07

design synthesis & iteration

As a continuation of the concept, the design development begins with an interrogation of ways to connect disparate buildings or sites through a precedent analysis.

Figure 159: Artwork on northern façade *(Author 2021)*

PRECEDENT

The Coal Drops Yard by Heatherwick Studio (2018) is chosen as a precedent because it consists of two separate, independent existing heritage buildings adjacent to an urban space similar to the condition of the Rivertown Beerhall. The important principles derived from this precent include: the way in which the two buildings are joined formally through a new shared roof that contrasts to the separate buildings below it, the subtraction of the urban space to form a new lower shared level which connects the buildings above, and the activation of these edges through circulation (figure 161).

Figure 160: Photograph *(Hufton + Crow 2018)*

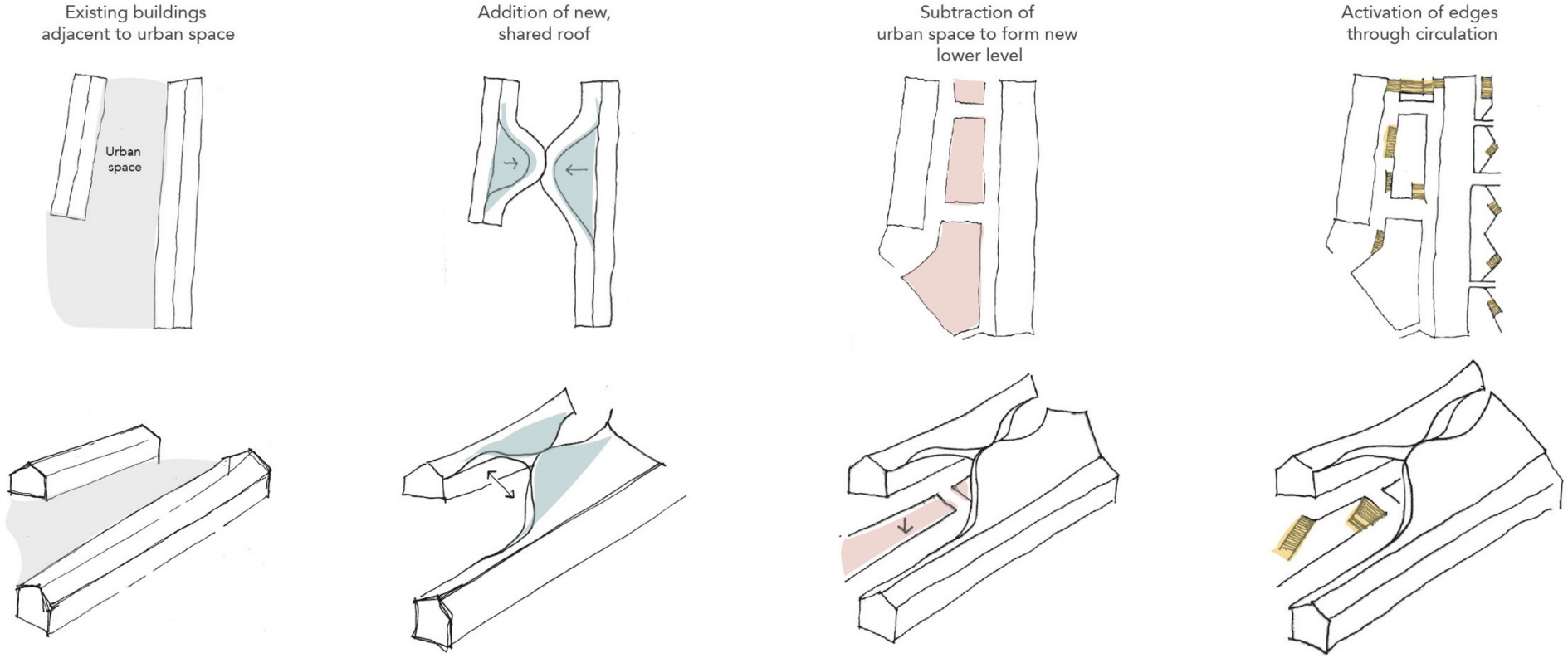


Figure 161: Principles *(Author 2021)*

ITERATION 1

Experimenting with form:

In response to the way in which the roofs were used create a new shared space in the precedent, a shared roof is explored in iteration one to devolve power. Power is redistributed from the former eating house to the bottom right and top left. This was done by creating one shared staggered sawtooth roof that collects south light and is longest above the most important space of the bakery. It reduces in length as the spaces diminish in significance. A new roof begins and increases its height towards another moment of significance at the north end of the site, being the seed research centre.

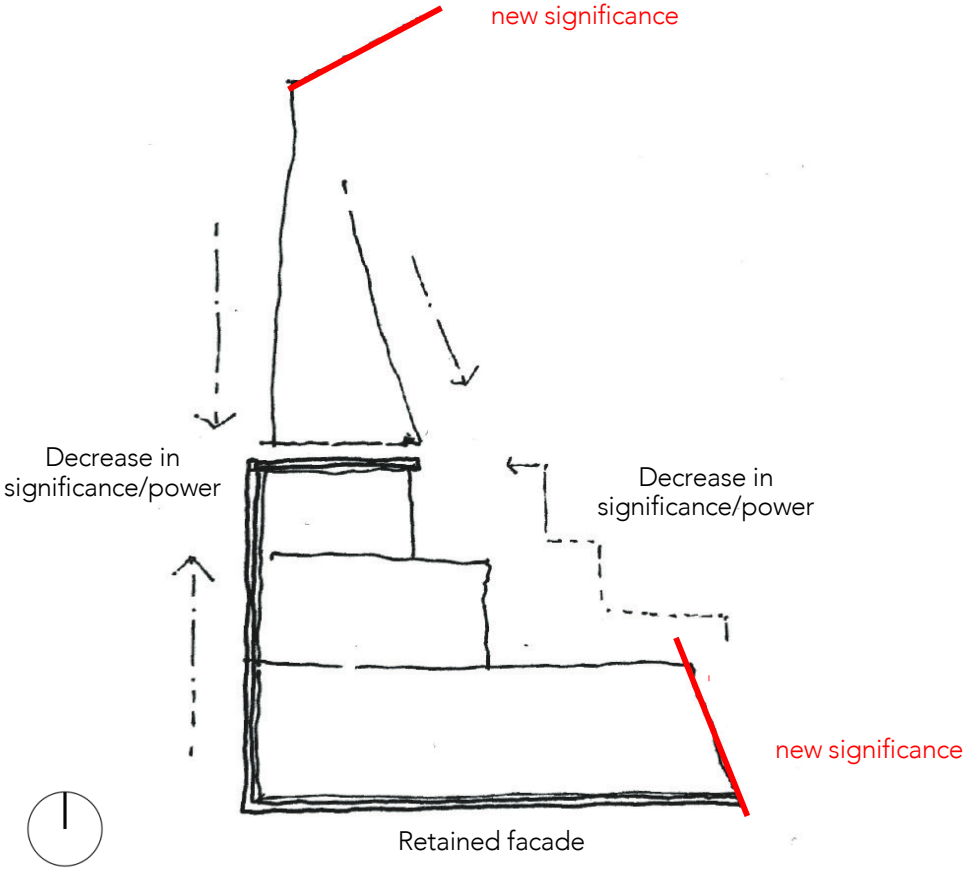


Figure 162: Roof Concept Drawings *(Author, June 2021)*

Figure 163: Roof Concept Maquettes *(Author, June, 2021)*

ITERATION 1

Development of plan:

The scheme begins with the front linear bakery space which opens up to the eastern corner. The former eating house is now subservient to the bakery in its placement, but still references the notion of gathering through an eating space. Services including toilets and refuse area are positioned alongside the previous most public edge as a statement of the redistribution of power. This gathering space spills out onto the courtyard and link area.

Water and circulation mediate the threshold between heritage and change. Learning and research facilities are positioned to the north of the site with circulation and an amphitheatre moving down to the basement to the seed library below. The northern most point acts as a welcoming forecourt to this scheme.

Figure 164: Ground Floor Plan, iteration 1 *(Author, June 2021)*

DESIGN ITERATIONS

Critique, Iteration 1:

The main intention of transformation, as the chosen heritage approach, is to re-signify existing features of the original building through the building's reuse.

The sawtooth roof (figure 165) did not fulfil the intentions stated above, because the design was not guided enough by the formal and technological value of the existing roofs.

The proposed sawtooth roof failed to enrich the significance of the previous forms. Rather, this iteration completely overpowered the original heritage, thus dismantling the integrity of the existing buildings.

Furthermore, the proposed roof removed an existing ventilation and lighting condition in the kitchen and disregarded the value and function of the existing truss structures of both spaces (Figures 166-167).

