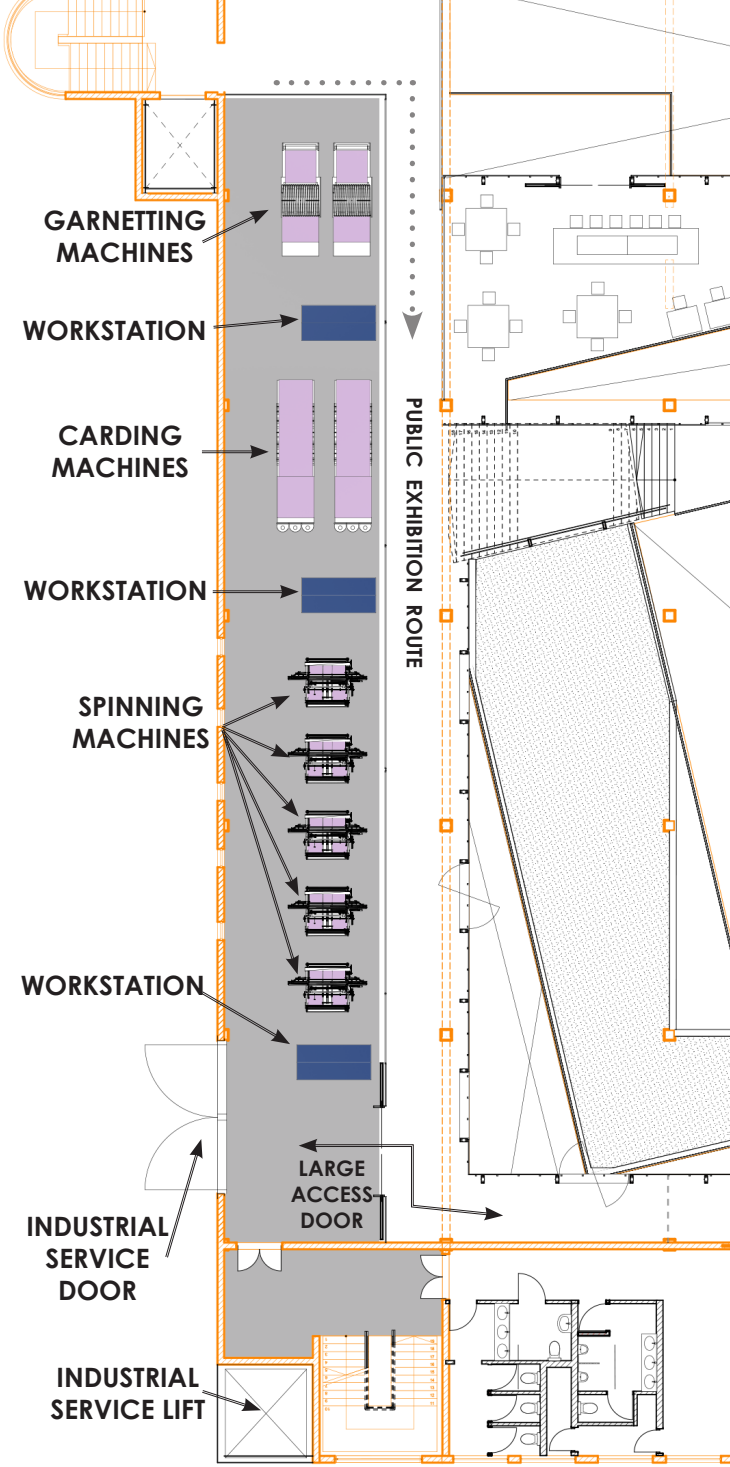


Fig. 251 & 252: On the left the recycling facility on ground floor and on the right first floor (Author, 2021)>

5.2.3 The experience when taking the visitors route

Before entering the building, one glimpses the exploded saw tooth roof – informing memory of the industrial area and creating anticipation of a connection between past, present and future.

Upon entering, the observer moves past the reception area and into the exhibition space. Here, the observer is confronted by the tilting wall, which creates a feeling of oppression and enclosing. As the observer moves through the space, the experience changes. A void in the first floor creates acoustic and visual connections to the design studio above. The view transcends the first floor to include the second floor library space, which, although it is only partially permeable, allows observation of movement within the space. The void exposes both the existing structure of the first floor and the new timber structure that supports the second floor. The user experiences a palimpsest of superimposed levels that creates a complex view of geometry, much like overlapping textile patterns or the complexities of the building's history. The void also creates a degree of relief from the feeling of oppression created by the tilted wall.

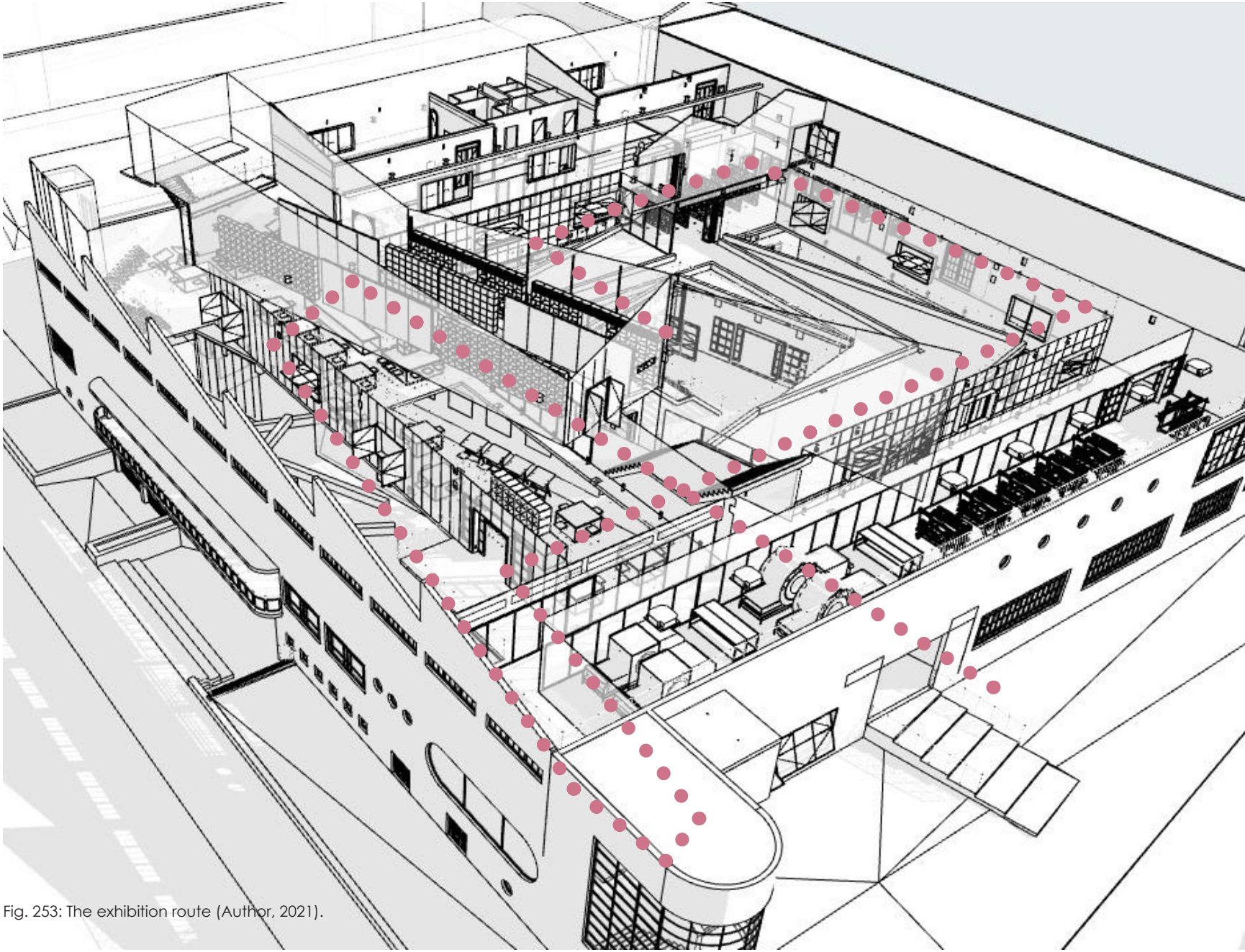
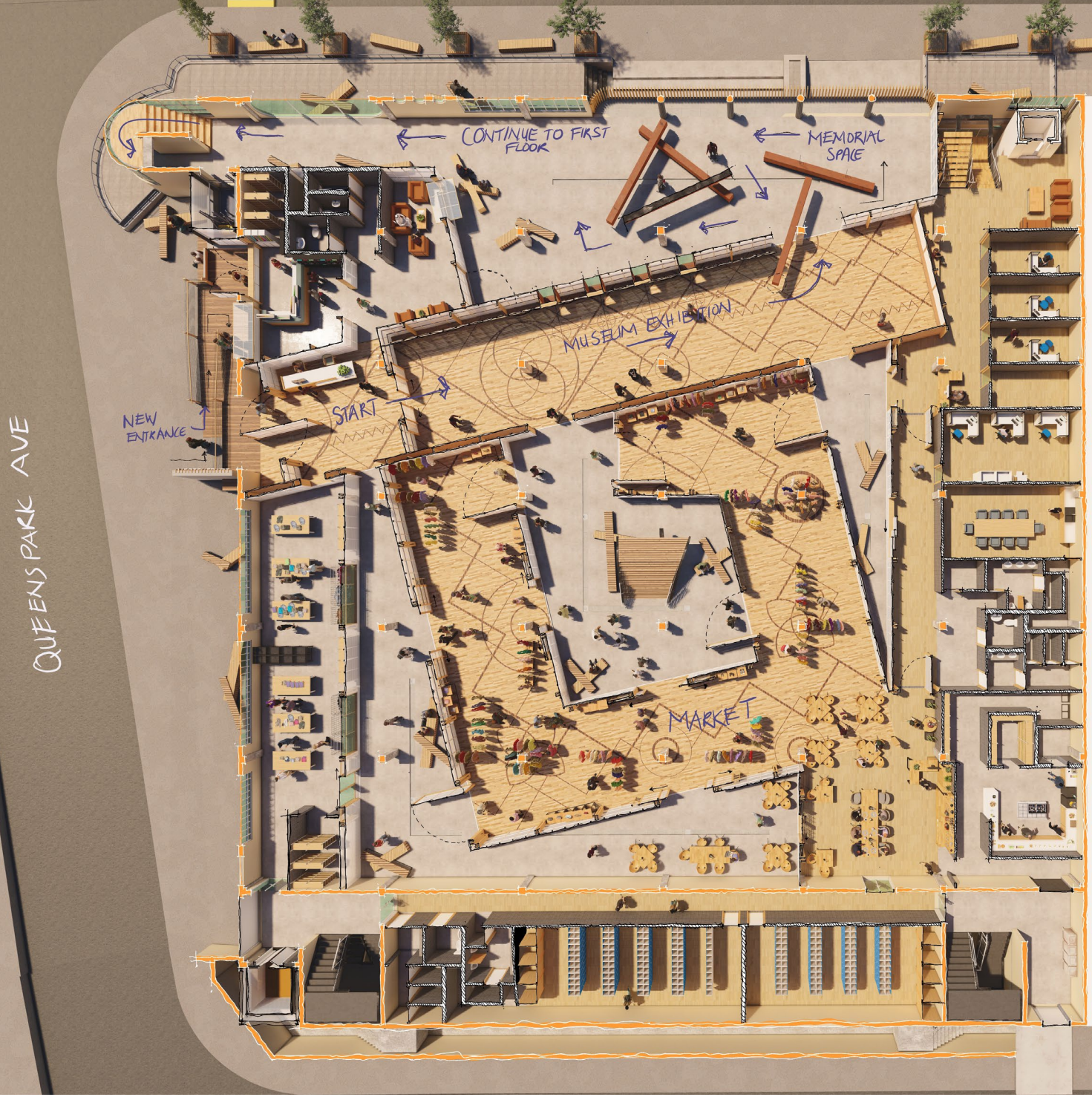


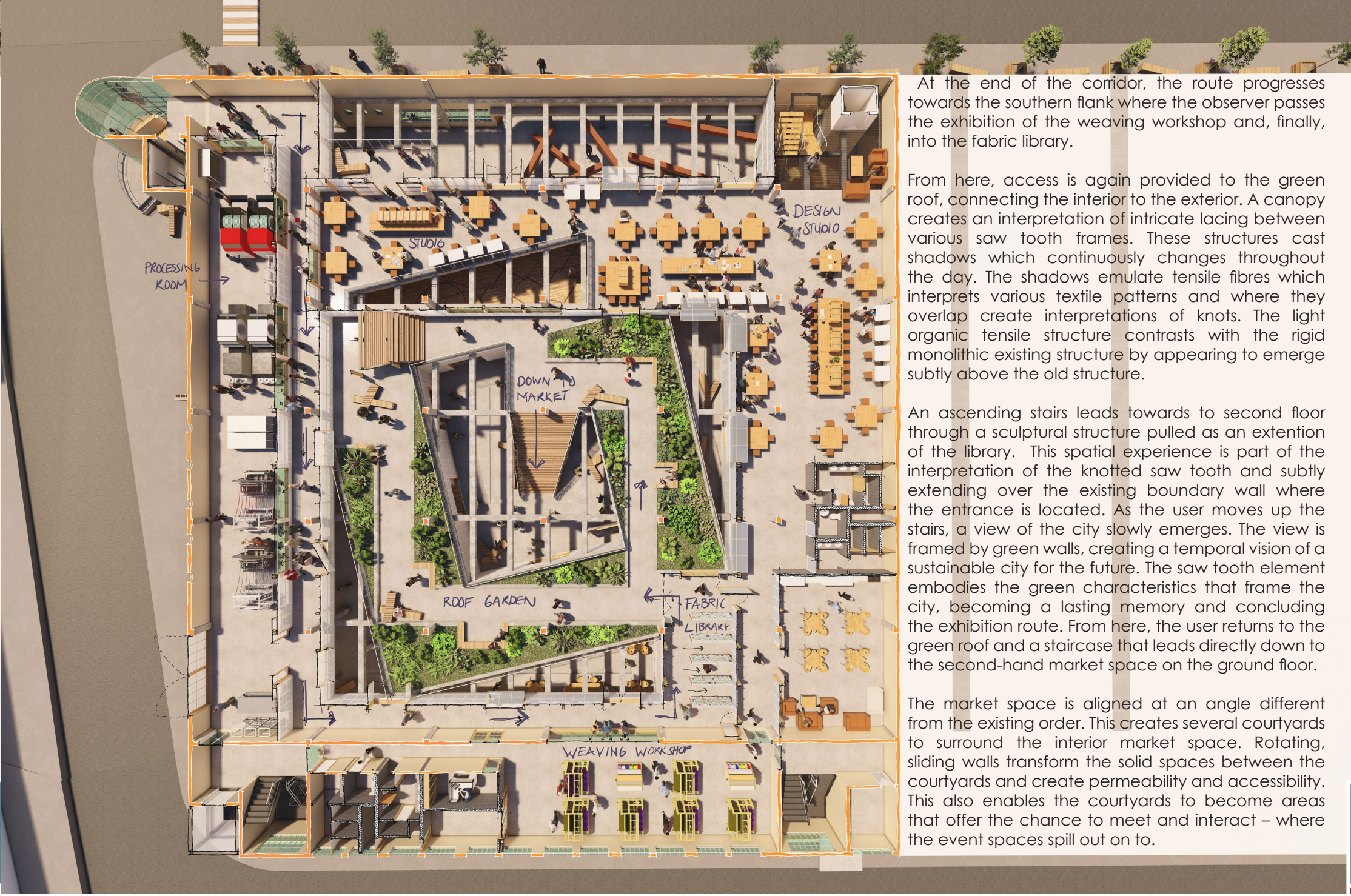
Fig. 253: The exhibition route (Author, 2021).



The history of the building is exhibited on the walls and four windows puncture the tilted wall. On these windows are inscriptions of the laws on segregation. The windows create a visual connection to the memorial space on the other side of the exhibition area. A peculiar beam pushes into the exhibition area, creating anticipation and articulating gravitation towards the memorial space. In the exhibition area, succession is created through movement and visual connections.

In the memorial space, the existing first floor is removed and the structure exposed. From the existing structure, beams of the same size but of contrasting material are suspended and on them the names of the factory workers engraved. They appear completely detached from the original, as if they embody the soul of the existing structure. The angles are shifted from the original order to suggest that they have broken free from apartheid constructs and are floating, as they no longer carry the weight of oppression. As time passes, the shadows of the existing are superimposed over the shadows of the memorial beams that shift throughout the day. The beams are strategically placed in terms of angles and height to create an abstract route to guide the observer through the exhibition.

Once through the exhibition area, the observer moves along the existing north façade and experiences views of Main Rd through the windows before ascending the semi-circular staircase to the first floor. Here the user progresses to the exhibition corridor of the recycling facility, passing a window through which one can look into the textile design studio. Along this exhibition route, the observer can witness the recycling process in action through permeable walls. An opening along the route provides a digression to the first floor green roof.



At the end of the corridor, the route progresses towards the southern flank where the observer passes the exhibition of the weaving workshop and, finally, into the fabric library.

From here, access is again provided to the green roof, connecting the interior to the exterior. A canopy creates an interpretation of intricate lacing between various saw tooth frames. These structures cast shadows which continuously changes throughout the day. The shadows emulate tensile fibres which interprets various textile patterns and where they overlap create interpretations of knots. The light organic tensile structure contrasts with the rigid monolithic existing structure by appearing to emerge subtly above the old structure.

An ascending stairs leads towards to second floor through a sculptural structure pulled as an extention of the library. This spatial experience is part of the interpretation of the knotted saw tooth and subtly extending over the existing boundary wall where the entrance is located. As the user moves up the stairs, a view of the city slowly emerges. The view is framed by green walls, creating a temporal vision of a sustainable city for the future. The saw tooth element embodies the green characteristics that frame the city, becoming a lasting memory and concluding the exhibition route. From here, the user returns to the green roof and a staircase that leads directly down to the second-hand market space on the ground floor.

The market space is aligned at an angle different from the existing order. This creates several courtyards to surround the interior market space. Rotating, sliding walls transform the solid spaces between the courtyards and create permeability and accessibility. This also enables the courtyards to become areas that offer the chance to meet and interact – where the event spaces spill out on to.

Conclusion

The story was written through a process of recycling the narrative. Firstly, the building was sorted by looking at the prefigured state of Rex Trueform and identifying aspects that constitute the genius loci to later become archetypes that embody the characters of the narrative. The second step, shredding, related to transforming the elements in order to develop the characters. This stage related to configuration, suggesting that the narrative is conceived by creating characters of the narrative through personifying elements based on events (emplotment), action (intelligibility) and utilising tropes (intertextuality). The final step, re-spinning, related to refiguration and the stage of reading the narrative. The architectural chronotope was the result of the connections between, time, plot and events, which constitute the experience of time and space. In other words, it is the written story and the atmosphere generated through the architectural approach. Reading the narrative of Rex Trueform was interpreted as a palimpsest of various layers of significance that create dialogues of meaning between the different characters. The palimpsest created new interpretations of the narrative, allowing the user to experience the meaning of the narrative in various ways.

The collection of events, actions and things that created the archetypes and formation of spaces in the artifact, has made care and sustenance part of Rex Trueform's identity. The place thus becomes a condensation of overlapping times, stories and memories.

Part 3- structural philosophy (CHAPTER 6)

6.1 CONSeption

6.2 The act of Sorting – assessing Rex Trueform

6.3 The act of Shredding- transforming Rex Trueform

6.4 Adding new fibres

6.5 The act of Re-spinning - connecting old and new

6.6 Textile properties

Introduction

Part 2 of this study explores the conceptual approach of sorting, shredding and re-spinning through the theoretical lens of narrative theory. Characters were developed to manifest the design approach, which created a narrative experience of the significance of the project. Part 3 is the technical application that reflects on how the theoretical premise as applied to the conceptual approach can be applied to physical construction.

The concept of the recycling process was used as intangible ideas: sorting as identification of elements, shredding as transformation of elements, and re-spinning as connection through dialogue between elements. The physical act of the recycling process can also be used in a tangible way to interpret the process of constructing these characters from start to finish as the structural philosophy.

Each of the characters developed in the theoretical design approach led to the creation of a design element. Recycling Rex Trueform would physically experience the steps in the recycling process applied to construction. During the design development it was established that the existing walls and structural system will be retained as part of sorting the building and a new order will be imposed as the result of the box of tricks.The voids created through the concept of 'celebrating voids' are the result of partially removing the floor structure and can be linked to the act of shredding the existing building. The box of tricks introduces a new order and with that a new structural system which can be interpreted as the part of the process where new fibres are added. The knotted saw tooth creates a new roof structure through tensile connecting structures which also adds new structure to the existing as fibres. Integrating old and new fibres happens through adding solid elements fixed to structural elements relates to the act of re-spinning by tying together old and new metaphorically through meaning and spatially through tectonics.

Therefore, the act of sorting influences the technical synthesis by identifying what will be retained from the Rex Trueform building, and also what is needed in terms of the shift in geometry. The act of shredding influences the technical approach to indicate where the Rex Trueform building will be transformed by removing certain parts of the first floor. The new structural system suggests the new fibres to be added responding to the needs identified during sorting. The act of re-spinning influences the technical approach through enclosing elements specifically as a means to bring together old and new fibres.

After the building has been physically sorted, shredded and respun, the addition of the new spaces weaves together a "recycled Rex Trueform" as a new piece of fabric. This new fabric has specific properties which which can be related to the characteristic functioning of a building.

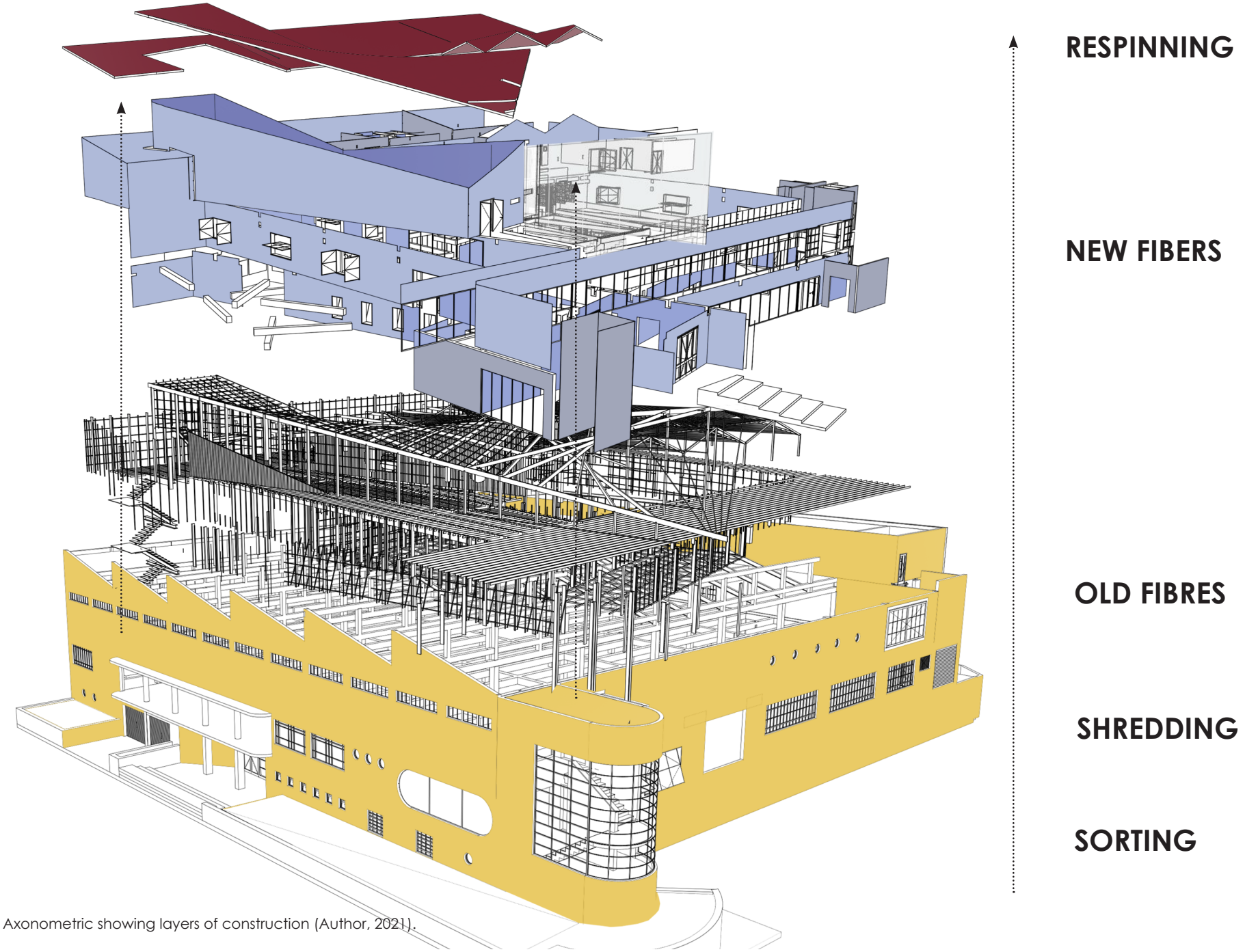


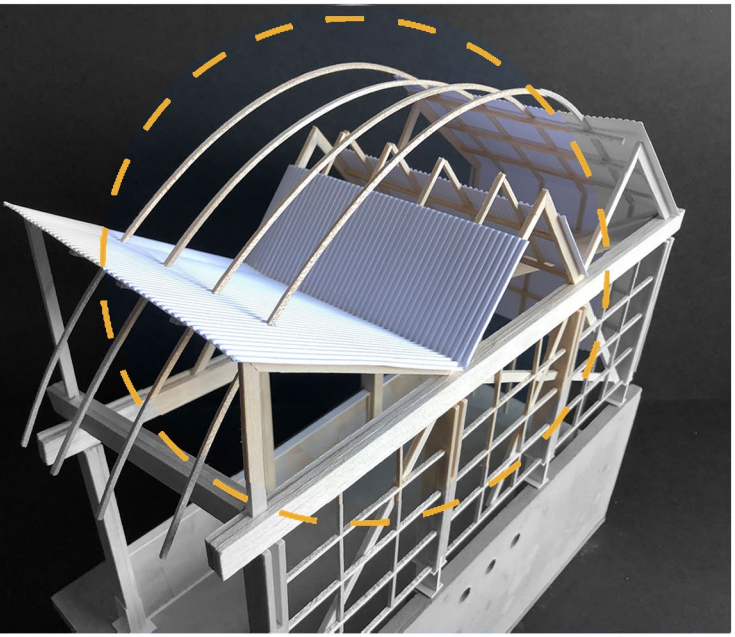
Fig. 254: Axonometric showing layers of construction (Author, 2021).