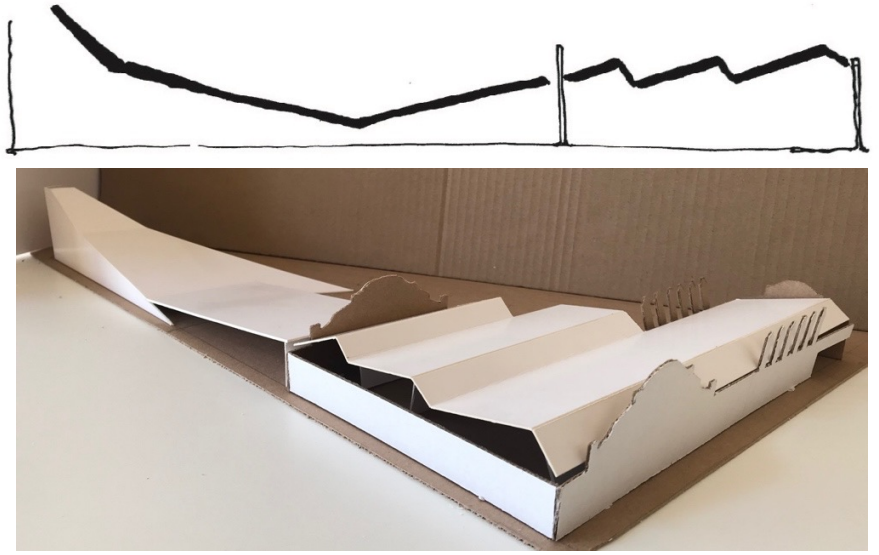


Figure 165: Iteration 1: Roof Concept *(Author, June 2021)*

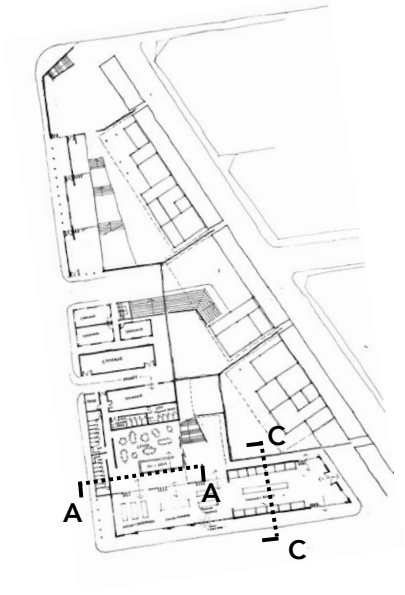


Figure 168: Key plan *(Author, June 2021)*

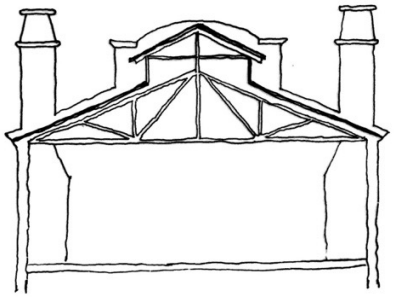


Figure 166: Section CC through kitchen *(Author, June 2021)*

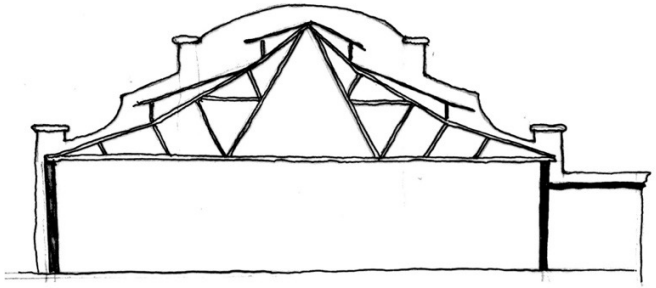
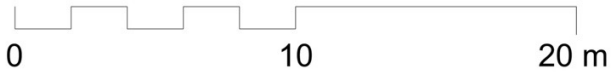


Figure 167: Section AA through eating hall *(Author, June 2021)*



DESIGN ITERATIONS

Critique, Iteration 1:

In terms of the plan of iteration 1, the notion of mediation through exchange was not demonstrated spatially and architecturally.

This was caused by the fact that there was no architectural principles that supported the argument of social exchange.

In addition, the articulation of the canal edge needed further refinement, and the geometry of the circulation spaces was awkward.

The proposed eating hall space was too divided and lost its perception of an open linear hall, flanked by the gables on either side.

Furthermore, the proposed learning spaces in the middle of the scheme did not tie the two buildings together successfully.

Figure 169: Iteration 1: Ground Floor Plan *(Author, June 2021)*

PRECEDENT

Circulation as a guiding architectural principle for exchange:

The conceptual driver of social exchange was devolved into the architectural principle of circulation which was used to guide the iterative design process going forward.

Circulation creates the threshold that facilitates exchange on site and which acts to mediate between the old and new, public and private, exterior and interior as well as various functions.

A precedent study was undertaken which highlighted how other projects have used circulation as an architectural principle to define relationships in space.

The first precedent is the KZNSA Gallery by Walters and Cohen Architects. This scheme embodies the notion of "circulation as threshold" through the circulation route that becomes the threshold between the gallery space and the exterior café eating area. It is successful in having more than one function acting both as a collective space for eating and also as a terraced route to the back-end of the scheme. The one critique with this circulation space, however, is that it ends very abruptly, leading to nowhere significant.

PRECEDENT 1

Project : KZNSA Gallery
Architect: Walters & Cohen Architects
Completed: 1996
Location: Durban, KwaZulu Natal

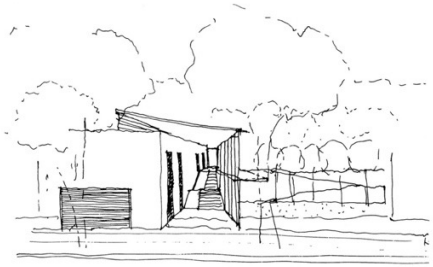


Figure 170: Concept Drawing
(Walters & Cohen 1996)

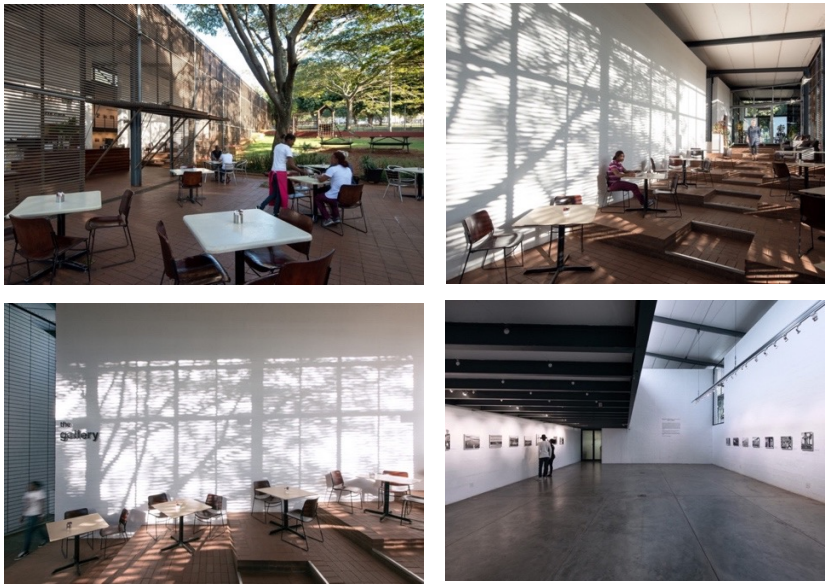
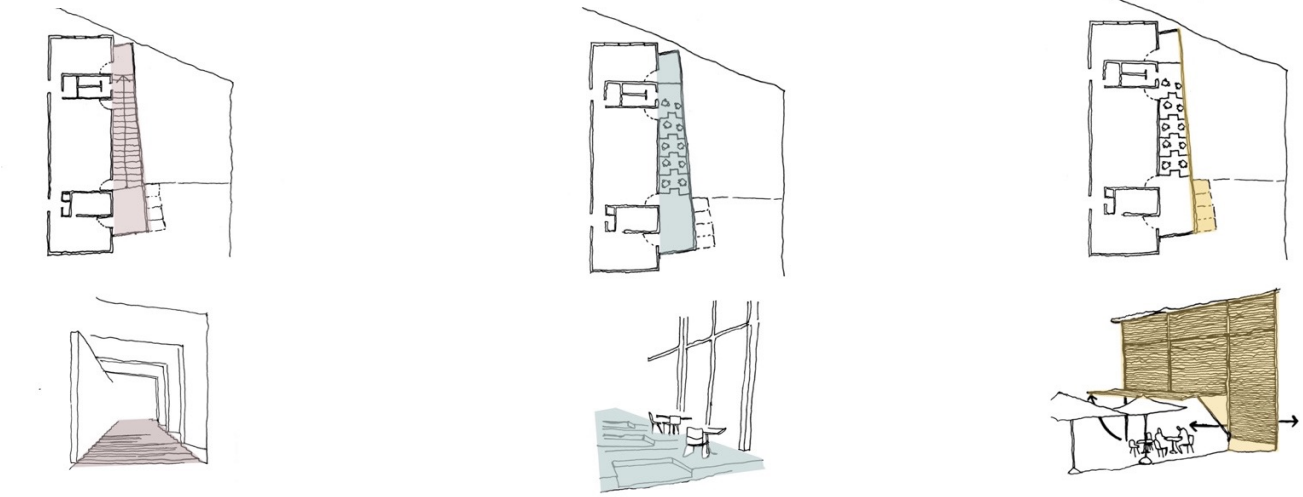


Figure 171: Photographs of KZNSA *(Angela Buckland 2015)*



CIRCULATION

CIRCULATION AS
COLLECTIVE EATING AREA

CIRCULATION
AS THRESHOLD

Figure 172: Analysis Diagrams: *(Author 2021)*

PRECEDENT

Circulation as a guiding architectural principle for exchange:

The next precedent that embodies circulation space as a threshold for exchange is the Montessori School in Delft by Herman Hertzberger.

In this precedent, the circulation space between the classrooms becomes a collective space for exchange and encounter between students. This circulation space acts as a unifying element that ties together many disparate functions of different degrees of privacy.

PRECEDENT 2

Project : Montessori School
Architect: Herman Hertzberger
Completed: 1960
Location: Delft, Netherlands

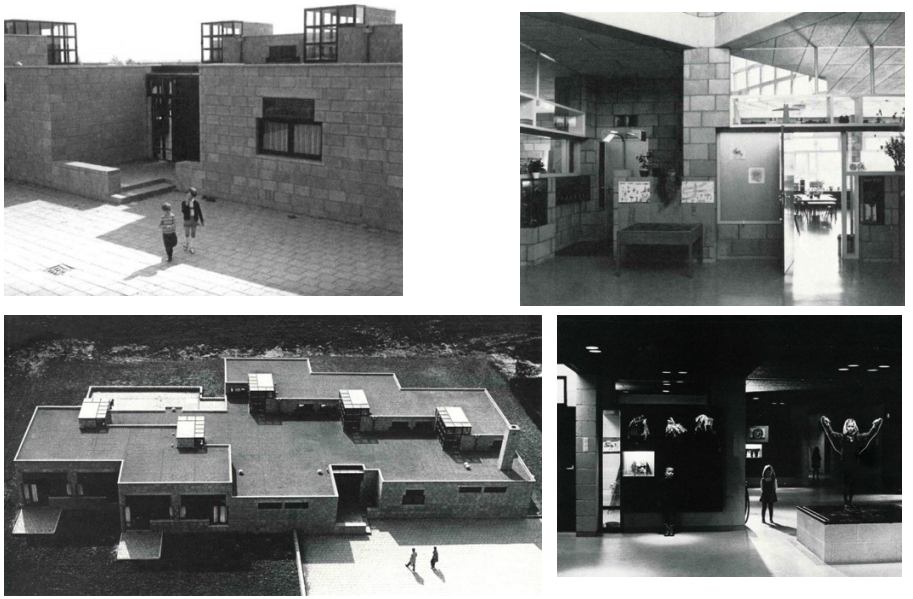
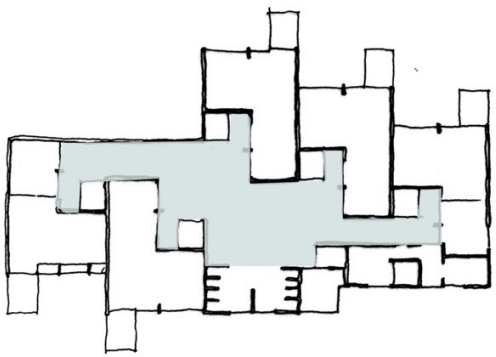


Figure 173: Photographs of Montessori School *(Johan van der keuken and Herman Hertzberger 1960)*



CIRCULATION AS
COLLECTIVE SPACE

CIRCULATION
AS THRESHOLD BETWEEN VARYING
FUNCTIONS

Figure 174: Analysis Diagrams: *(Author 2021)*

PRECEDENT

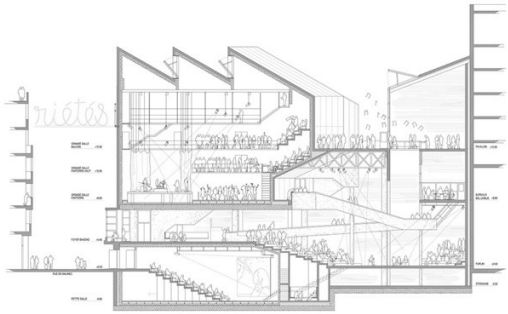
Circulation as a guiding architectural principle for exchange:

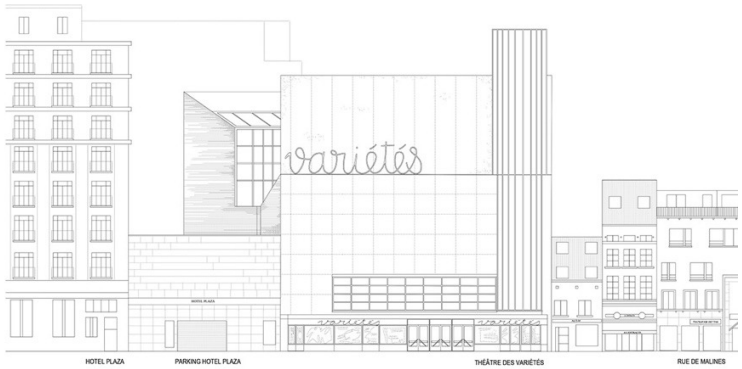
The third precedent is Théâtre des Variétés by Flores & Prats. This precedent consists of a multi-volume circulation space that allows exchange and encounter to happen across space both vertically and horizontally. The plan consists of several internal streets that get pulled into various spaces and which act to tie and unify disparate functions and spaces together.

.

PRECEDENT 3

Project : Théâtre des Variétés
Architect: Flores & Prats
Competition: 2020
Expected date of completion: 2024
Location: Brussels, Belgium





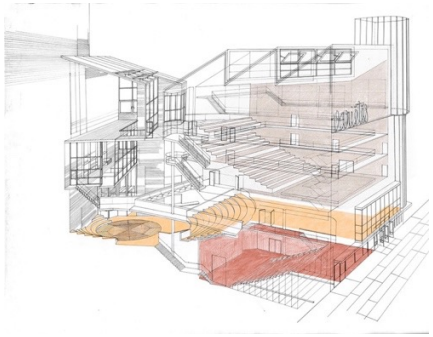
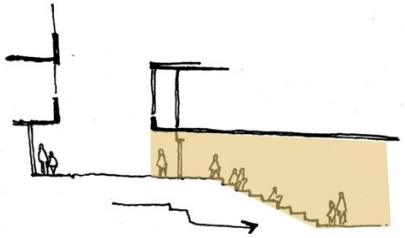
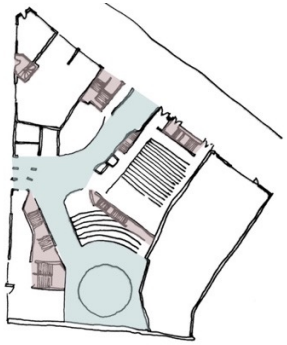
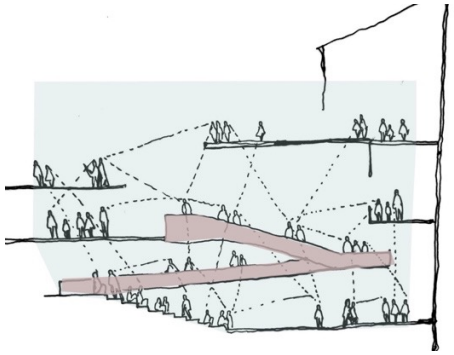


Figure 175 : Photographs & Drawings *(Flores & Plats 2020)*



CIRCULATION AS THRESHOLD
BETWEEN STREET AND BUILDING





CIRCULATION AS COLLECTIVE SPACE
FACILITATING SOCIAL EXCHANGE

Figure 176: Analysis Diagrams *(Author 2021)*

DESIGN ITERATIONS

Design development for iteration 2:

A new conceptual diagram was created from the lessons learnt in the previous precedents (figure 177). The concept diagram uses circulation to form a collective space. This new circulation space mediates between the fixed heritage of the existing building and changing water conditions of the canal. Iteration 2 was then developed from this concept diagram.

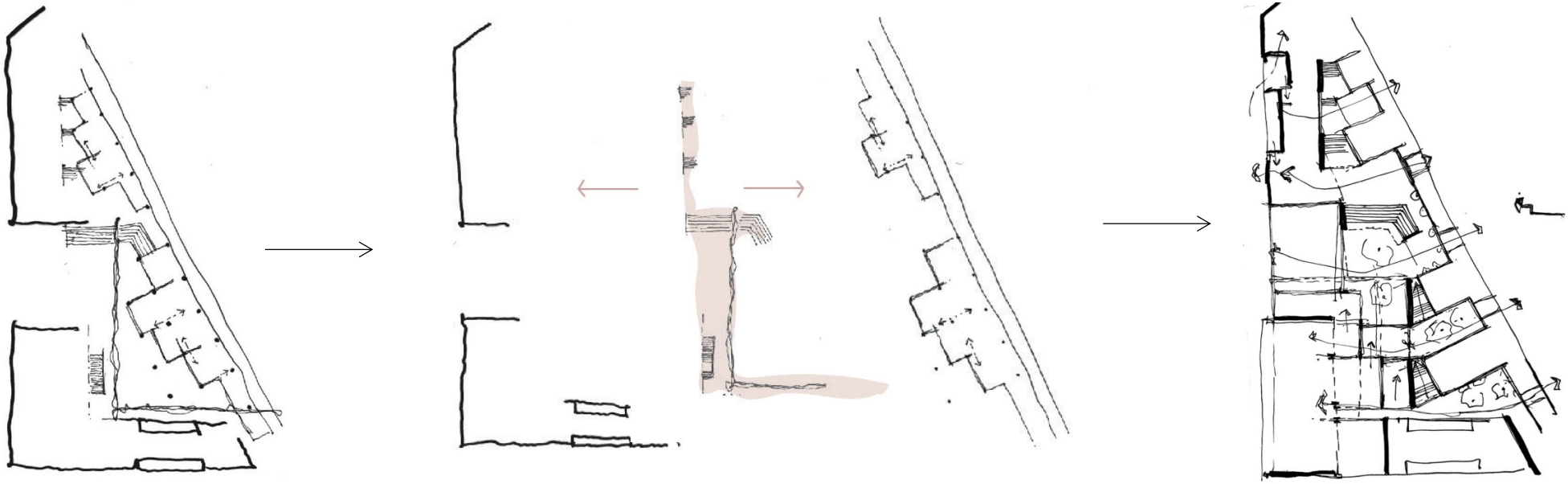
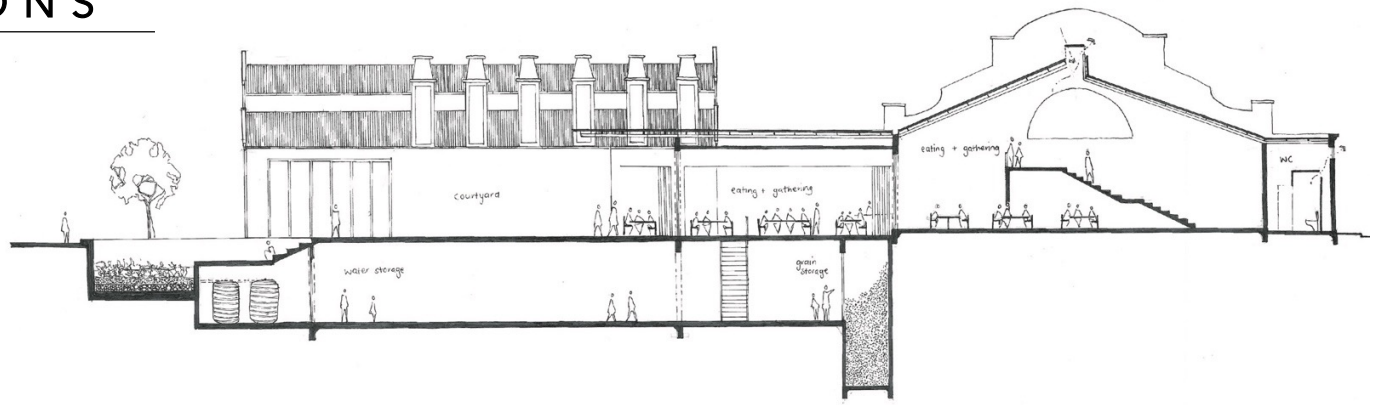