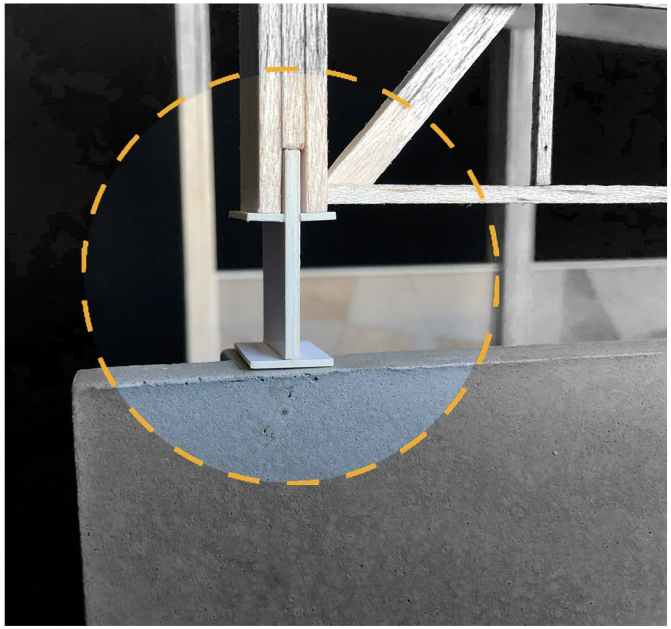
6.1 CONSeption





The word CONSeption is a wordplay on the idea of a construction conceptual exploration. The model focuses on the structural application and relationship between the old and the new. The vertical connection between old and new arises at points where the old structure ends and the new begins. The old structure thus remains the support for the new load-bearing structural elements. As seen in the model (figure x), these connection points are articulated with steel to emphasise the distinction between old and new. The roof structure is a tectonic element that emulates an abstraction of the existing surrounding roofscapes in the semi-industrial area, indicating that the new is born/ recycled out of the old.





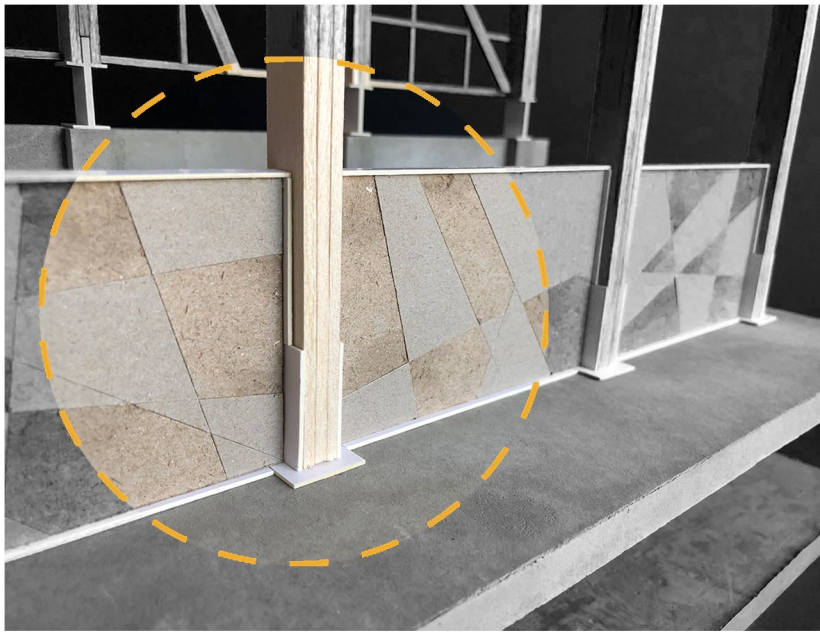


Fig. 255-259: Conception model (Author, 2021).

6.1 CONSeption

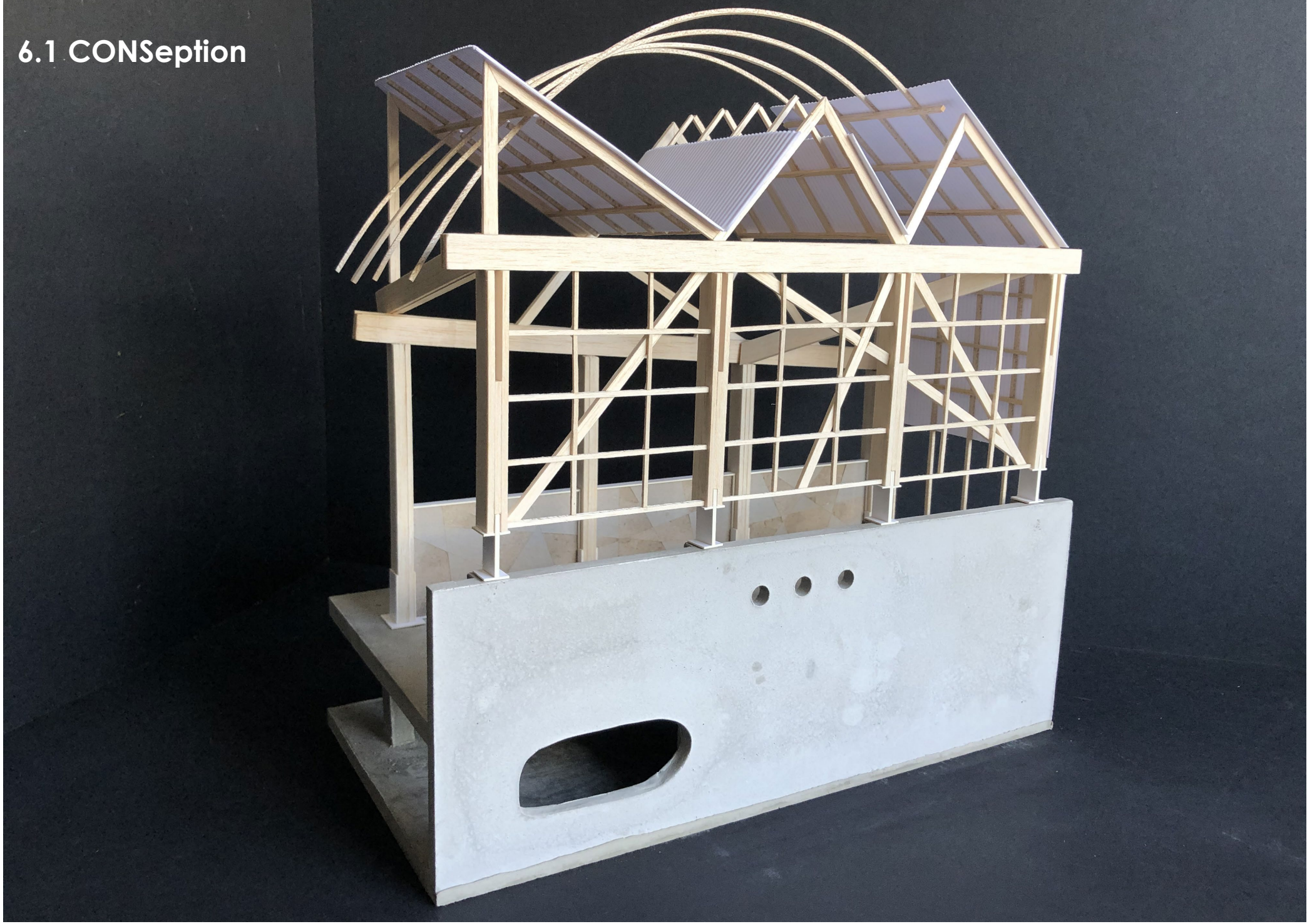




Fig. 260 & 261: Conception model (Author, 2021).

6.2 The act of Sorting – assessing Rex Trueform

6.2.1 The valuable

By expanding on the existing instead of building a new facility, the existing is reused – a sustainable approach to building. Reuse of the existing preserves the historical structure and its urban significance. The approach taken is to preserve the exterior walls, unchanged, and apply changes only to the interior of the building. The existing structure, in terms of load-bearing columns and beams, is also preserved to retain the structural stability of the building. To permit vertical circulation, only beams that do not affect structural stability are demolished.

6.2.2 What it lacks

The structural approach indicates how the theoretical grounding of the project influenced it in terms of materials, construction methods, and connections between old and new. As a result of the characters' relation to separation and inclusivity, a change in geometry creates a new spatial organisation, as the reasoning to what the building needs in terms of its assessment.

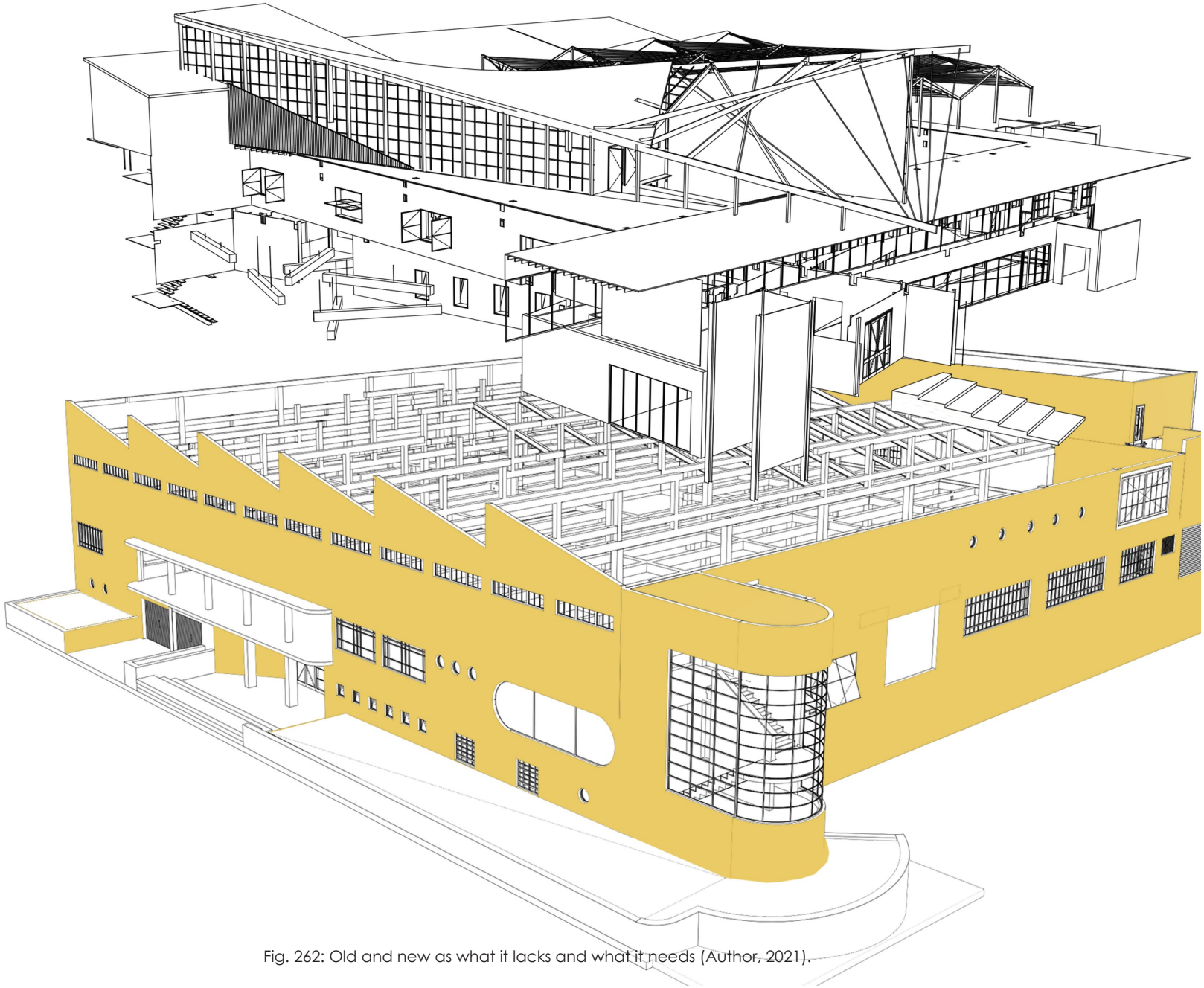


Fig. 262: Old and new as what it lacks and what it needs (Author, 2021).

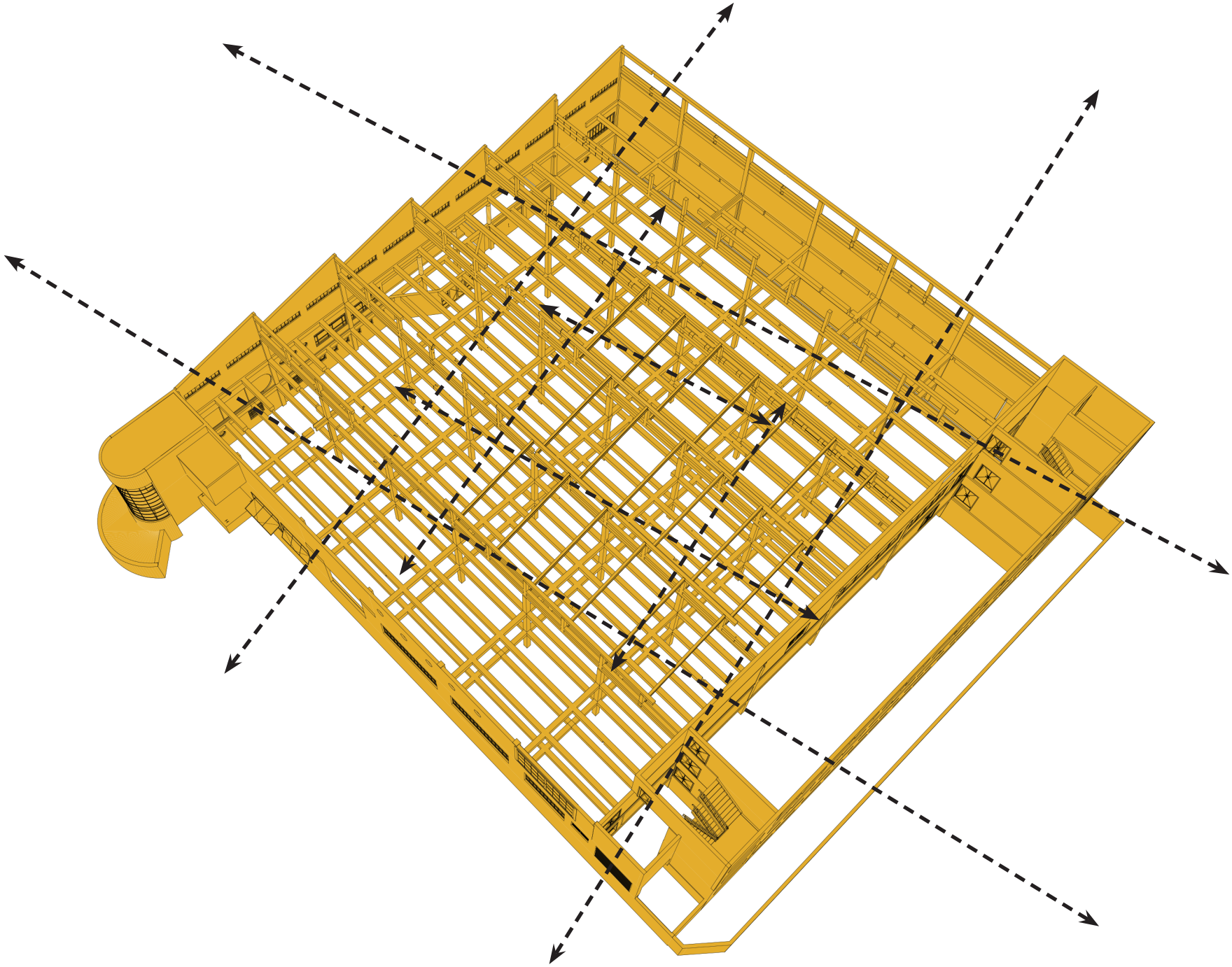


Fig. 263: Sorting technical approach (Author, 2021).

6.3 The act of Shredding- transforming Rex Trueform

6.3.1 Voids

The second character, relating to the company and the workers, resulted in the strategy to partly remove floor area to celebrate the existing structure. The removal of the floor spaces was influenced by the new geometry imposed on the ground floor, which creates voids that result in the various courtyard spaces in the building.

6.3.2 Drainage

The courtyard spaces allow light to reach the lower parts of the building. However, these spaces create a challenge to control water accumulation from rain. Water is thus removed through a drainage system that collects water on the ground floor and traverses the floor into the basement. Here the storm water pipes run along the upper ceiling, below the columns, towards the nearest drains outside the building.

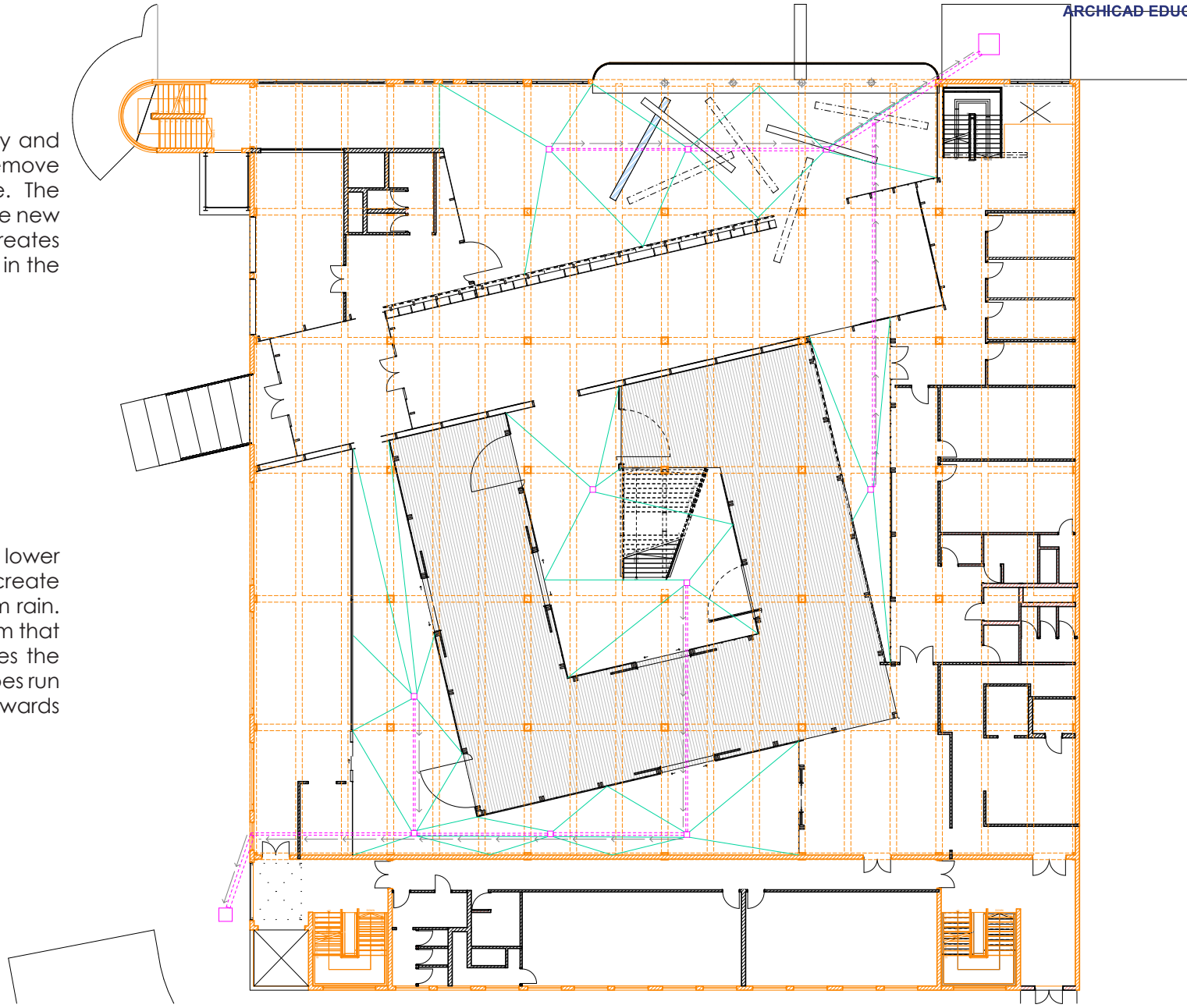


Fig. 264: Drainage plan (Author, 2021).

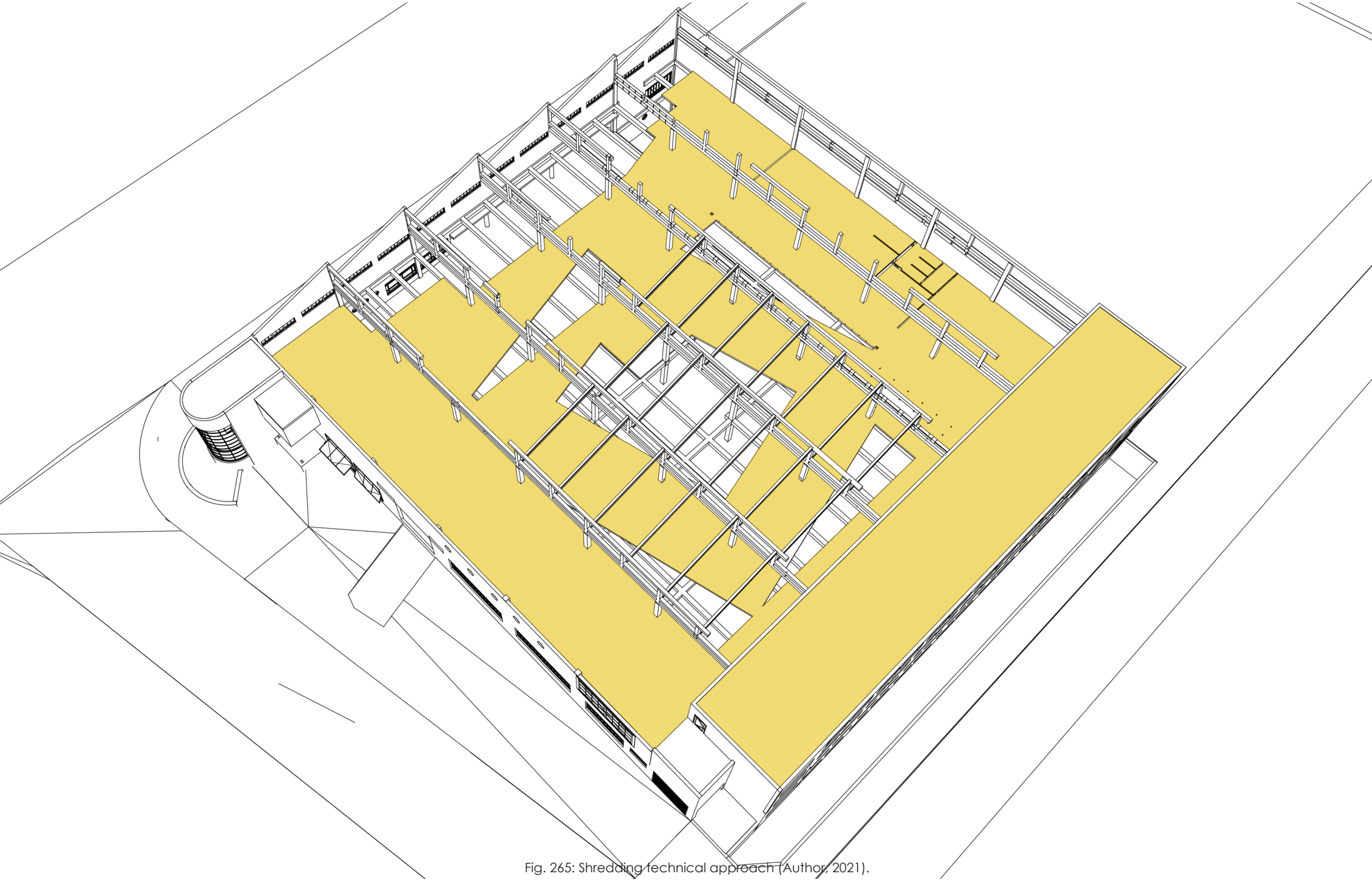


Fig. 265: Shredding technical approach (Author, 2021).

6.4. Adding new fibres

6.4.1 New structure

A new secondary structure is added to mainly create a supporting frame for the new enclosing walls. Timber is used to contrast with the existing concrete structure and provide a warm sense of materiality which clearly distinguishes old from new. The tectonic moment between old and new structure is articulated with steel sections and brackets.

On the ground and first floors, the new structural columns function as secondary non-load-bearing columns to support the new polycarbonate walls as a frame. The structure is placed in a way that does not obstruct the old columns but instead frames the old, creating a visual layering of old and new. New columns are connected to the existing floor structure through articulated detailing, which clearly distinguishes old from new. Sections and brackets are fixed to existing floors and columns to support the new columns.

The structure supporting the planned additional floor on the second floor is supported by the existing beams that support the old roof. New laminated timber beams are fixed to the existing concrete beams by placing two steel sleeves around each existing beam and welding a section to the sleeve to support the new beam. The load-bearing beams are braced with smaller timber beams, which support the new timber floor decking.

6.4.2 Canopy

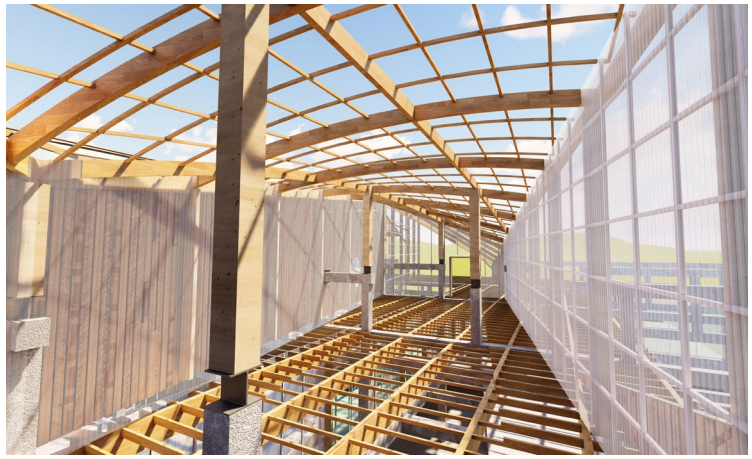
The second approach was to create a parametric lattice structure, which symbolises the weaving of fibres as tensile elements, to connect the saw tooth-like frames from opposite directions. This new canopy creates partial shading over the central space through ivy vines growing on its frame. It also offers a degree of protection from wind.