Figure 177: Concept Diagram Developed: *(Author, July 2021)*

DESIGN ITERATIONS

Iteration 2:

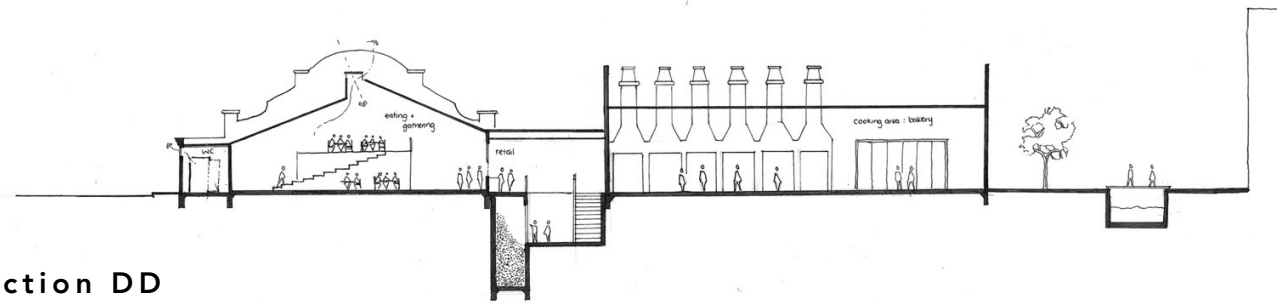
Circulation was demonstrated in iteration 2 particularly through the link area (section AA and DD) which created a new space underground and added a vertical dimension to the scheme (figures 178 & 179). Furthermore, circulation was explored at the canal edge with stairs leading to the seed library below (see plan on next page).



Section AA

1:100

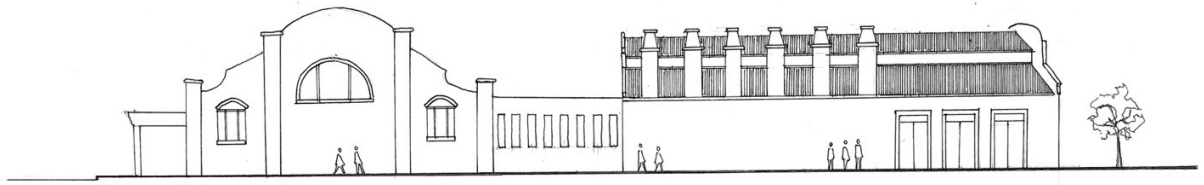
Figure 178: Iteration 2, Section A-A: *(Author, July 2021)*



Section DD

1:200

Figure 179: Iteration 2, Section D-D: *(Author, July 2021)*



South Elevation

1:200

Figure 180: Iteration 2, South elevation: *(Author, July 2021)*

DESIGN ITERATIONS

Iteration 2:

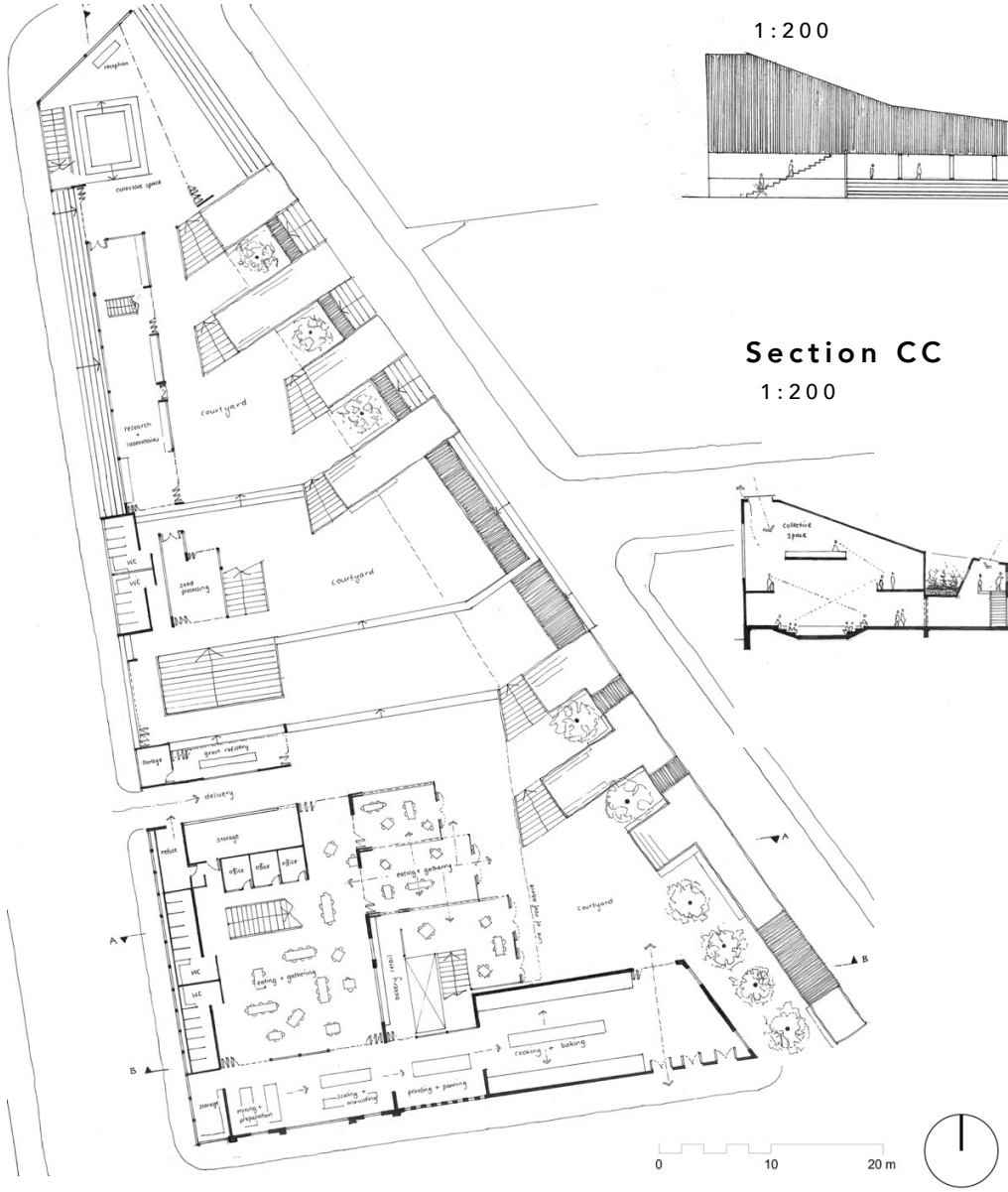


Figure 181: Iteration 2, Ground floor plan: *(Author, July 2021)*

West Elevation

1:200

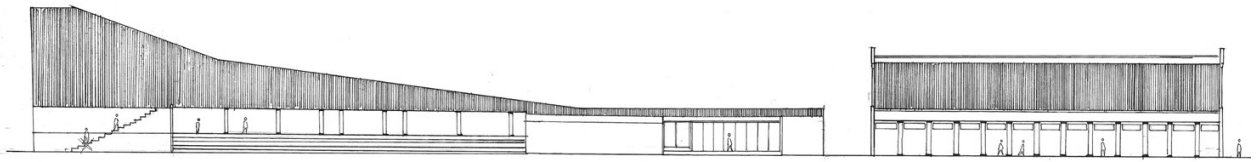


Figure 182: Iteration 2, West elevation : *(Author, July 2021)*

Section CC

1:200

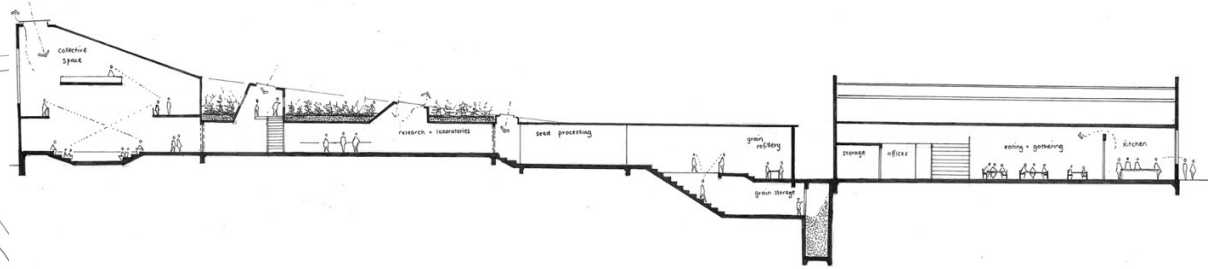


Figure 183: Iteration 2, Section C-C: *(Author, July 2021)*

DESIGN ITERATIONS

Critique, Iteration 2:

In Iteration 2, the number of stairs to the seedbank below was unnecessary and redundant. Furthermore, with the added circulation spaces and staircases, disability was neglected and needed to be resolved.