6.4.3 Library roof

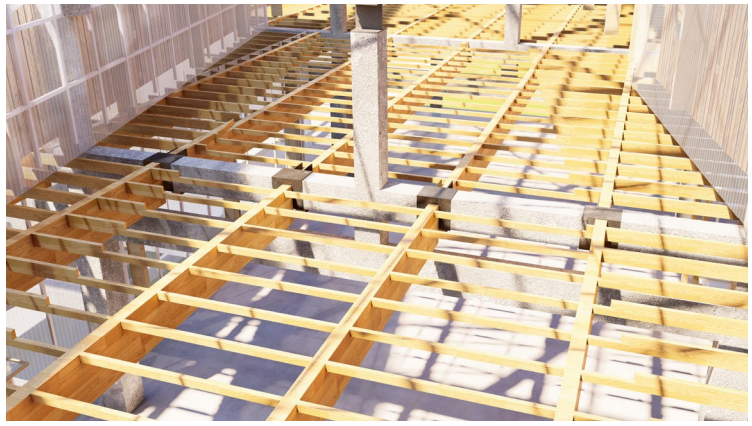
The character of the parametric canopy structure is transferred to the roof structure of the library space. The structure is left exposed on the interior to create a visual interpretation of weaved textiles as a lattice design. It becomes a dynamic element that transforms from one end to the next to form an organic structure that interprets the textile industry.
The various roof structures, although different in function, were all designed around the same strategy: reimagining the old industrial roof in terms of textile recycling with nature at its core.



canopy



library



new floor

Fig. 266- 268: New structure (Author, 2021).

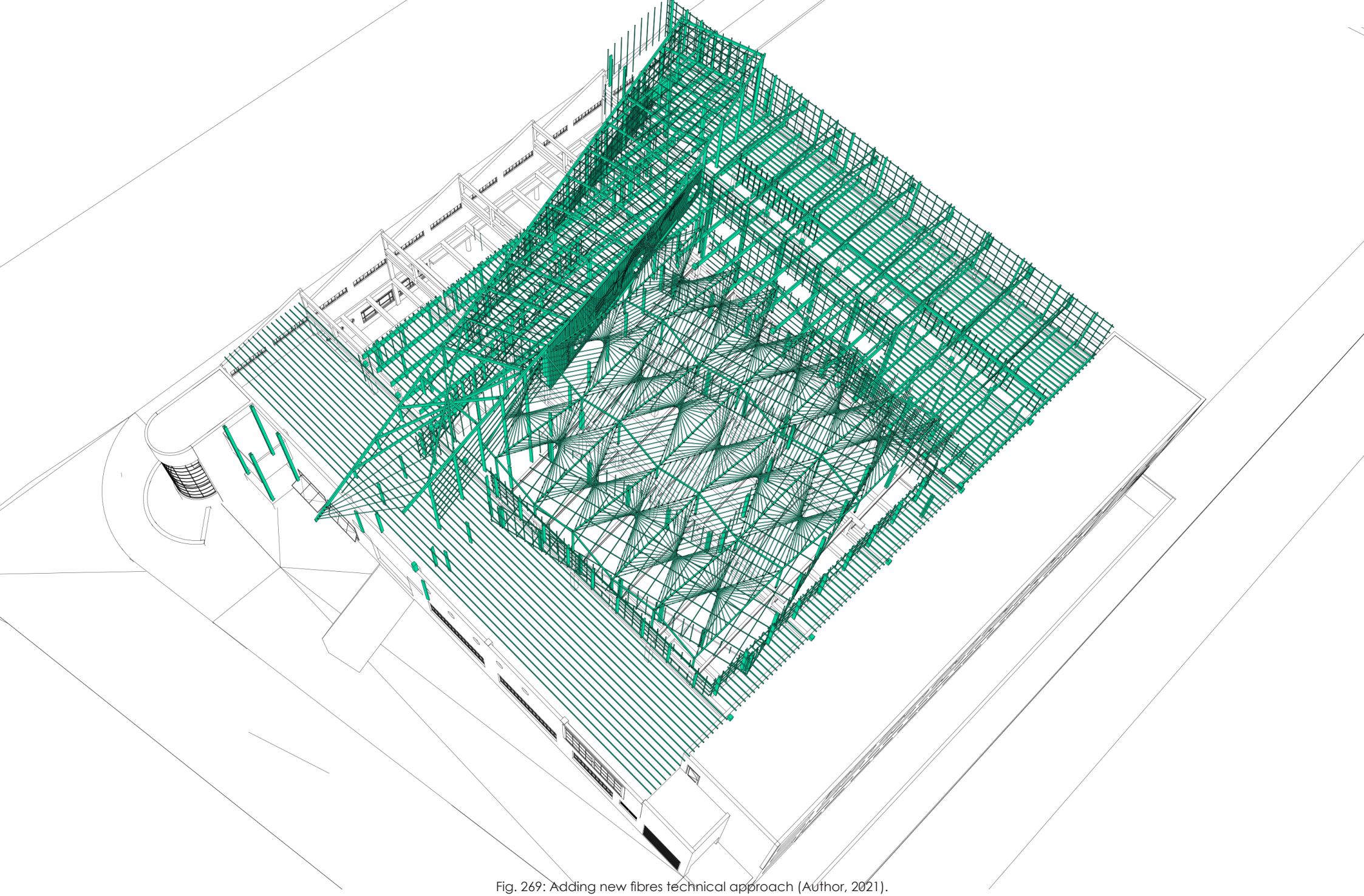
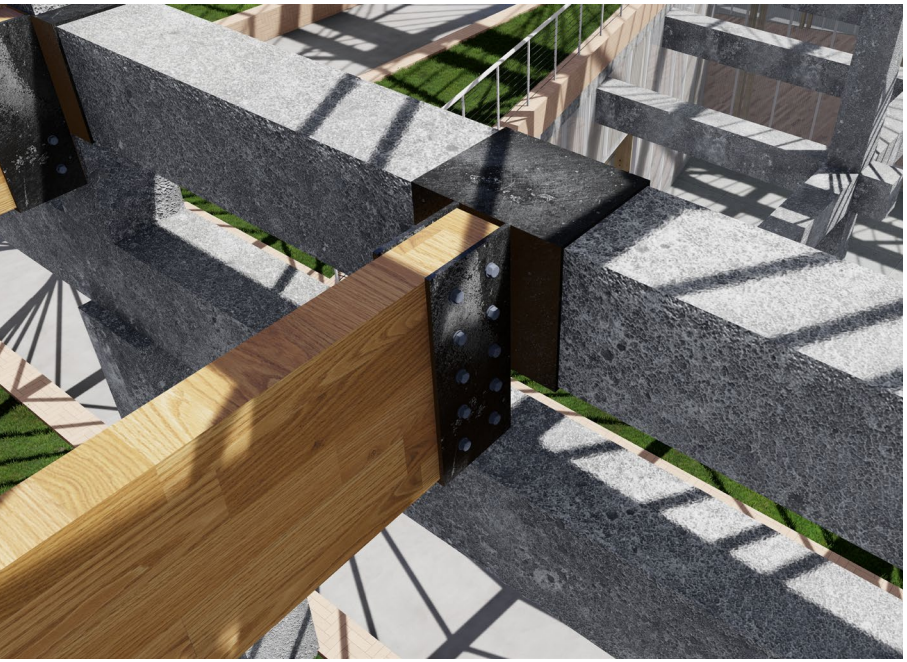


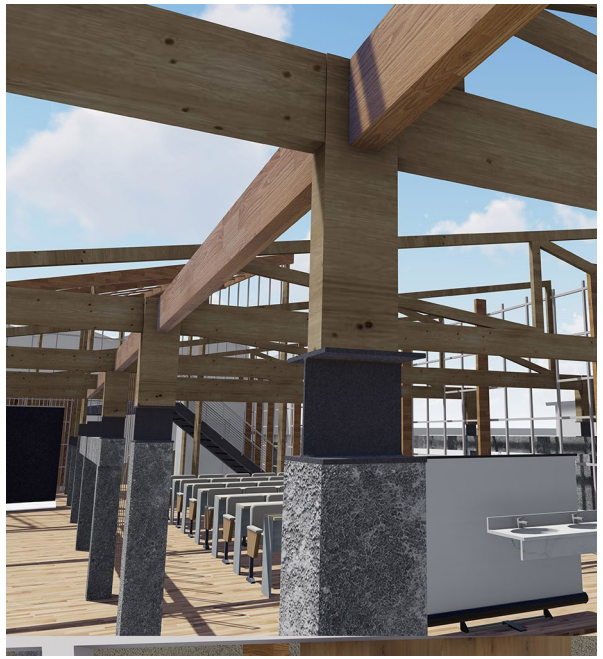
Fig. 269: Adding new fibres technical approach (Author, 2021).

6.4. Adding new fibres









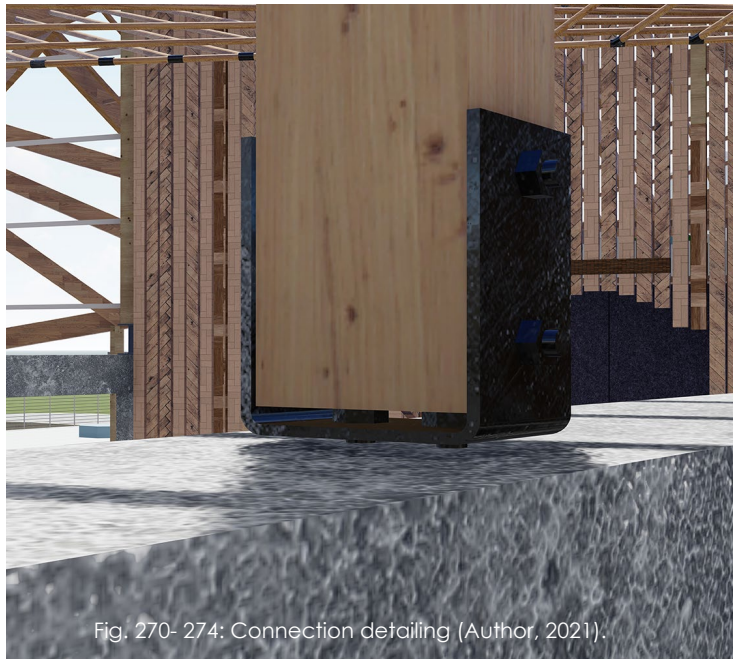


Fig. 270- 274: Connection detailing (Author, 2021).

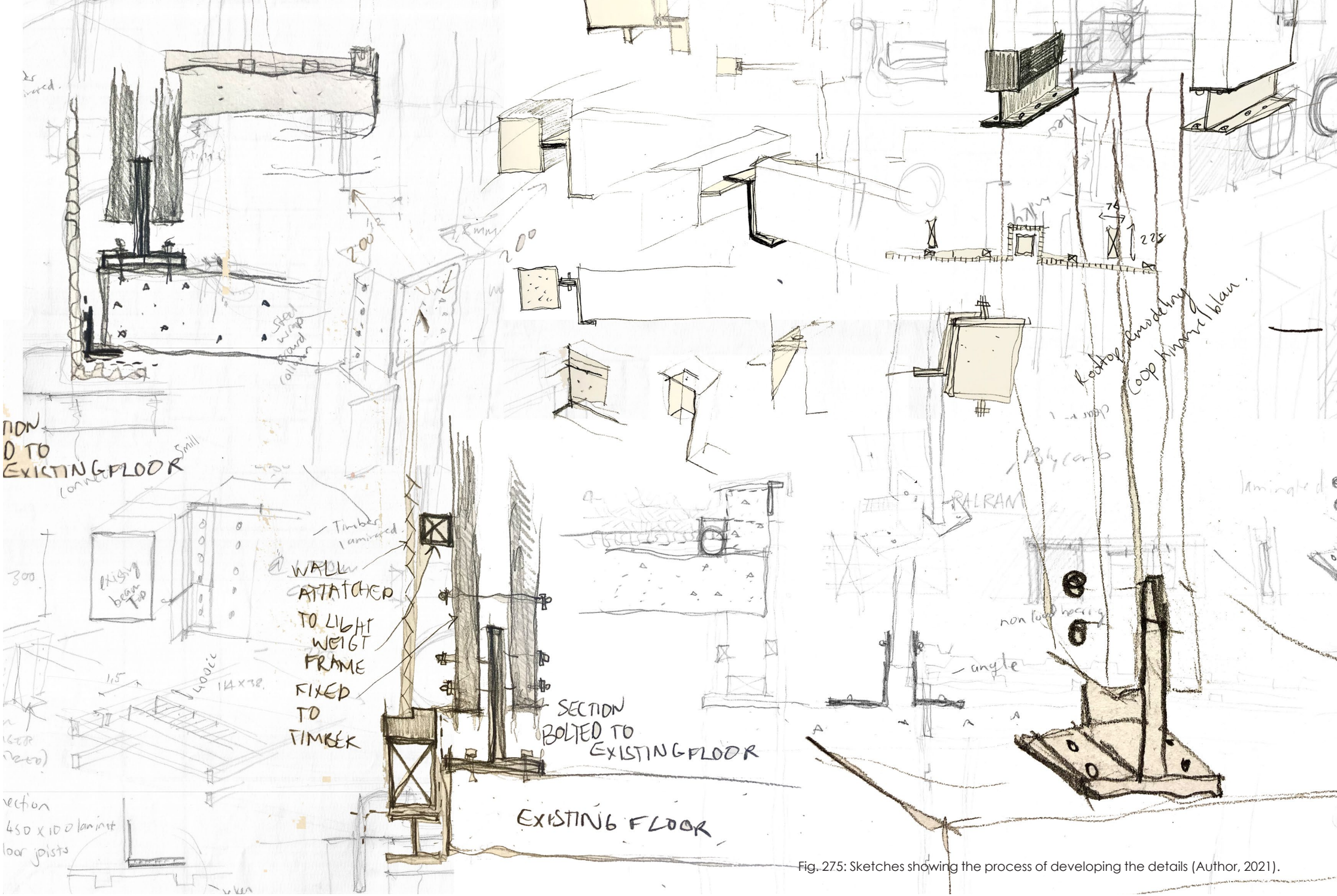


Fig. 275: Sketches showing the process of developing the details (Author, 2021).

6.5 The act of Re-spinning - connecting old and new

Solid elements are fixed to new structure to create physical elements weaving together old and new fibres. Walls solidify the perception of spaces and enhance the experience of the old structure and the new. The new programme is placed within designated spaces, filling the old building with a new purpose.

The characters of the Salt River farmlands and the industrial morphological saw tooth roofscape resulted in the reinterpretation of industry with nature at its core. The green roof on top of the market space reintroduces the old grid to organise a garden space. The old grid imposed on the new geometry creates triangular sections that are dedicated to garden spaces. It becomes an interpretation of the old saw tooth shape fully embraced by plants and nature.

Fig. 276: All the construction elements together (Author, 2021).

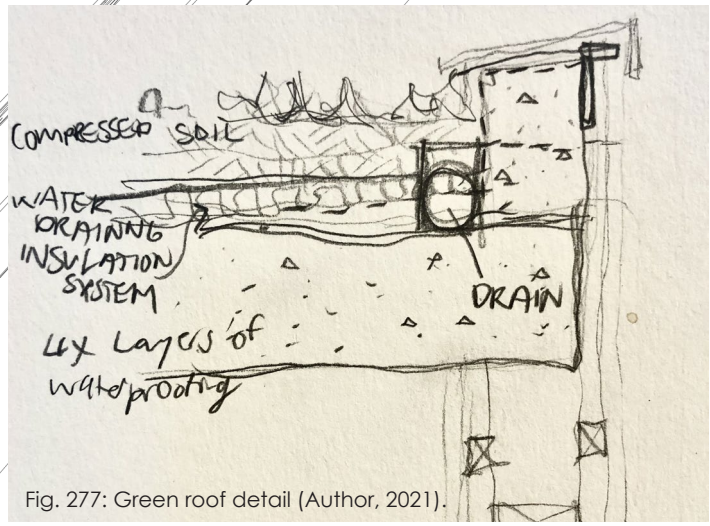


Fig. 277: Green roof detail (Author, 2021).



Fig. 278: Re-spinning technical approach (Author, 2021).

6.6 Textile properties

6.6.1 Textile materiality (materials)

The new materials were chosen to contrast with the existing to create a clear distinction between old and new. The old, plastered brick walls and concrete structure are juxtaposed with contrasting materials, such as steel for connections, timber for columns and beams, and polycarbonate sheeting for walls. The choice of materials symbolises the reinterpretation of industrial materials in a contemporary way.

The polycarbonate sheeting allows the walls a degree of permeability, creating visual connections throughout the building, celebrating the presence of both the old and new structures and displaying their integration as fibres. Spaces that require solid walls, such as lecture rooms and offices, are solidified using fibreboard insulated with recycled textiles to create an acoustic barrier. Truth windows accompany these walls reveal their interior qualities to become an educational display of the use of recycled fibre in construction. The services, however, require more stable wall structures for sanitary fixtures, bricks are therefore used to enclose services such as kitchens and toilets.

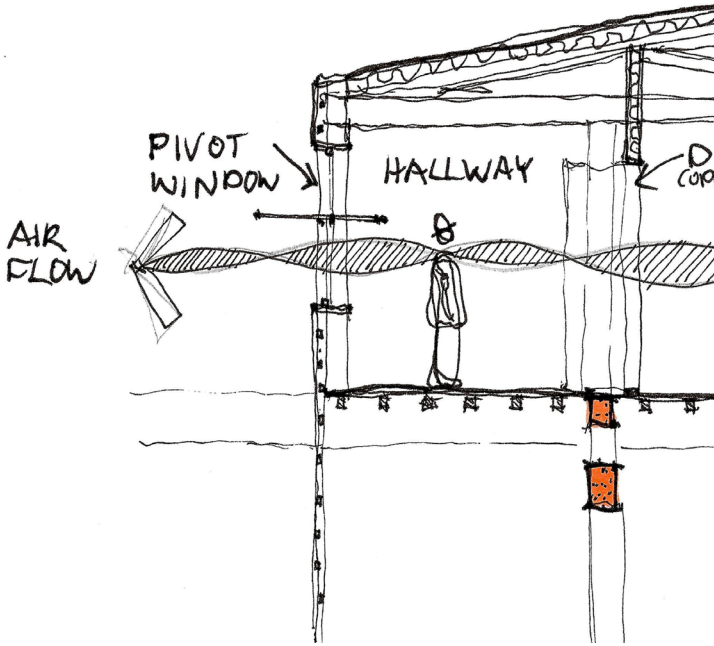
The void vertically connecting the ground floor exhibition space, the design studio and the library, solidifies on the second floor to create usable space in the library and serve as an acoustic barrier. The floor remains permeable through the utilisation of semi-transparent glass floor panels supported by the new timber floor structure.



6.6.2 Textile thermal characteristics (climate control)

Palram polycarbonate sheeting offers a great amount of resistance to the effects of changing weather conditions. It is a multiwall structure with internal cells that create insulating air pockets. Its main benefits are high thermal insulation; lightweight, rigid panels; light transmission; impact, weather and UV resistance; a high fibre rating and easy installation (Palram: online). Therefore, this material can be widely used around the building to reduce solar heat gain and allow light transmission. The library space, however, requires more protection against light, and timber cladding covers the west-facing wall to reduce light penetration and protect the books.

The existing south-west façade has a lot of fenestration, which challenges the climate control of spaces located on this flank. The existing apertures are thus reused, but new fenestration is installed, which utilises screen shutters to block or permit sunlight to the interior throughout the day.



6.6.3 Textile breathability (Ventilation)

As part of the design strategy acquired from the characters of inclusivity and separation, large openings are implemented to promote accessibility and visual permeability. Some of the openings on the ground floor function as movable pivot walls that create opportunities for movement and ventilation. These openings allow the building to successfully breathe through air flow from one opening to the next. However, in order to retain the existing west façade, ventilation is placed through the ceiling to circulate air from the recycling facility.



Fig. 279: Truth window (Author, 2021).

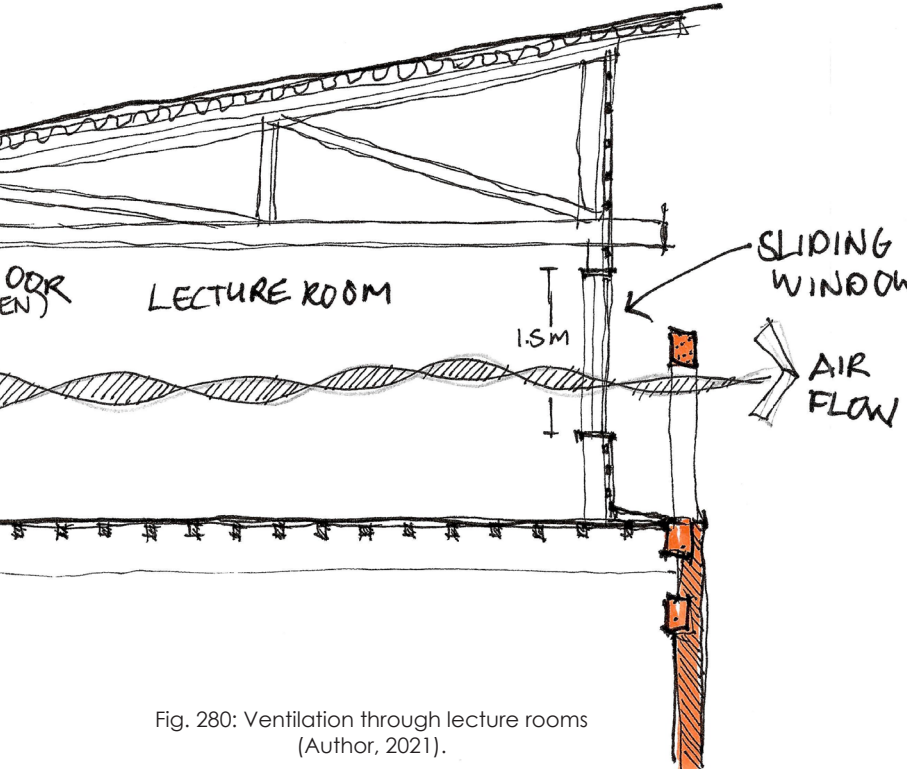


Fig. 280: Ventilation through lecture rooms (Author, 2021).

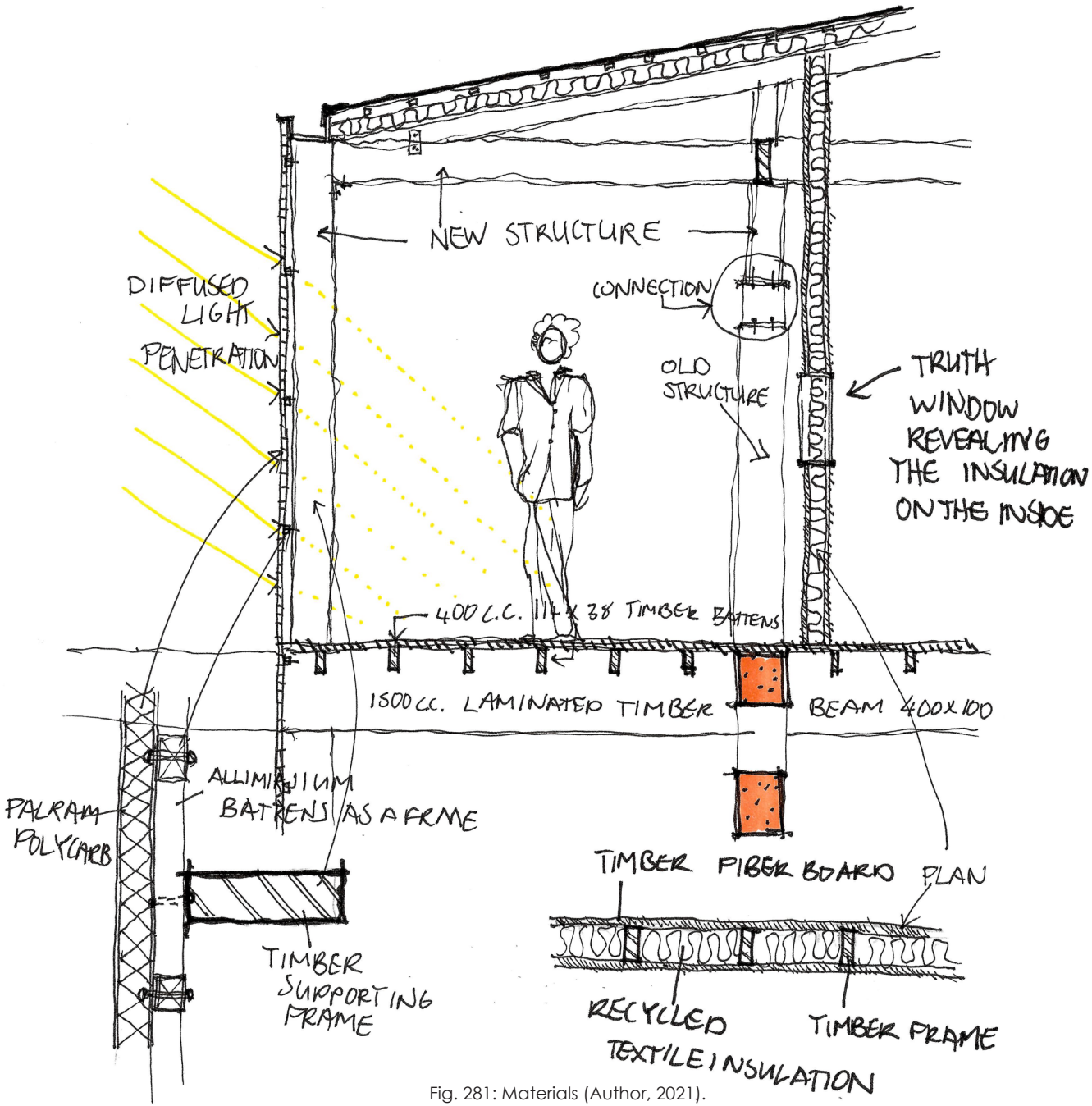


Fig. 281: Materials (Author, 2021).