The toilets needed to be designed in such a way that eliminated pipes or ducts on the existing façade which is significant in terms of the heritage value of the site (figure 185).

Owing to the extension of the eating hall into the link area (figures 184 & 185), the relationship between the kitchen and eating hall was ill-defined in terms of its intention of subverting and dismantling power between the two buildings.

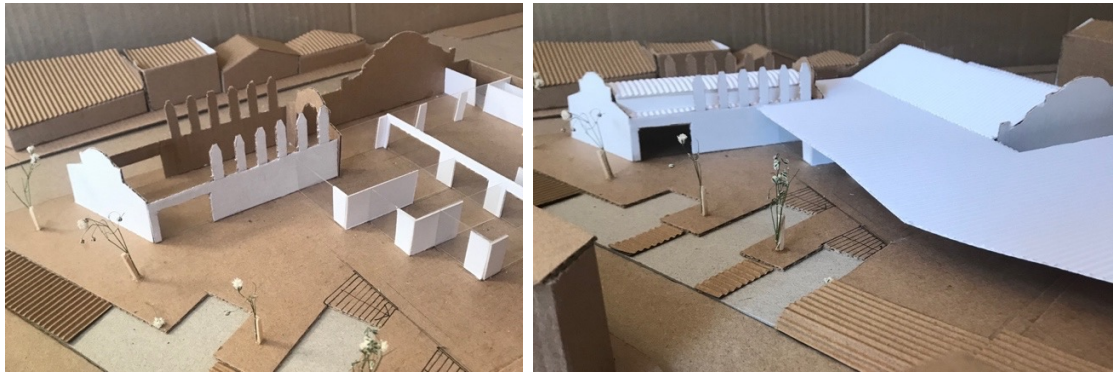


Figure 184: Extension of Link Area, maquettes, Iteration 2: *(Author, July 2021)*

Figure 185: Ground Floor Plan, Iteration 2: *(Author, July 2021)*

DESIGN ITERATIONS

Critique, Iteration 2:

As a result, the link area could have been more creatively and conceptually used in iteration 2 to define the new relationship between the buildings in a way that didn't overpower the space with more "building."

Therefore, the redesign of the link area to redefine the power relationships between the two buildings became imperative to the design development going forward.

In addition, the roof junctions between the link area and the existing heritage was not resolved and this needed to be requestioned in terms of how seamlessly the old and new met and how the roof could act to mediate between the two buildings and the new intervention (figure 186).

Figure 186: Maquette, Iteration 2: *(Author , July 2021)*

PRECEDENT

Precedent study of link areas:

In response to the critique of iteration 2, a further precedent study was undertaken that looked particularly at the resolution of junctions and link areas between buildings.

Precedent 4 is the Wakehurst Place restaurant by Walters and Cohen. The site consists of an existing grade II listed heritage building and courtyard. The intervention provides additional seating area in the courtyard as an extension of the existing internal restaurant.

The edge connections of the precedent are clearly defined through the roof glazing which creates a distinction between the existing heritage and new the intervention.

Furthermore, this enables circulation space to act as the threshold that mediates between old and new.

.

PRECEDENT 4

Project : Wakehurst Place Restaurant
Architect: Walters and Cohen
Completion: 2005
Location: West Sussex

Figure 187: Photos and Drawings of Precedent 4 *(Walters and Cohen, Dennis Gilbert 2005)*

PRECEDENT

Translating precedent onto site:

This precedent resulted in a rereading of the link area and its junctions towards the existing heritage fabric (figure 188).

At this point, the link area was still viewed as a connected extension of the eating hall and not its own separate space.

As a response to the precedent, these diagrams alongside (figure 188) explored how roof glazing could potentially frame circulation spaces below and act to separate yet connect to the existing heritage fabric of the kitchen.

PRECEDENT 4 : Translation onto site

Project : Wakehurst Place Restaurant
Architect: Walters and Cohen
Completion: 2005
Location: West Sussex

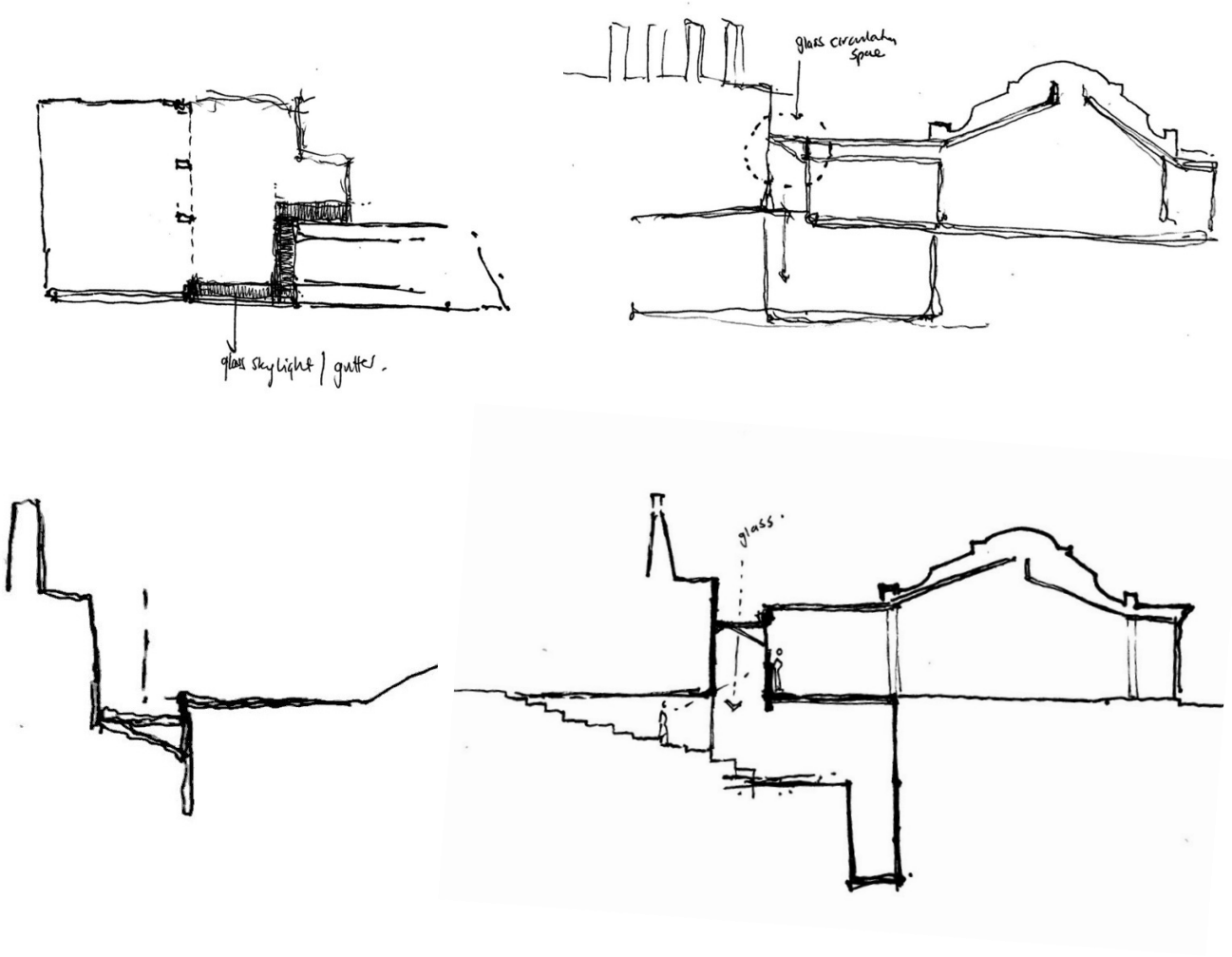


Figure 188: Precedent translated onto site: *(Author, August 2021)*

PRECEDENT

Precedent study of link areas:

Precedent 5 is a competition project called Yehudi Menuhin School Recital Hall by Walters and Cohen.

Precedent translated onto site:

This precedent explores the relationship between two buildings through the manipulation and subtraction of topography rather than the addition of more buildings.

The rough diagrams alongside (figure 190) explored how the manipulation of topography below the link area could act to connect the two seemingly separate buildings.

Manipulating the topography as an approach of mediation aligns with the the architectural intentions of subverting previous power relationships between these two spaces.

Increasing the vertical dimension of this space also creates more opportunity for social exchange to occur across boundaries and activities in space. The public can sit in this space and observe activities above and below.

PRECEDENT 5

Project : Yehudi Menuhin School Recital Hall
Architect: Walters and Cohen
Competition: 1999
Location: Stoke d'Abernon, Surrey

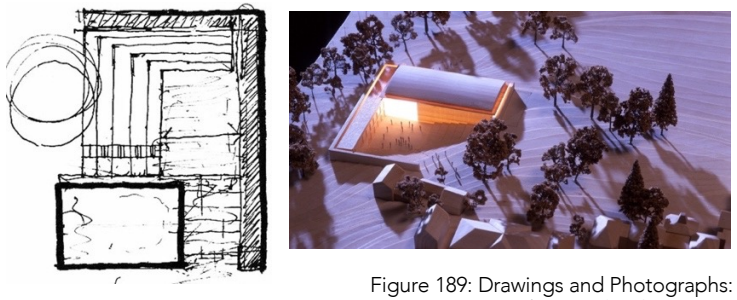


Figure 189: Drawings and Photographs: *(Walters and Cohen, 1999)*

PRECEDENT 5: TRANSLATED ONTO SITE

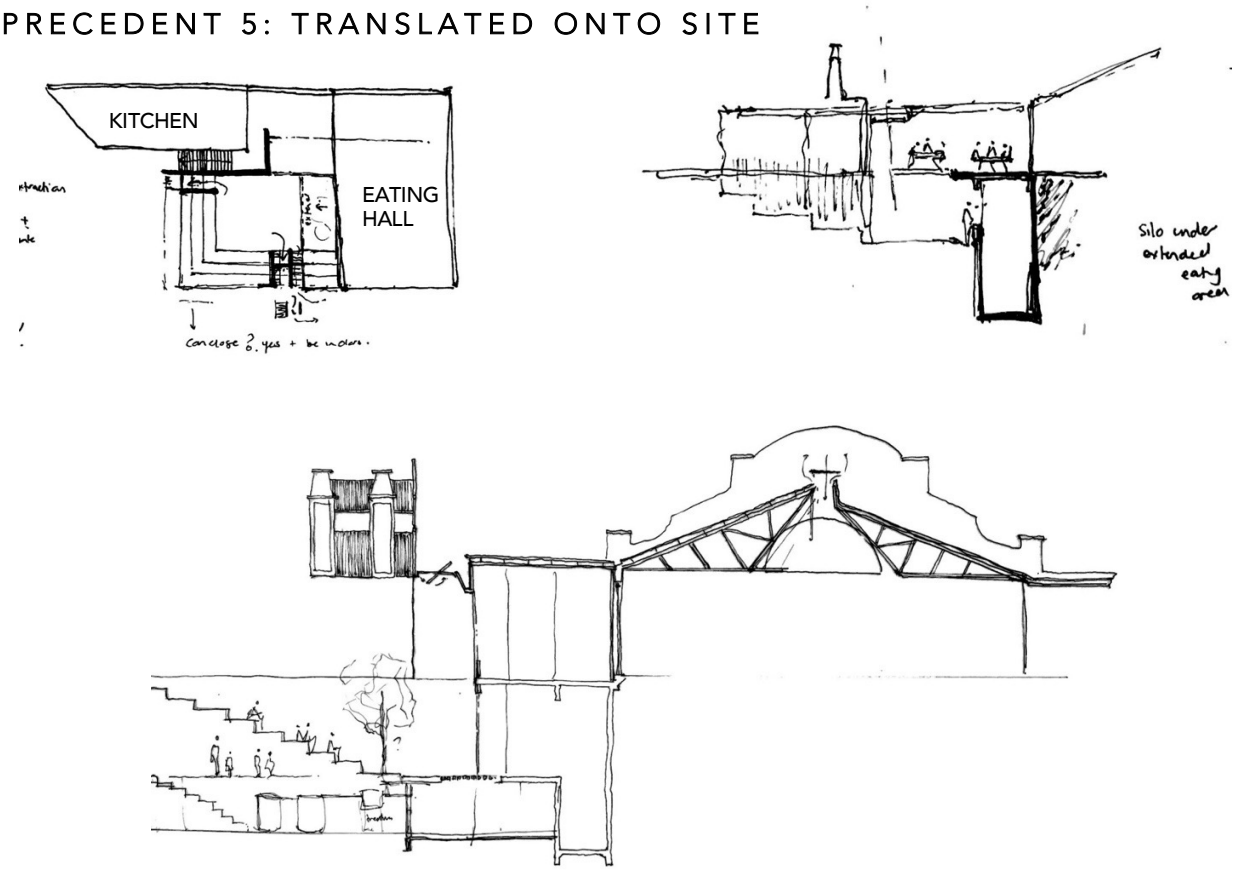


Figure 190: Precedent translated onto site: *(Author, August 2021)*

DESIGN ITERATIONS

Critique, Iteration 3:

The previous precedent study initiated the design decisions of iteration 3. Iteration 3 involved a rereading of the link area as a separate space from both the kitchen and the eating hall as opposed to a connected extension of the eating hall.

The conceptual sketches (figures 191-193) demonstrate this new independent link area that is connected to the existing heritage fabric through a gutter on one side and a skylight on the other. These new edge conditions create two circulation areas on either side of the link area, which separate it from the two buildings so that they read independently yet with a new mediated connection.

In alignment with the previous precedent study that was undertaken, the topography below the link area was also manipulated to form an amphitheatre into the grain silo space below (figures 191-192).

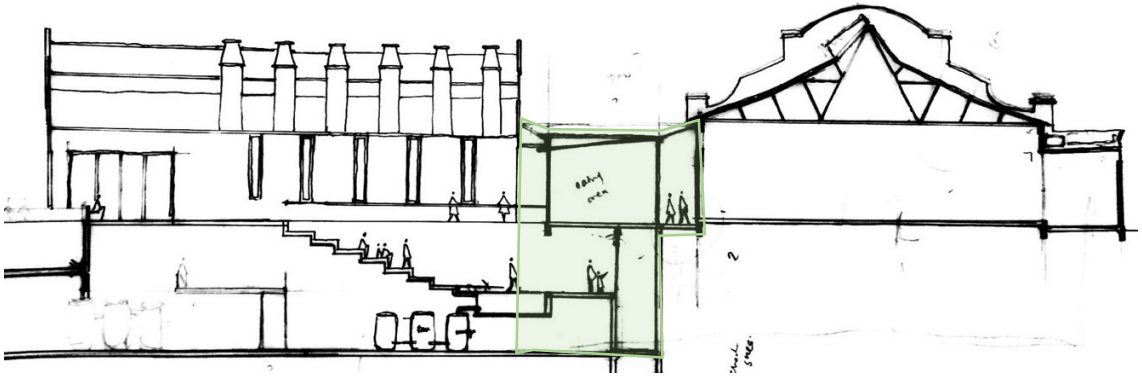


Figure 191: Iteration 3, Independent Link Area: *(Author 2021)*

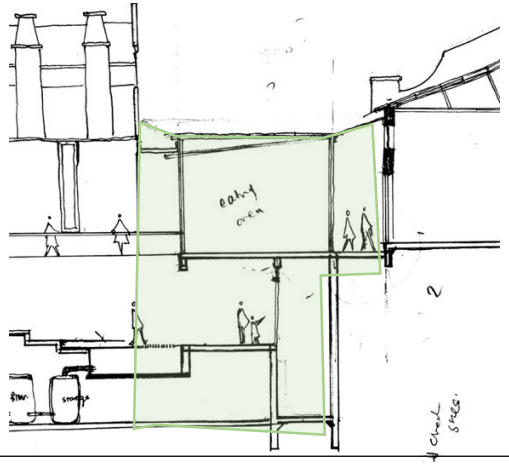


Figure 192: Iteration 3, Independent Link Area: *(Author, August 2021)*

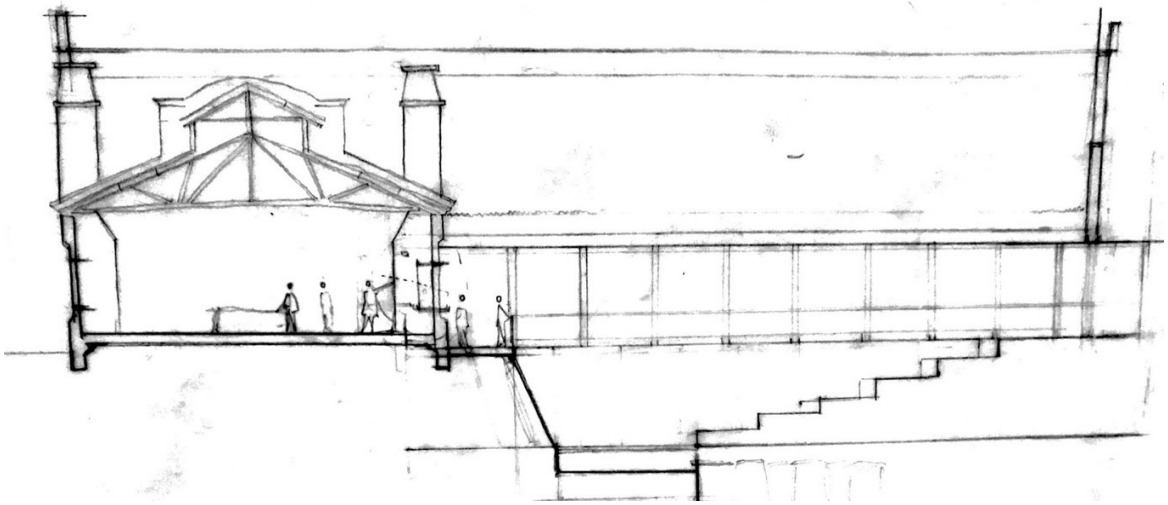


Figure 193: Iteration 3, Manipulation of topography across link area: *(Author, August 2021)*

DESIGN ITERATIONS

Critique, Iteration 3:

In iteration 3, the plan of the seed research centre was turned 45 degrees to respond to the grid of the canal (figure 195).

In hindsight, this was unsuccessful as it created a completely different language to the rest of the plan.