Fig. 282: Timber and steel contrasting with existing concrete(Author, 2021).

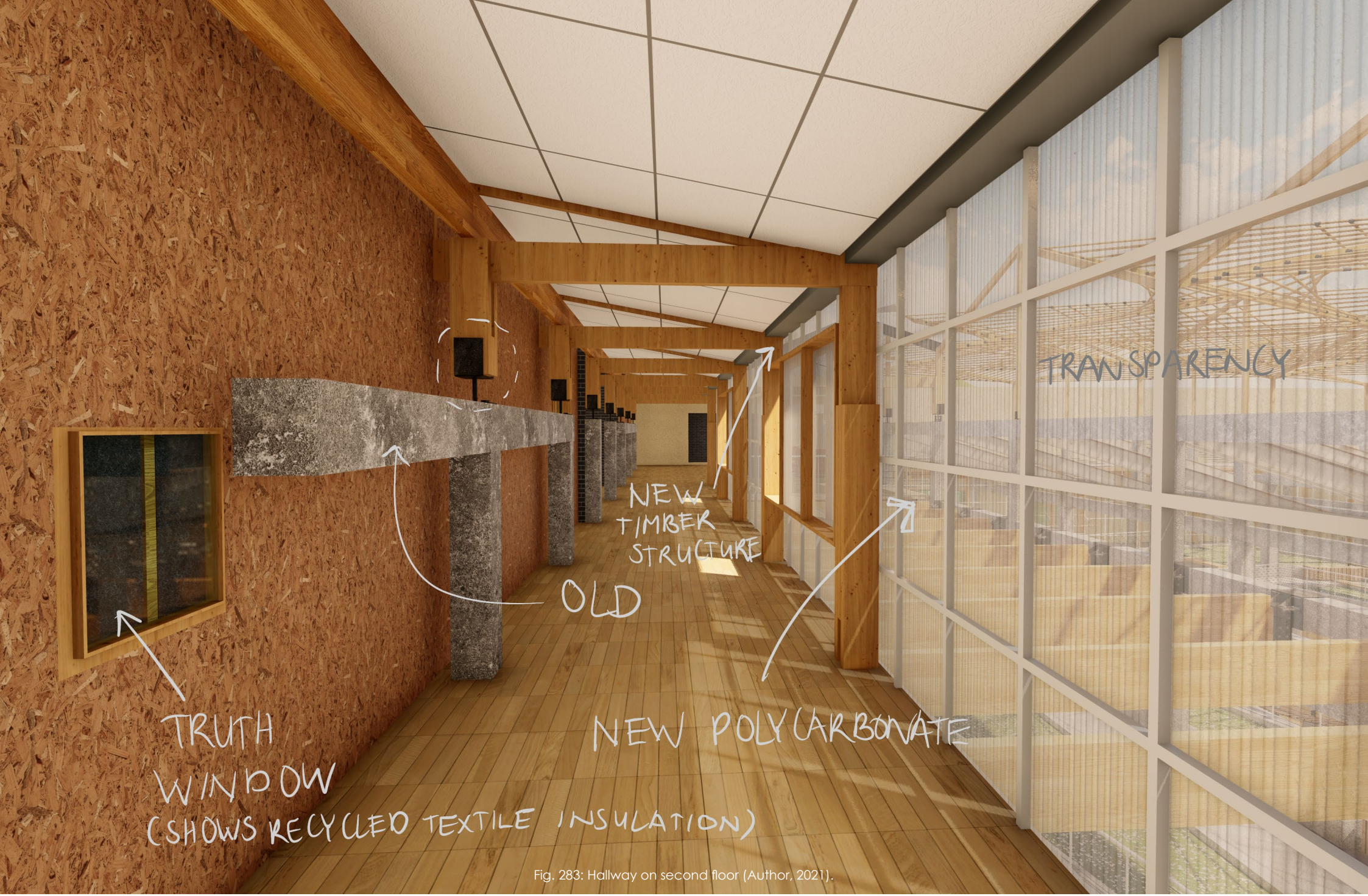


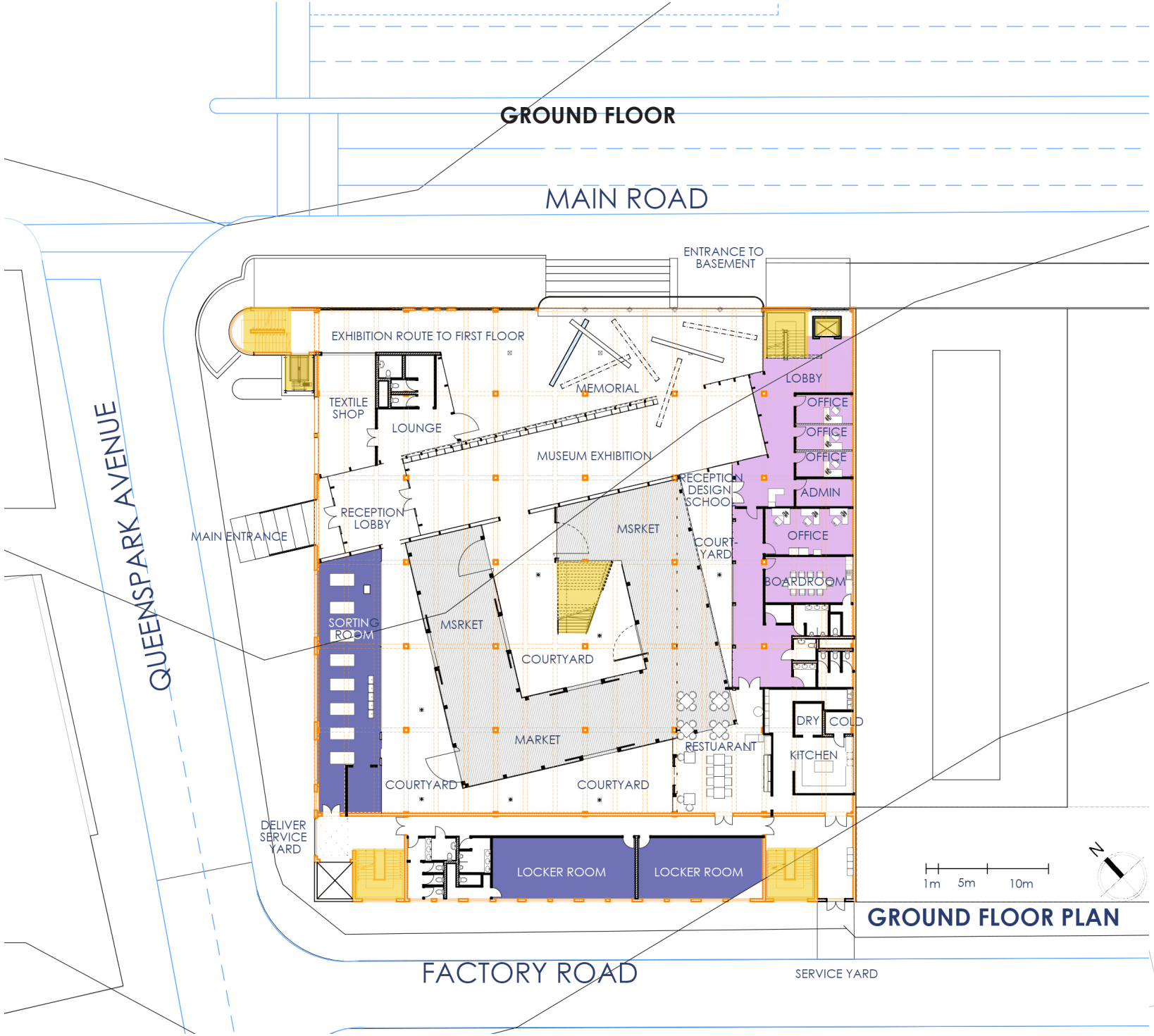
Fig. 283: Hallway on second floor (Author, 2021).

6.6 Textile properties

6.6.4 Textile flexibility (circulation)

The exhibition route is an important part of the narrative journey. The user enters at the new entrance on Queens Park Ave and follows the route through the museum exhibition, memorial space and recycling facility to the green roof square and ground floor market space. Along the corridors, the activities of the various functions are visible through windows, and the entire building functions as one large exhibition of heritage and new function. User circulation is public, and visitors mainly move through the north, south and centre of the building. The lecture rooms, design studios and office spaces are private segments of the building, therefore staff and students mainly move on the east of the site.

The old vertical circulation is reused, and new circulation is added in the north-east corner of the building. These circulation points also function as the building's fire escape strategy. Two user lifts are implemented: the first, in the north-west corner, is for public use and travels to the first floor. The second, in the north-east corner, is for the textile design school and travels from the basement to the second floor.



FIRST FLOOR

SECOND FLOOR

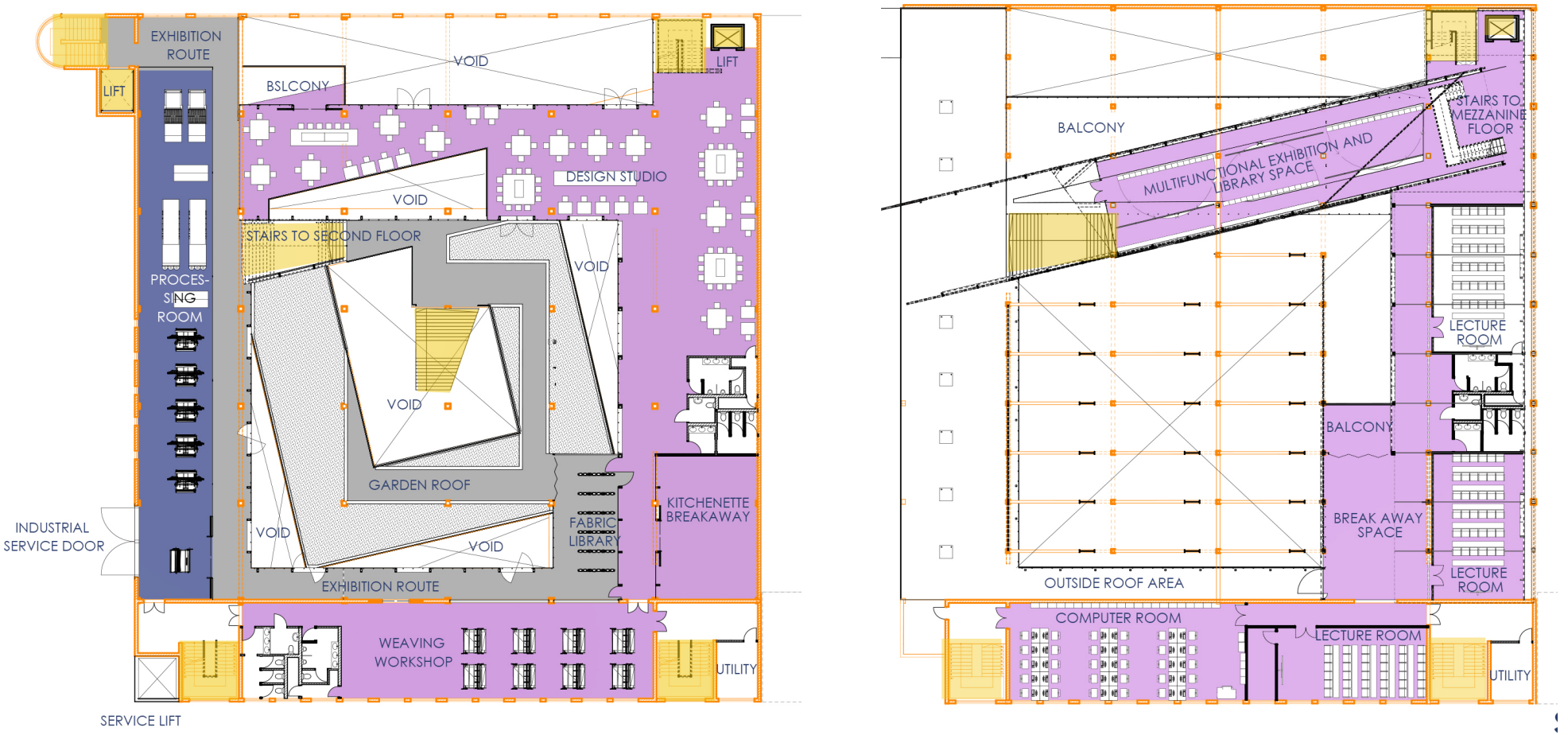


Fig. 284- 286: Circulation- pink (textile design school), blue (recycling facility), grey (exhibition route on first floor), blank (public), yellow vertical circulation (Author, 2021).

final conclusion

In Part 1, the initial understanding of the project rationale and grounding are discussed. The issues regarding the textile industry are made evident, as well as the need to revitalise abandoned industrial sites, particularly the heritage site under investigation. The investigation revealed the themes of sustainability that were industrially and culturally relevant to creating a critical argument for the relevance of the intervention.

Part 2 introduces the making through conceptual exploration and theoretical justification. This process facilitated reacting in a way that made sense as a response to Part 1. What was learned was that a heritage project requires an immense degree of sensitivity when considering an appropriate design response. The result must be not merely a design imposed on an existing structure, but one that gradually enters the premises with respect and critical consideration for what is already there.

Part 3 illustrates the structural philosophy, which concludes in the coming together of design and construction to create an approach where construction and design shape one another. Analysis of the building created a new way of looking at the project to evaluate the goal of the final proposal.

The project aim was to give new life to an abandoned building and activate the site to reintegrate it with the surrounding urban fabric. The approach attempted to transform the existing to become relevant to its new use, whilst retaining its cultural significance. The goal was to create an architectural response that encourages public participation in order to educate the public on the importance of a sustainable textile industry. The regeneration of this forgotten site created the opportunity to memorialise the victims of the past by celebrating their contribution to society and community and remembering the various stories relating to the significance of Rex Trueform.

The method of recycling Rex Trueform not only advocates a sustainable industry but also allows for the reinvention of an old building – bringing to light the memories of the past and anticipations for the future. Reusing existing buildings creates sustainable practice and preserves the places with stories and memories that describe our being in the world. The intervention has been designed to invite visitors to experience Salt River's heritage, architecture, culture and future aspirations.

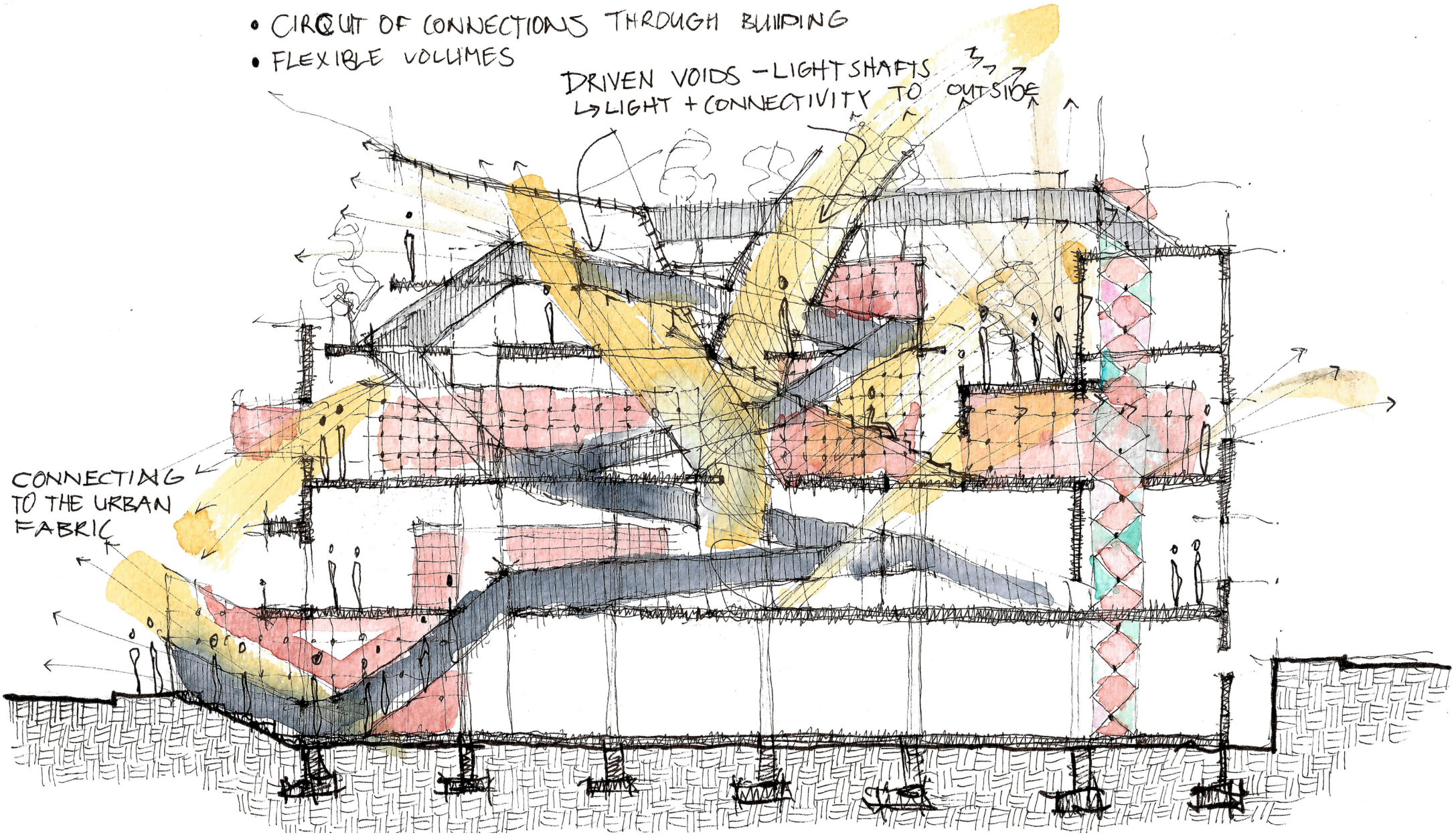


Fig. 287: Early conceptual diagram (Author, 2021).

FINAL DESIGN



SECTION A-A


COMPUTER ROOM
WEAVING WORKSHOP
ROOF GARDEN
RTYARD
THRIFT MARKET
COURTYARD
LOCKER ROOM,
FACTORY RD
scale 1:100

FINAL DESIGN



SECTION B-B


LIBRARY/ EXHIBITION
RECYCLING FACILITY
EXHIBITION ROUTE
QUEENSPARK AVE
MUSEUM EXHIBITION
MAIN ENTRANCE
BASEMENT
scale 1:100

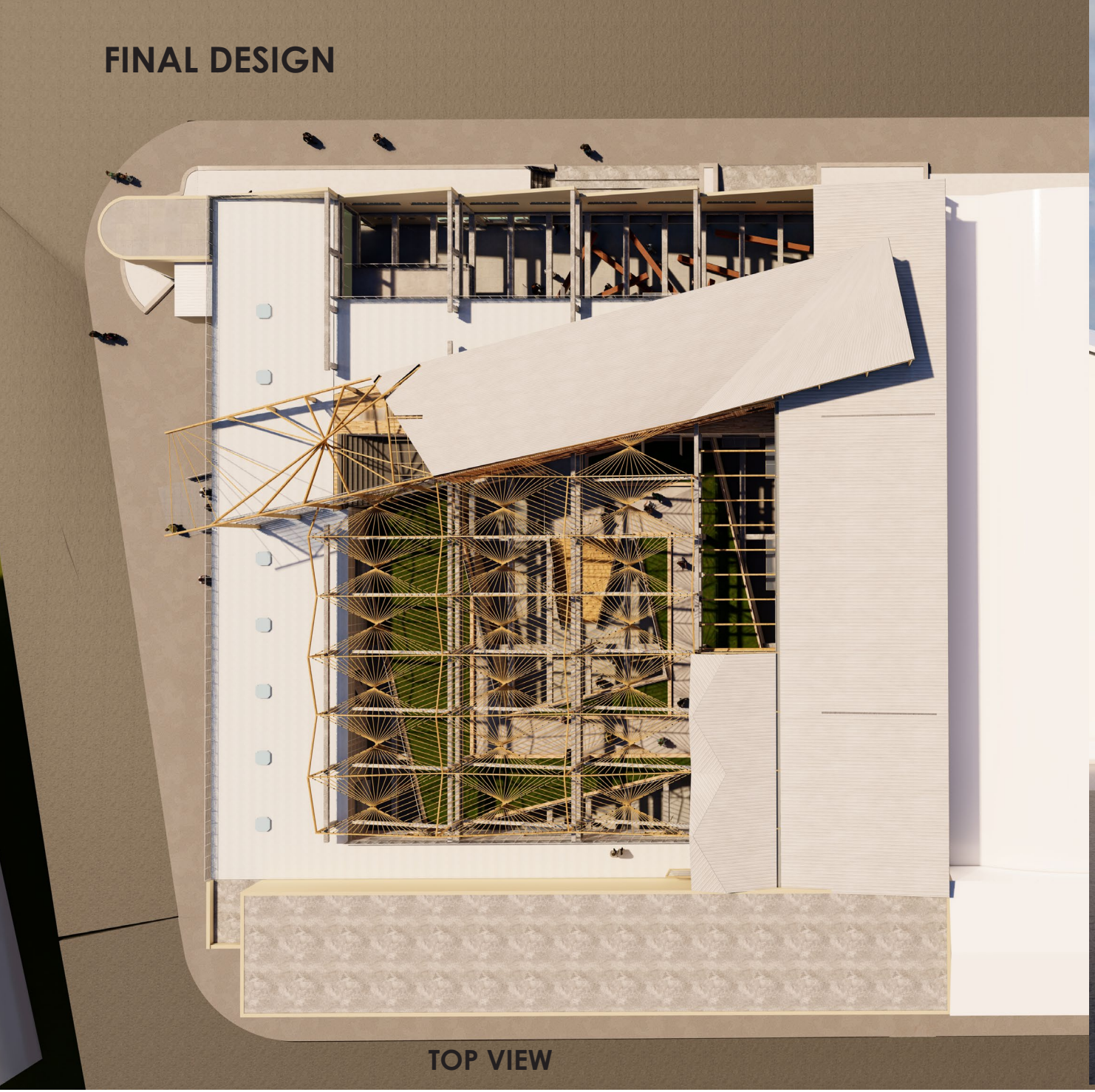
FINAL DESIGN



NORTH ELEVATION



FINAL DESIGN



TOP VIEW





NORTH ELEVATION WITH MORNING SHADOW FROM SECOND REX TRUEFORM BUILDING

FINAL DESIGN



NORTH EAST CORNER



MUSEUM EXHIBITION

FINAL DESIGN



ROOF GARDEN



FINAL DESIGN



MEMORIAL



FABRIC LIBRARY

FINAL DESIGN





Personal reflection

Initially, this master's research investigation was focused on the adaptive reuse of an existing building in order to promote textile recycling and sustainability. After identifying Rex Trueform as the chosen site, the focus shifted and the complexity of the project instantly increased.

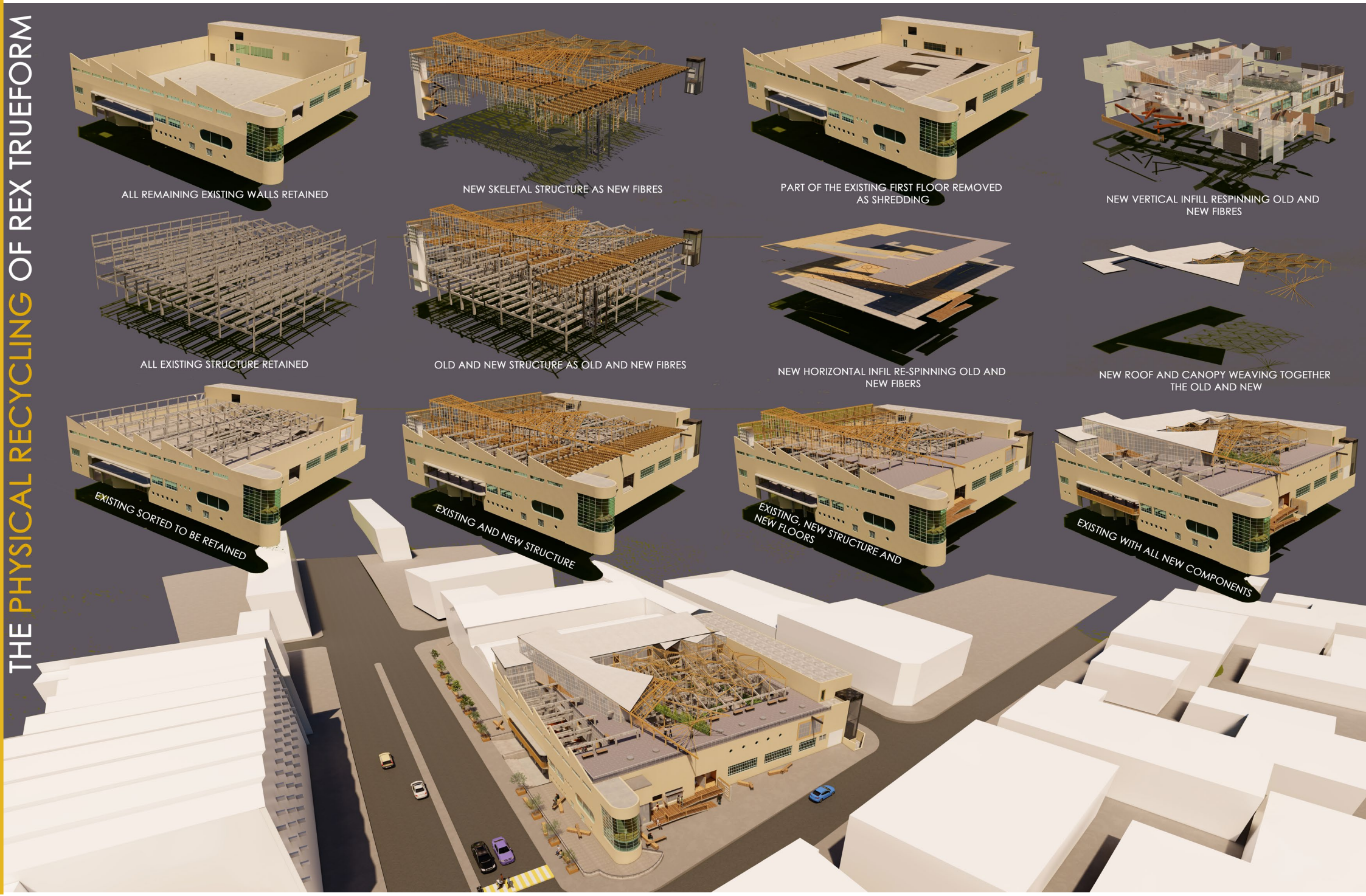
Taking on a heritage project has been far more challenging than I could have ever predicted. However, the project created a platform to think about the inextricable connections between history, forces of labour, race, class, capitalism, toxicity and climate change. This allowed me to vastly expand my understanding of South African architecture in terms of the overlooked aspects of the contextual environment.