The maquette below (figure 194) demonstrates the new link area as an independent space between the two existing heritage buildings.

Figure 194: Iteration 3, Maquette: *(Author, August 2021)*

Figure 195: Iteration 3, Plan: *(Author, August 2021)*

DESIGN ITERATIONS

Critique, Iteration 4:

The main bakery production processes before cooking occurs in the existing chimneys begins with mixing and preparation, scaling and moulding and then proofing and panning (figure 196). The layout of the sequence of the bakery processes was reassessed in iteration 4. From the previous iterations, the bakery processes were extended from the kitchen into the eating hall yet this was far away from any cold or dry storage areas which reduced the efficiency of the whole production process (figure 197).

As a response, in iteration 4, the bakery production processes were positioned perpendicular to the kitchen so that they were closer to delivery and storage areas (figures 198 & 199).

Iteration 4, however, proved unsuccessful as it cut the eating hall off from the extended link area, essentially placing a service function on a very public edge which would eliminate any notion of exchange that could take place across this threshold.

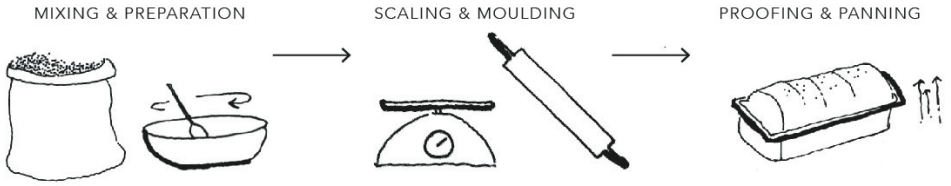


Figure 196: Bakery Production Processes: *(Author 2021)*

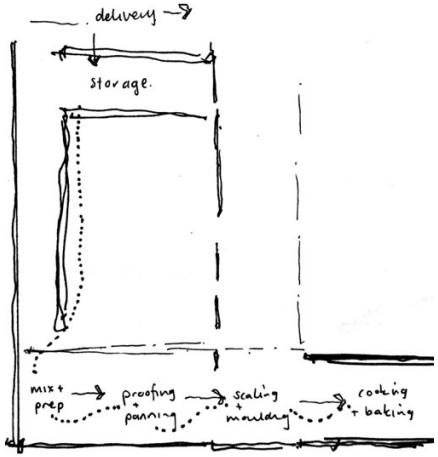


Figure 197: Bakery Production Processes: iteration 1-3 *(Author, August 2021)*

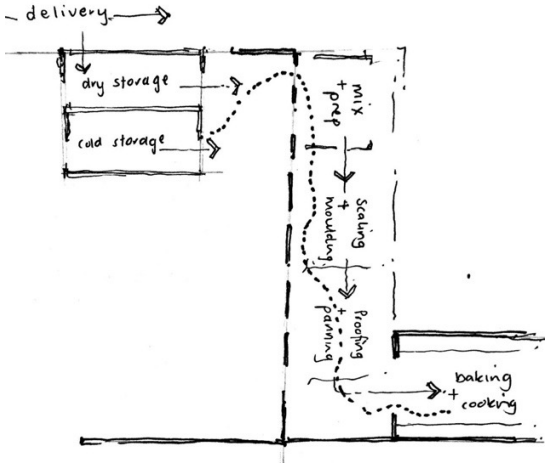


Figure 198: Bakery Production Processes: iteration 4*(Author, August 2021)*

Figure 199: Iteration 4: *(Author, August 2021)*

DESIGN ITERATIONS

Critique, Iteration 5:

In iteration 5, the bakery production processes were positioned along the proposed service edge. This was successful as it also created an additional private zone in front of the bathrooms (figures 200 - 201).

In this iteration, the solution was to have the bakery production processes divided into sunken "pockets" along its production sequence towards the kitchen. This allowed the eating area to be divided into general seating as well as interactive seating along the production edges.

Iteration 5 also involved the refinement of the extension and entrance of the Seed Research Centre. This edge functions as an exhibition area to attract visitors to the site as well as to retain the existing function of the gallery on site.

Furthermore, in iteration 5 the seed research centre was further refined, resulting in a developed section (figure 202). The refinement involved a linear progression from reading and research pockets to laboratories in plan, to seedbanks in basements, laboratories on ground floor and testing areas on the roof in section.

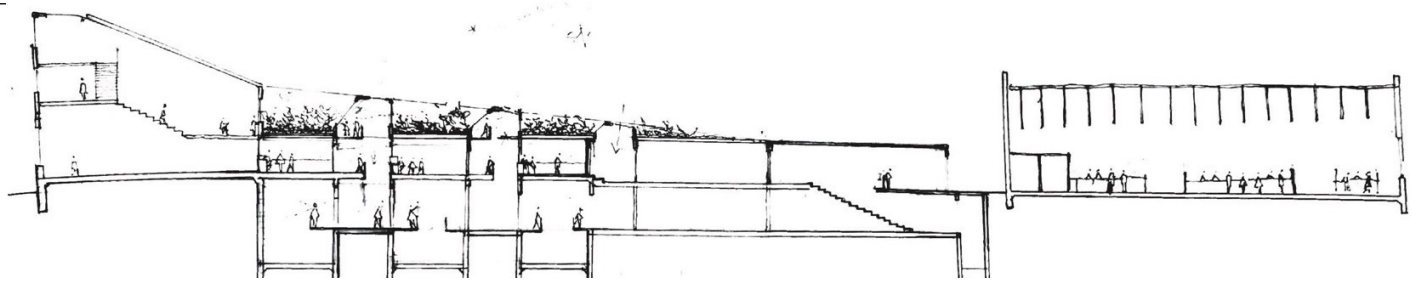


Figure 202: Process Development of Longitudinal Section B-B: *(Author , August 2021)*

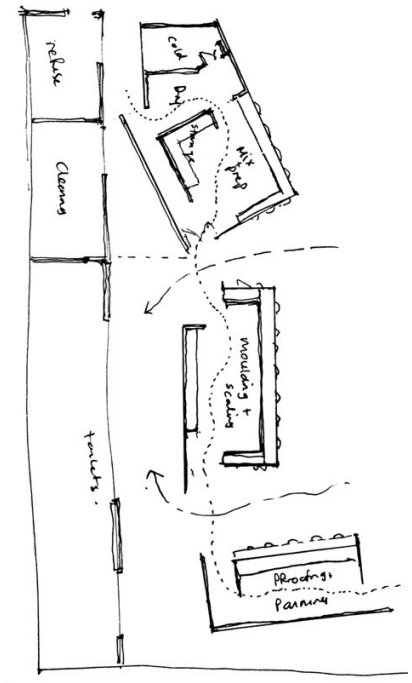


Figure 200: Bakery Production Processes: iteration 5 *(Author , August 2021)*

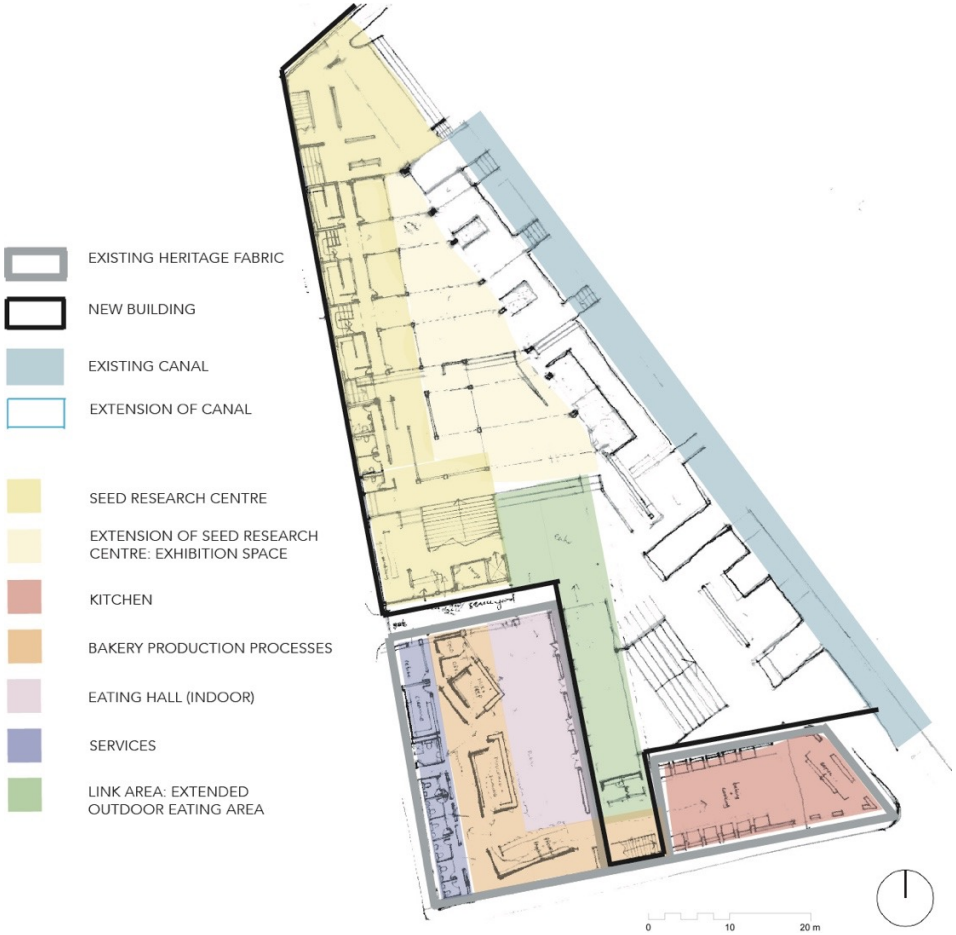


Figure 201: Iteration 5: *(Author, August 2021)*

DESIGN ITERATIONS

Roof Explorations, Iteration 6:

In iteration 6 the significance and value given to the eating hall roof was reassessed.