Reusing existing buildings not only implements sustainable practice but also preserves the places with stories and memories that describe our being in the world, bringing light to our deep past and vast future.

ANNEXTURE 1-

FINAL DESIGN PRESENTATION

THE PHYSICAL RECYCLING OF REX TRUEFORM

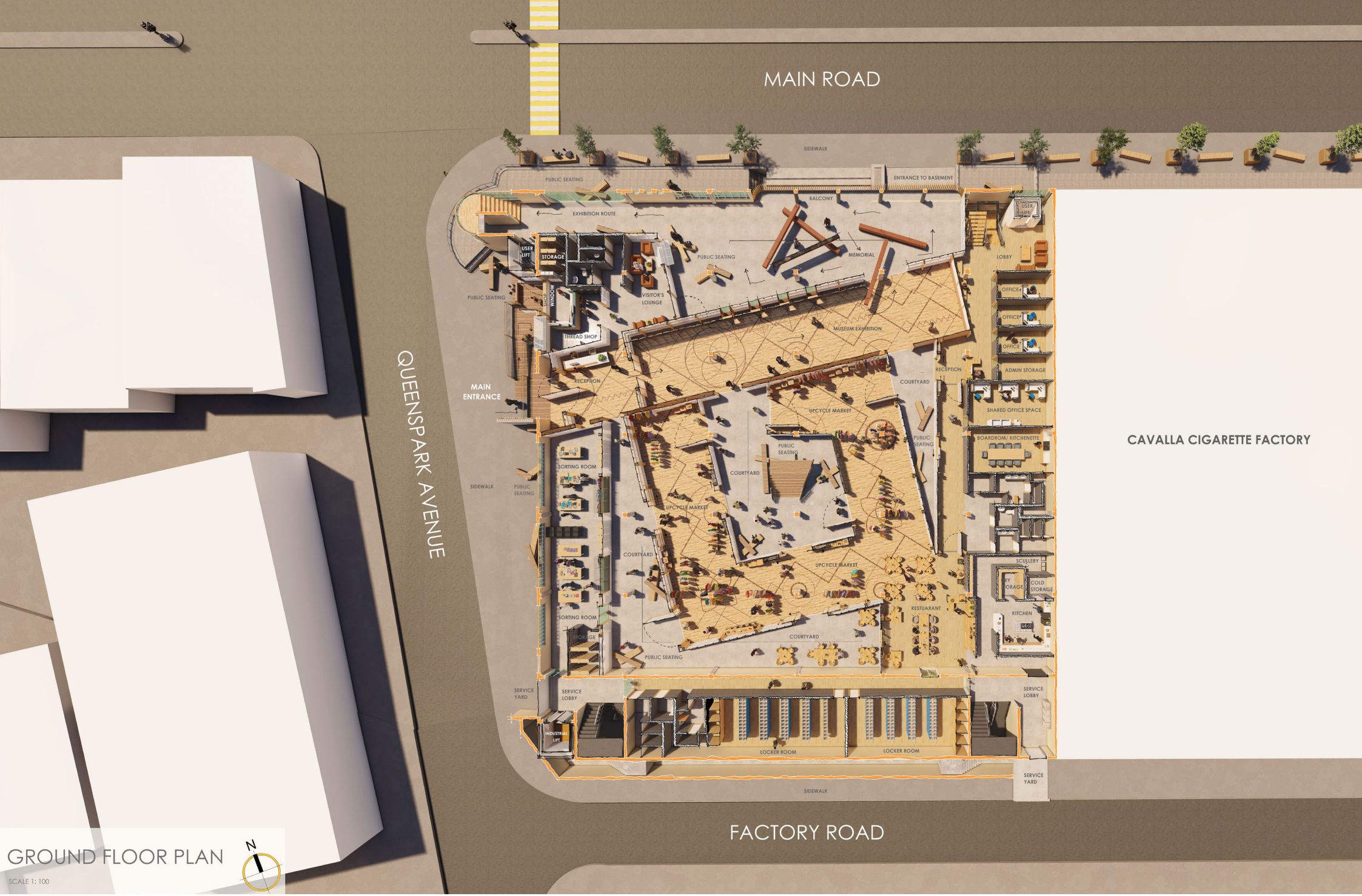



MAIN ROAD
C
SIDEWALK
ENTRANCE TO BASEMENT
A
A
QUEENSPARK AVENUE
B
B
CAVALLA CIGARETTE FACTORY
FACTORY ROAD
C
BASEMENT PLAN
SCALE 1: 100
N


NORTH ELEVATION
MAIN ROAD


WEST ELEVATION
QUEENSPARK AVENUE


REX TRUEFORM
NORT EAST CORNER


MAIN ROAD
QUEENSPARK AVENUE
FACTORY ROAD
CAVALLA CIGARETTE FACTORY
SIDEWALK
PUBLIC SEATING
ENTRANCE TO BASEMENT
BALCONY
EXHIBITION ROUTE
USER LIFT
STORAGE
MEMORIAL
LOBBY
OFFICE
OFFICE
OFFICE
ADMIN STORAGE
SHARED OFFICE SPACE
BOARDROM/ KITCHENETTE
WINDOW SHOP
VISITOR'S LOUNGE
MUSEUM EXHIBITION
THREAD SHOP
RECEPTION
MAIN ENTRANCE
COURTYARD
UPCYCLE MARKET
SORTING ROOM
SCULLERY
COLD STORAGE
RESTAURANT
KITCHEN
SERVICE YARD
SERVICE LOBBY
INDUSTRIAL LIFT
LOCKER ROOM
GROUND FLOOR PLAN
SCALE 1: 100
N



THRIFT MARKET



THREAD SHOP



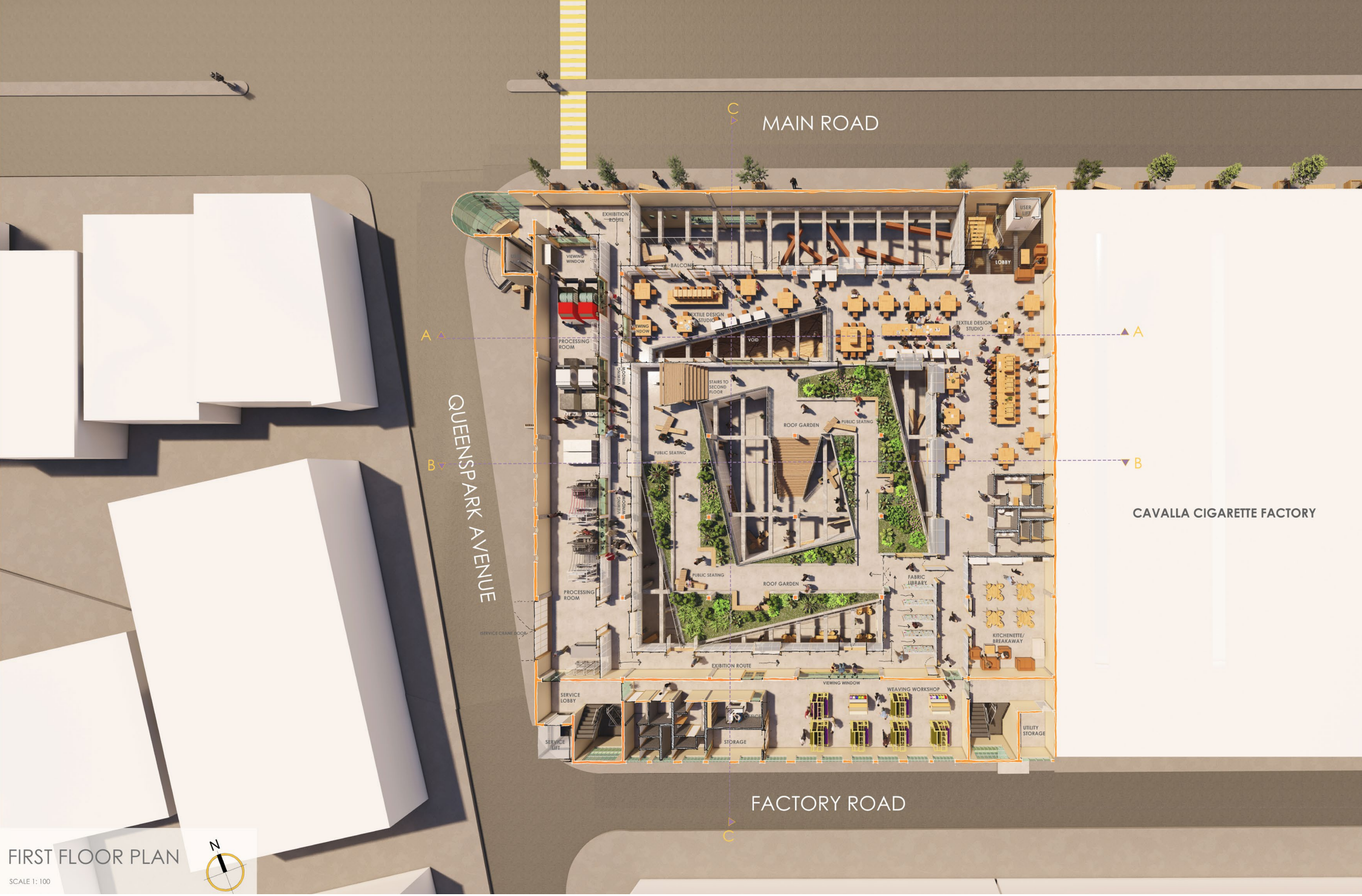
SORTING VIEW WINDOW



MUSEUM EXHIBITION



MEMORIAL



FIRST FLOOR PLAN

SCALE 1: 100



PROCESSING ROOM VIEW WINDOW



WEAVING WORKSHOP



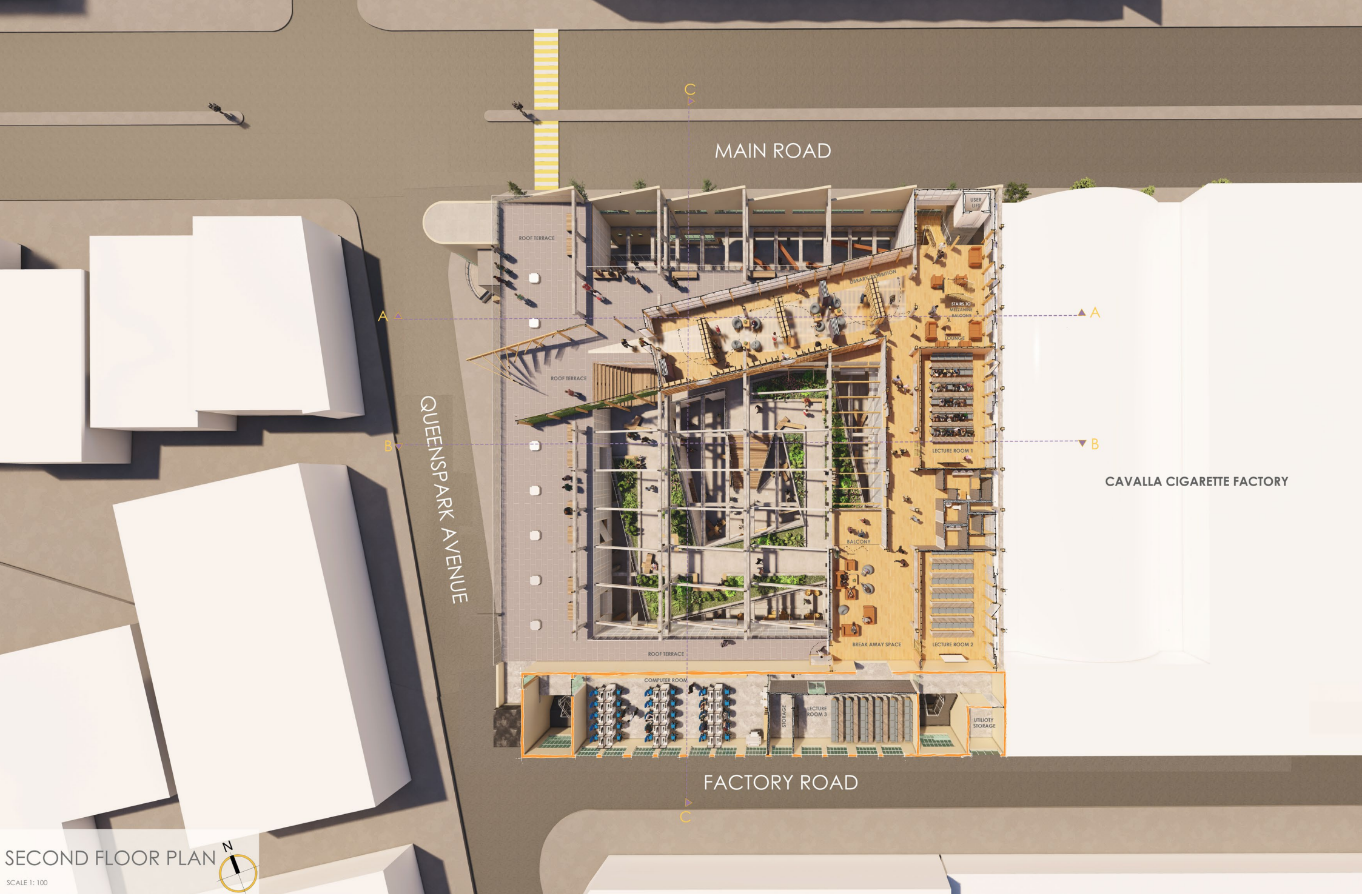
FABRIC LIBRARY



ROOF GARDEN



TEXTILE DESIGN STUDIO



SECOND FLOOR PLAN

SCALE 1: 100



BREAKAWAY SPACE




ROOF TERRACE OVERLOOKING MEMORIAL


LECTURE ROOM


LIBRARY



SECTION A-A SCALE 1:50



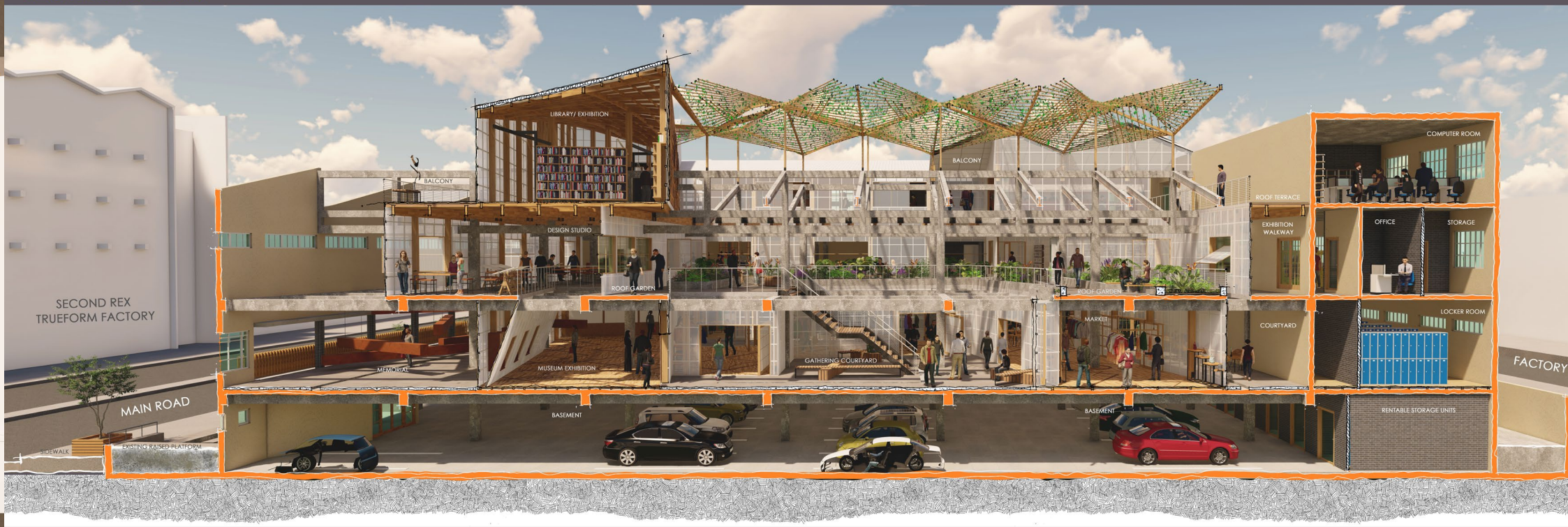
MAIN ENTRANCE



TOP VIEW NOT TO SCALE



SECTION B-B SCALE 1:50



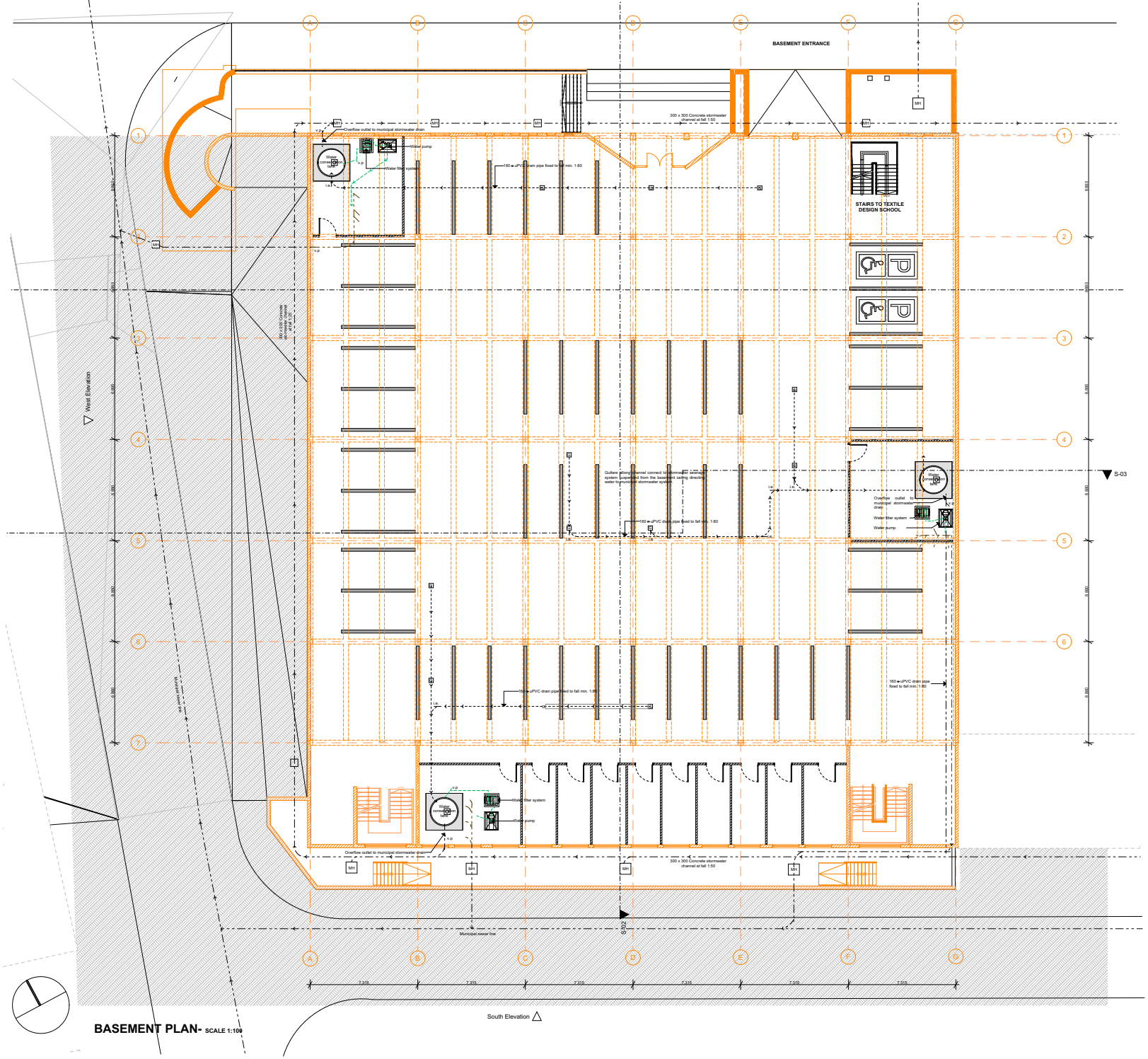
SECTION C-C SCALE 1:50

ANNEXTURE 2-

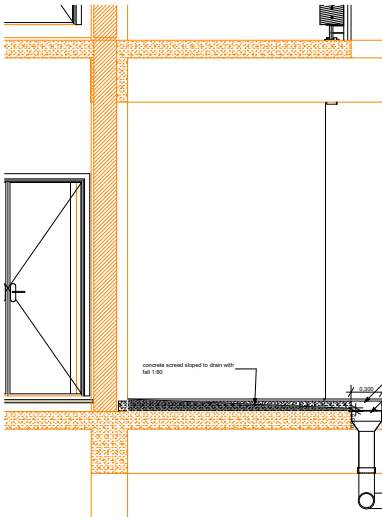
FINAL CONSTRUCTION DRAWINGS

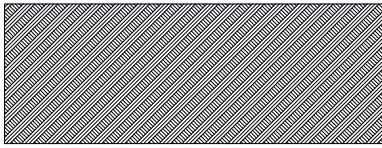


SITE PLAN- SCALE 1:500

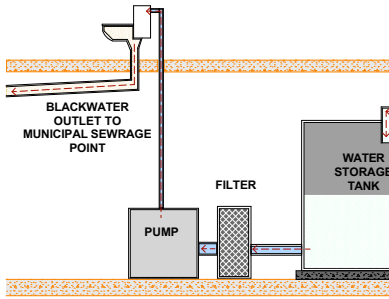


BASEMENT PLAN- SCALE 1:100

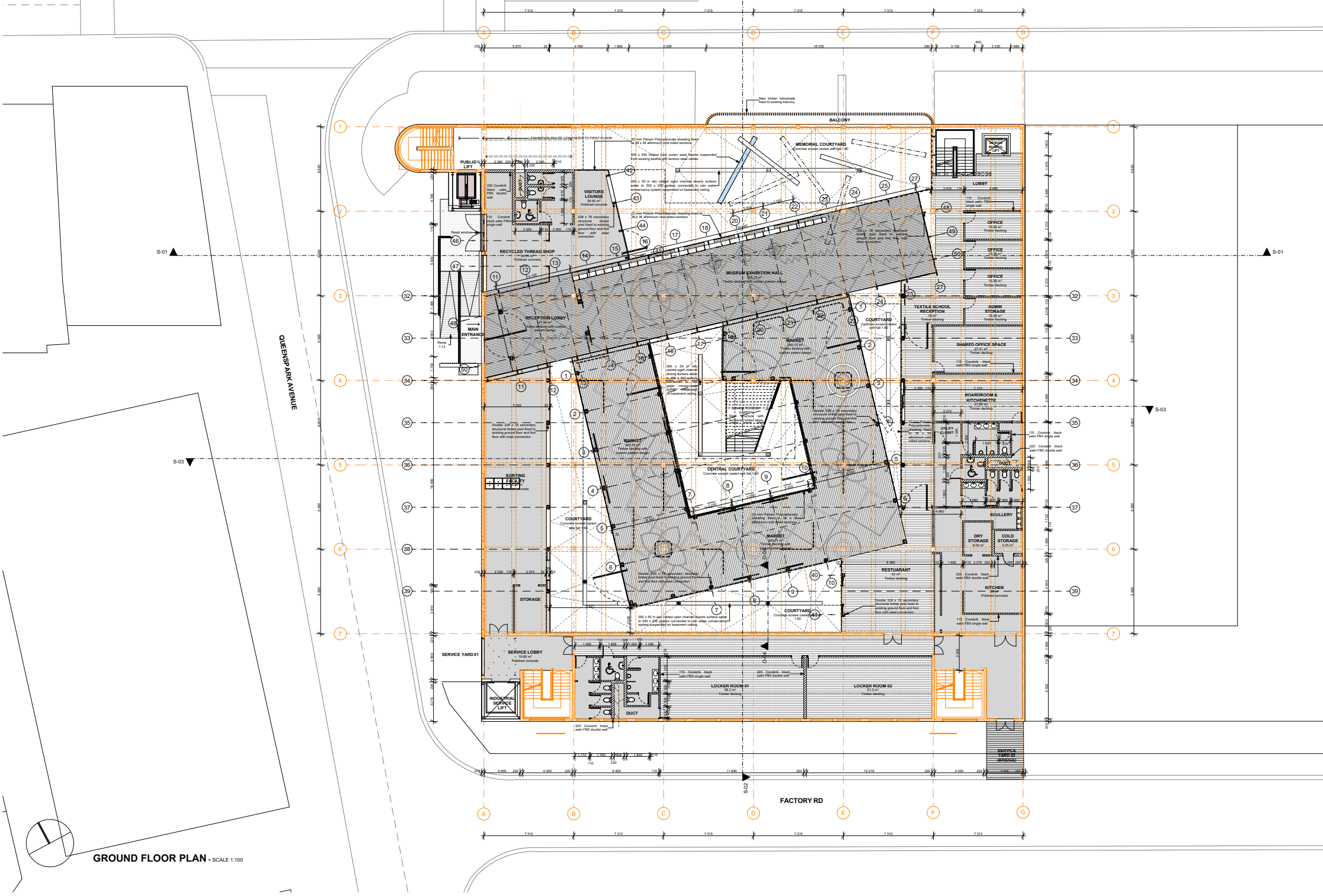




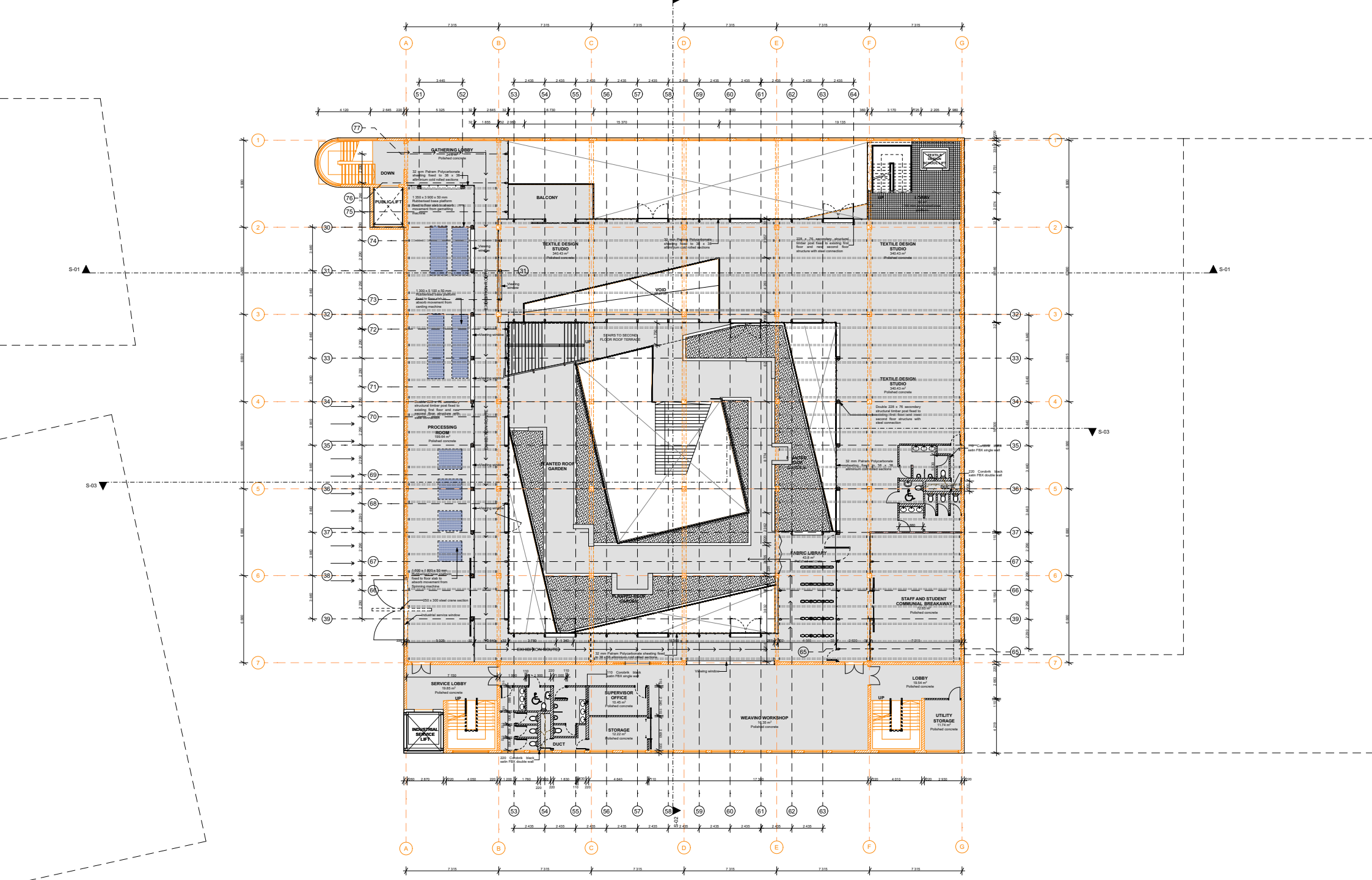
DETAIL O4- GROUND FLOOR WITH SLOPE T

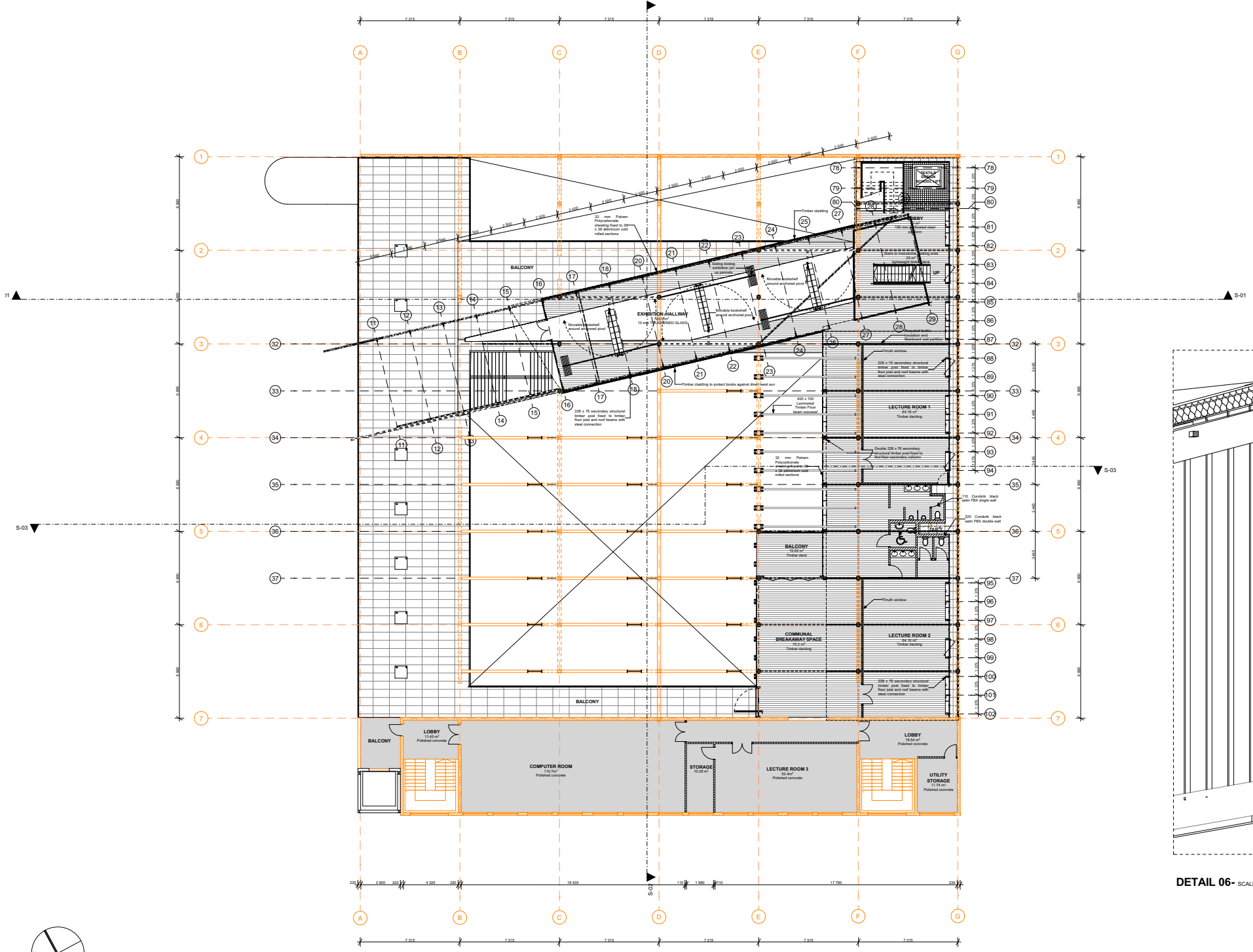


WATER RE-USE AND DRAINAGE SYSTEM (N

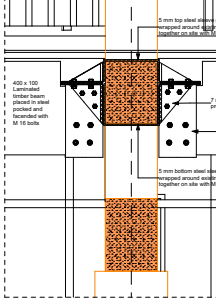


GROUND FLOOR PLAN - SCALE 1:100

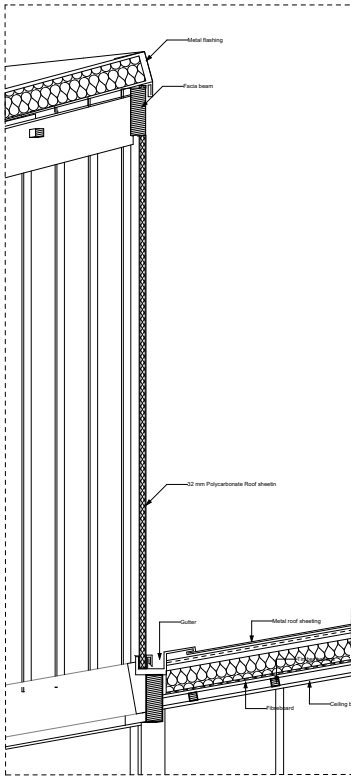

GATHERING LOBBY
Polished concrete
DOWN
PUBLIC LIFT
BALCONY
TEXTILE DESIGN STUDIO
340.43 m²
Polished concrete
VOID
STAIRS TO SECOND FLOOR ROOF TERRACE
UP
PROCESSING ROOM
199.64 m²
Polished concrete
PLANTED ROOF GARDEN
FABRIC LIBRARY
43.8 m²
Polished concrete
STAFF AND STUDENT COMMUNIAL BREAKAWAY
72.65 m²
Polished concrete
EXHIBITION OUTLET
SERVICE LOBBY
19.85 m²
Polished concrete
INDUSTRIAL SERVICE LIFT
SUPERVISOR OFFICE
10.45 m²
Polished concrete
STORAGE
10.22 m²
Polished concrete
DUCT
WEAVING WORKSHOP
LOBBY
18.54 m²
Polished concrete
UTILITY STORAGE
11.74 m²
Polished concrete
S-01
S-03



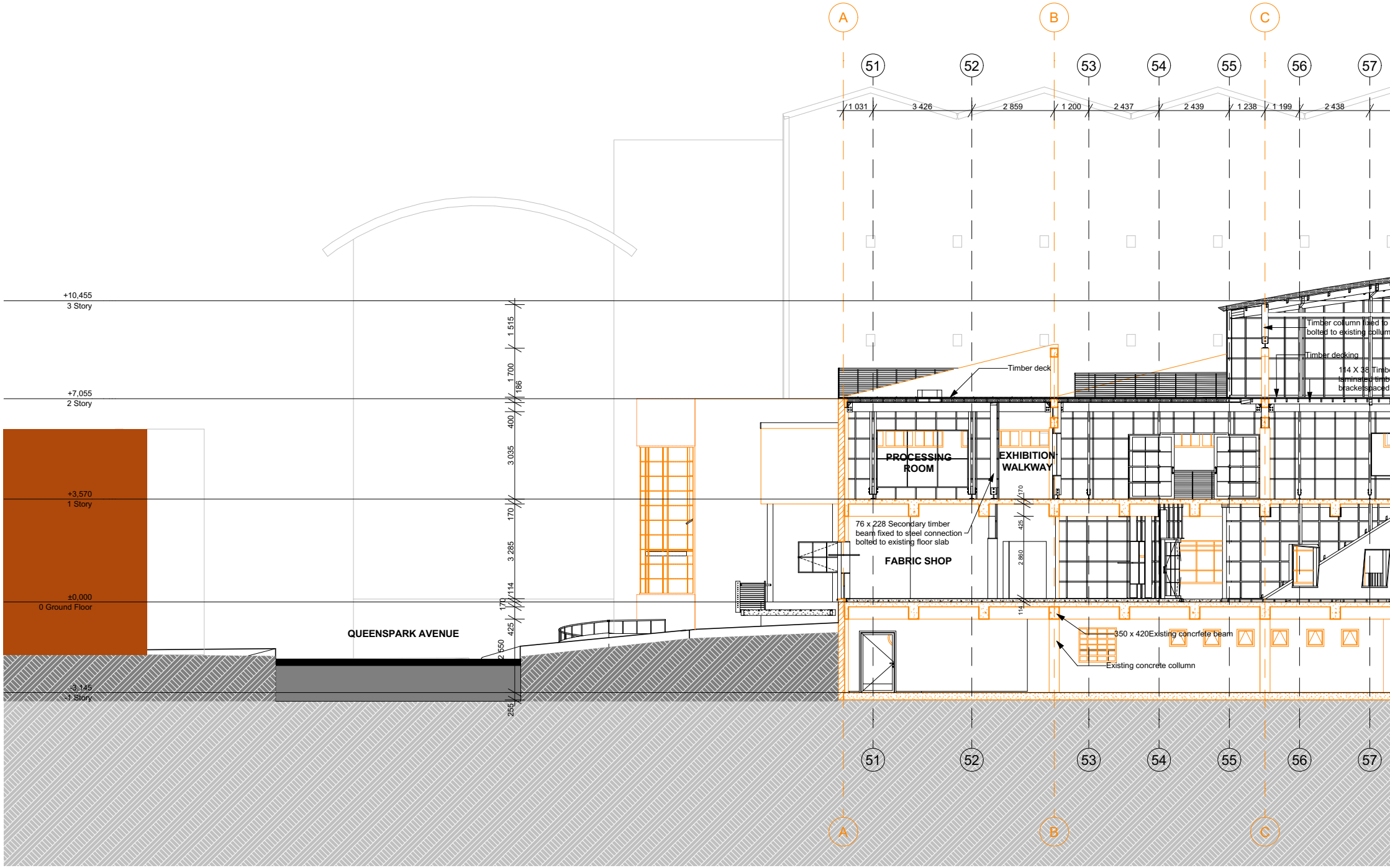
SECOND FLOOR PLAN - SCALE 1:100

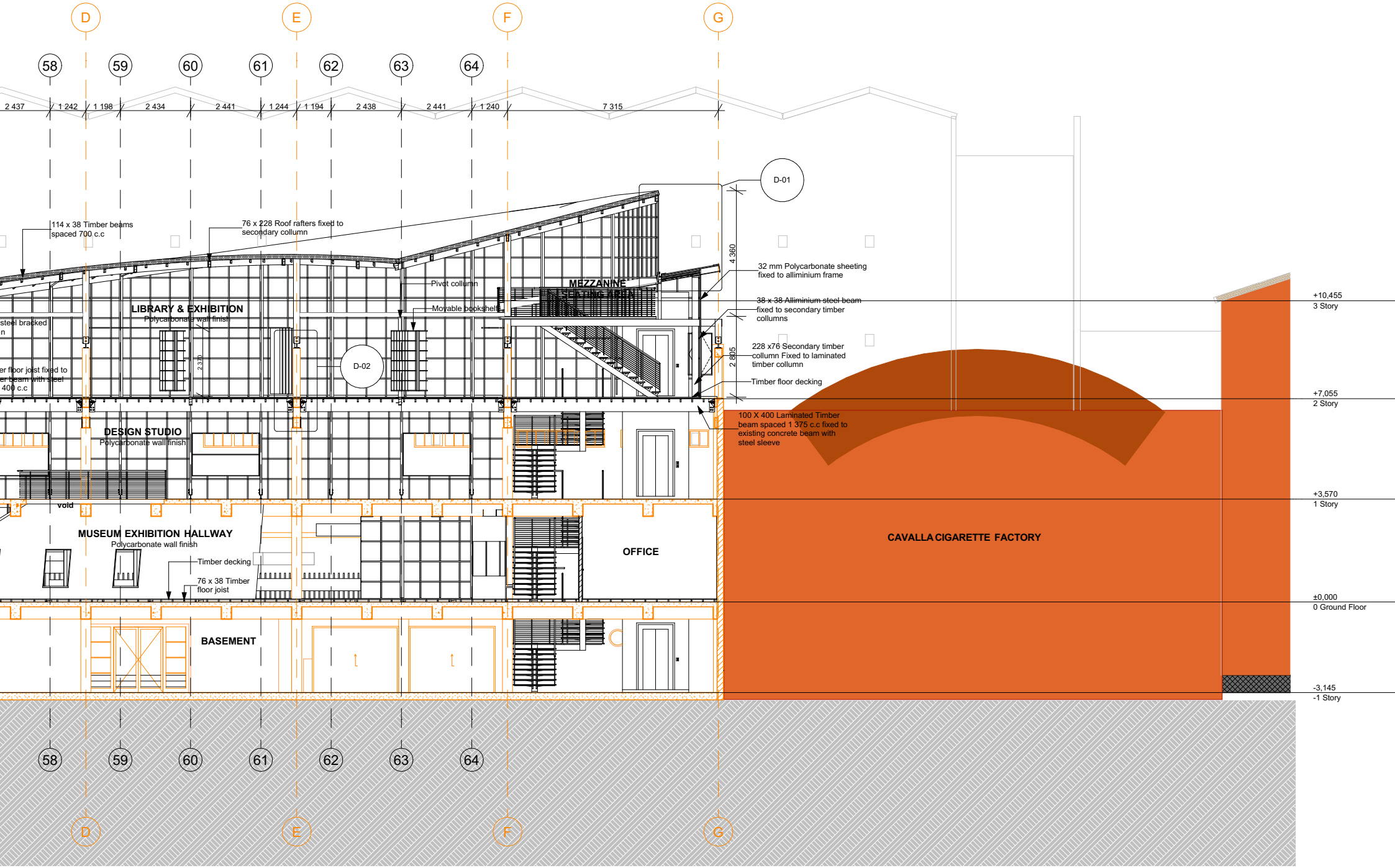


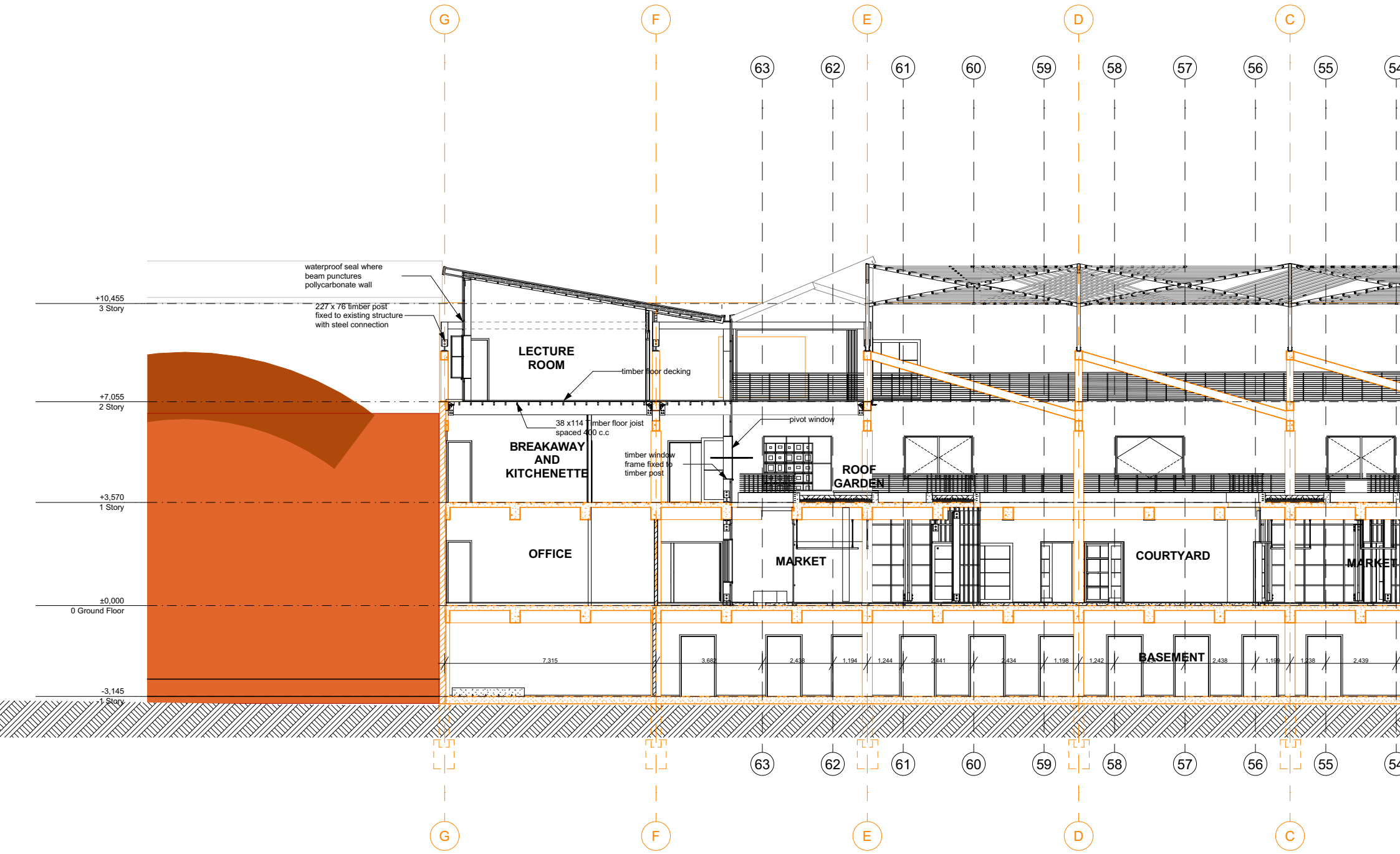
DETAIL 05- SCALE 1:10

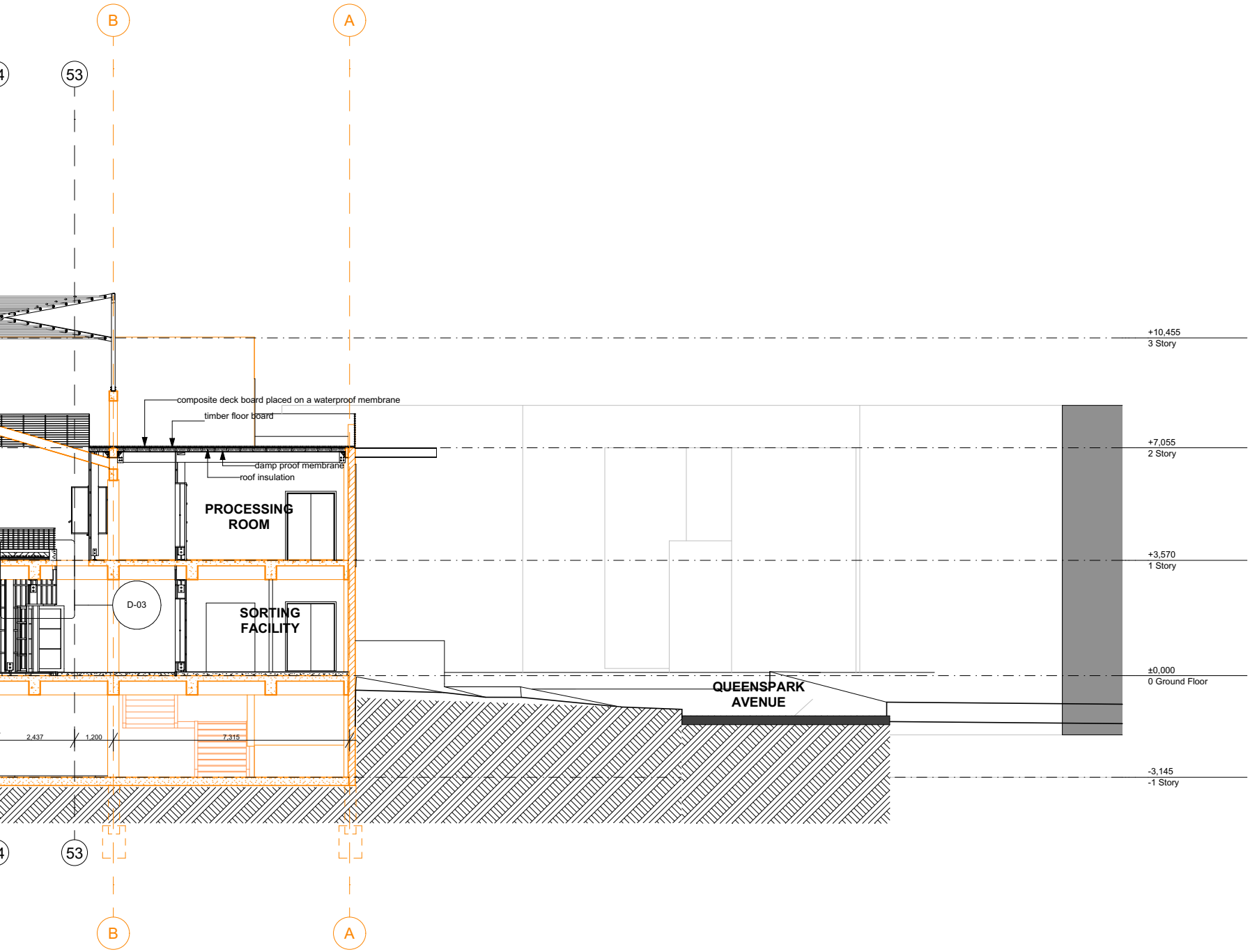


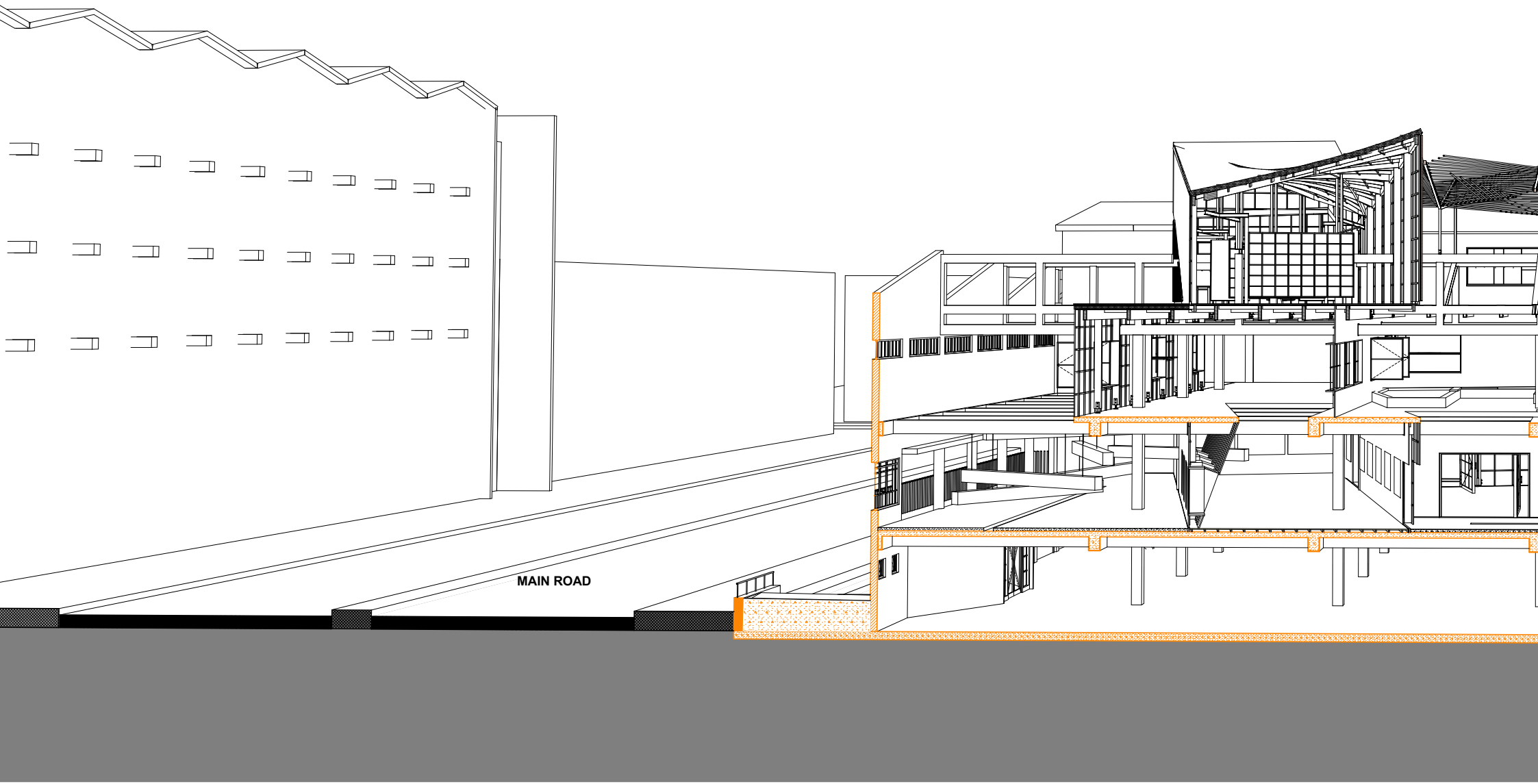
DETAIL 06- SCALE 1:10


A
B
C
51
52
53
54
55
56
57
1 031
3 426
2 859
1 200
2 437
2 439
1 238
1 199
2 438
+10,455
3 Story
+7,055
2 Story
+3,570
1 Story
±0,000
0 Ground Floor
-3,145
-1 Story
1 515
1 700
186
400
3 035
170
3 285
114
170
425
2 550
255
QUEENSPARK AVENUE
PROCESSING ROOM
EXHIBITION WALKWAY
FABRIC SHOP
Timber deck
Timber column fixed to
bolted to existing collum
Timber decking
114 X 38 Timb
laminated timb
bracket spaced
76 x 228 Secondary timber
beam fixed to steel connection
bolted to existing floor slab
170
425
2 860
114
350 x 420Existing concrete beam
Existing concrete collumn