The existing roof consisted of two bands of east and west clerestory windows that had been painted over to suit the lighting conditions needed for the conservation of artworks which is the current function of that space.

This roof form therefore needed replacing in a way that would continue to respect the gables on its ends instead of detract from them. The existing steel truss structure has been untouched throughout the years and thus is highly valuable in terms of the structural and technological heritage of the building.

The resultant decision was made that the existing sheeting and clerestory windows would be replaced but the existing truss structure would remain. Because natural daylighting was needed to replace the existing clerestory windows, several new daylighting conditions were explored to fit between the existing trusses whilst still respecting the gables (figure 203).

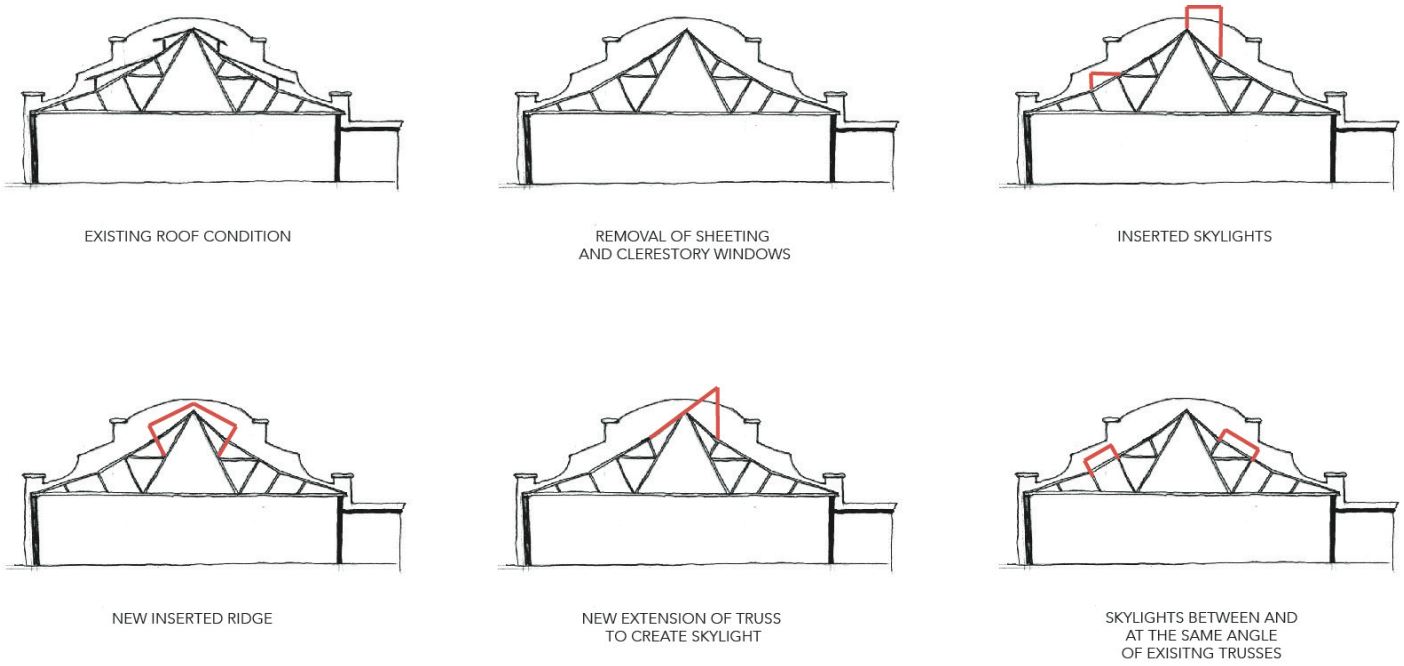


Figure 203: Iteration 6, Roof Exploration: *(Author, September 2021)*

DESIGN ITERATIONS

Roof Explorations, Iteration 6:

The final iteration of the eating hall roof explored two skylights between the trusses that responded to the lighting needs of the new functions proposed beneath (figure 204). The manipulation of light contributes to the experience of the different individual spaces below whilst still retaining the continuous truss structure above.

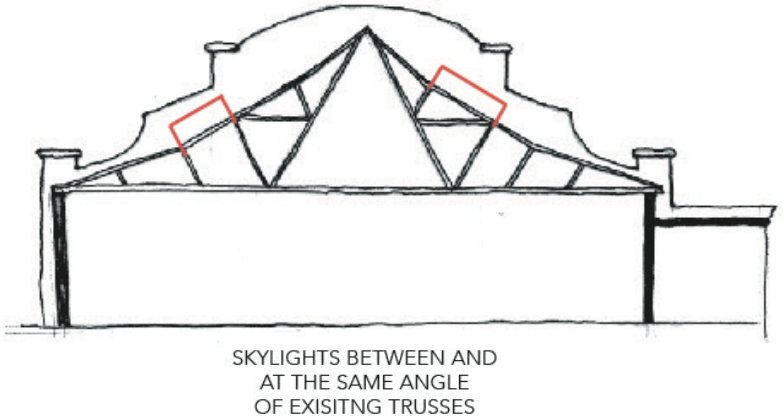


Figure 204 Iteration 6, Final Roof Exploration: *(Author 2021)*

Iteration 7:

Iteration 7 involved the formal refinement of the link area roof. The exploration concentrated on creating a central, internal roof that was to be read separately and independently from the circulation edges (figure 205). As a result, a sawtooth roof is created which captures south light for the linear space below and is wrapped by circulation edges (figure 206).

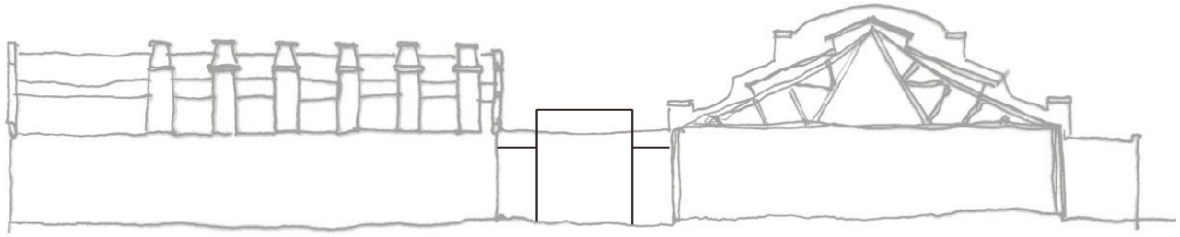


Figure 205: Iteration 7, Link Roof Exploration, Section AA: *(Author 2021)*

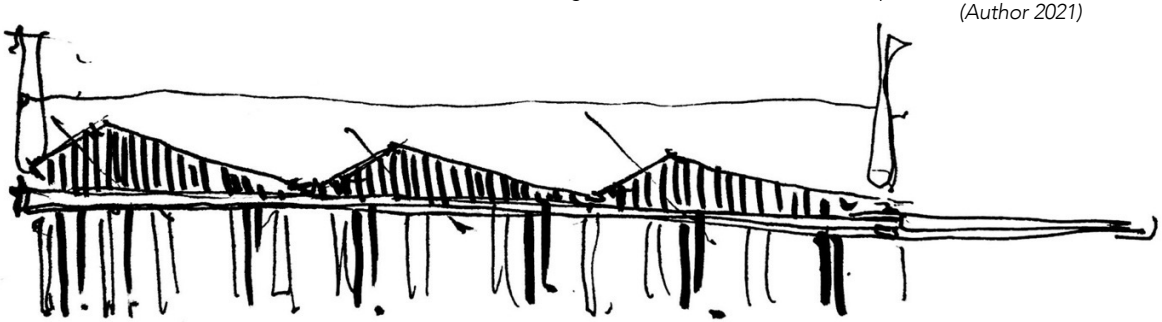


Figure 206: Iteration 7, Final Sawtooth Link Area roof, Section CC: *(Author, September 2021)*

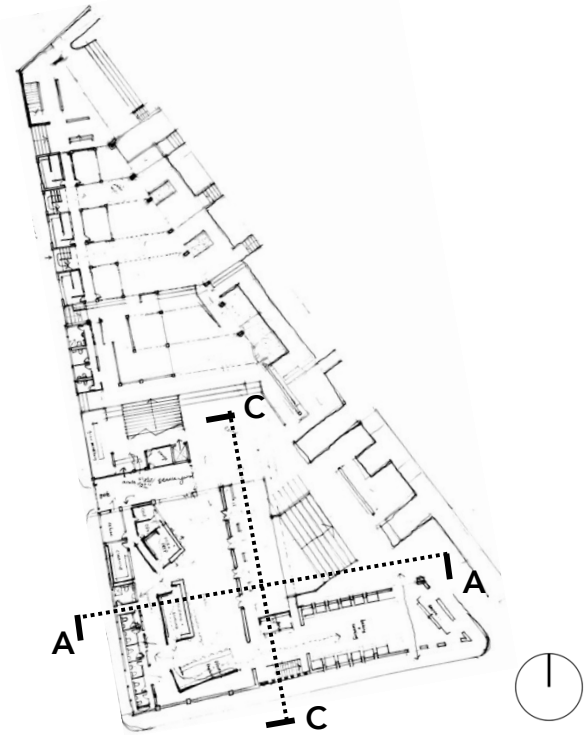


Figure 207: Key plan *(Author, September 2021)*

MAQUETTE

Iteration 7:

Figure 208: Maquette, Iteration 7: *(Author 2021)*