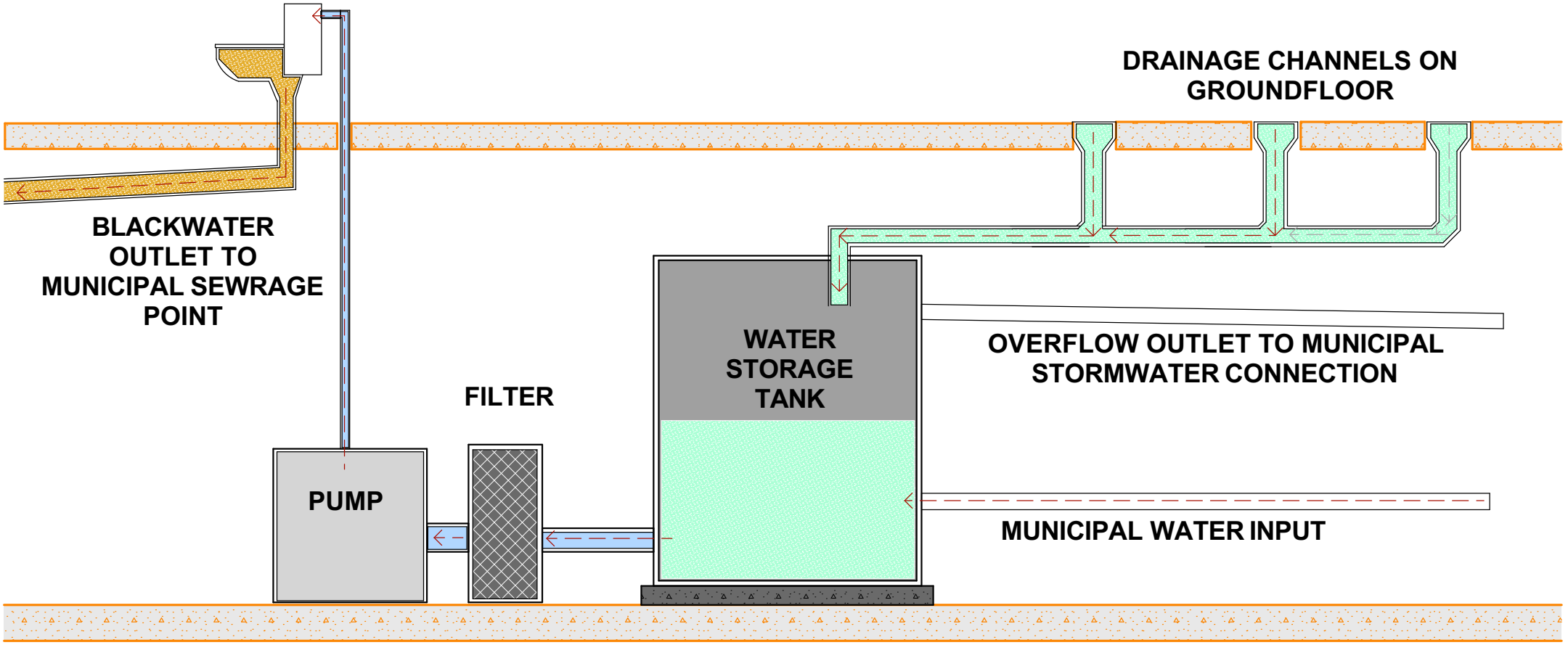

D
E
F
G
58
59
60
61
62
63
64
2 437
1 242
1 198
2 434
2 441
1 244
1 194
2 438
2 441
1 240
7 315
D-01
4 360
114 x 38 Timber beams spaced 700 c.c
76 x 228 Roof rafters fixed to secondary collumn
32 mm Polycarbonate sheeting fixed to alliminium frame
Pivot collumn
MEZZANINE
Polycarbonate wall finish
Movable bookshelf
38 x 38 Alliminium steel beam fixed to secondary timber collumns
LIBRARY & EXHIBITION
Polycarbonate wall finish
steel bracked
n
2 370
D-02
2 805
228 x76 Secondary timber collumn Fixed to laminated timber collumn
er floor joist fixed to
er beam with steel
400 c.c
Timber floor decking
100 X 400 Laminated Timber beam spaced 1 375 c.c fixed to existing concrete beam with steel sleeve
DESIGN STUDIO
Polycarbonate wall finish
void
MUSEUM EXHIBITION HALLWAY
Polycarbonate wall finish
Timber decking
76 x 38 Timber floor joist
OFFICE
CAVALLA CIGARETTE FACTORY
BASEMENT
+10,455
3 Story
+7,055
2 Story
+3,570
1 Story
±0,000
0 Ground Floor
-3,145
-1 Story


G
F
E
D
C
63
62
61
60
59
58
57
56
55
54
waterproof seal where beam punctures pollycarbonate wall
227 x 76 timber post fixed to existing structure with steel connection
+10,455
3 Story
+7,055
2 Story
+3,570
1 Story
±0,000
0 Ground Floor
-3,145
-1 Story
LECTURE ROOM
timber floor decking
38 x114 Timber floor joist spaced 400 c.c
BREAKAWAY AND KITCHENETTE
timber window frame fixed to timber post
pivot window
ROOF GARDEN
OFFICE
MARKET
COURTYARD
MARKET
BASEMENT
7,315
3,682
2,438
1,194
1,244
2,441
2,434
1,198
1,242
2,438
1,199
1,238
2,439

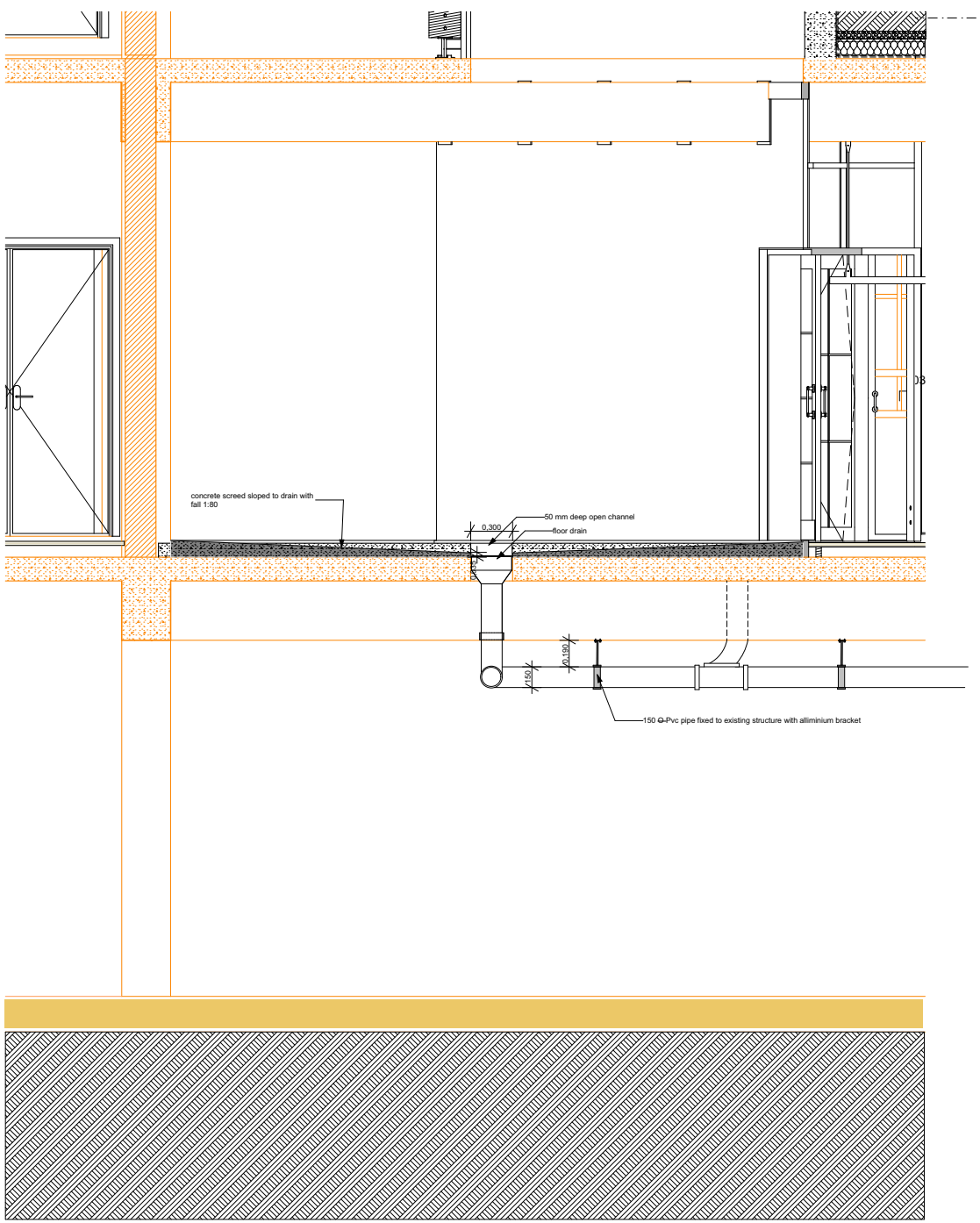

B
A
53
composite deck board placed on a waterproof membrane
timber floor board
damp proof membrane
roof insulation
PROCESSING ROOM
SORTING FACILITY
D-03
QUEENSPARK AVENUE
2,437
1,200
7,315
+10,455
3 Story
+7,055
2 Story
+3,570
1 Story
±0,000
0 Ground Floor
-3,145
-1 Story


MAIN ROAD

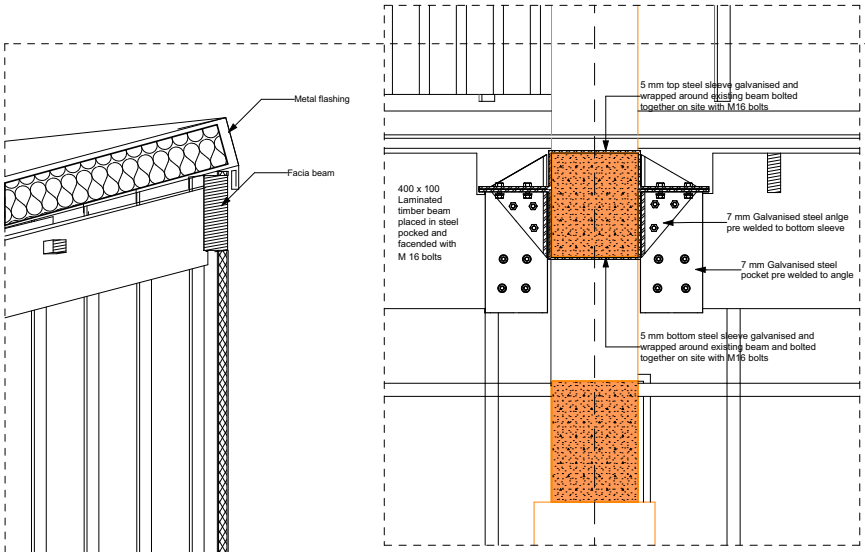

FACTORY ROAD



WATER RE-USE AND DRAINAGE SYSTEM (NOT TO SCALE)

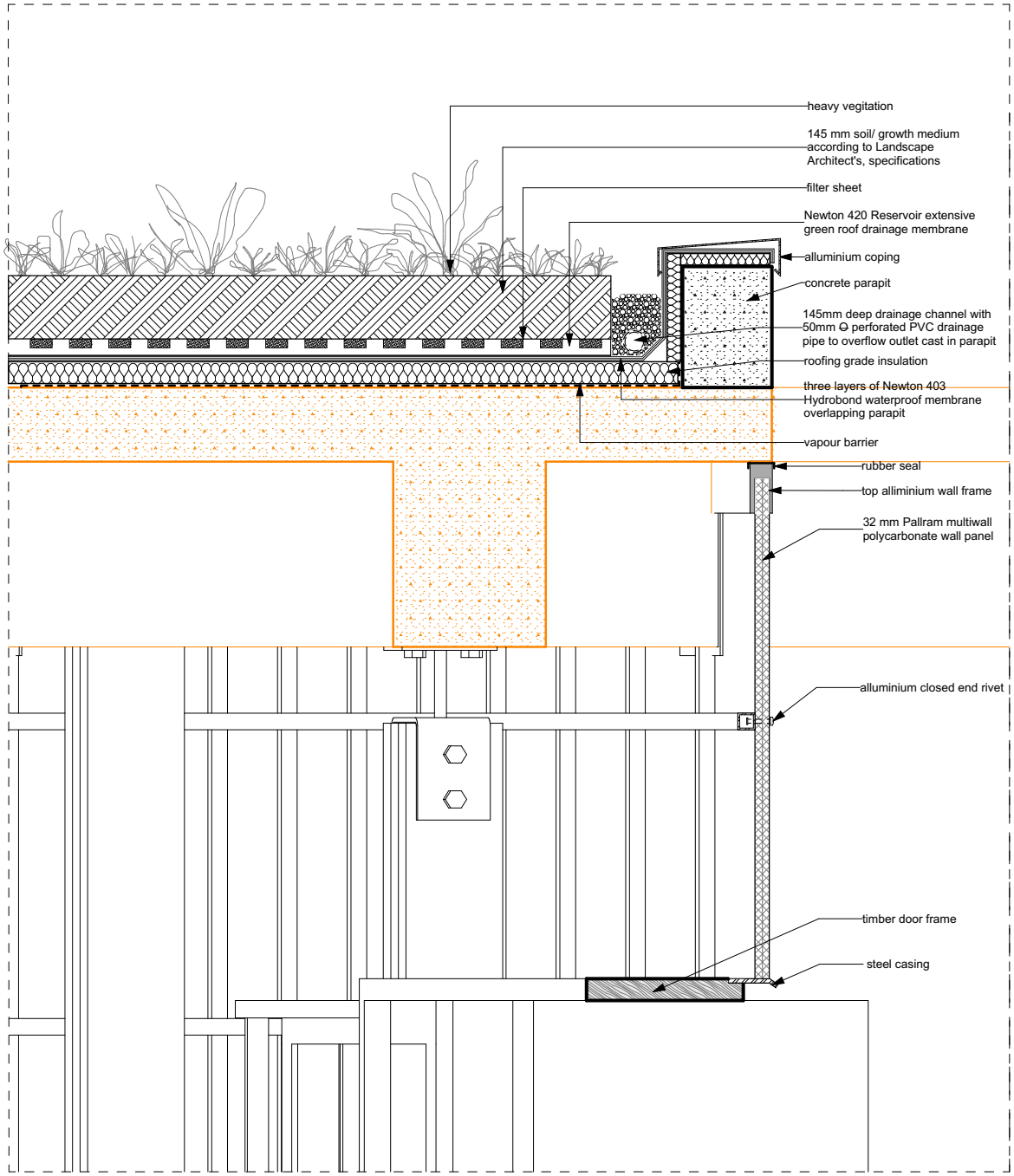


DETAIL O4- GROUND FLOOR WITH SLOPE TO DRAIN- SCALE 1:20

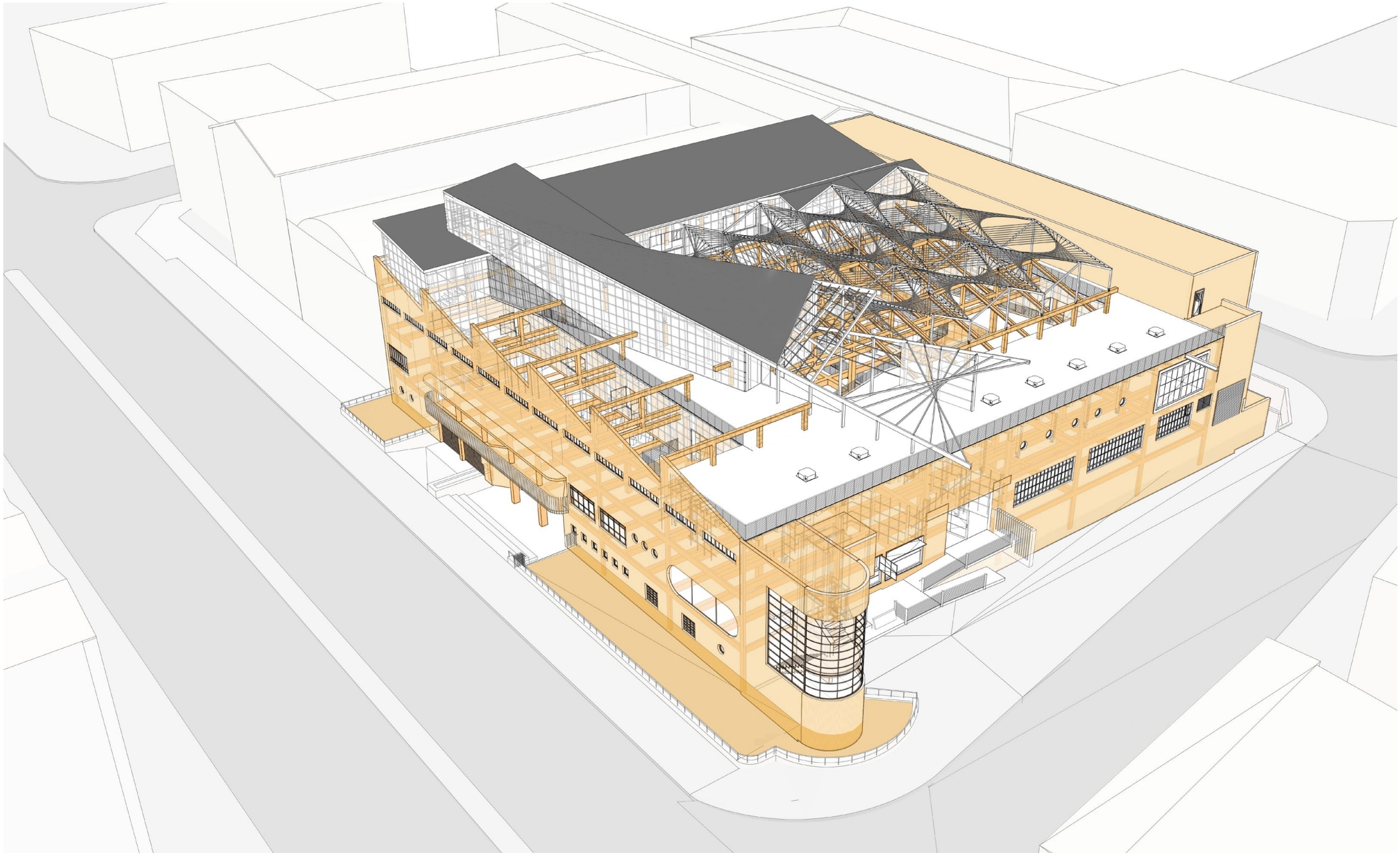


DETAIL 05- SCALE 1:10

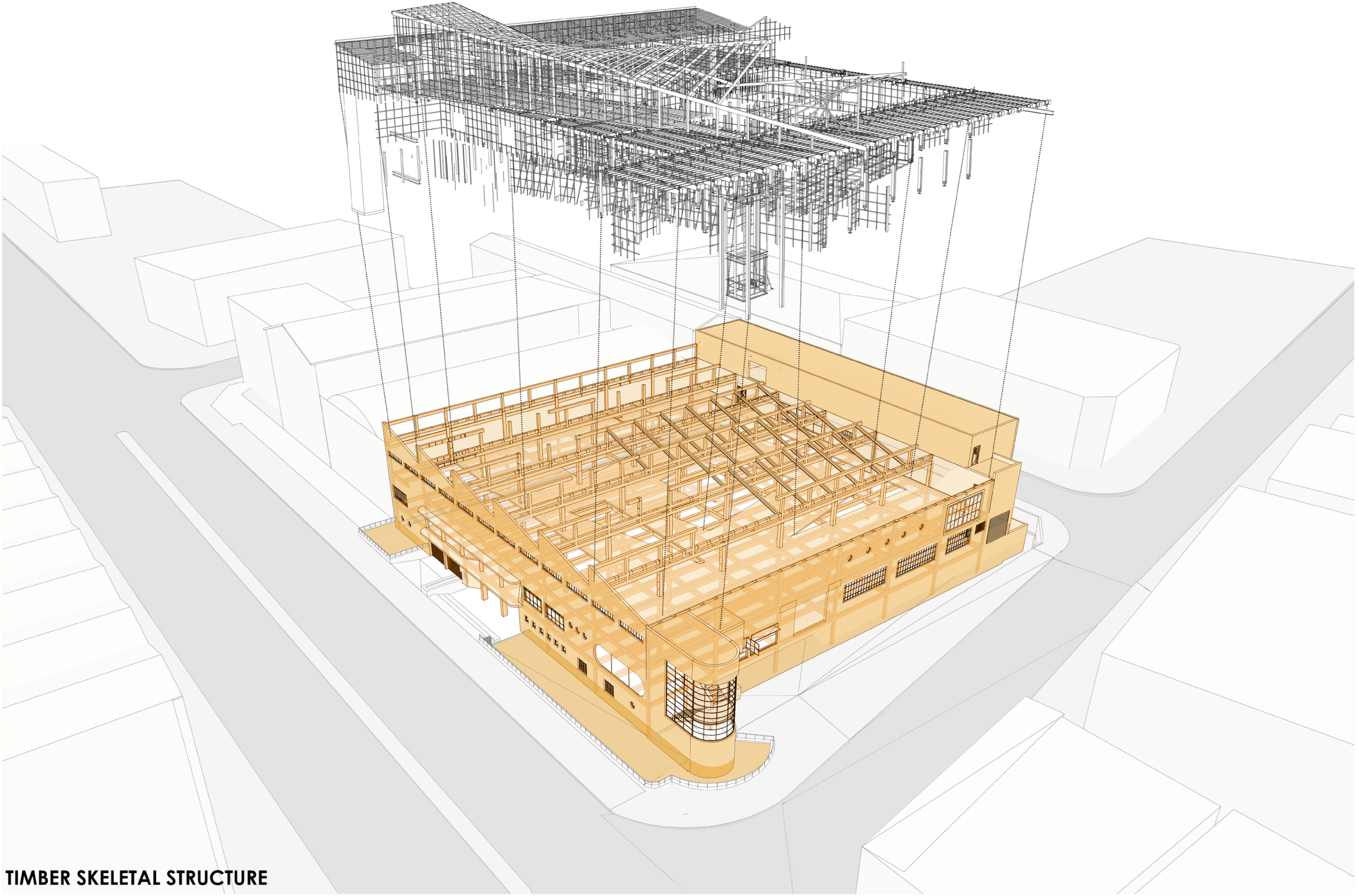
DETAIL 06- SCALE 1:10



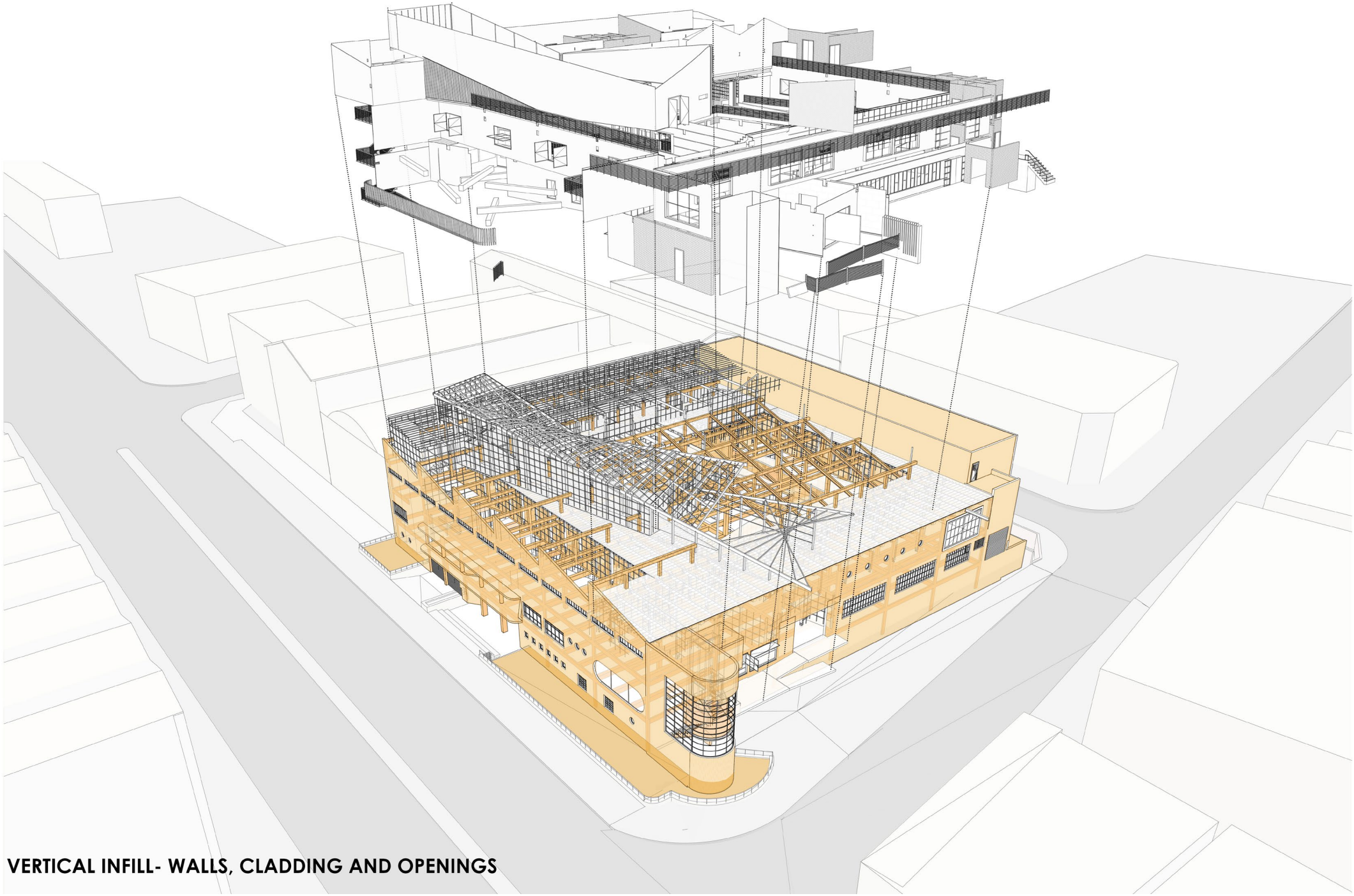
DETAIL 03 **SCALE 1:10**



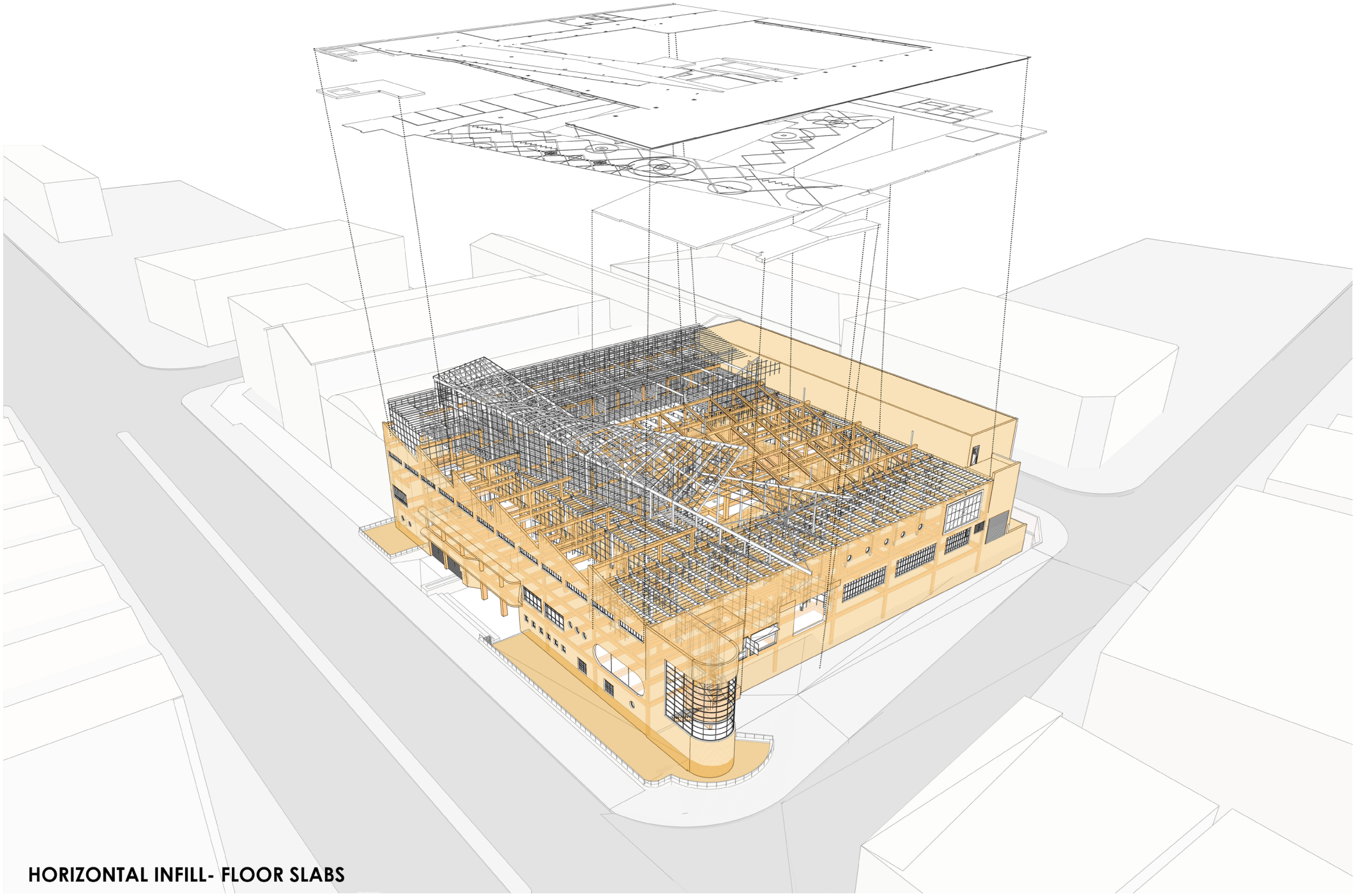
BIRDS EYE VIEW



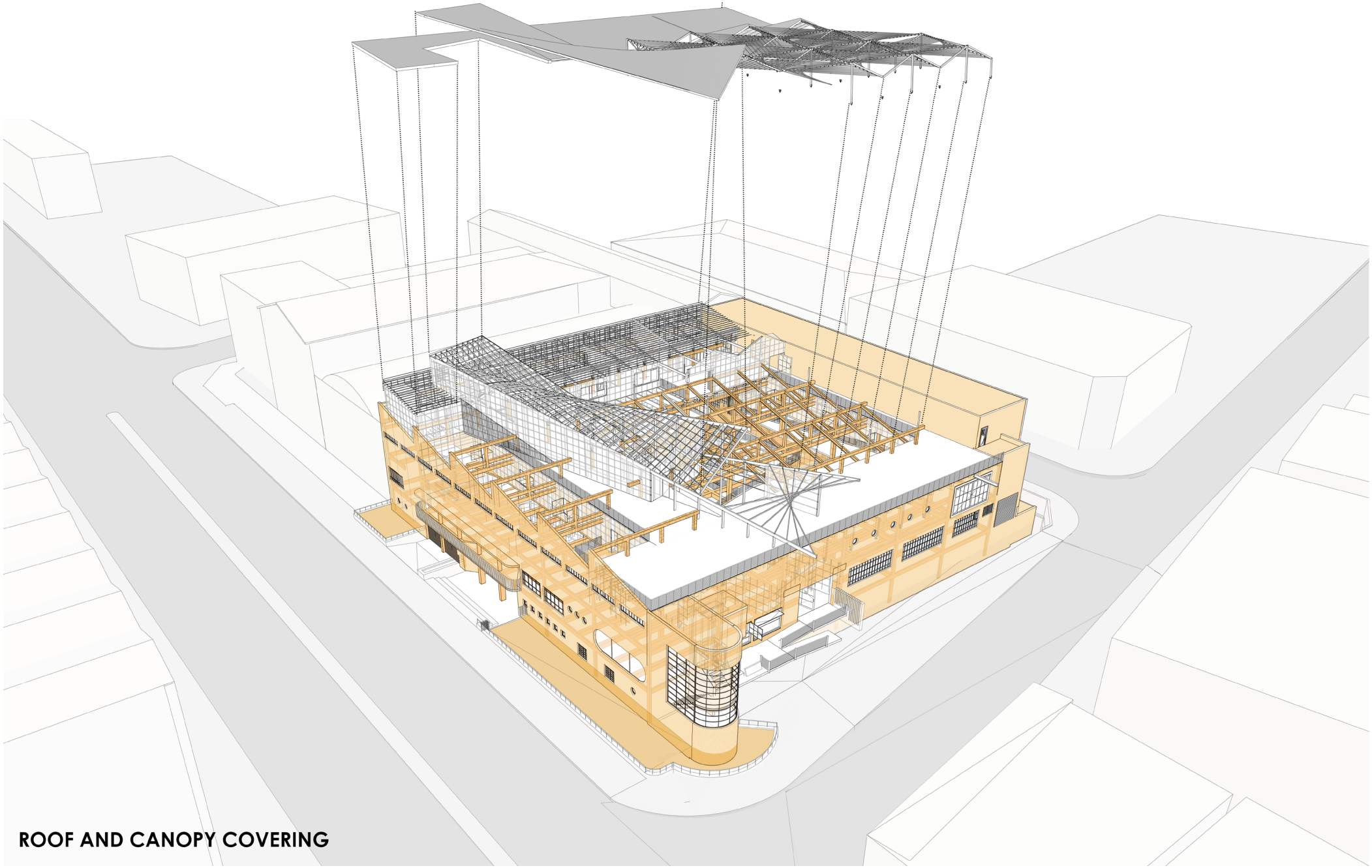
TIMBER SKELETAL STRUCTURE



VERTICAL INFILL- WALLS, CLADDING AND OPENINGS



HORIZONTAL INFILL- FLOOR SLABS



ROOF AND CANOPY COVERING

REFERENCE LIST

1941 Parliamentary debates around the amendment of the 1931 Factory Act no 26, Government Publications of the Union of South Africa.

1941 parliamentary debates around the amendment of the 1931 Factory Act no 26, Government Publications of the Union of South Africa, 4202.

1941 parliamentary debates around the amendment of the 1931 Factory Act no 26, Government Publications of the Union of South Africa, 4205

Anguelov, N. 2016. The Dirty Side of the Garment Industry: Fast Fashion and Its Negative impact on Environment and Society. Boca Raton: Taylor & Francis Group, LLC

Archdaily, 2021: Oslo School of Architecture. [online.] Available from: < https://www.archdaily.com/2240/oslo-school-of-architecture-jva> [Acessed 20 July 2021].

Archdaily, 2021. Parc de la Vilette: Bernard Tschumi. [online.] Available from: <https://www.archdaily.com/92321/ad-classics-parc-de-la-villette-bernard-tschumi?ad_medium=gallery> [Accessed 23 September 2021].

Australia ICOMOS. 2013. The Burra Charter: The Australian ICOMOS Charter for Places of Cultural Significance [online] Available from: <https://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf> [Accessed: 26 July 2021].

Baan, I. n.d. Thomas Heatherwick Gives AD a Tour of the Zeitz MOCAA. [online.] Available from: < https://www.architecturaldigest.com/story/thomas-heatherwick-cape-town-zeitz-mocaa-south-africa> [Accessed 24 September 2021].

Brand. 2017. Manufacturing in South Africa. [online.] Available from: <https://www.brandsouthafrica.com/investments-immigration/business/economy/sectors/manufacturing-in-south-africa> [Accessed 1 October 2021].

Cape Town Photos. 2016. Groote Schuur 1938. [online.] Available from: <http://www.cape-town.photos/image/1480-groote-schuur-hospital-1938/> [Accessed 16 June 2021].

English, G. 1990. Feb. 11, 1990: Nelson Mandela and his Wife, Winnie Madikizela-Mandela walk free after 27 years in prison. [online.] Available from: <http://www.apimages.com/metadata/Index/South-Africa-AP-Was-There-30-Years-Ago/dfc7823424c343fa8b3fff5bb903e1d7/33/0> [Accessed 6 July 2021].

Kano, E. nd. Shipyard 1862 Shangai, China 2017. [online]. Available from: <https://www.architonic.com/en/project/kengo-kuma-shipyard-1862/5106177> [Accessed 3 June 2021].

Palais de l'eau. 2020. Recycle denim process. [online.] Available from: <https://palaisdeleau.com/magazine/recycle-denim-process/ > [Accessed 15 August 2021].

Rashid, P. 2011. Industrial Pollution in Bangladesh. [online.] Available from: < https://www.gettyimages.com/photos/pollution-textiles?phrase=pollution%20textiles&sort=mostpopular> [Accessed 16 August 2021].

Bachmann, S. & Lutz, T. nd. Shipyard 1862 Shangai, China 2017. [online]. Available from: <https://www.architonic.com/en/project/kengo-kuma-shipyard-1862/5106177> [Accessed 3 June 2021].

Bakhtin, M. 1981. The dialogic imagination: four essays. Austin, University of Texas Press.

Beukes, E., de Villiers, I. & van Marle, K. 2012. Memory, space and gender: re-imagining the law. Southern African Public Law, 27(2), pp. 559-574.

Brand. 2017. Manufacturing in South Africa. [online.] Available from: <https://www.brandsouthafrica.com/investments-immigration/business/economy/sectors/manufacturing-in-south-africa> [Accessed 1 October 2021].

Cape Town Photos. 2016. Groote Schuur 1938. [online.] Available from: <http://www.cape-town.photos/image/1480-groote-schuur-hospital-1938/> [Accessed 16 June 2021].

Carr, A. 2017. The quick and the dead: temporality, temporal structure, and the architectural chronotope. Architectural Research Quarterly, Cambridge University Press, 21(2), pp. 94–112.

Clarke, N. 2016. SA Breweries Visitors' Centre. [online.] Available from: <https://www.artefacts.co.za/main/Buildings/bldgframes.php?bldgid=9288> [Accessed 13 May 2021].

Dobbins, T. 2018. Why Heatherwick Studio's Zeitz MOCAA Is "A Call to Arms" For African Museums. [online]. Available from: <https://www.archdaily.com/896395/why-heatherwick-studios-zeitz-mocaa-is-a-call-to-arms-for-african-museums> [Accessed 23 June 2021].

English, G. 1990. Feb. 11, 1990: Nelson Mandela and his Wife, Winnie Madikizela-Mandela walk free after 27 years in prison. [online.] Available from: <http://www.apimages.com/metadata/Index/South-Africa-AP-Was-There-30-Years-Ago/dfc7823424c343fa8b3fff5bb903e1d7/33/0> [Accessed 6 July 2021].

Factories Act No 26 of 1931

Frederick, S. & Gereffi, G. 2010. The Global Apparel Value Chain, Trade and the Crisis: Challenges and Opportunities for Developing Countries. The World Bank, Policy Research Working Paper Series. (WPS 5281)

Gardenvisit. 2021. Deconstructive reading Parc de la Villette. [online]. Available from: <https://www.gardenvisit.com/history_theory/library_online_ebooks/architecture_city_as_landscape/deconstructive_reading_parc_de_la_villette> [Accessed 23 June 2021].

Garment 2 Garment. 2021. G2G Recycling system. [online.]. Available from: <(https://www.garment2garment.com/> [Acessed 28 August 2021].
Gerfen, K. 2018. Shipyard 1862. [online]. Available from: <https://www.architectmagazine.com/project-gallery/shipyard-1862_o> [Accessed 3 June 2021].

Getty Images, 2021. Examining textile waste from brands and charities. [online.] Available from: <https://acta.global/news/used-textile-waste-from-brands-and-charities/> [Acessed 30 October 2021].

REFERENCE LIST

Google Earth. 2021. Salt River, Cape Town, South Africa. [online.] Available from: <https://earth.google.com/web/search/salt+river+cape+town/@-33.92928061,18.46573197,10.81004947a,4484.58956997d,35.93139548y,0.00414324h,0t,0r/data=CigiJgokCeZ51Iuq9UDAEV2sqWIy-UDAGavq_SE9eTJAITslA3P3bDJA> [Accessed 23 March 2021].

Harries, K. 1975. The Ethical Function of Architecture. In: Nesbitt, K. (Ed). 1996. Theorizing a New Agenda for Architecture – an Anthology of Architectural Theory 1965- 1995. New York: Princeton Architectural Press. pp. 392-397

Heritage Council Victoria. 2013. Adaptive Reuse of Industrial Heritage: Opportunities & Challenges. [online]. Available from: <http://heritagecouncil.vic.gov.au/wp-content/uploads/2014/08/HV_ IPAWsinglepgs.pdf> [Accessed 26 May 2021].

Hooks, B. 2015. Feminist theory from margin to center. 1st ed. New York: Routledge.

Ioannidis, M. 2016. Room of possibilities: The Oslo School of Architecture. [online.] Available from: <http://www.roomofpossibilities.com/index.php/2016/09/27/the-oslo-school-of-architecture-before-and-now/> [Accessed 5 June 2021].

Kano, E. nd. Shipyard 1862 Shangai, China 2017. [online]. Available from: <https://www.architonic.com/en/project/kengo-kuma-shipyard-1862/5106177> [Accessed 3 June 2021].

Koolhaas, R. 1988. Postscript: introduction for New Research "the Contemporary City". (Ed). 1996. Theorizing a New Agenda for Architecture – an Anthology of Architectural Theory 1965- 1995. New York: Princeton Architectural Press. pp. 322-326.

Latz, P. 2000. The Idea of Making Time Visible. Topos 33(1), pp. 94-99.

Latz and partners. nd. Duisburg Nord Landscape Park. [online]. Available from: <https://www.latzundpartner.de/en/projekte/postindustriellelandschaften/landschaftspark-duisburg-nord-de/> [Accessed 21 June 2021].

Leatherbarrow, D. 2016. 96th ASCA Annual meeting. Fresh Air. Philadelphia: Drexel University & the University of Pennsylvania. Video. [online]. Available from: <https://www.youtube.com/watch?v=_B5c22rLyMo&list=PLC9mTZ4NozZ2PxYnr0JeaWcxCsV52n3rs&index=3&ab_channel=ACSANational> [Accessed 26 June 2021].

Leblanc, R. 2020. The Basics of Textile Recycling: Growth of Textile Recycling Promises to Divert More Material from Landfills. [online]. Available from: <https://www.thebalancesmb.com/the-basics-of-recycling-clothing-and-other-textiles-2877780> [Accessed 25 May 2021].

Martinson, W. 1997. "SA Breweries Visitors' Centre - Mariendahl Brewery", Architecture South Africa, Nov-Dec 1997. 18-19.
Miles, A. 2020. Circular Fashion – A New Model for a Broken System. [online.] Available from: <https://www.heddels.com/2020/06/circular-fashion-a-new-model-for-a-broken-system/> [Acessed 30 October 2021].

Muthu, S. S. 2017. Textiles and Clothing Sustainability: Recycled and Upcycled Textiles and Fashion. Singapore: Springer Nature

Ndalana, L. 2016. New push to revive SA textile industry. [online]. Available from: <http://www.fin24.com/ economy/new-push-to-revive-sa-textile-industry-20160606> [Accessed 16 May 2021].

Norberg-Schulz, C. 1980. Genius Loci. London: Academy Editions.

Palais de l'eau. 2020. Recycle denim process. [online.] Available from: <https://palaisdeleau.com/magazine/recycle-denim-process/ > [Accessed 15 August 2021].

Pather, R. 2017. Twin buildings still echo the changes in Salt River. [online] Available from: <https://mg.co.za/article/2017-12-21-00-twin-buildings-still-echo-the-changes-in-salt-river/> [Accessed 13 May 2021].

Payne, C. 2015. The Weird Tech and Brilliant Colors of the American Textile Mill. [online.] Available from: <https://www.wired.com/2015/02/christopher-payne-textiles/?mbid=social_twitter#slide-id-1724335/slide-id-1724335:> [Acessed 16 August 2021].

Pienaar, M. 2017. "Eaton for Africa – fifty years later", Architecture South Africa, Aug-Sept 2017, 17-34.

Pinnock, G. n.d. Unstitching Rex Trueform. [online.] Available from: <http://www.wolffarchitects.co.za/2012/01/this-is-an-article-title/> [Accessed 23 April 2021].

Pretorius, K. 2019. Rex Trueform Building declared a provincial heritage site. [online]. Available from: <https://www.iol.co.za/weekend-argus/rex-trueform-building-declared-a-provincial-heritage-site-19423759> [Accessed 13 May 2021].

Rashid, P. 2011. Industrial Pollution in Bangladesh. [online.] Available from: <https://www.gettyimages.com/photos/pollution-textiles?phrase=pollution%20 textiles&sort=mostpopular> [Accessed 16 August 2021].

Revoven. 2021. Textile waste recycling. [online]. Available from: <https://www.rewoven.africa/textile-recycling> [Accessed 26 June 2021].

Ricoeur, P. 2016. Architecture and Narrativity. Ricoeur studies, 7(2), pp. 31-42.

Weather & climate, 2021. Cape Town annual weather statistics. [online]. Available from: <https://weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,Cape_town,South-Africa> [Acessed 23 July 2021].

Wikipedia. 2010. University of Cape town. [online.] Available from: <https://en.wikipedia.org/wiki/University_of_Cape_Town> [Accessed 13 July 2021].

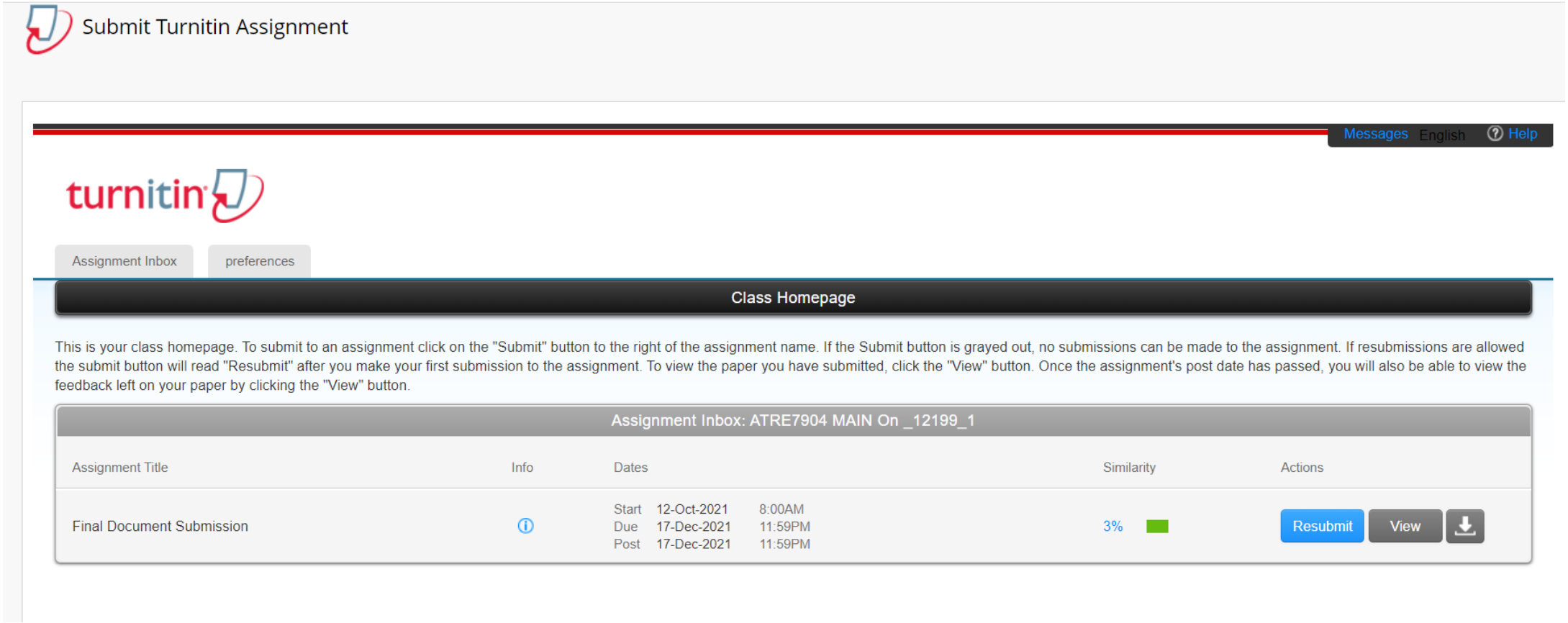
Wolff, I. 2014. Unstitching Rex Trueform: exploring apartheid modernity and architectural modernism through the Rex Trueform garment manufacturing factory, Salt River 1937 – 2013. Dissertation (Mphil Herritage and Public Culture). Cape Town: University of Cape Town.

Souza, E. 2011. AD Classics: Parc de la Villette/ Bernard Tschumi Architects. [online]. Available from: <https://www.archdaily.com/92321/ad-classics-parc-de-la-villette-bernard-tschumi> [Accessed 23 July 2021].

REFERENCE LIST

Vlok, E. 2006. The Textile and Clothing Industry in South Africa. In Jauch, H & Traub-Merz, R. (Ed.). The Future of the Textile and Clothing Industry in Sub-Saharan Africa. Bonn: Friedrich Ebert Stiftung, pp. 227-246.

World Bank Group. 2019. How much do our wardrobes Cost the Environment. [online]. Available from: <https://www.worldbank.org/en/news/feature/2019/09/23/costo-moda-medio-ambiente> [Accessed 14 May 2021].



NOTES:

