3

The Expanded Works Training Hub

Every workshop on the site is partially constructed from redundant or reused materials from another project, on-site, or in the city. The resulting palimpsest changes the material to acknowledge the evolving context (Machado, 1976: 48-49).

The use of standard construction materials influenced the resulting industrial architecture. The front elevation of the Stonemasons' workshop (Fig. x) results from arbitrarily placed timber and steel windows in a hastily built brick wall. The remnants of a removed carport isis still evident on its facade.

These practical choices made were based on the limited palette of materials at the time. Similarly, the west elevation of the Carpenter's workshop is too narrow to accommodate four steel windows, which results in an unusual asymmetrical three window design (Fig. xi). It suggests that the construction of the carpenter's workshop was somewhat unplanned.

With this idea of redundant material exchange in mind, the potential of remaking through reuse and standard construction materials in the industrial heritage context is applied.

Fig. x *Photograph of the Stotemason's Workshop* .

Fig. xi *Photograph of the inside of the Carpenter's Workshop*

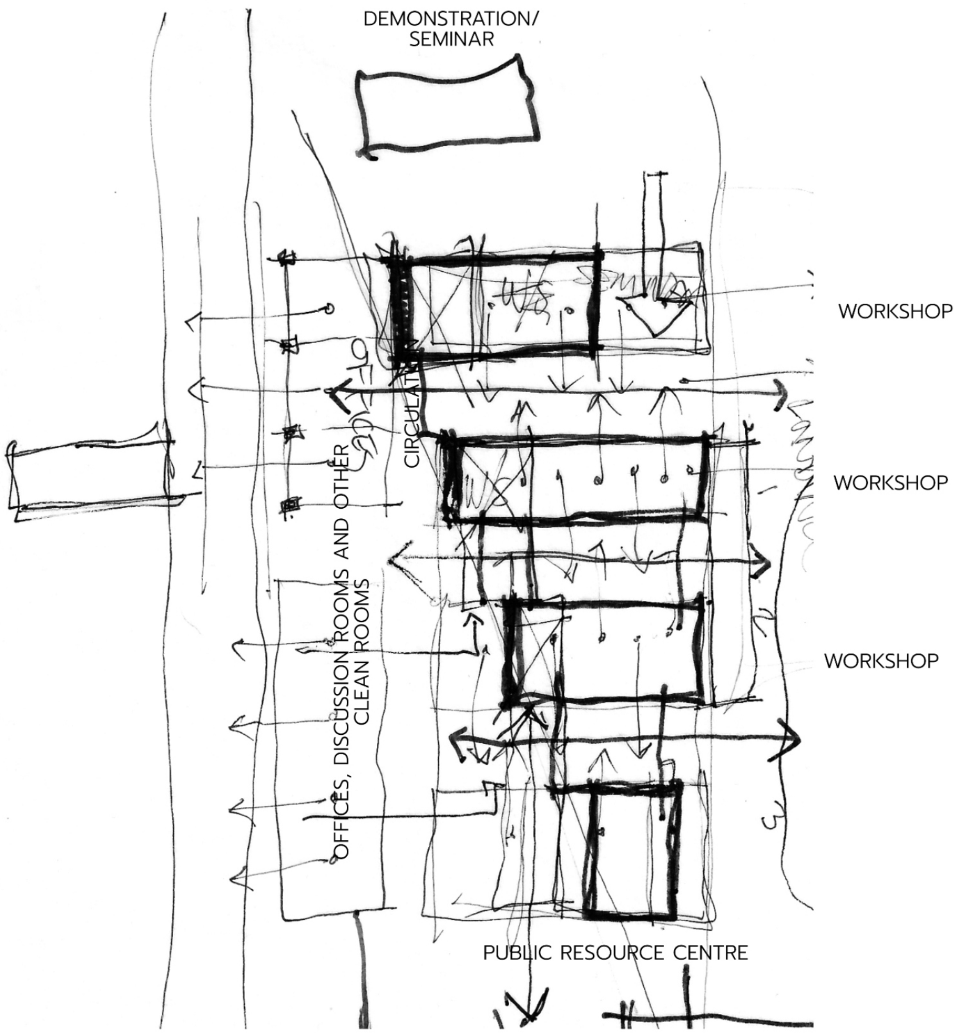


Fig. 9.1 *Programmatic concept*

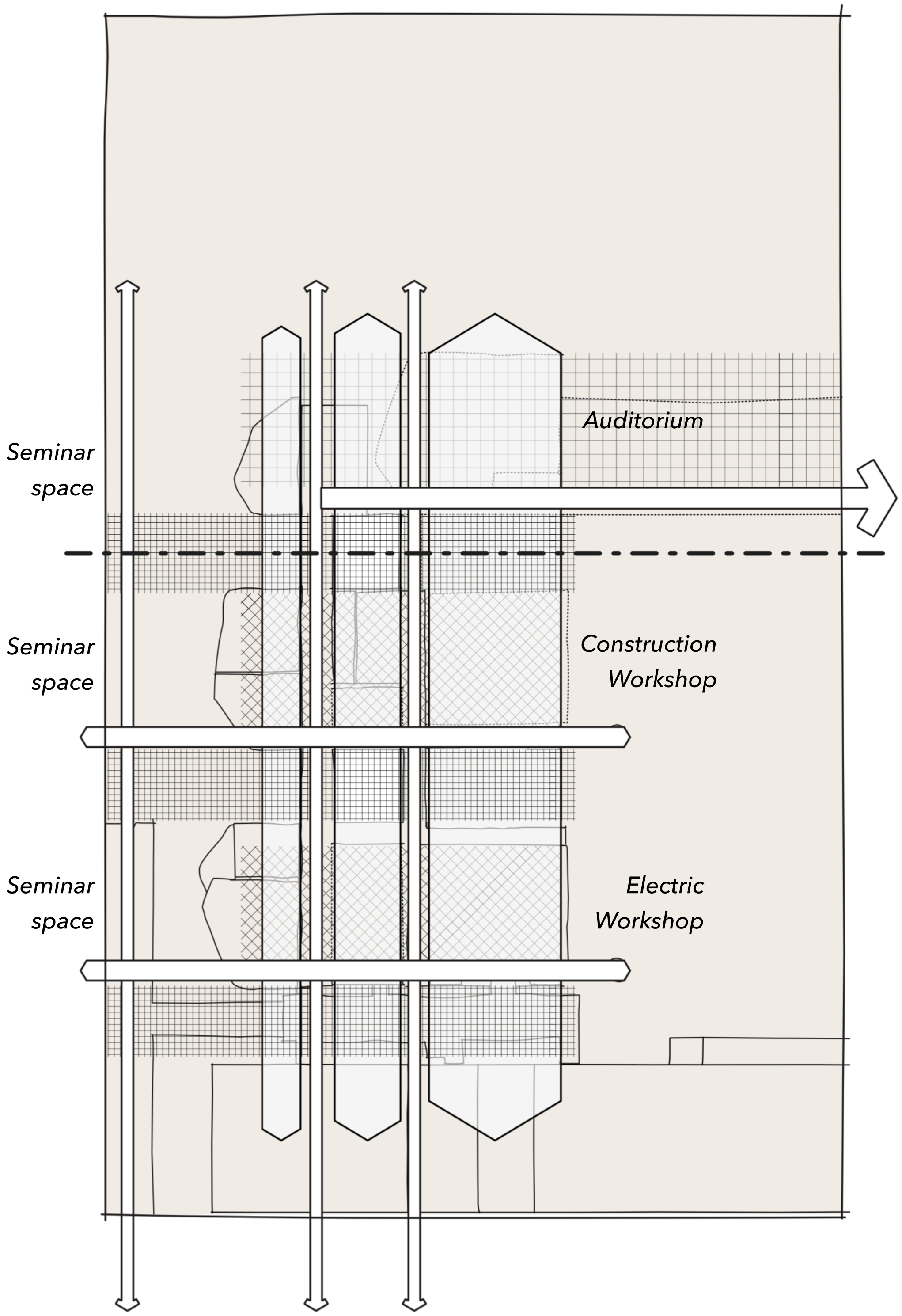


Fig. 9.2 *A scaled approach: hierarchy of importance of spaces*

9. DESIGN DEVELOPMENT

9.1 DESIGN CONCEPT

The program for the building is a series of training workshops accompanied by an auditorium and smaller seminar spaces.

Supplementary spaces include offices, participant break-away spaces, a vestibule for the auditorium, circulation, storage, ablutions, and change rooms.

The internal spatial condition of the existing carpentry workshop forms the reference of the design. Therefore, the design concept is primarily a critical reinterpretation and mediation between the existing elements on site.

Scaled approach

As the building mediates between the two conditions; i.e., the public walkway and the workshop yard, the building proceeds in function. The seminar spaces are associated with the public walkway (west) and the workshops with the workshop yard (east). [explain how this mediates the two sides]

Three warehouse structures

In an attempt to maximise the southern light, and reduce the amount of western sun, the design is portioned into smaller structures, connected with a mutual walkway.

Remaking

The proportions of the existing buildings are taken into consideration. Long, repeatable themes are considered as an opportunity to extend the spaces where necessary.

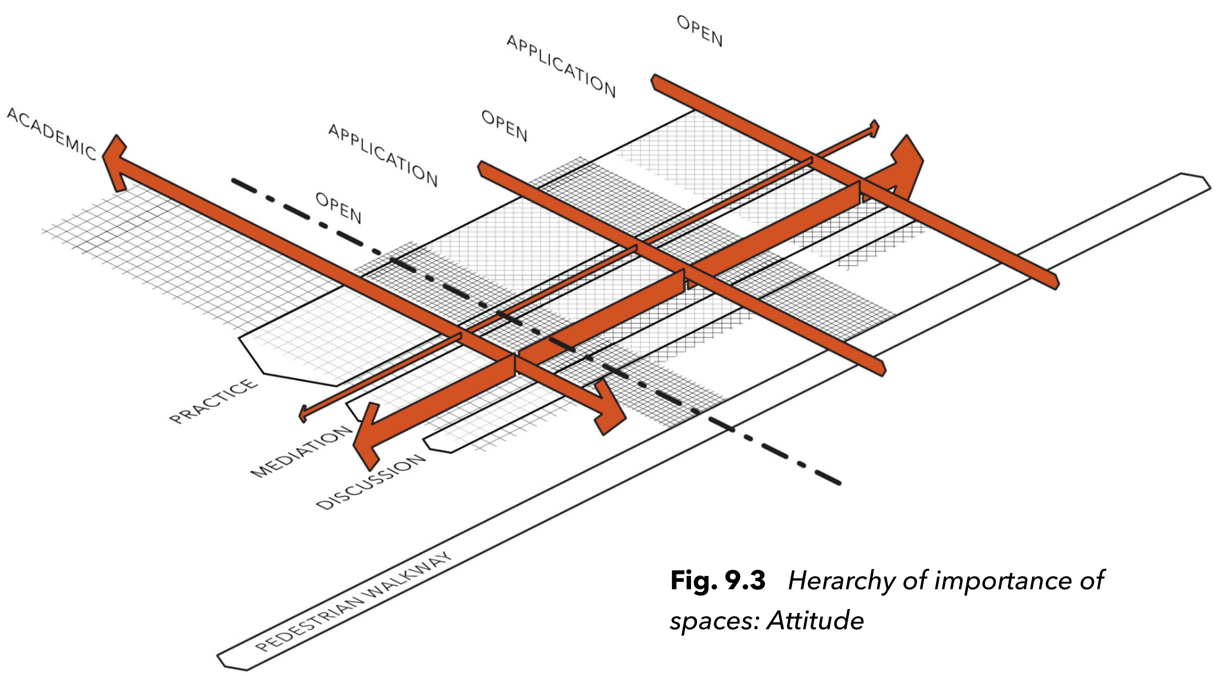
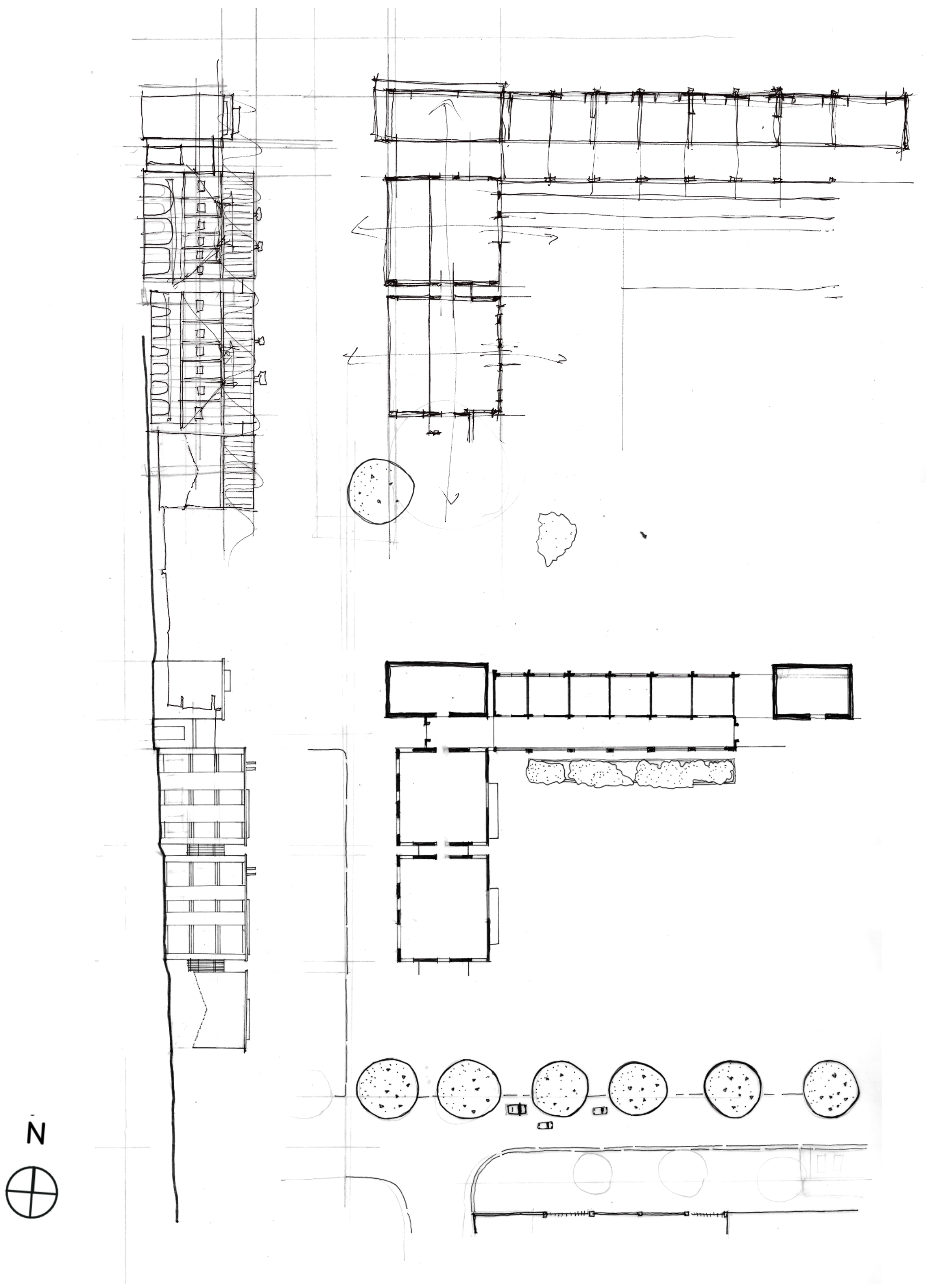


Fig. 9.3 *Herarchy of importance of spaces: Attitude*



9.2 ITERATION OF THE DESIGN

Iteration 1

The initial concept sketch focused on translating the framework into a broad spatial and programmatic intent. The building completed the “courtyard” between the Ruin, the Mechanical Workshop and the Stonemasons’ workshop, with the office and admin spaces located in the northern wing and the workshop spaces on the western leg.

This iteration did not consider the effect that a series of noisy workshops on a public walkway would have, especially since the nature of the majority of the site is already industrial.

Fig. 9.4 *Sketches: Iteration 1*

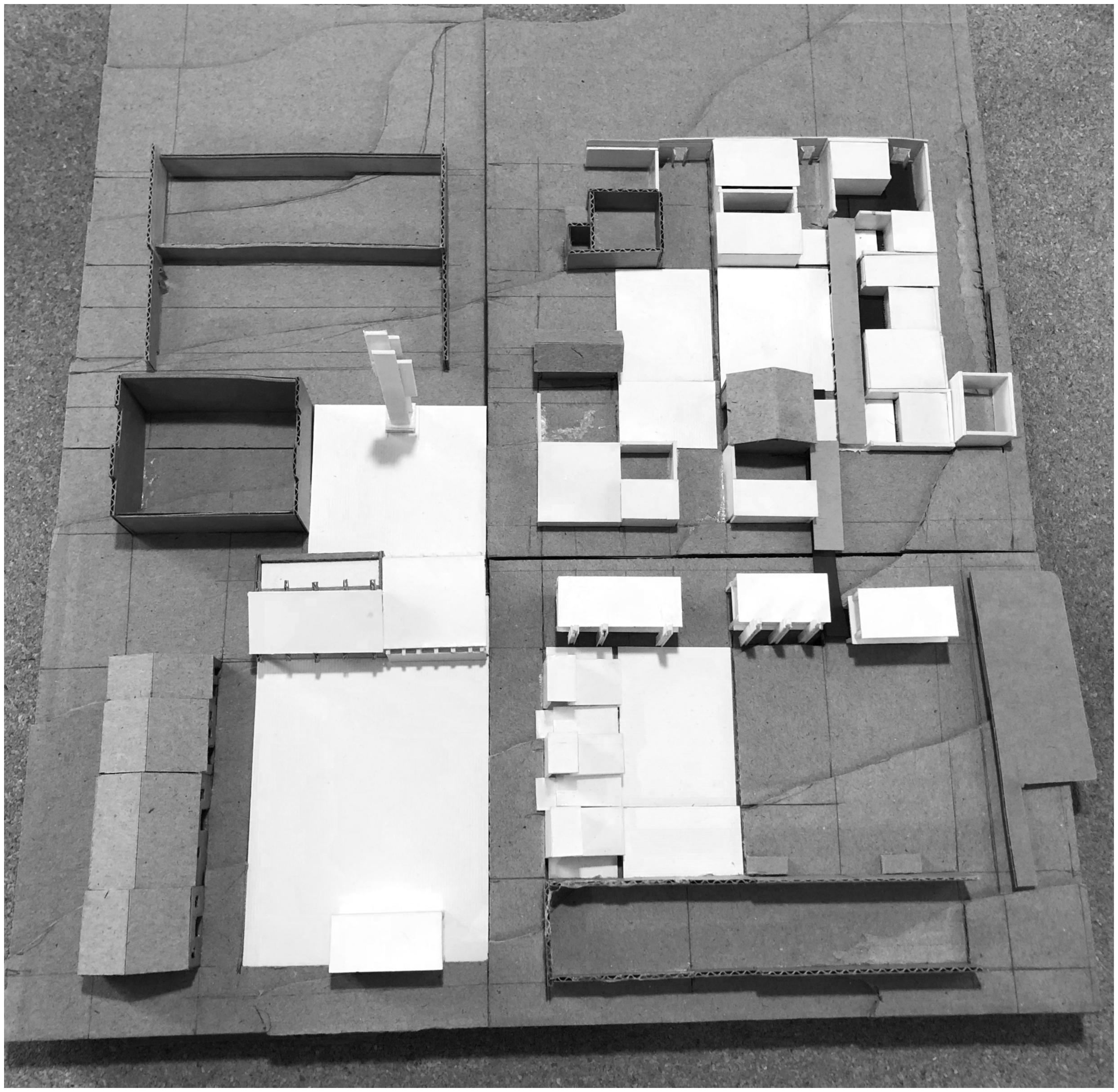
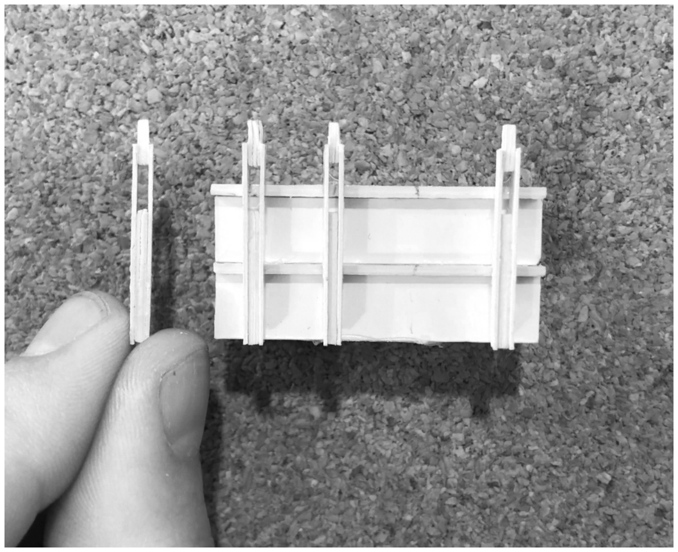


Fig 9.5 *Iteration 1 maquette*



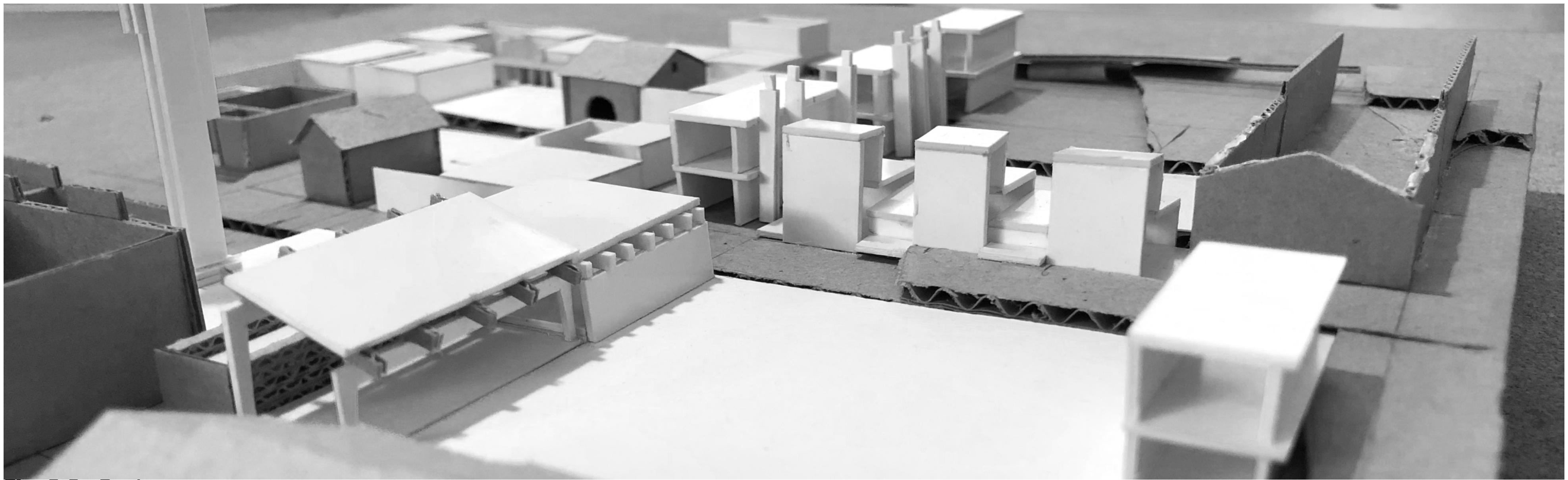
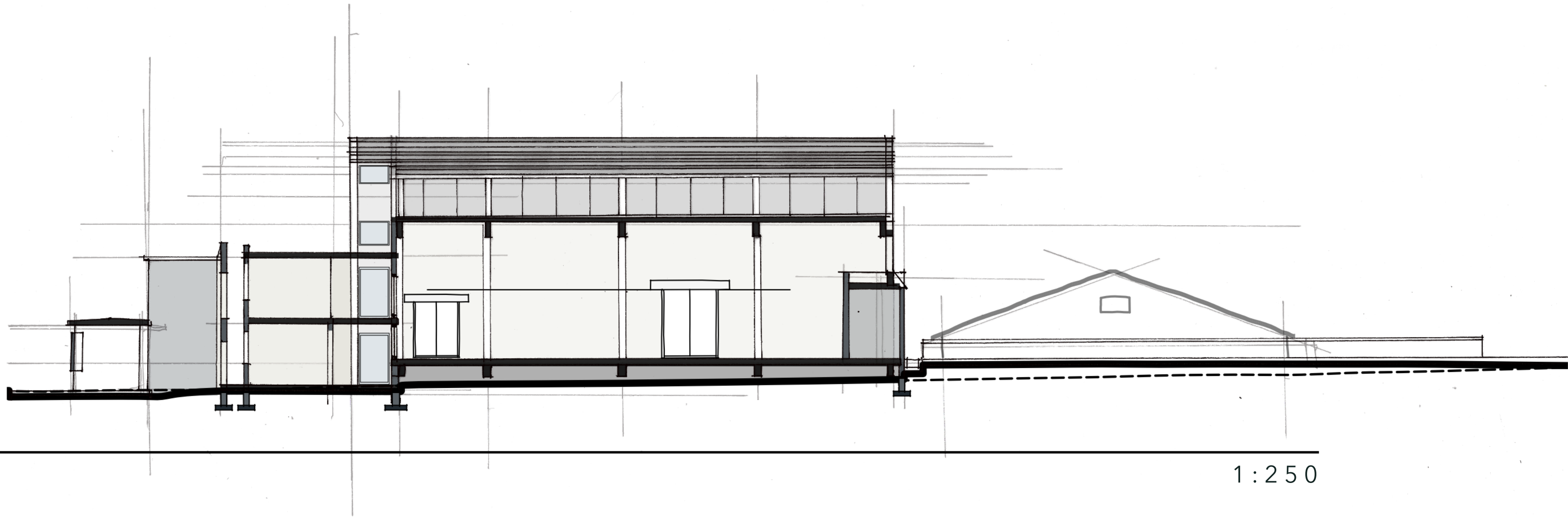
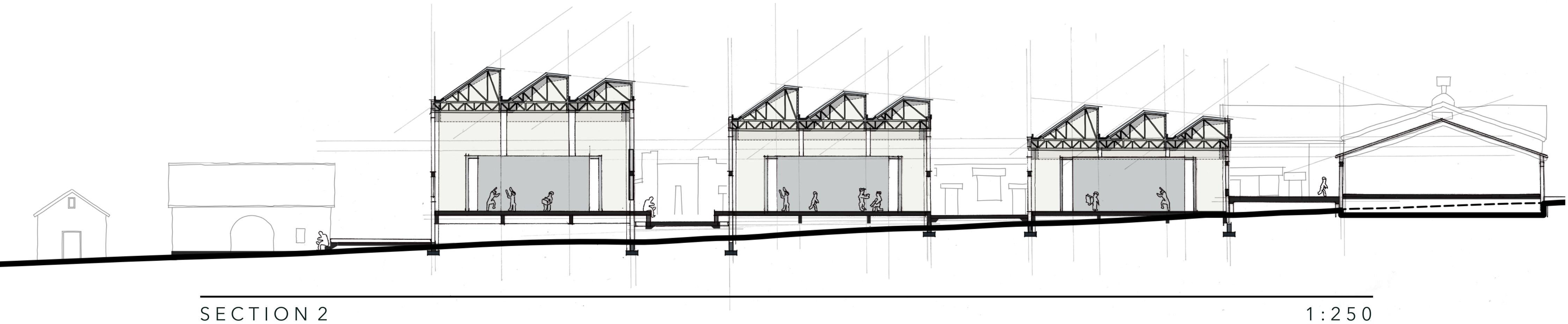


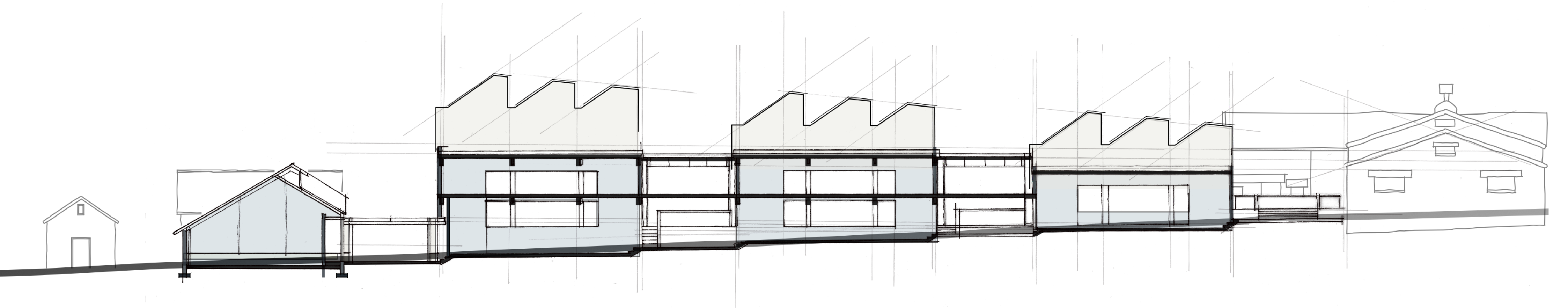
Fig. 9.3 *Design concept*



SECTION 1 1:250



SECTION 2 1:250



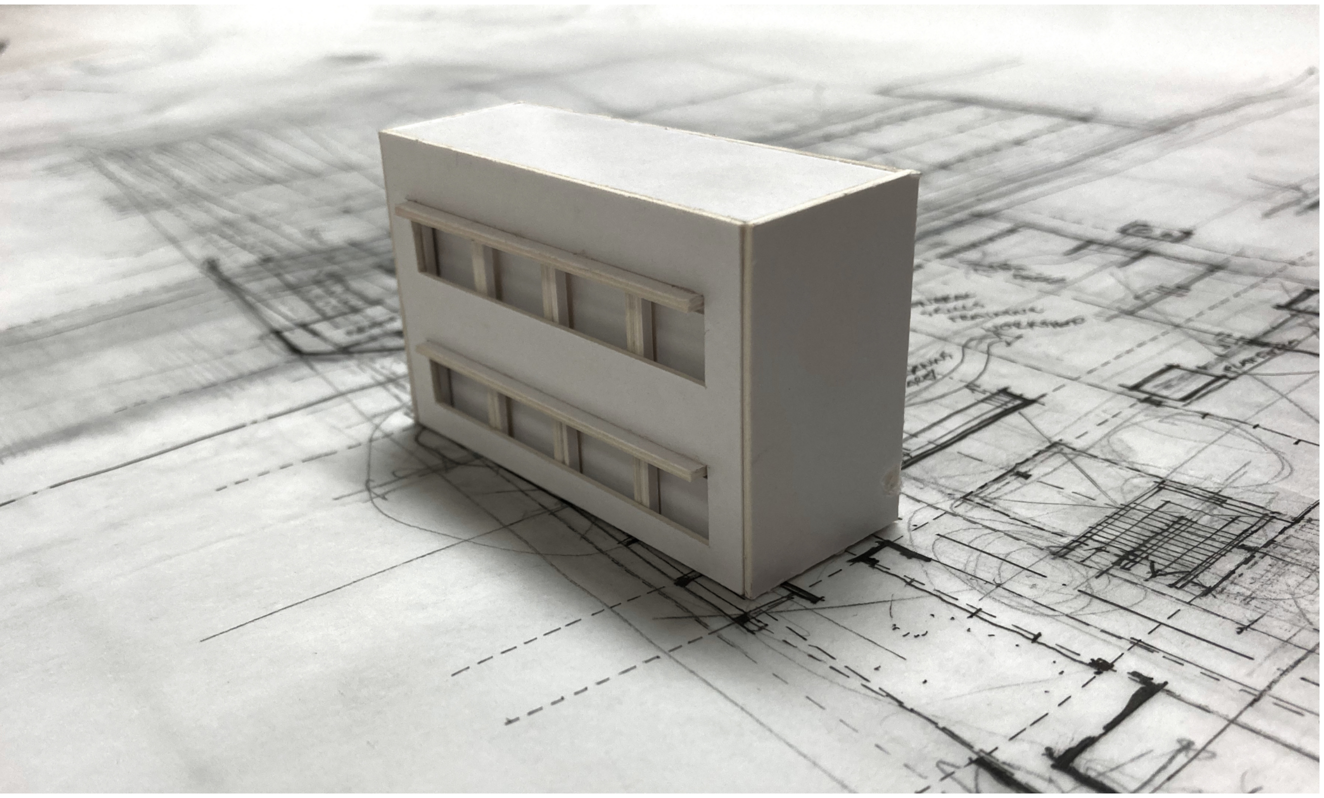
SECTION 3 1:250

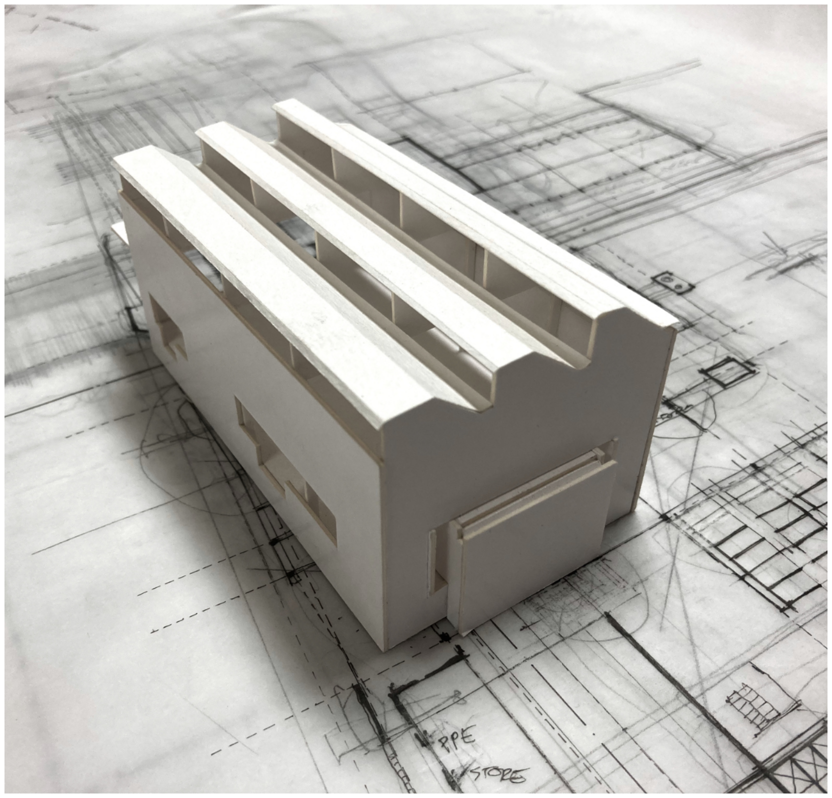
Iteration 2

The design is an intuitive response to the proposed public walkway, the spatial constraints of the existing buildings on site, the 3m fall and the site's orientation. As the site runs predominantly north-south, the intent was to minimise the western exposure of the building. The building is divided between the public interface and the industrial activities associated with making. In section, the building meets the height of the existing workshop and then gradually moves to a three-storey workshop. An adapted saw-tooth roof is used to allow southern light to enter the workshops.

Figs. 9.5 *Iteration 2*

GROUND FLOOR PLAN 1:250





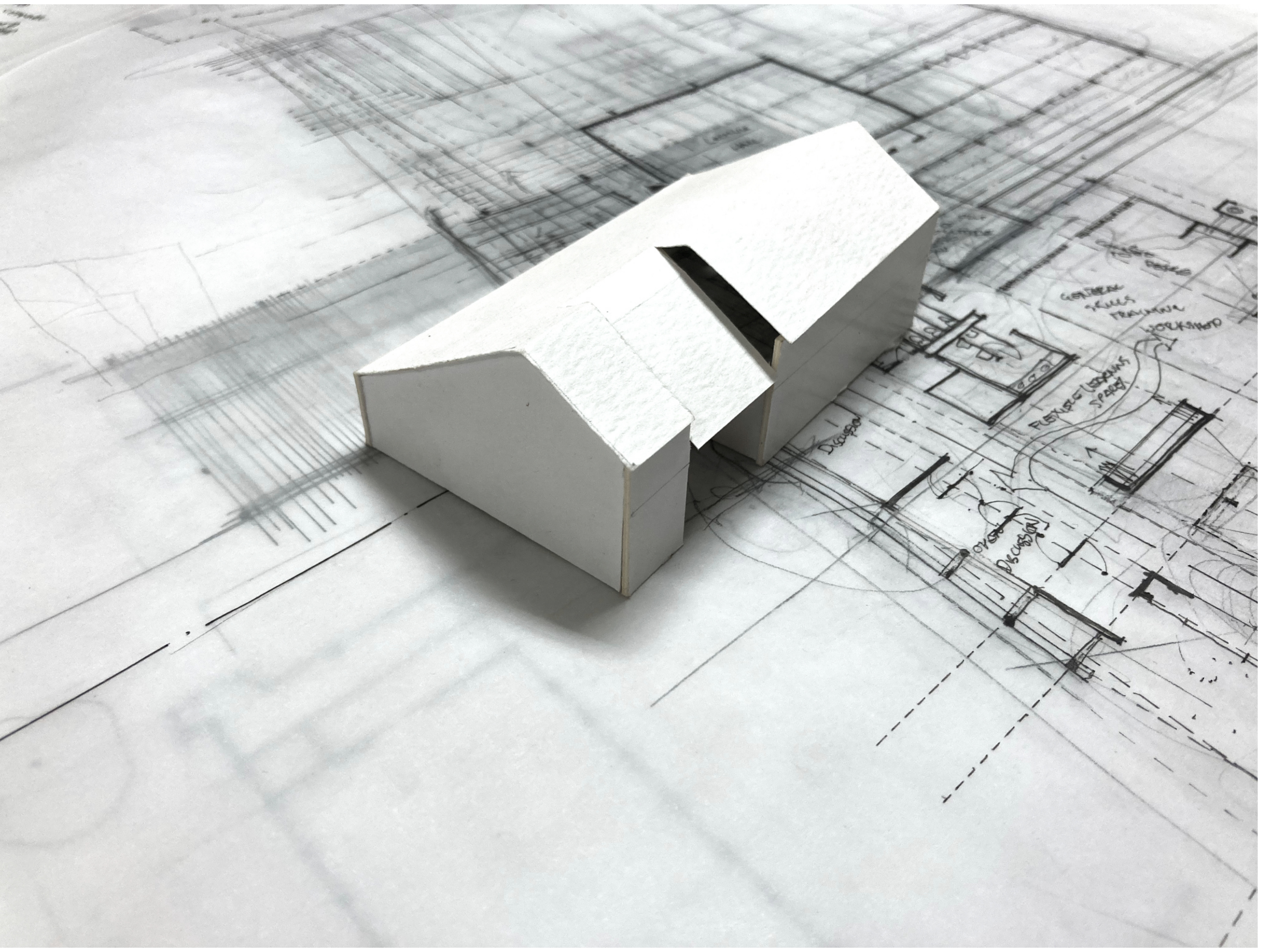
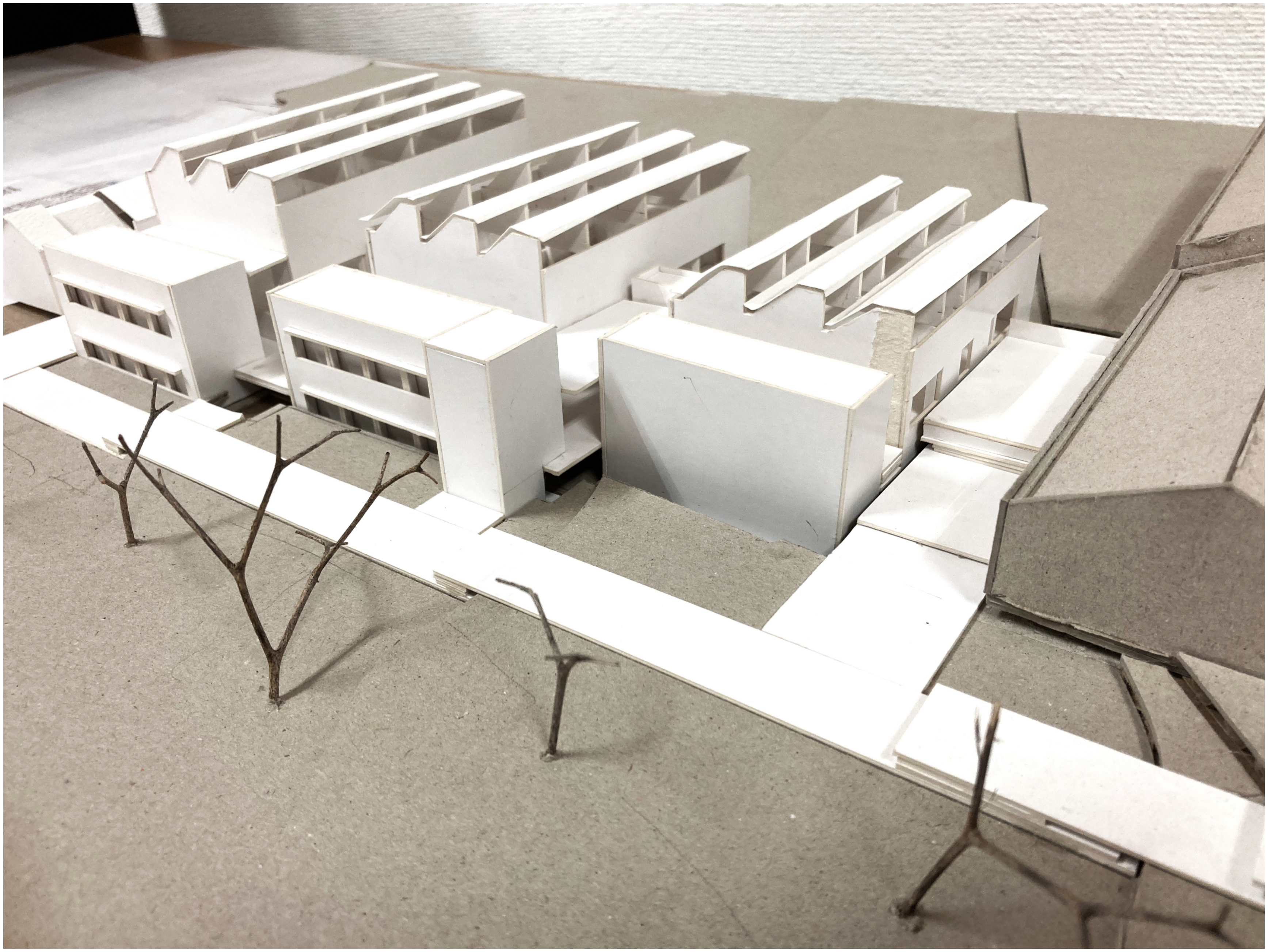
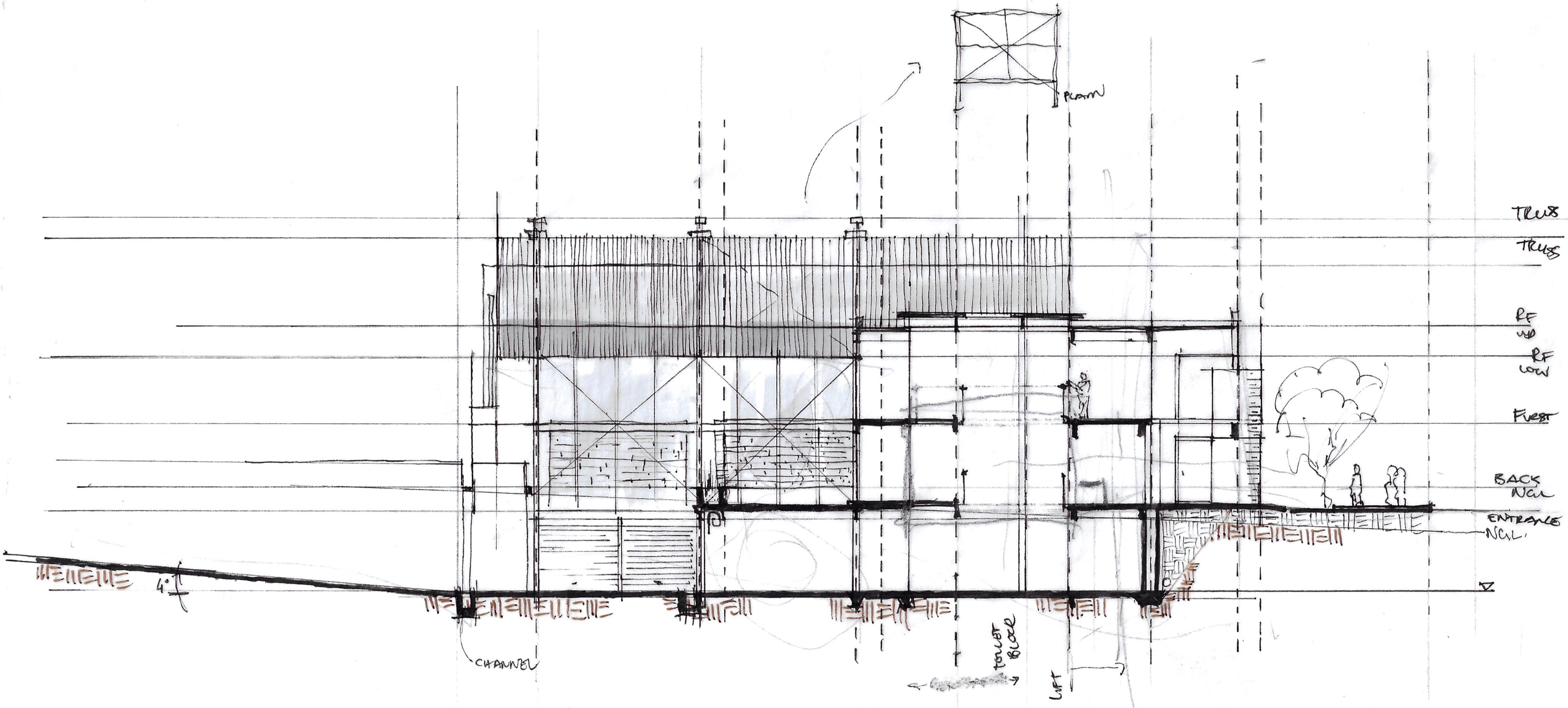


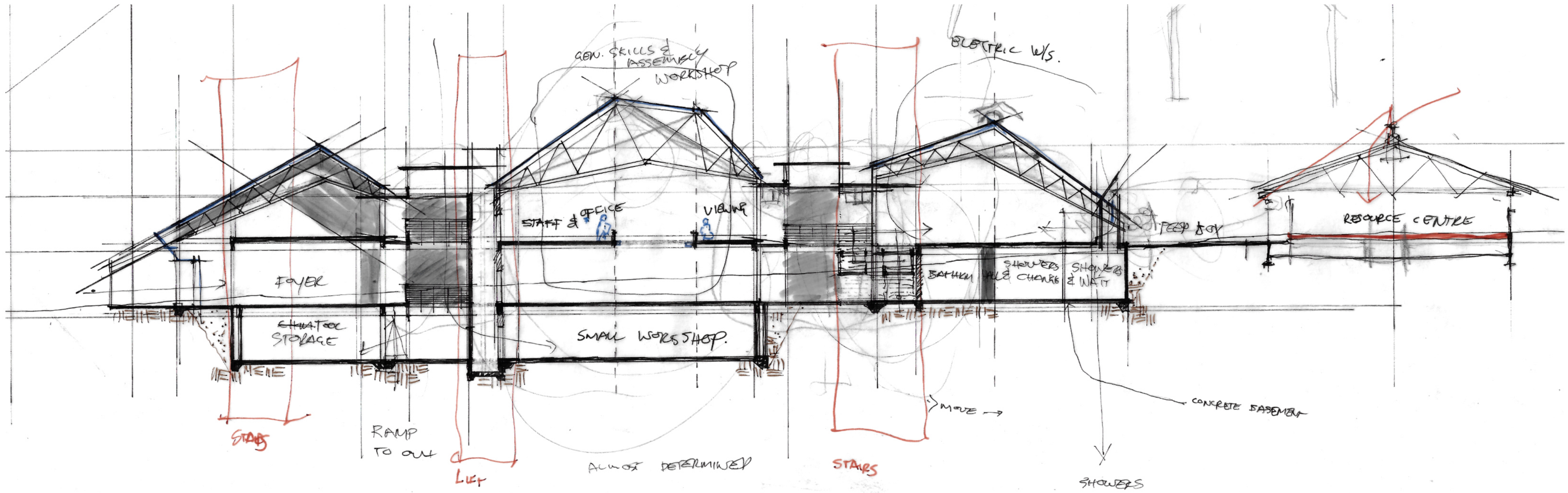
Fig. 9.5 *Iteration 2 maquettes*





SECTION 1 1:250

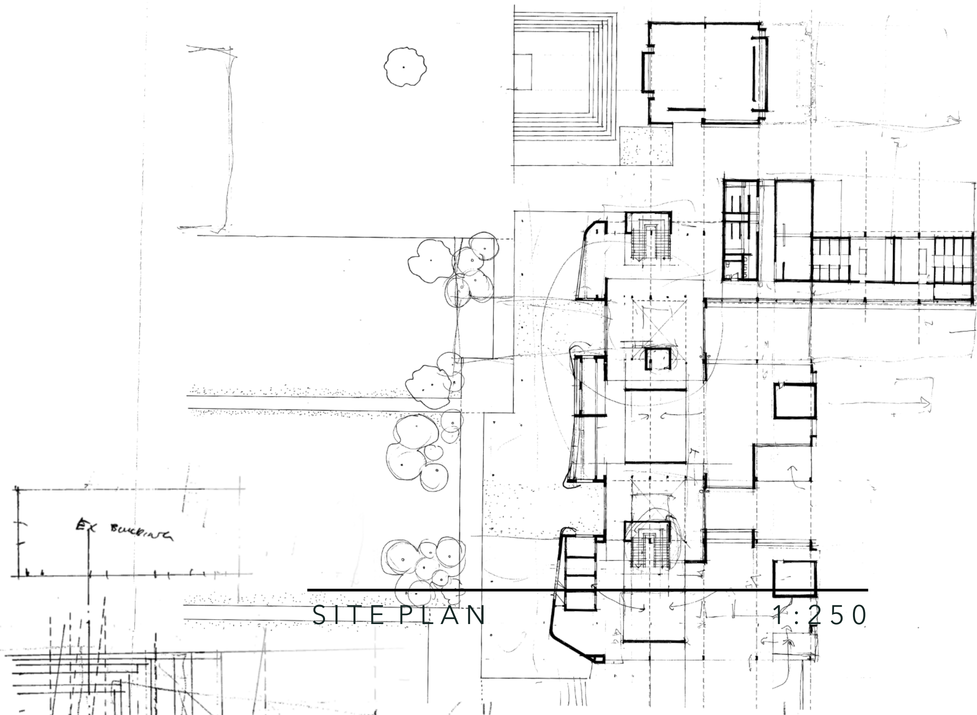
Figs. 9.7 *Building section with the workshops in elevation*



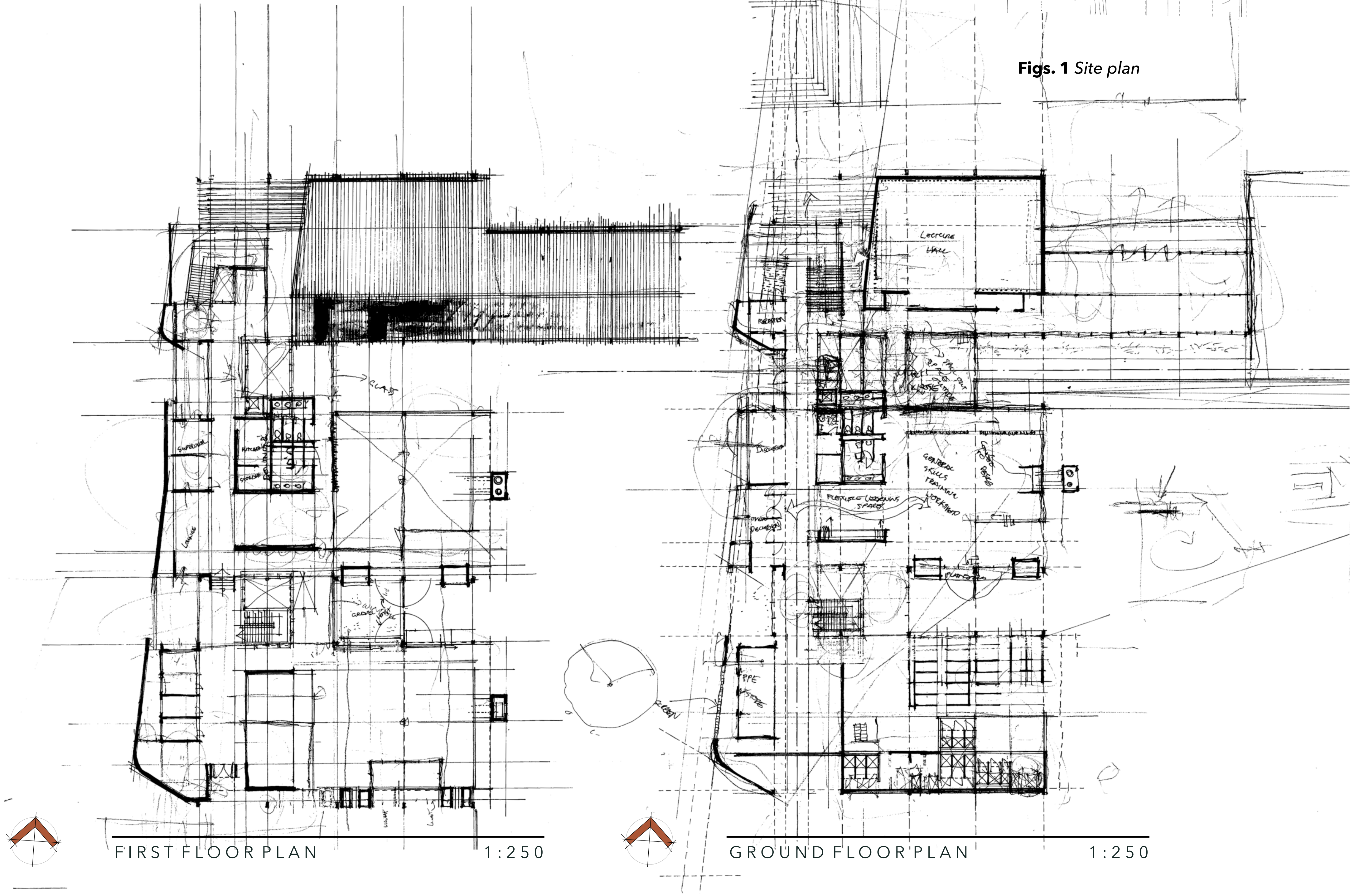
SECTION 2 1:250

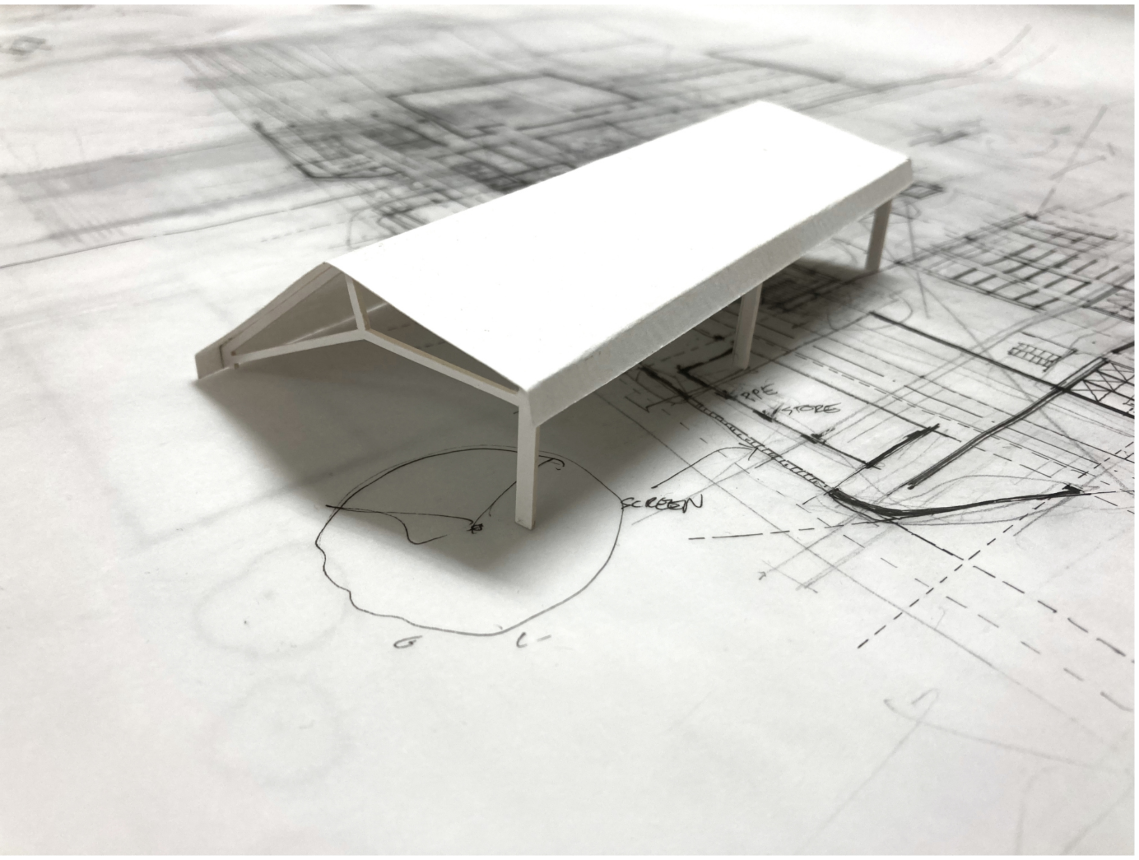
Iteration 3

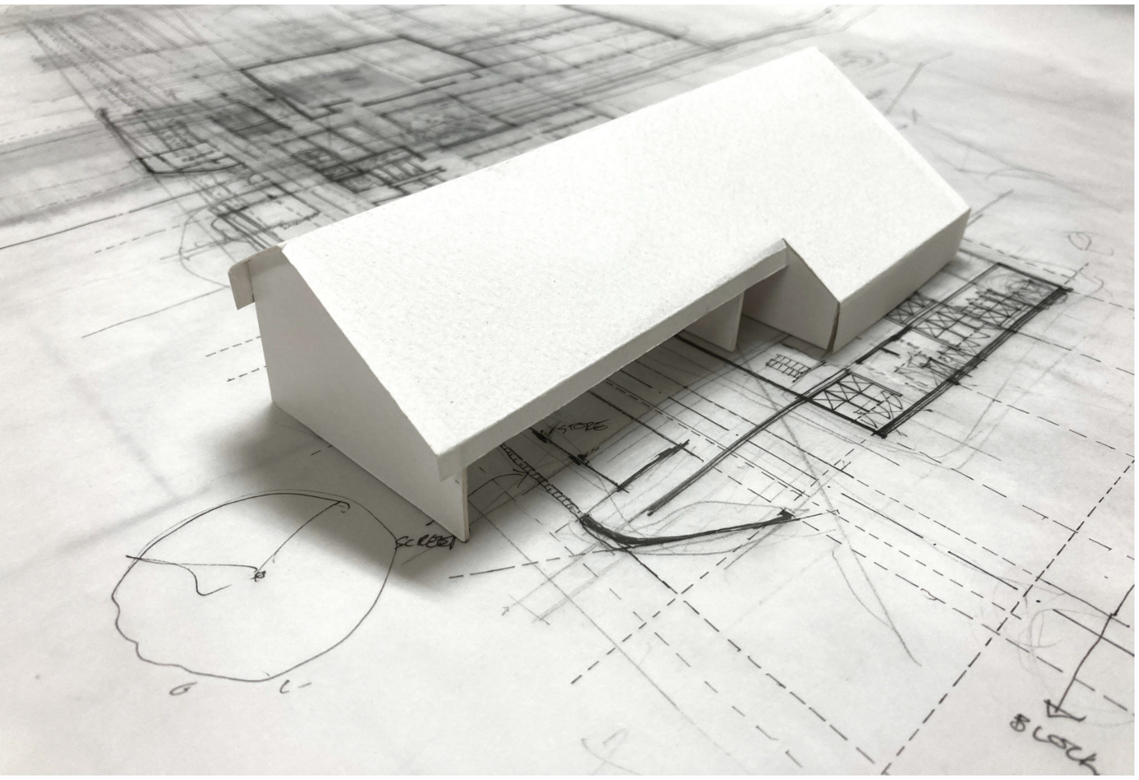
These iterations focus on the roof shapes as a response to heritage. Workshop spaces as opposed to interstitial spaces are considered. Modularity and materiality are considered. Brick walls undulate underneath the steel frame structures.

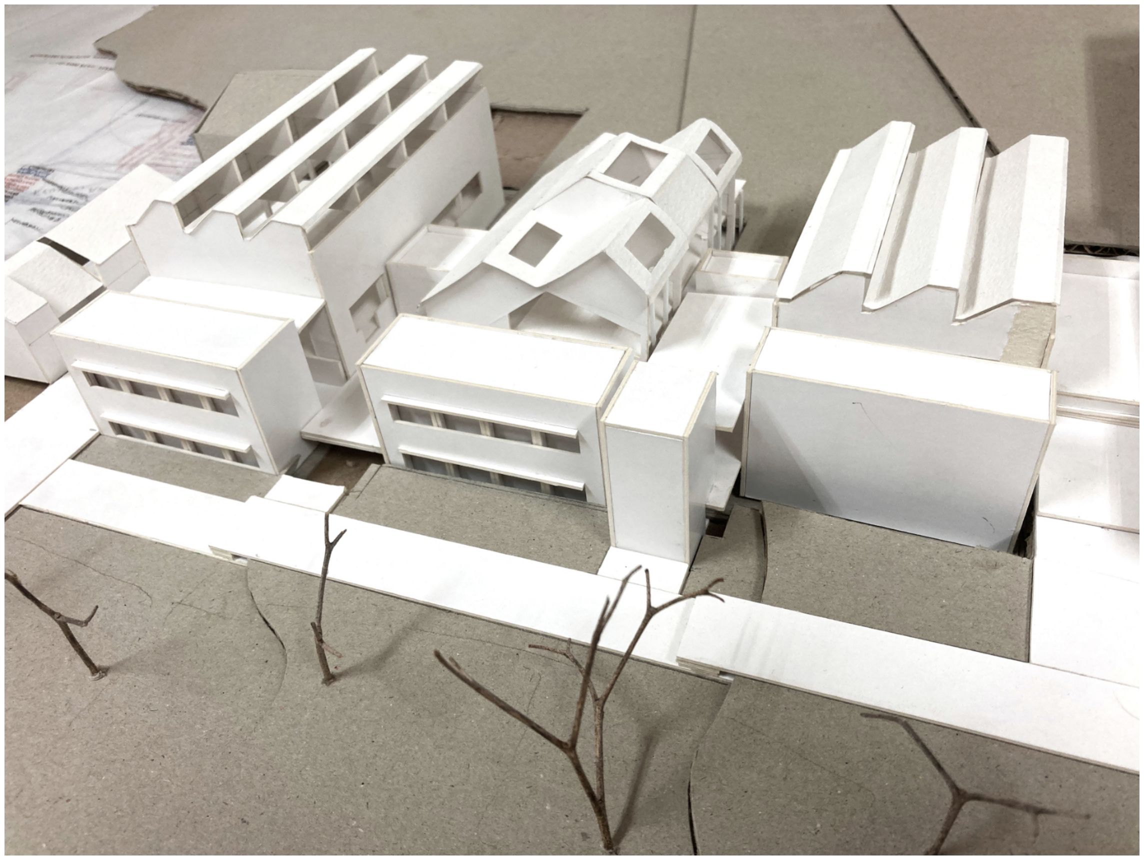


Figs. 1 *Site plan*









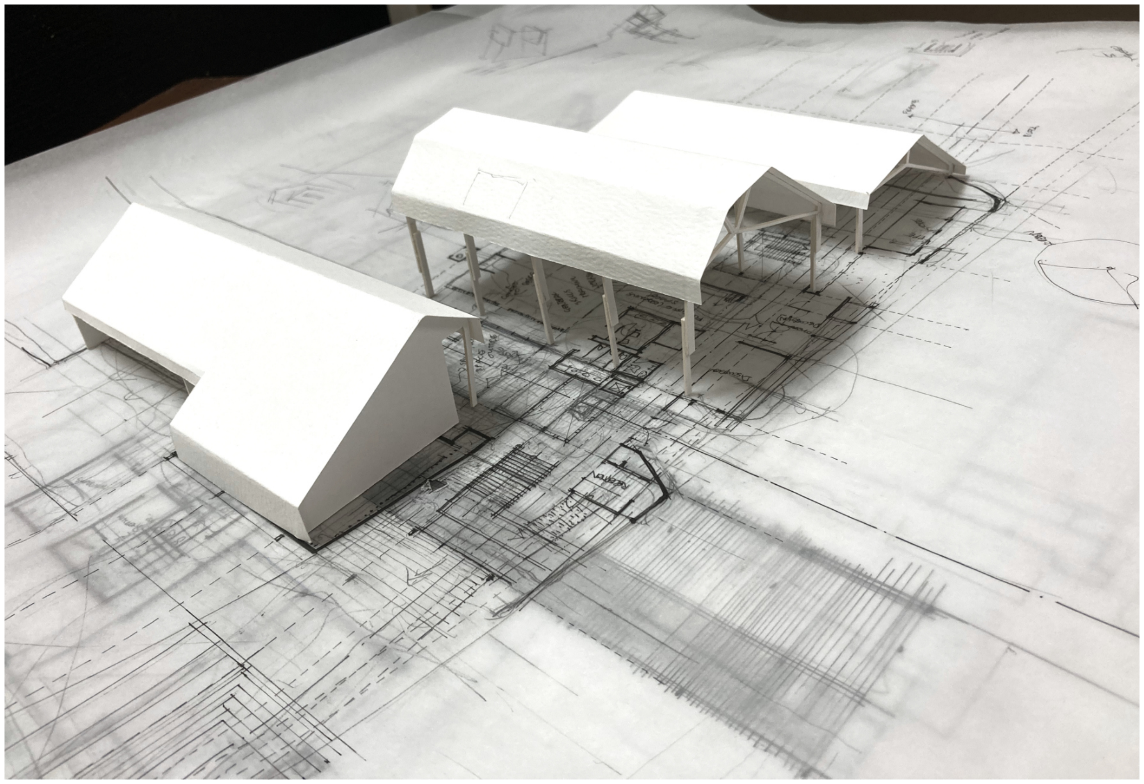
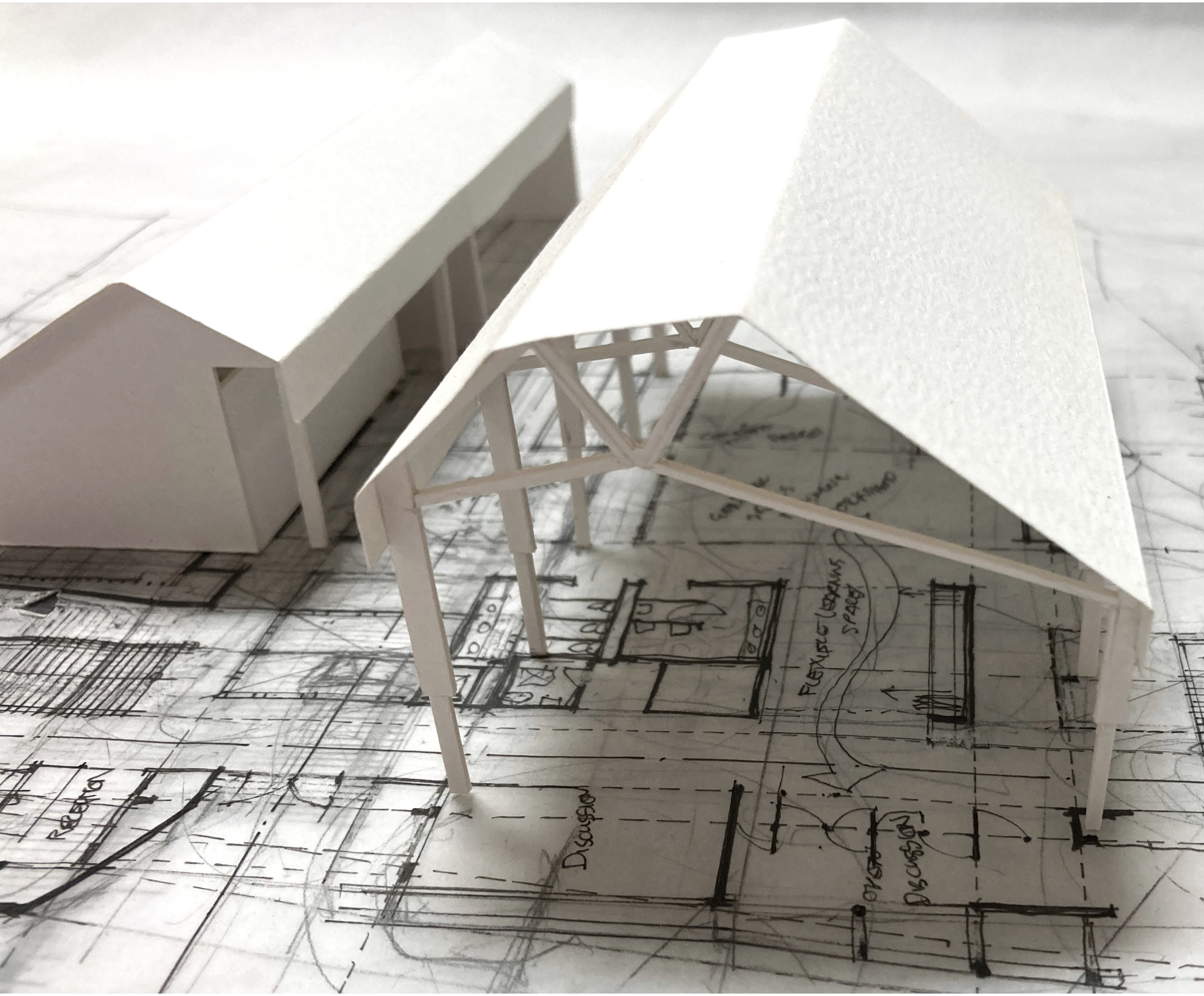
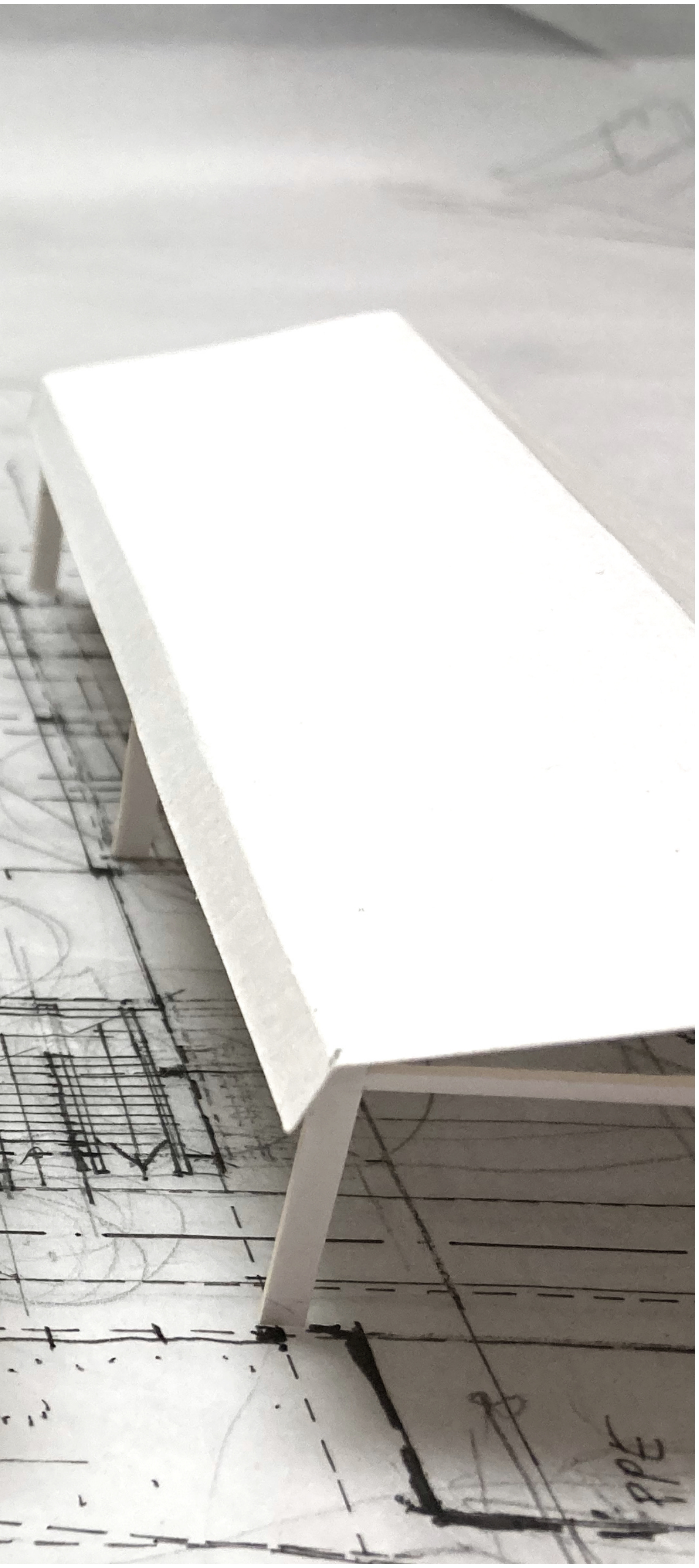


Fig. 9.7 *Iteration 3 Maquettes*


FLEXIBLE LEARNING SPACE
DISCUSSION

10. DESIGN EXPLAINED



10.1 RESPONDING TO THE HISTORY OF THE EVERYDAY

The limitations and opportunities as set out by the Statement of Significance indicate that any changes to the site should be considered as part of the whole. The individual buildings obtain their value from the context.

An organisational grid is determined from the context. The six-metre north-south grid continues the underlying structural logic of the Mechanical workshop. The 14m width of the new workshops is based on the Stonemasons Workshop and the Carpenters Workshop. The main entrance of the EPWP Hub aligns with the entrance to the ruin, with the remaining column of the hoist as the focal point.

The west elevation requires significant heritage consideration as it directly impacts the spatial experience of the existing fabric, especially from the public interface. As for the roof, the existing 20-degree double pitch roof typology is reinterpreted and reconsidered as a variation on the existing.

In plan, the new building thus steps away from the existing buildings to reveal and frame the important qualities of the existing context. Rounded brick edges, echoing existing brick details on site, introduce entrances on the western facade.

The EPWP Hub is located over the footprint of two heritage workshops that have been demolished since 2014 (Jansen, 2014). This provides an opportunity to expose traces of the lost heritage by remaking the footprints inside the EPWP Hub in the characteristic polished red concrete floor of some of the remaining workshops on-site (Machado, 1976: 49).

The lower edge of the roof of the Electric workshop correlates with the height of the existing building. The new platform between the buildings lifts off the natural ground to meet the height of the existing platforms.

The existing door of the Resource Centre is recessed into the building, similar to the new entrance. This is done to define the interstitial space between the Electric workshop and the Resource centre.

Fig. 10.1 *Organisation of the building*

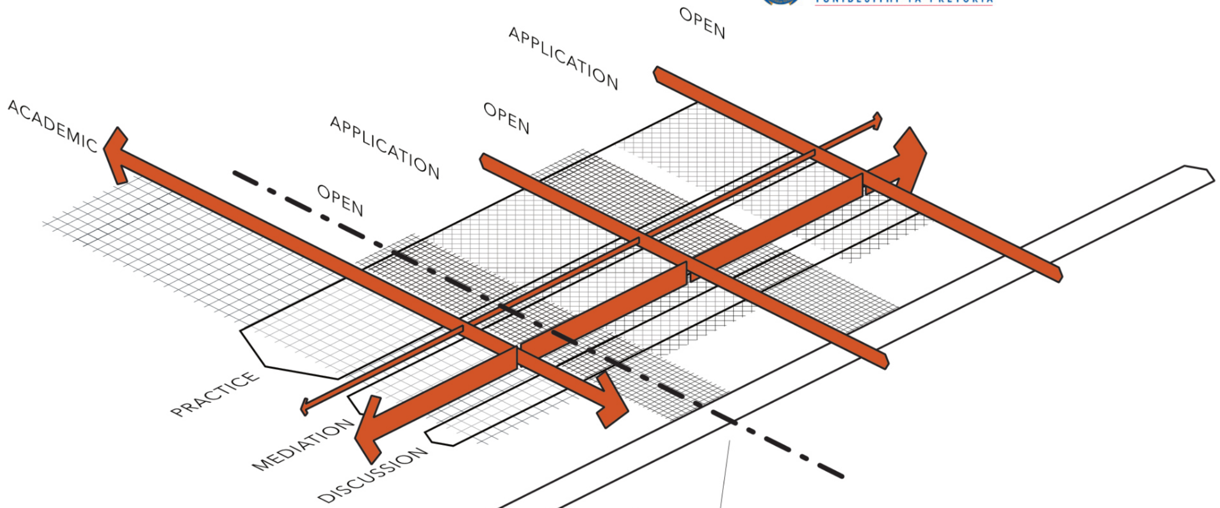


Fig. 10.5 *Organisation of the building*

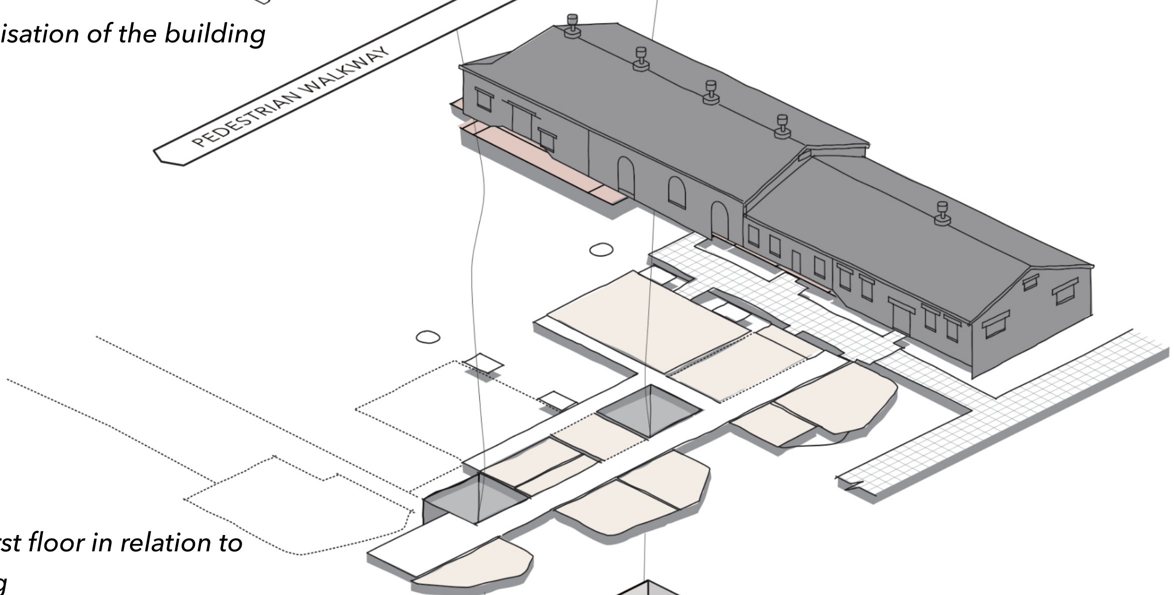


Fig. 10.6 *First floor in relation to existing building*

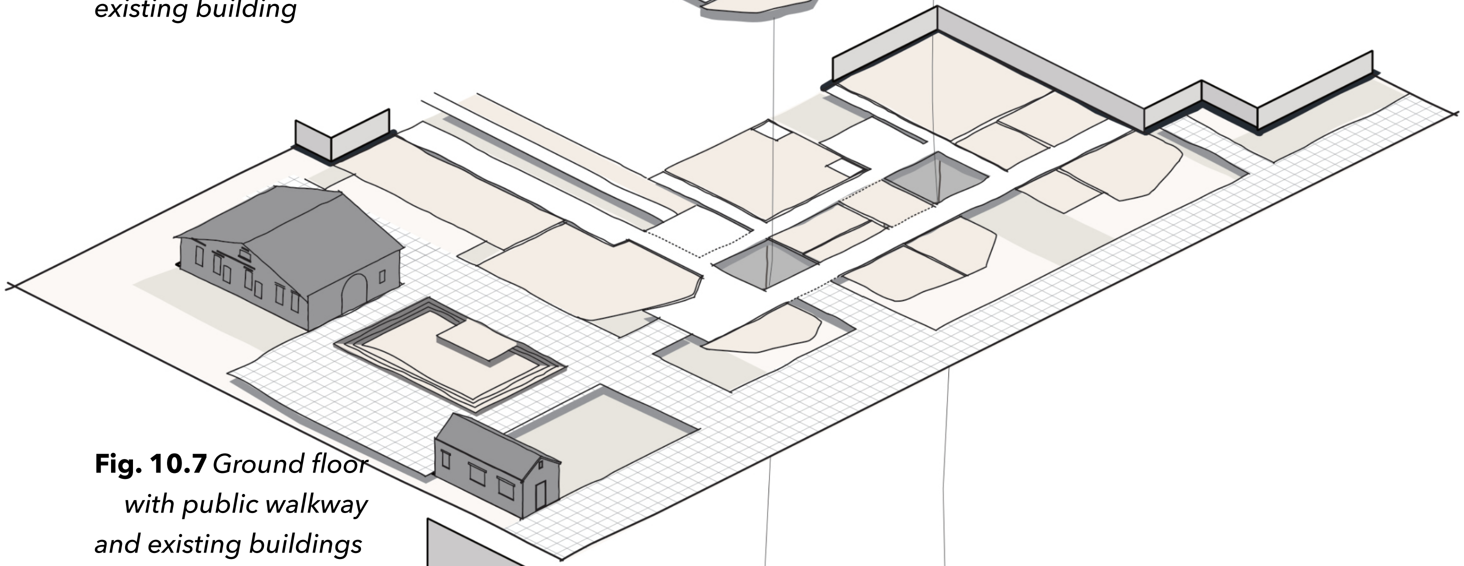


Fig. 10.7 *Ground floor with public walkway and existing buildings*

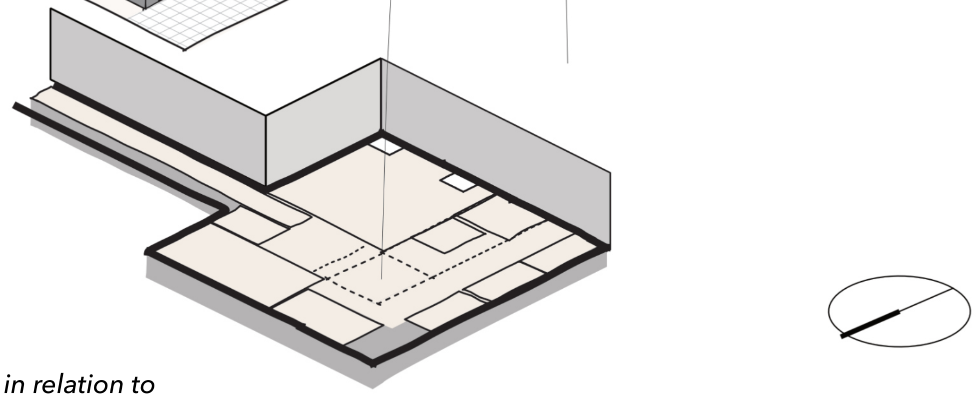


Fig. 10.4 *Basement in relation to ground floor*

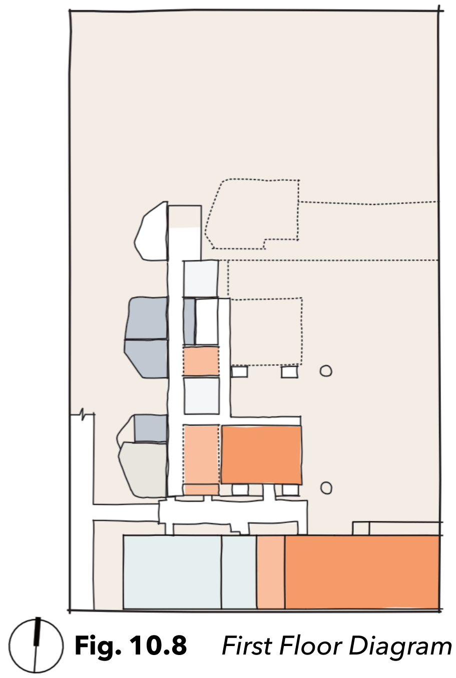


Fig. 10.8 *First Floor Diagram*

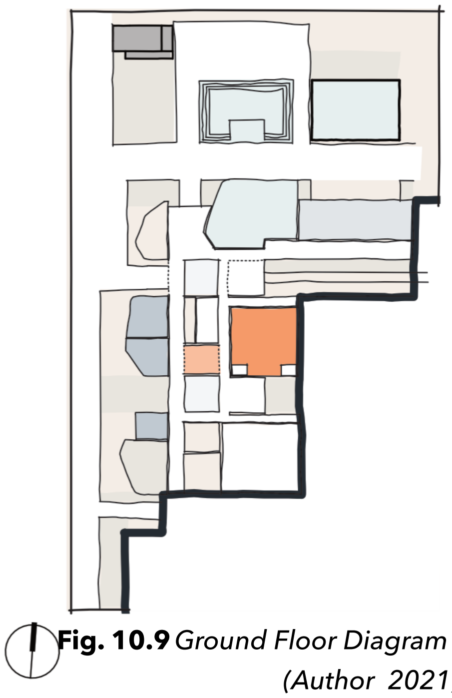


Fig. 10.9 *Ground Floor Diagram (Author 2021)*

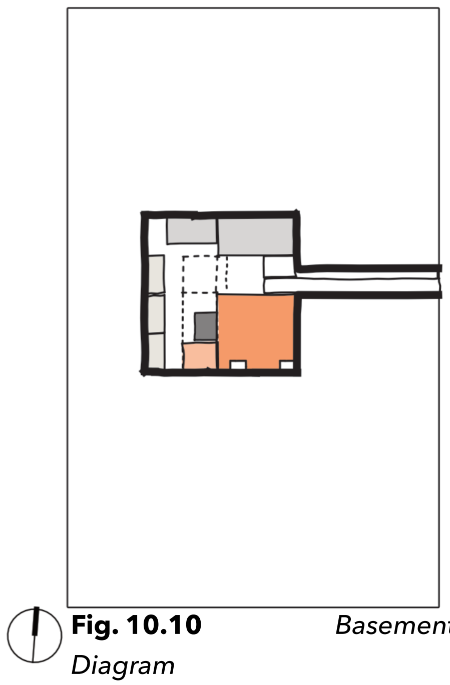


Fig. 10.10 *Basement Diagram*

10.2 BUILDING PROGRAM AND SPATIAL ORGANISATION

Refer to fig. 10.5. The building is organised along with a series of axial zones. The intersections between the axes guide the use of the rooms in that intersection. These zones are informed by the existing heritage on-site and the distance between the public walkway, the new building, and the training yard. The aim is to engage with the public regarding the industrial activities on the site while still maintaining a protected separation between the training activities and the public walkway. The discussion rooms offer an opportunity to serve as this buffer.

Figs 10.6 and 10.7. indicate the atriums and the vertical circulation located where the mediation zone intersects with the open zone. The hierarchy of movement is informed by the two heritage axes: The door of the existing Mechanical workshop (now resource centre) and the remaining gable and concrete column of the hoist of the old Electrical workshop.

The building is a training facility aimed at offering EPWP participants introductory construction skills training and safety practices. The level of training is explicitly targeted for entry-level participants entering government-funded infrastructure projects in the city. Furthermore, the facilities are equipped to carry out short refresher courses in construction, mechanical maintenance, electrical installation and management, both academic and applied.

The three training workshops are equipped to each allow up to thirty participants at a time, depending on the course. (SANS 10400 Part-A) The Electrical training workshop is aimed at familiarising participants with the installation and maintenance of typical electric infrastructure in buildings. The General Construction Workshop trains participants in both dry and wet construction techniques on a rotating basis. The Machinery and Welding Workshop familiarise participants with more dangerous equipment, which tends to be noisier.

The discussion rooms and offices are situated towards the western edge of the building and form the buffer between the public walkway and the Workshops Yard. The director- and staff offices and kitchenette are located on the first floor. The first and ground floors have expandable discussion rooms to accommodate up to 12 participants (Neufert, 1985: 263-293;SANS 10400 Part-A).

The flexible learning spaces both open into the workshops and towards the discussion rooms. If more floor area for the workshops is required, the flexible learning spaces can be adapted to accommodate the expansion. Similarly, discussions with larger audiences are held, the discussion rooms can spill into the flexible learning spaces. The spaces can also house exhibits of projects or demonstrations of craft development (Neufert,1985: 191-193).

The change rooms are located underneath the Electric Training Workshop. This includes showers and lockers, with the PPE store located next to the change room. Lightwells allow light to wash the pause spaces between the showers and locker rooms, naturally illuminating the change rooms without allowing the public to intrude on the participants' privacy.

The northern section of the building is dedicated to academic training. The lecture hall can accommodate 120 participants (SANS 10400 Part-A), including eight accessible seats, as per EPWP's intent to accommodate higher recruitment of people with disabilities. In addition, the large sliding door of the lecture hall opens into the public amphitheatre to expand the learning space rapidly. It also provides access to demonstrations showcased outside.

When the doors are opened, the courtyard between the lecture hall and the General Construction workshop serves as a vestibule to the lecture hall.

The participant breakaway room is intended for participants to rest between practical courses. It accommodates a small tuck shop and kitchenette, with refrigeration for meals. Participants are encouraged to make use of the food court across from the EPWP Hub.

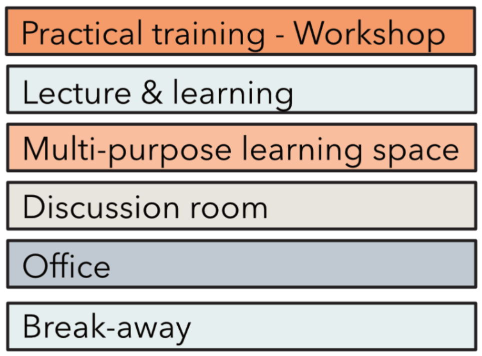


Fig. 10.11 *Programmatic key for the diagrams*

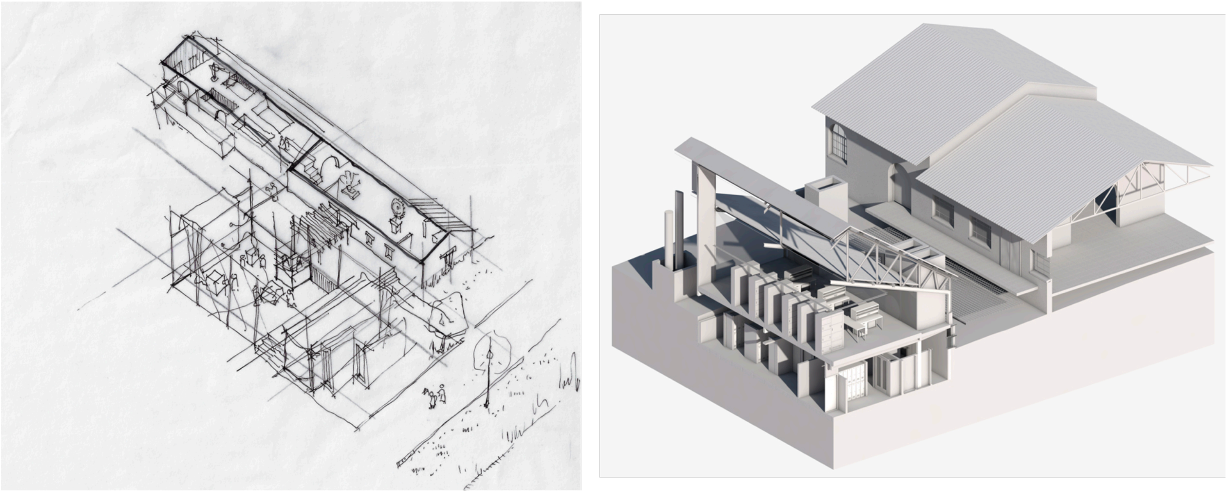


Fig. 10.12 *electric training workshop - resource centre - discussion rooms - change rooms - public viewing spaces - multi-purpose expandable workshop space - PPE store.*

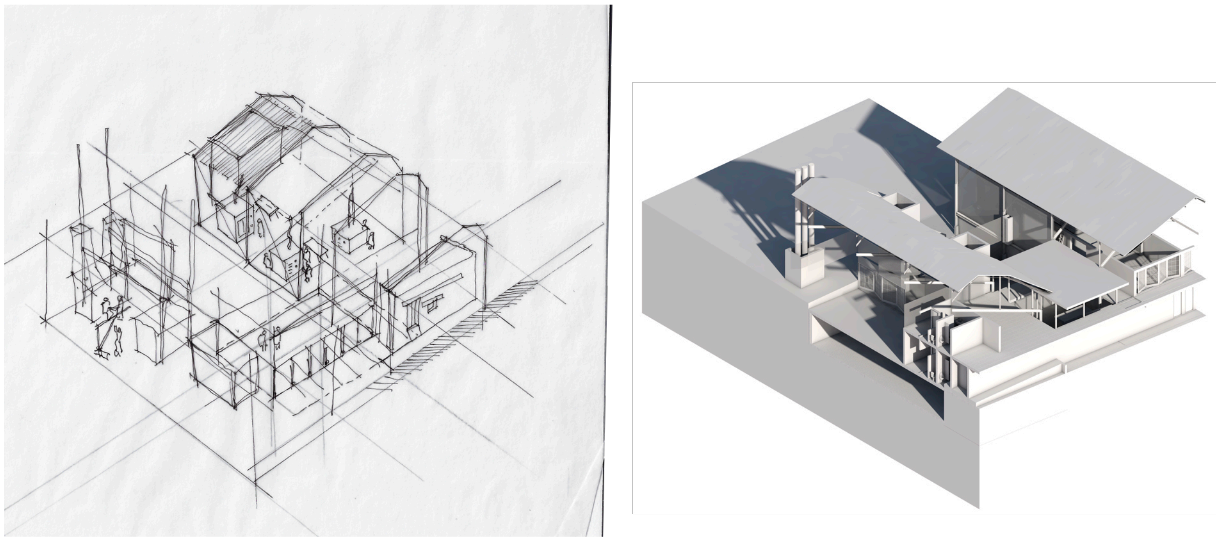


Fig. 10.13 *general training workshop - welding and assembly workshop - atrium - discussion rooms offices - public viewing spaces - multi-purpose expandable workshop space - store rooms - bathrooms*

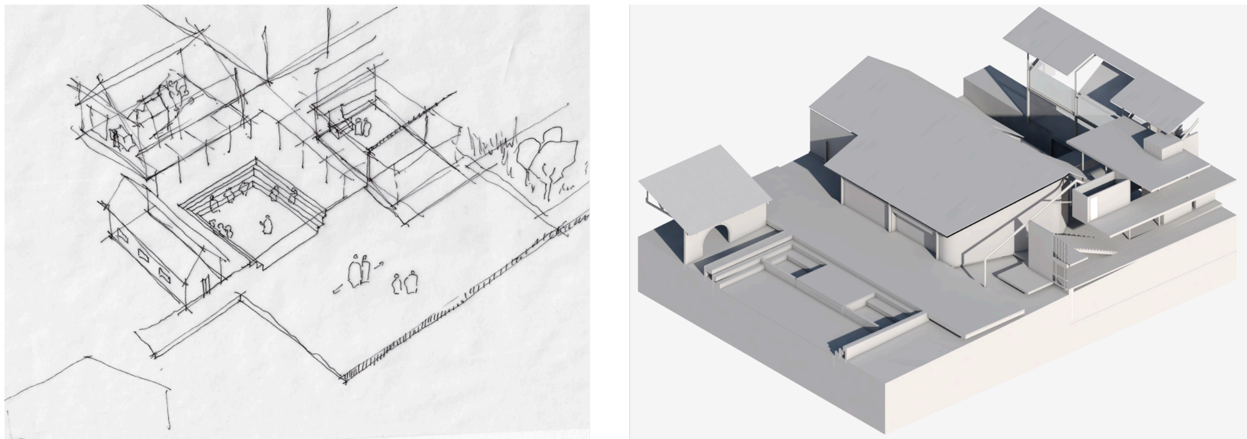


Fig. 10.14 *public pedestrian route - entrance - reception - public amphi - demonstration spaces - lecture hall - participant breakaway spaces - offices - public viewing spaces*

10.3 MOMENTS OF RECOLLECTION

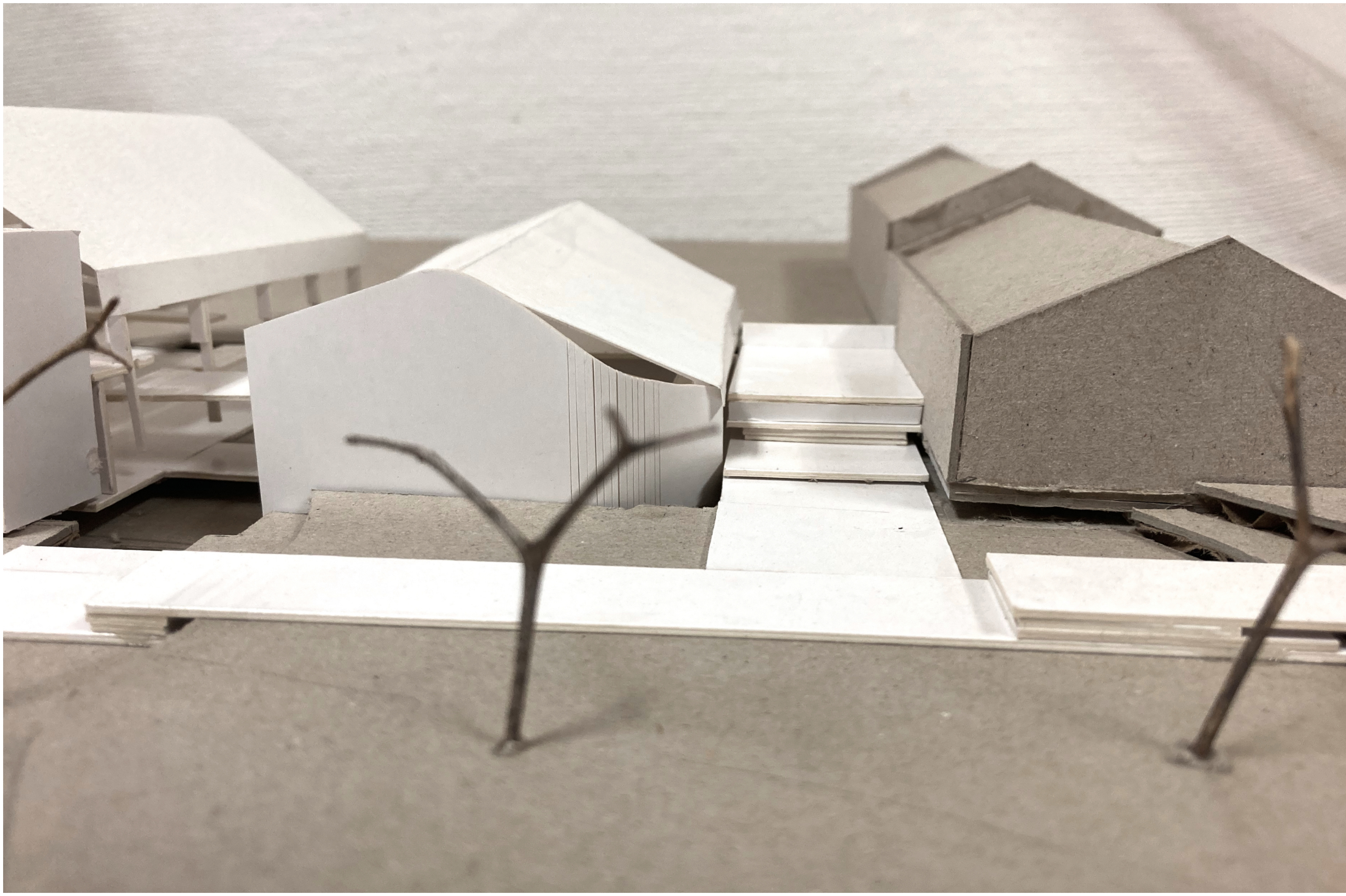
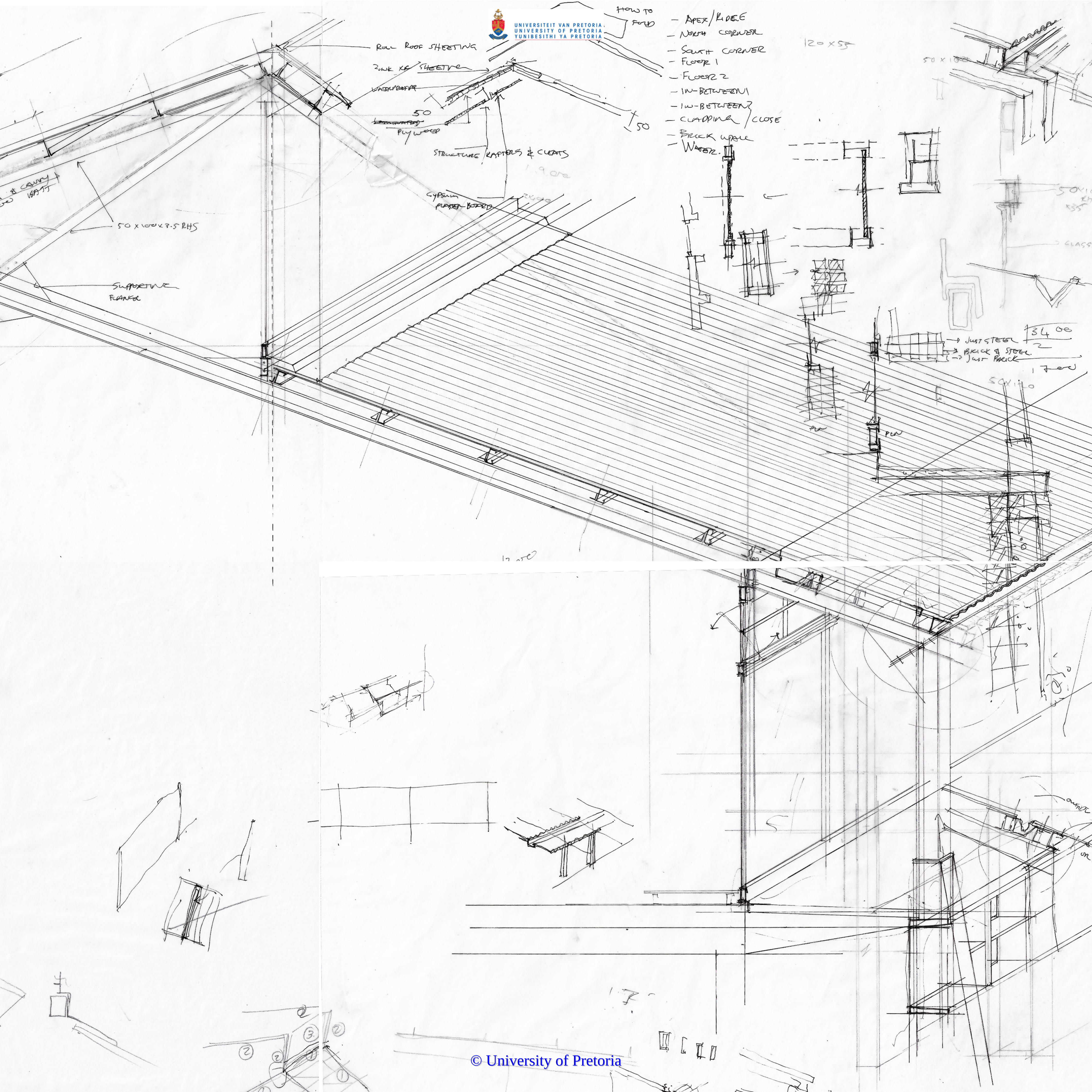


Fig. 10.15 *Maquette showing the connection between the old and new*


ROLL ROOF SHEETING
WATERPROOFING
50
PLYWOOD
STRUCTURE RAFTERS & CLEATS
GYPSUM PLASTER BOARD
50 x 100 x 3.5 RHS
SUPPORTING FLANGE
HOW TO FOLD
APEX / RIDGE
NORTH CORNER
SOUTH CORNER
FLOOR 1
FLOOR 2
IN-BETWEEN 1
IN-BETWEEN 2
CLADDING / CLOSE
BRICK WALL
WATER.
50
120 x 50
JUST STEEL
BRICK & STEEL
JUST BRICK

11. MAKING

11.1 TECHNOLOGICAL REASONING

Tectonics

The approach to the tectonics of the project is understood through Semper's elements; the earthwork, the hearth, the frame and roof, and the light enclosing membrane (Frampton, 1995: 5), where the hearths are analogous for the light wells and the chimneys. As illustrated in Fig.11.1, the frame and roof structure folds over the enclosing brick building below it. The enclosing brick building, in turn, transitions to protecting the building from the western sun. The roof structure becomes the workshop space.

Modules

Furthermore, the use of repeatable and standard structures and materials not only contributes to the resilience of the techne (Peres 2016: 178) but also responds to the findings of the statement of value. The use of a repeated module (Ibid.) that is adapted to suit the varying requirements is evident on various scales. On a building scale, the new workshops are conceptually adapted standard modules to the existing buildings on site. The portal frame designed for the workshops is repeated throughout the project. Custom extensions to the steel portal frames are added to allow light to enter the building in various ways. The openings in the western facade are defined using exposed standard precast lintels.

Standard factory steel frame windows are used in the workshop roof lights. The 'mentis' grating walkways celebrate the pragmatic use of the material in industrial settings.

Participants as craftsmen

The cooperation between the craftsman and the machine (Wright 1901) is valued in the construction of the building by EPWP participants. As the building is in itself a government project, the construction of the EPWP Hub will be in itself a training opportunity (Department of Public Works and Infrastructure 2021:5).

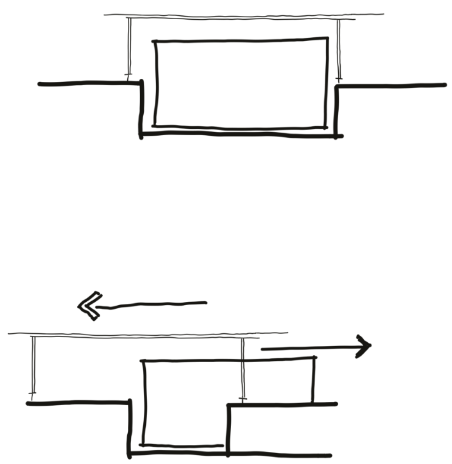


Fig. 11.2 *Technological parti illustrating the separation of the earthwork, the frame and roof, and the enclosing membrane*

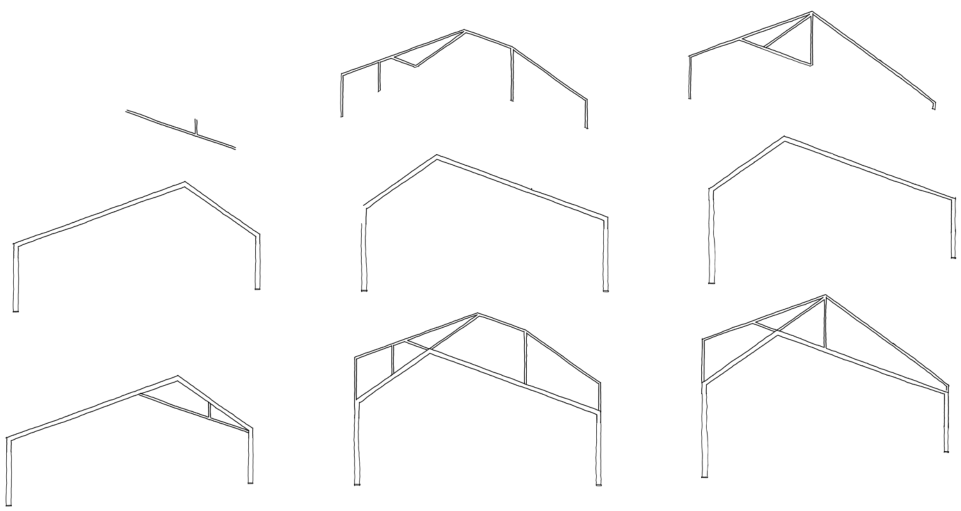


Fig. 11.3 *Technological parti illustrating the separation of the earthwork, the frame and roof, and the enclosing membrane*

Fig. 11.1 *Development of technological section*

11.2 ITERATIONS

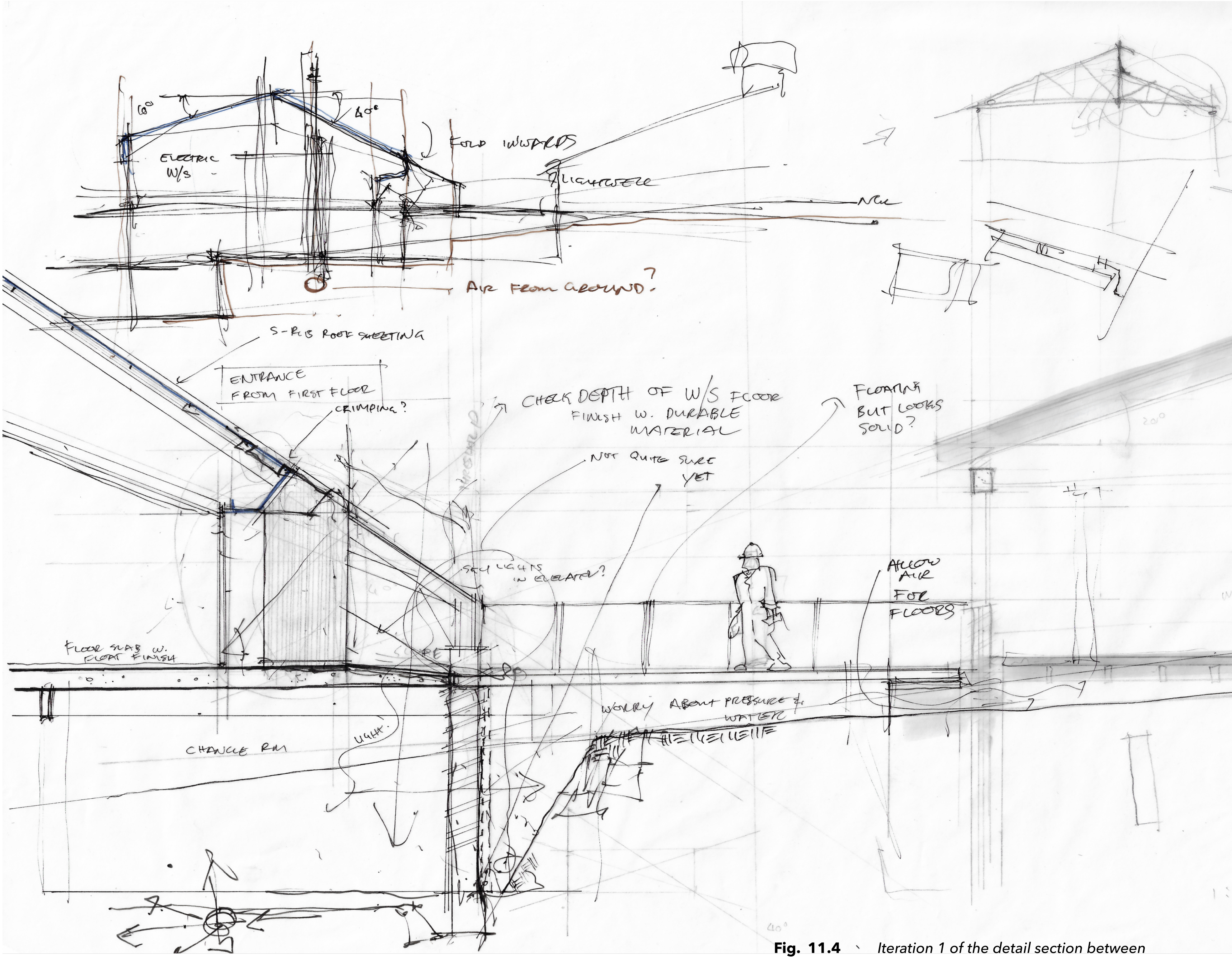


Fig. 11.4 ` *Iteration 1 of the detail section between the existing building and the new workshops*

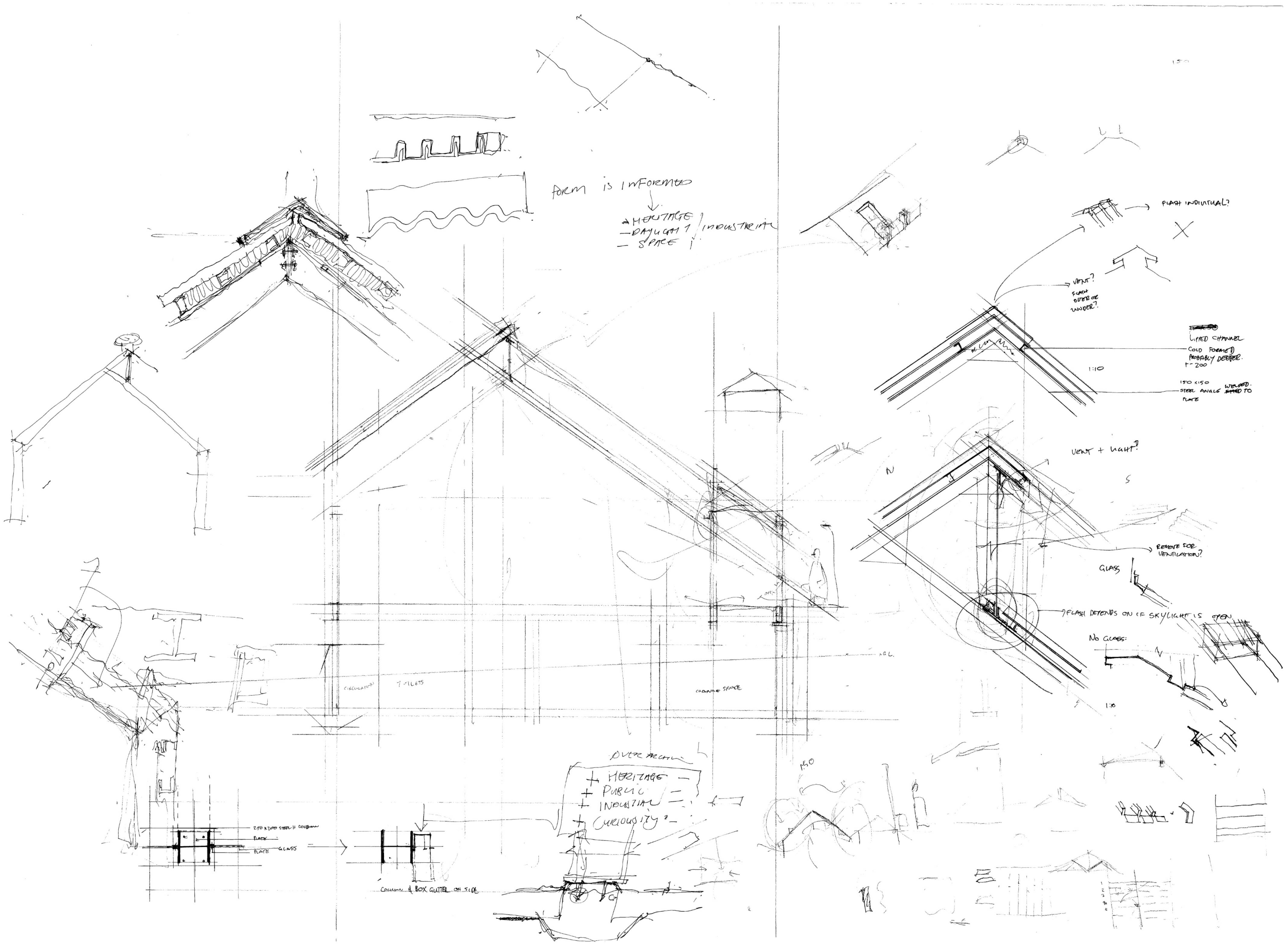


Fig. 11.5 *Development of steel connections in the portal frame*

11.2 ITERATIONS

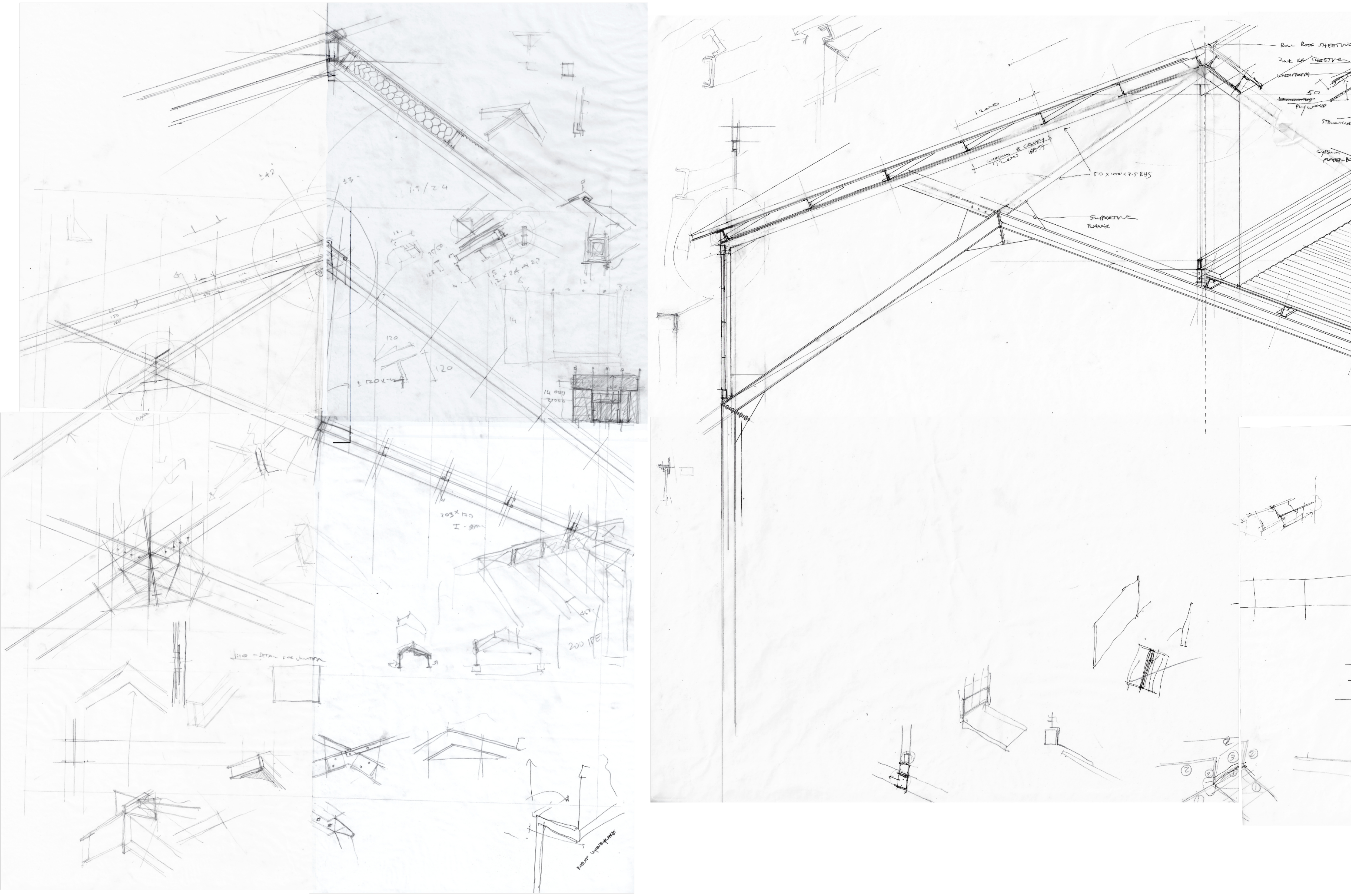


Fig. 11.6 *Iteration 3 of the detail section between the existing building and the new workshops*

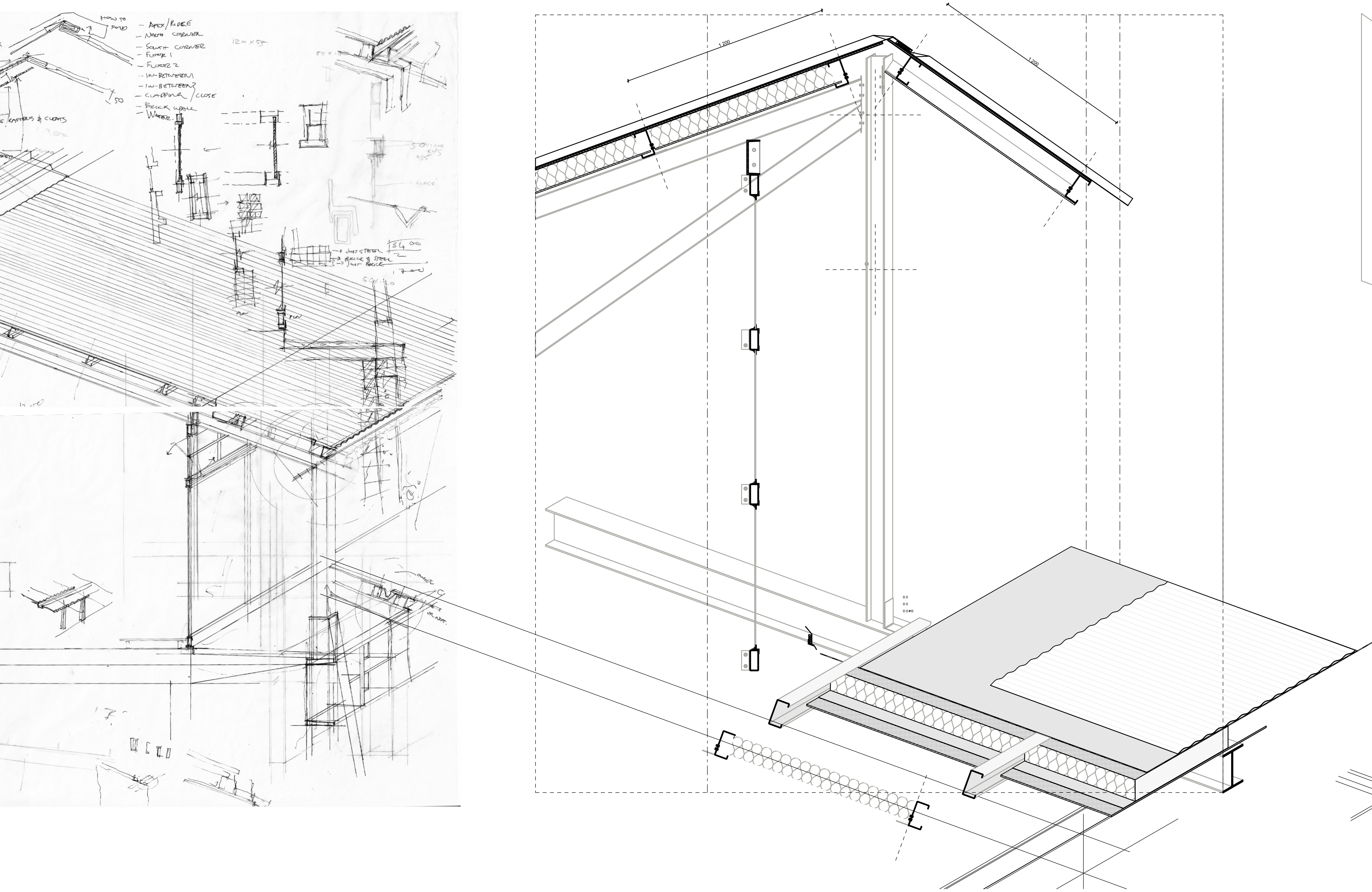


Fig. 11.7 *Iteration 4*

11.3 INHERITED TECHNOLOGIES

The brick screens are inspired by the English bond present on the site. The aim is to reinterpret the bond as a translucent screen. The bricks are sourced from demolition projects in the city.

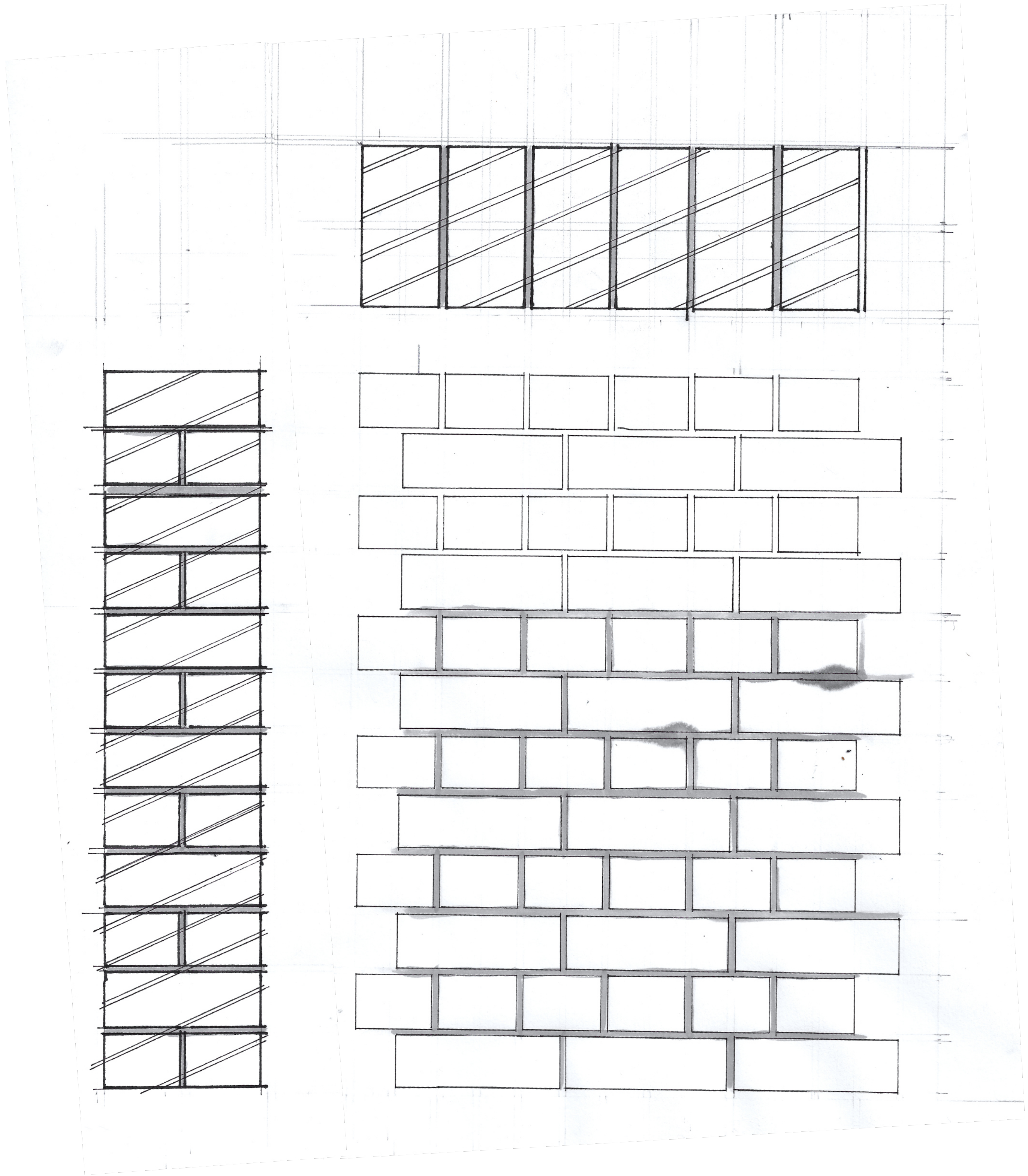


Fig. 11.8 *Section, elevation and plan of existing english bond of the majority of buildings on site*

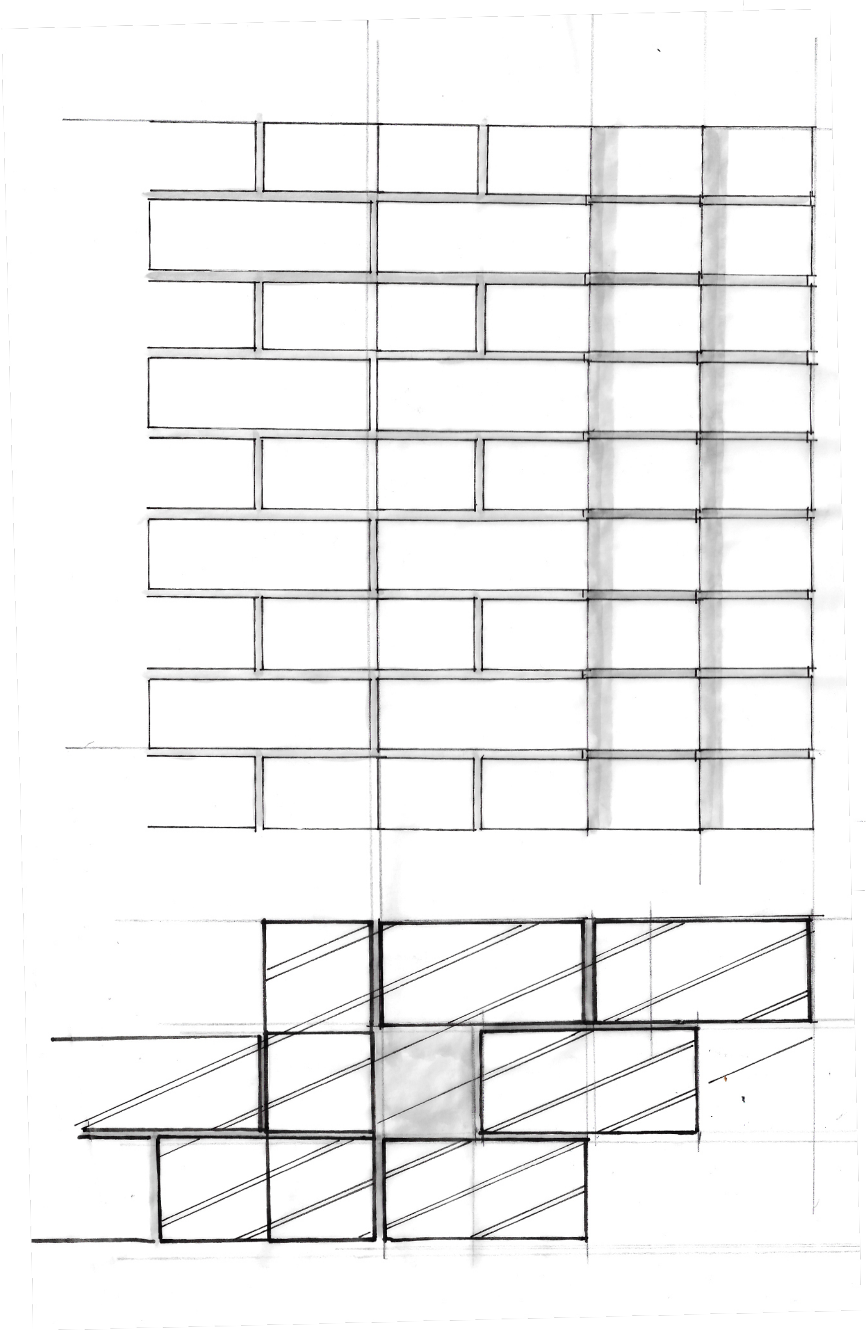


Fig. 11.9 *Plan and elevation of the connection between the wall and the screen*

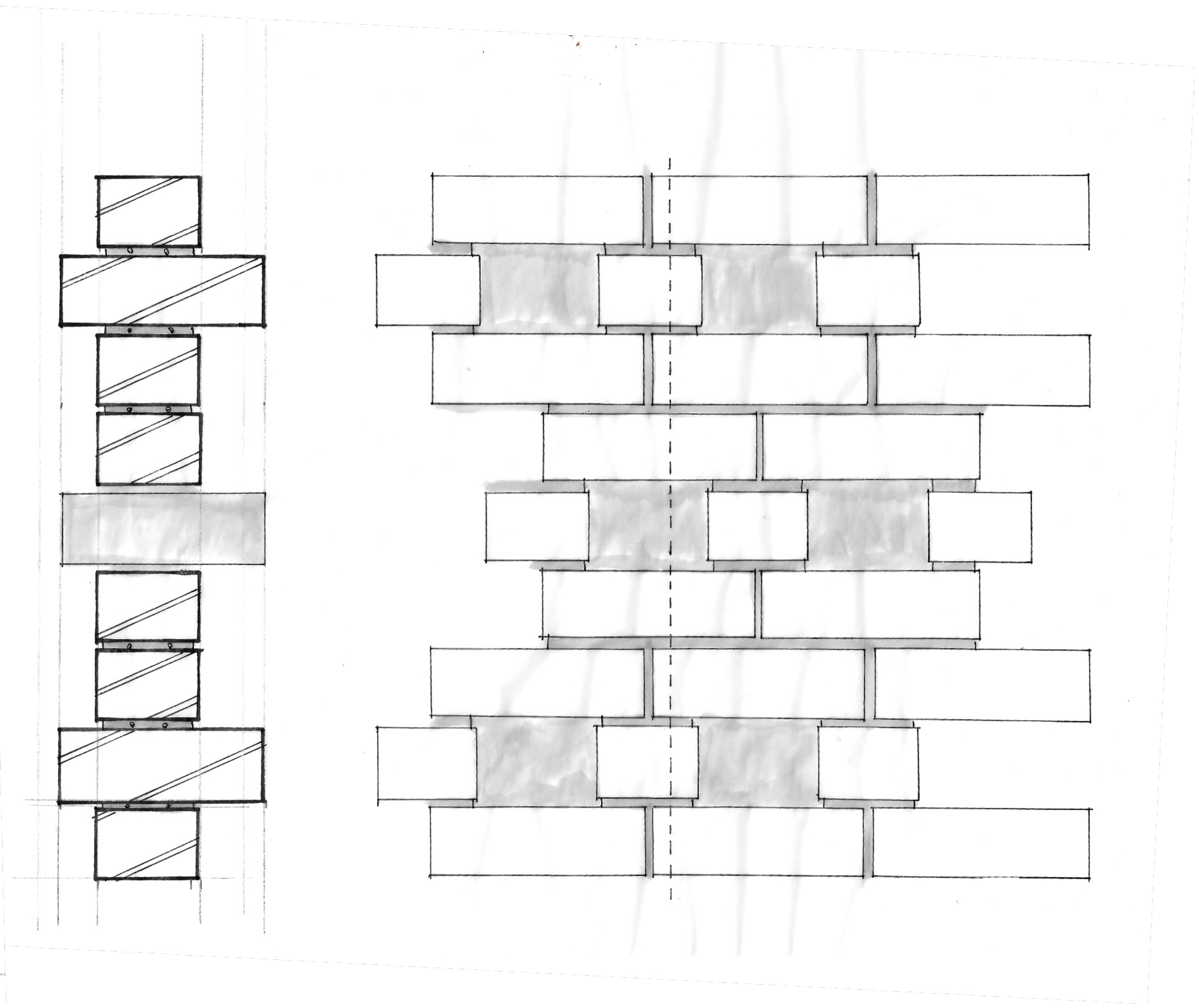


Fig. 11.10 *Section and elevation of the developed brick screen with protruding bricks*

11.5 DAYLIGHT (ENVIRONMENTAL STRATEGY)

Sun Angles

The western edge of the building is exposed to significant afternoon sun that is addressed through shading devices and minimising the size of openings. Where openings occur, vertical shading devices are implemented in front of it, or the openings are deep-set within thick walls (Ching and Shapiro, 2019).

Illuminance

The Daylight Factor, or DF, describes the quality of light inside a space. The DF is influenced by the shape of the opening. An irregular DF creates an uncomfortable working environment, which can result from tall, narrow windows. Wide windows evenly distribute the illuminance over the area (Ching and Shapiro, 2019). The recommended average DF for workshop spaces is 5%, with a minimum of 2,5% (Neufert, 1984:32).

The size of the roof light in the workshop is partially determined by the required DF in the workshop. The intent is to achieve a consistent internal illuminance to minimise the required electric lighting inside the building.

SEFAIRA Iterations

Baseline (fig. 11.11): the first iteration is used as a baseline to compare the following iterations. The goal is to have a working environment of 500 lux throughout the year. Furthermore, the intention is to have an even distribution of light throughout the building, with a DF between 2.5% and 5%.

Iteration 1 (Fig. 11.13): the windows on the eastern edges are removed and the shape of the middle roof is adapted. However, this resulted in an undesired DF between 1% and 3,39%.

Iteration 2 (Fig. 11.15): some external shading is added. The shading devices (roof overhangs) addresses the overlit quality inside, but it also reduces the DF.

Iteration 3 (Fig. 11.16): Clerestory windows on the northern and southern elevation, with light shelves, improve the DF in addition to the even distribution of light inside.

SBAT Rating

The building has achieved an SBAT rating of 4.1, scoring high in the categories of transport, social cohesion, education, access to a local economy and services and product. Water consumption is partially alleviated with a water harvesting system. Bio-swales on site capture the runoff off the parking and walkways, which is used to irrigate the park.

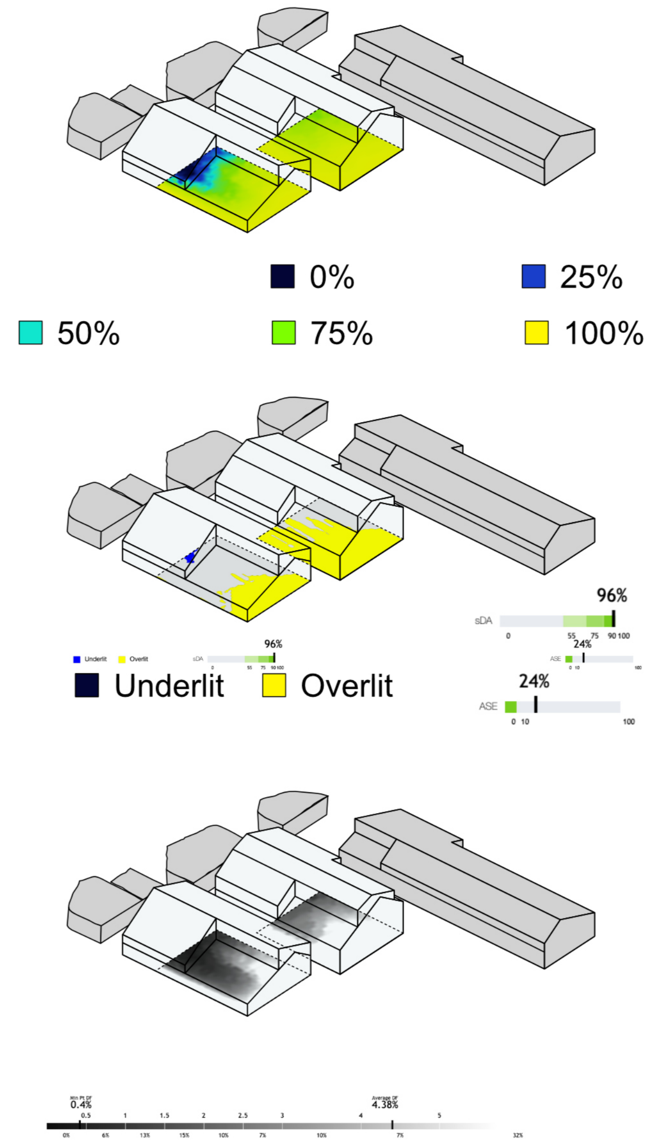


Fig. 11.11 *Baseline*

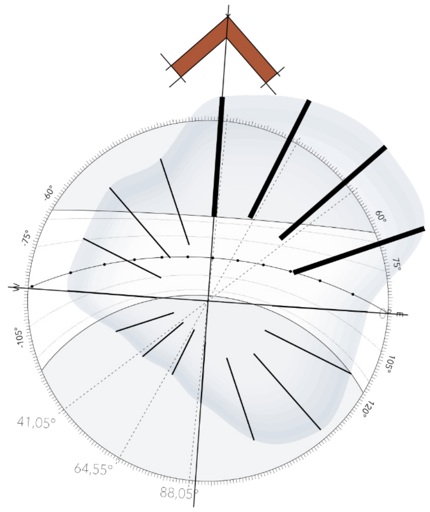
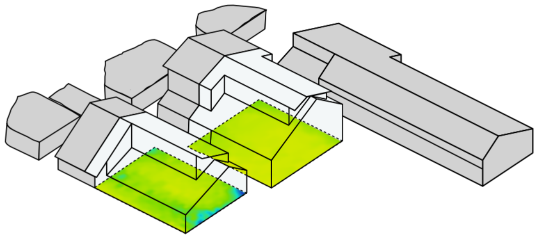
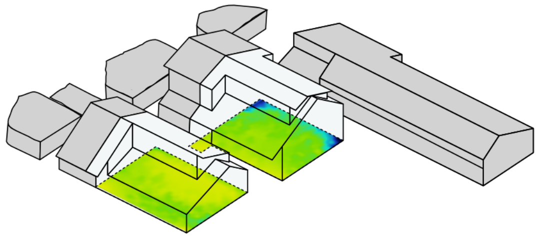
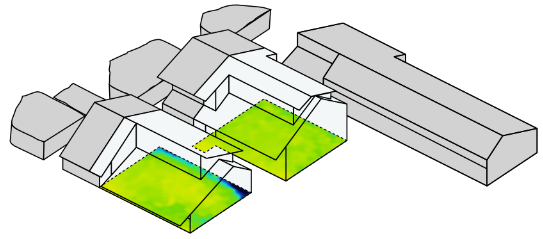
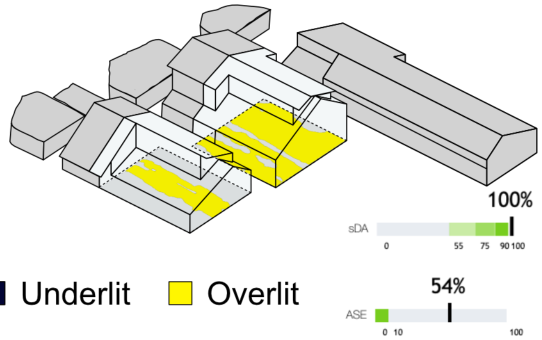


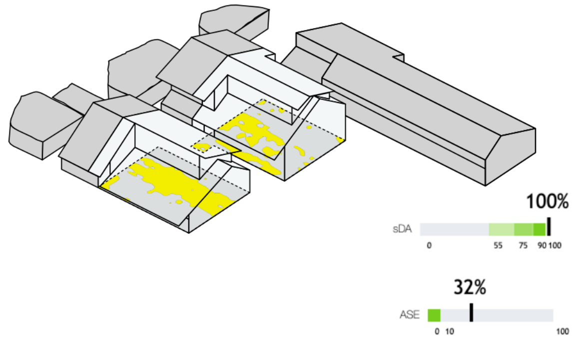
Fig. 11.12 *Wind rose and sun angle*

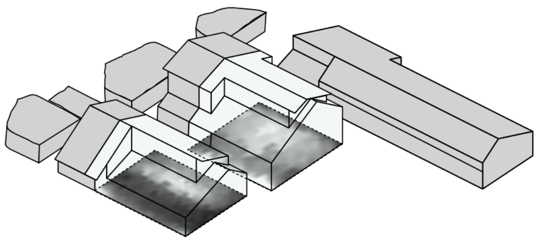
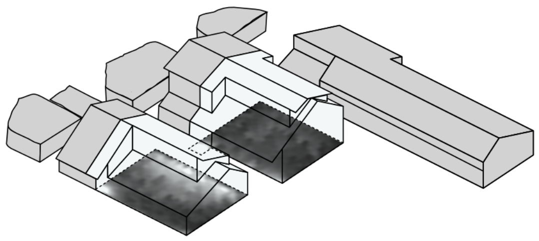
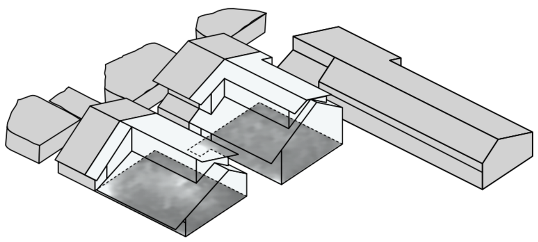
Percentage of annual occupied hours where luminance is at least 500 lux. measured at 0,85 meters above the floor.

0% 25% 50% 75% 100%

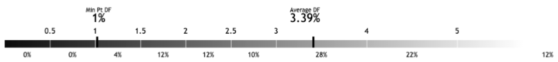


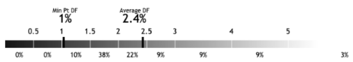


Underlit Overlit

Percentage of Floor Area where Daylight Factor (DF) is measured at 0.85 meters above the floor plate





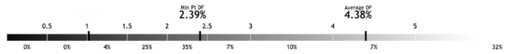
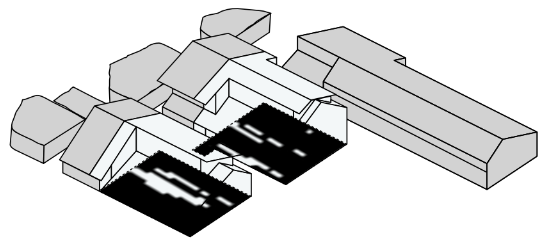
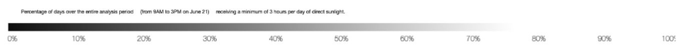


Fig. 11.13 *Daylighting iteration 1*

Fig. 11.15 *Daylighting iteration 2*

Percentage of days over the entire analysis period (from 9AM to 3PM on June 21) receiving a minimum of 3 hours per day of direct sunlight

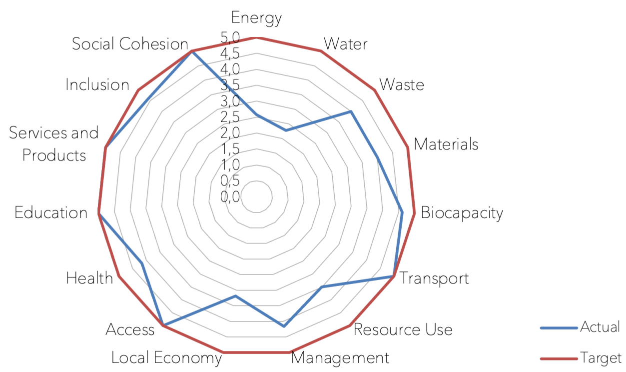


Fig. 11.14 *SBAT rating*

Fig. 11.16 *Daylighting iteration 3*

11.5 WATER

The water captured by the roofs of the Extended Works training hub is used by the participants for training. The training includes the mixing of binding materials, the making of structures, the testing of waterproof efficacy and the cleaning of surfaces. The current site has an average annual rainfall-runoff of 537,4 kℓ. The roofs of the Extended Public Works Training Hub have the potential of harvesting 1 780,3 kℓ. annually. (Refer to Fig. 11.18).

The roofs of the workshops, the interstitial spaces, and the training yard can harvest 1 773,8 kℓ annually, calculated as per SANS 10400 Part-R. This is used to supplement the activities in the wet construction training workshop. Between April and September, the wet construction activities rely entirely on the municipal water supply. Thus less water-intensive training courses are scheduled during this time of the year, as shown in Fig. 11.18-19

Refer to Fig. 11.17. The harvested water from the workshop roofs is stored in two 15 000ℓ elevated water tanks with two additional 20 000ℓ storage tanks underground.

The water captured by the roofs of the seminar spaces,101,2 kℓ annually, will feed to the bio-swales on-site, which irrigates the park.

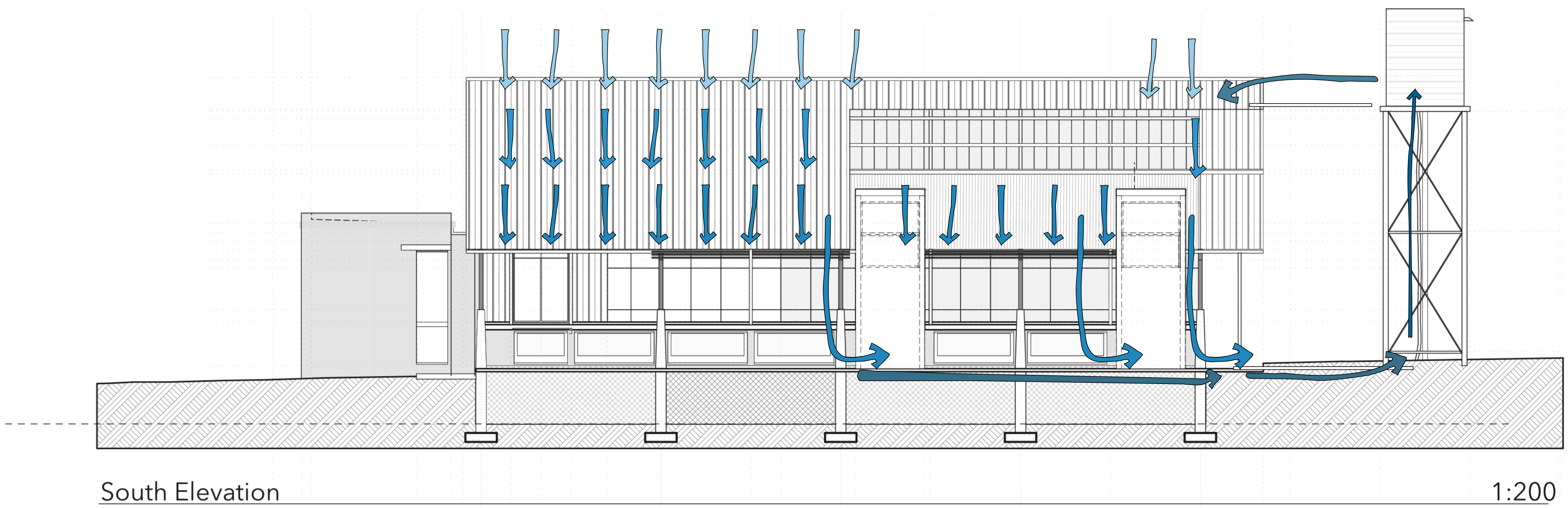


Fig. 11.17 *Daylighting iteration 1*

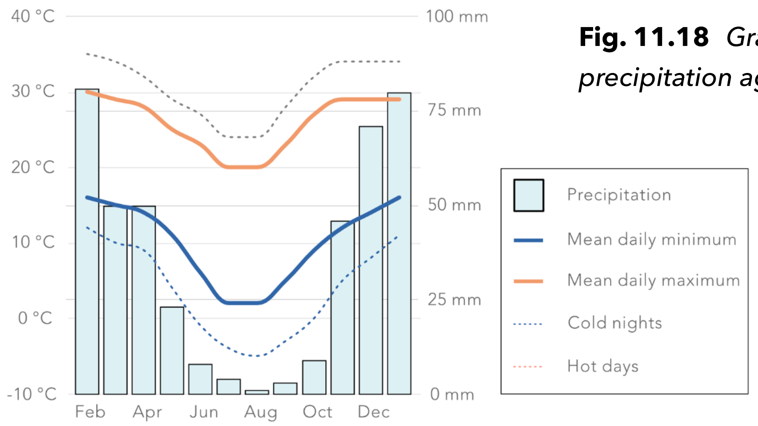


Fig. 11.18 *Graph depicting precipitation against temperature*

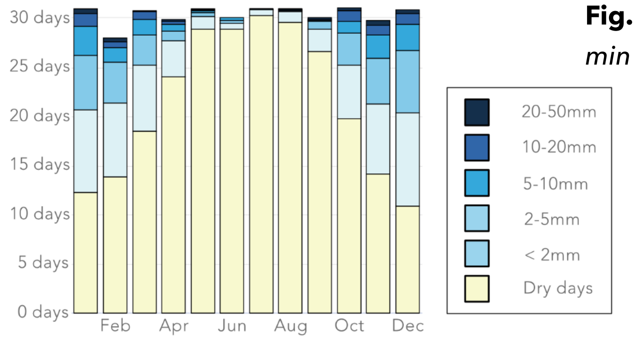


Fig. 11.19 *Graph depicting annual min and max precipitation*

	AVERAGE RAINFALL (mm)	AREA THE SITE (M2)	RUNOFF COEFFICIENT	TOTAL k
January	154	21900	0,6	2 023 560
February	75	21900	0,6	985 500
March	82	21900	0,6	1 077 480
April	51	21900	0,6	670 140
May	13	21900	0,6	170 820
June	7	21900	0,6	91 980
July	3	21900	0,6	39 420
August	6	21900	0,6	78 840
September	22	21900	0,6	289 080
October	71	21900	0,6	932 940
November	98	21900	0,6	1 287 720
December	150	21900	0,6	1 971 000
Average annual runoff of site	732	1224	0,6	537 406
Total Runoff				9 015 480

Fig. 11.20 *Table with potential annual rainfall on the site*

	AVERAGE RAINFALL (mm)	AREA OF ROOFS WORKSHOPS (M2)	SEMINAR SPACES (M2)	INTERSTITIAL SPACES (M2)	PAVEMENT (M2)	RUNOFF COEFFICIENT	TOTAL (Kℓ)
January	154	1224	154	145	1325	0,9	374, 539
February	75	1224	154	145	1325	0,9	182, 405
March	82	1224	154	145	1325	0,9	199, 430
April	51	1224	154	145	1325	0,9	124, 036
May	13	1224	154	145	1325	0,9	31, 617
June	7	1224	154	145	1325	0,9	17, 024
July	3	1224	154	145	1325	0,9	7, 296
August	6	1224	154	145	1325	0,9	14, 592
September	22	1224	154	145	1325	0,9	53, 506
October	71	1224	154	145	1325	0,9	172, 677
November	98	1224	154	145	1325	0,9	238, 343
December	150	1224	154	145	1325	0,9	364, 811
Average Rainfall	732	1224	154	145	1325,2	0,9	1 780, 275
Runoff of areas		806110	101157	95660	873009		

Fig. 11.21 *Table with potential average rainfall collectable from the EPWP Hub roofs*

WORKSHOP ROOFS
SUMMER RAINFALL = 140 MM2 PER M2 ROOF PLAN AREA SERVED

	WORKSHOPS ROOF AREA (M2)	INTERNAL CROSS SECTIONAL AREA (MM2)	DIAMETER FOR DESIGN GUIDANCE (MM)
ROOF 1	85,5	11970,0	123
ROOF 2	85,5	11970,0	123
ROOF 3	171,1	23954,1	175
ROOF 4	85,5	11970,0	123
ROOF 5	85,5	11970,0	123
ROOF 6	31,3	4382,0	75
ROOF 7	111,5	15610,0	141
ROOF 8	396,5	55506,5	266
TOTAL AREAS	1223,6	171304,4	467

Fig. 11.22 *Table calculating the min diameter for gutters and dwownpipes for the workshop roofs*

FLAT ROOFS

SUMMER RAINFALL = 140 MM2 PER M2 ROOF PLAN AREA SERVED

	WORKSHOPS ROOF AREA (M2)	INTERNAL CROSS SECTIONAL AREA (MM2)	DIAMETER FOR DESIGN GUIDANCE (MM)
Flat roof 1	43,1	6028,4	88
Flat roof 2	43,1	6030,5	88
Flat roof 3	67,4	9437,7	110
Flat roof 4	72,6	10164,3	114
Flat roof 5	72,6	10164,3	114
TOTAL AREAS	298,8	41825,1	231

Fig. 11.23 *Table calculating the min diameter for gutters and dwownpipes for the flat roofs*

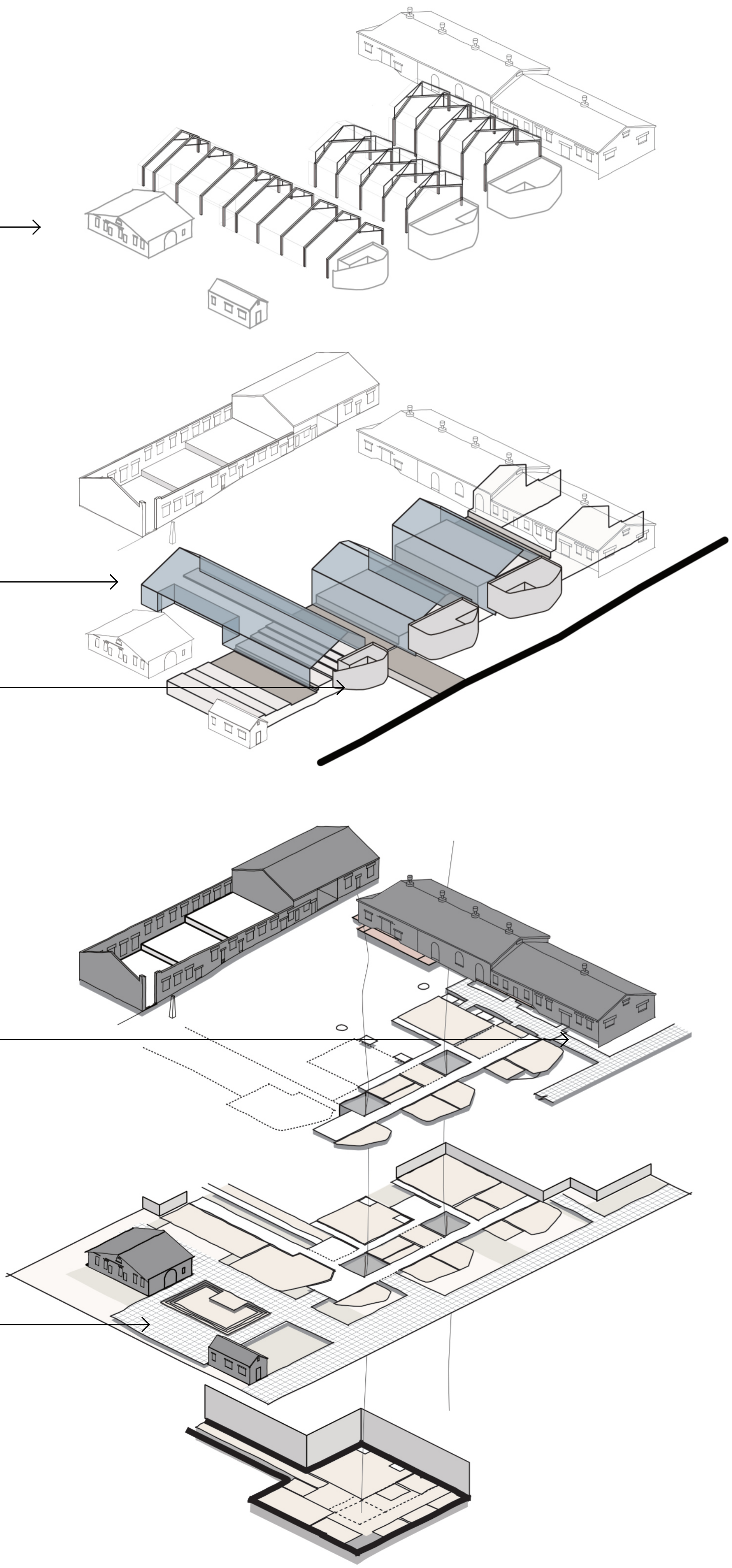


Fig. 11.24 *The assembly of the workshops and their parts*

12. ASSEMBLY

The excavation

Historically the landscape has been reshaped multiple times. This includes the recent removal of almost all external hard surfaces and soil platforms prepared for further site development as proposed in the 2014 HIA (Jansen, 2014). Thus further excavations and changes to the landscape would unearth the traces of the demolished workshops.

Due to stonemasonry activities, remnants of sandstone, granite and quartzite have been identified on the site (Ibid.: 23).

These remnants, along with broken bricks and quartzite foundation stones found in the excavation, are collected. The collected material is used as a mosaic in the atriums. Face bricks from ongoing demolitions in the city are reused on the western facade. The excavated soil is repurposed to create the platform for the workshop yard.

Structure

Concrete columns support the workshop floors. The steel portal frame system functions independently as a structure over the concrete floors of the workshops and seminar space. The face brick walls serve as infill for the concrete frame structure of the seminar spaces. The tanked basement is constructed using concrete blocks, with an access ramp towards the workshop yard.

New and old modules

The steel portal frame module repeated throughout the project is designed to accommodate adaptations to the profile. This reduces waste in custom manufacturing. The secondary structure comprises steel T-sections.

Where roof lights puncture the roof, the roof sheeting used is recycled corrugated steel sheets to correspond with the existing roofs on-site (Wegelin, 2009: 187-195, 226, 237).

The brick screens on the western elevation are built using recycled red face brick from demolitions of buildings with some heritage value. An English bond is used in the southern portion. This transition to a stretcher occurs farther from an existing workshop.

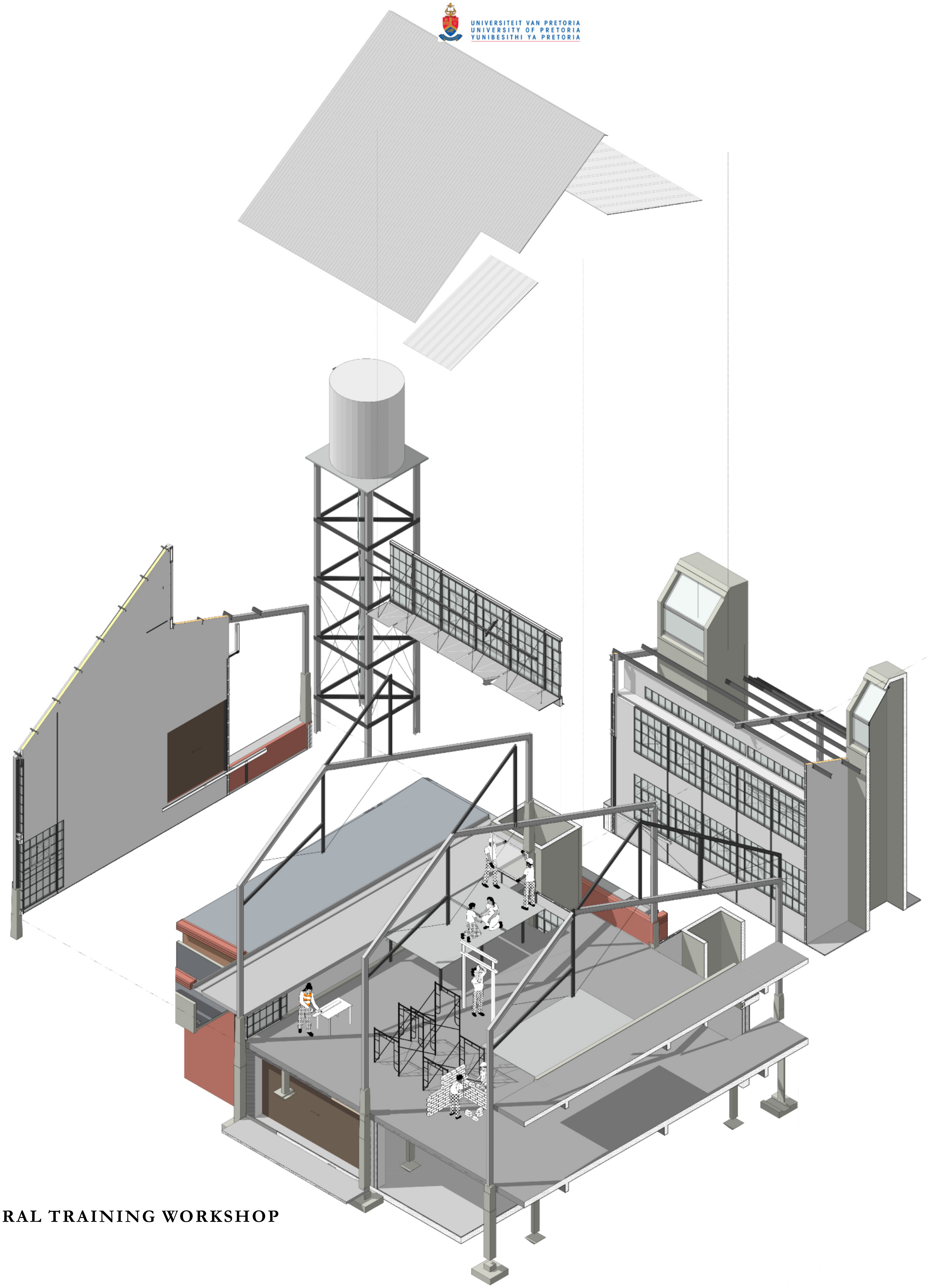
The concrete beams over the new windows in brick walls are exposed. The beam extends to the brick screen and acts as a supporting structure. Precast concrete window modules are used as high windows for the basement and change rooms.

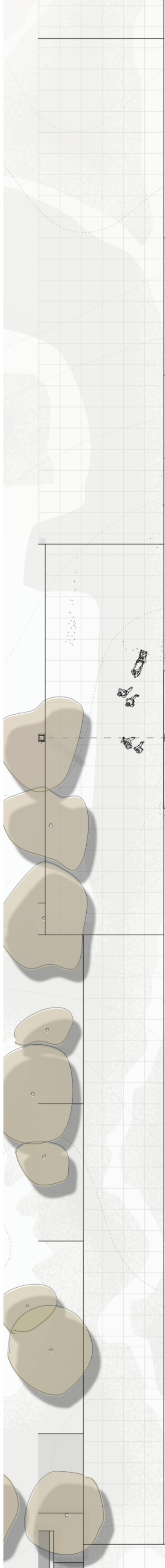
The atriums

The atriums allow for double volume spaces as well as vertical circulation. The floor is finished with a polished rubble aggregate and mosaic pieces comprising of the remnants of sandstone, granite and quartzite on the site. Since these spaces are designed for people instead of machinery, the floor will not wear down as fast as in the workshops.

The roof

The columns extend from the retaining wall. The steel portal frame is fixed to the extended concrete column. This design references the remaining concrete columns of the hoisting equipment still present on site.

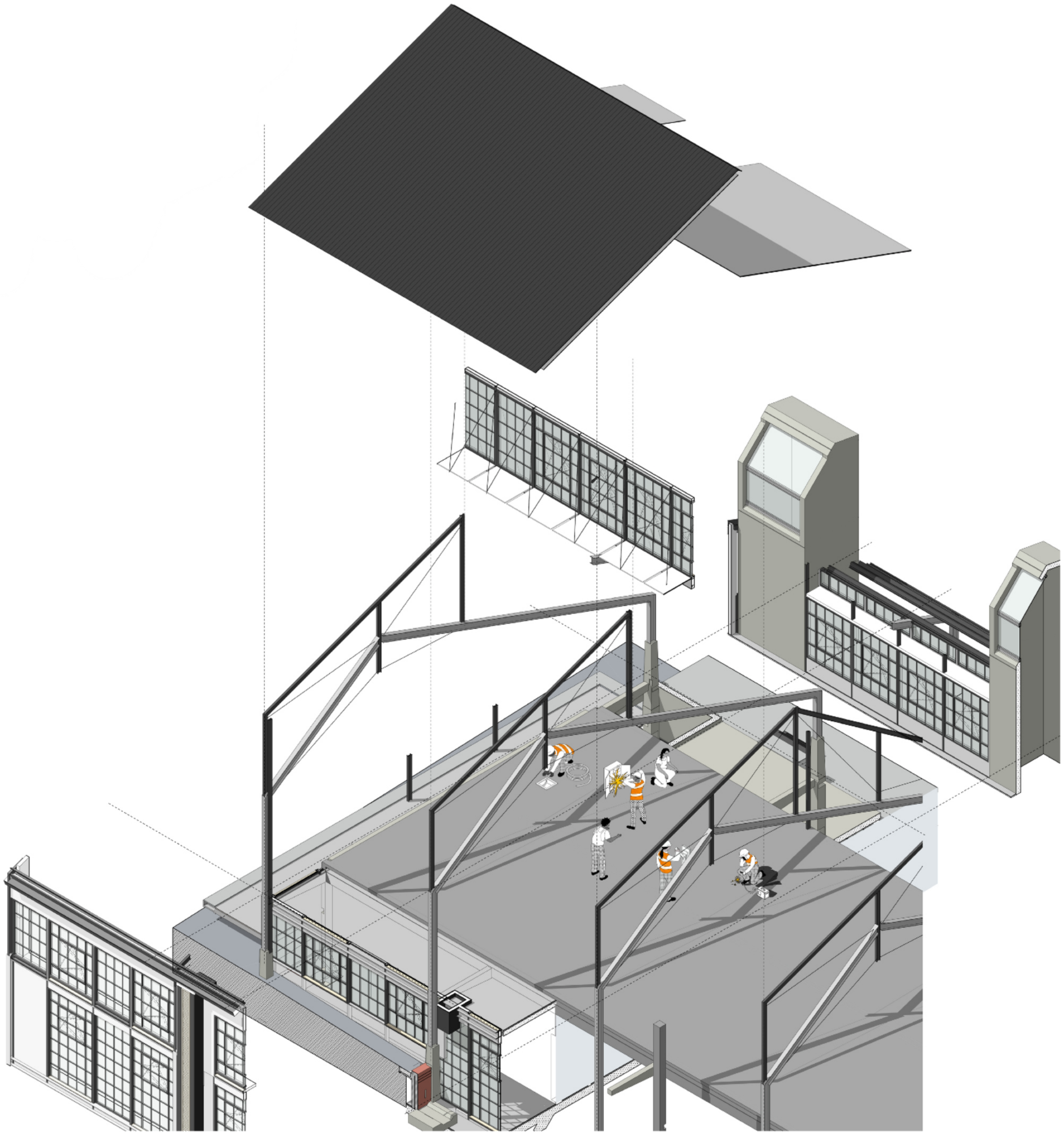




GENERAL TRAINING WORKSHOP

PLAN AND AXONOMETRIC

GROUND FLOOR PLAN 1:250

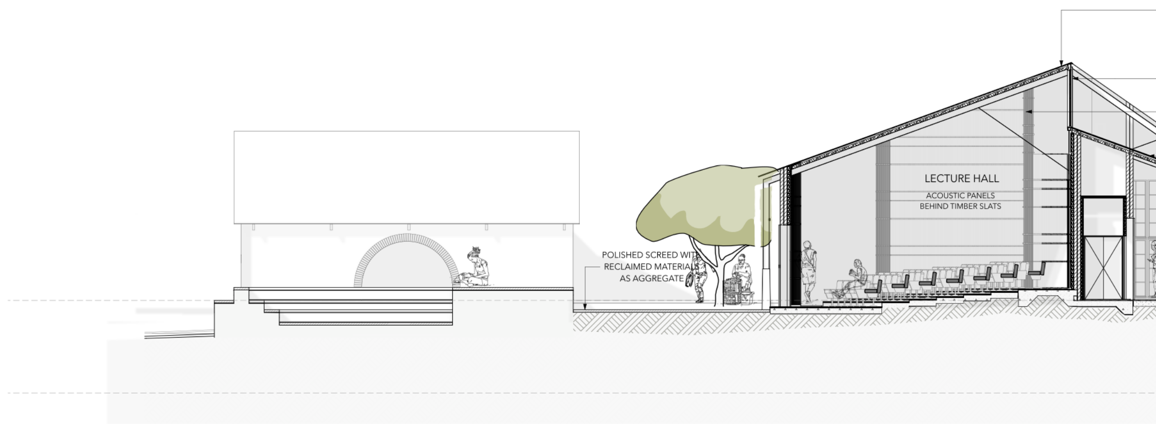


ELECTRIC TRAINING WORKSHOP

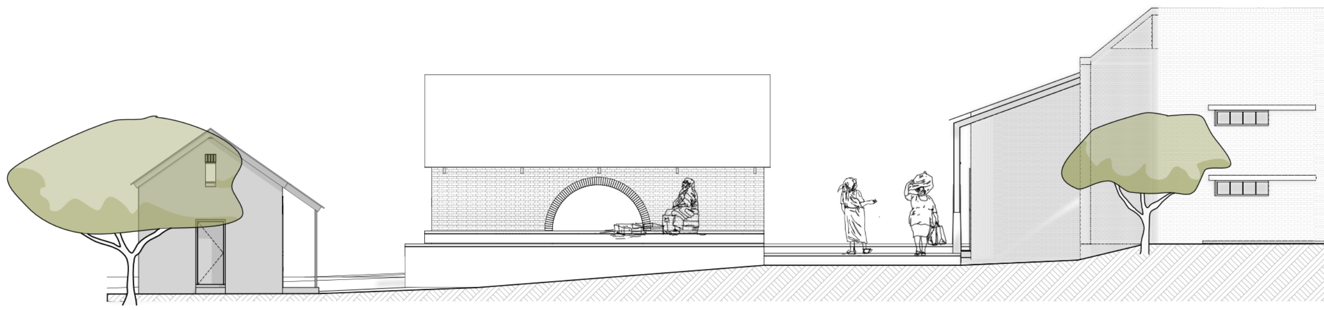
PLAN AND AXONOMETRIC

FIRST FLOOR PLAN 1:250

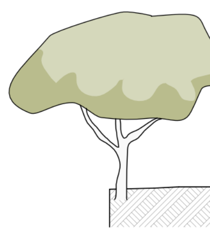
SECTION 1:250



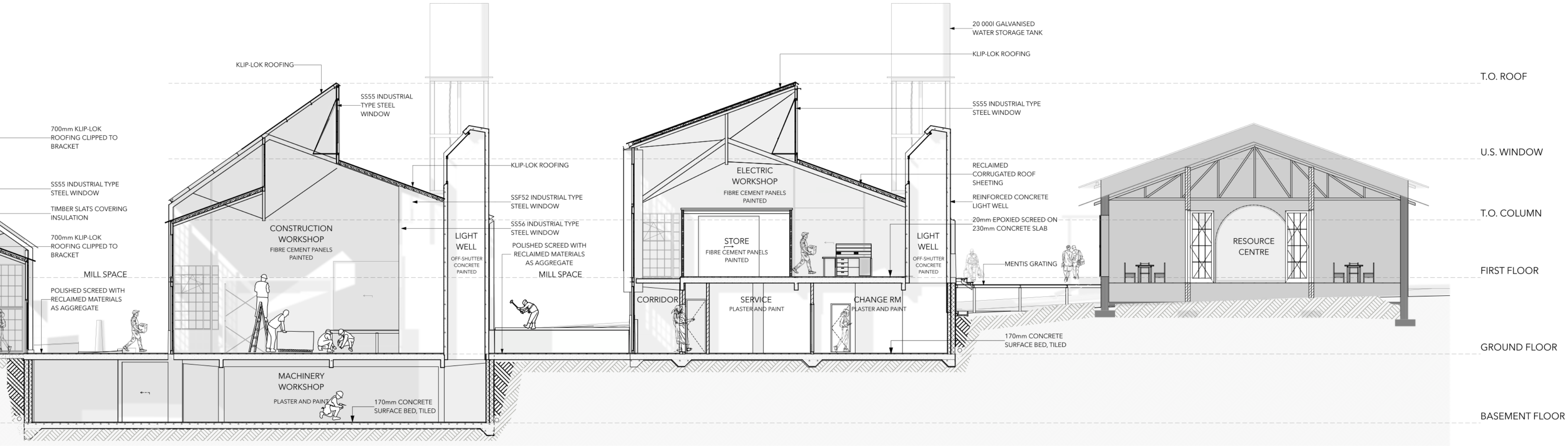
WEST ELEVATION 1:250

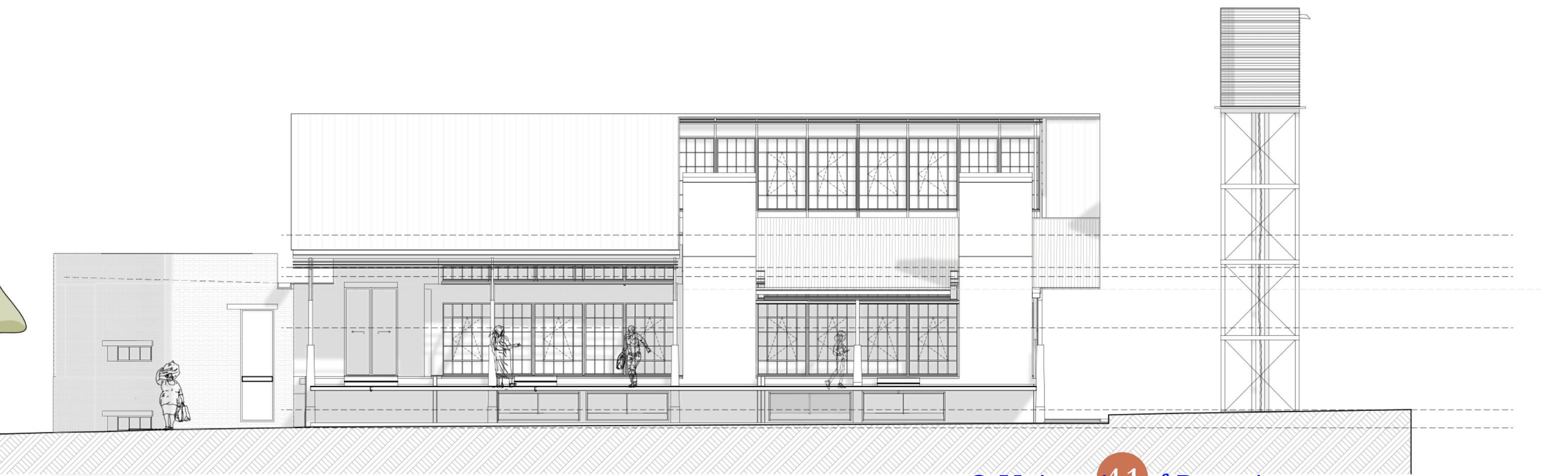


SOUTH ELEVATION 1:250



SECTION AND ELEVATIONS


KLIP-LOK ROOFING
SS55 INDUSTRIAL TYPE STEEL WINDOW
700mm KLIP-LOK ROOFING CLIPPED TO BRACKET
SS55 INDUSTRIAL TYPE STEEL WINDOW
TIMBER SLATS COVERING INSULATION
700mm KLIP-LOK ROOFING CLIPPED TO BRACKET
MILL SPACE
POLISHED SCREED WITH RECLAIMED MATERIALS AS AGGREGATE
CONSTRUCTION WORKSHOP
FIBRE CEMENT PANELS PAINTED
MACHINERY WORKSHOP
PLASTER AND PAINT
170mm CONCRETE SURFACE BED, TILED
LIGHT WELL
OFF-SHUTTER CONCRETE PAINTED
KLIP-LOK ROOFING
SSF52 INDUSTRIAL TYPE STEEL WINDOW
SS56 INDUSTRIAL TYPE STEEL WINDOW
POLISHED SCREED WITH RECLAIMED MATERIALS AS AGGREGATE
MILL SPACE
ELECTRIC WORKSHOP
FIBRE CEMENT PANELS PAINTED
STORE
FIBRE CEMENT PANELS PAINTED
CORRIDOR
SERVICE
PLASTER AND PAINT
CHANGE RM
PLASTER AND PAINT
LIGHT WELL
OFF-SHUTTER CONCRETE PAINTED
20 000l GALVANISED WATER STORAGE TANK
KLIP-LOK ROOFING
SS55 INDUSTRIAL TYPE STEEL WINDOW
RECLAIMED CORRUGATED ROOF SHEETING
REINFORCED CONCRETE LIGHT WELL
20mm EPOXIED SCREED ON 230mm CONCRETE SLAB
MENTIS GRATING
170mm CONCRETE SURFACE BED, TILED
RESOURCE CENTRE
T.O. ROOF
U.S. WINDOW
T.O. COLUMN
FIRST FLOOR
GROUND FLOOR
BASEMENT FLOOR



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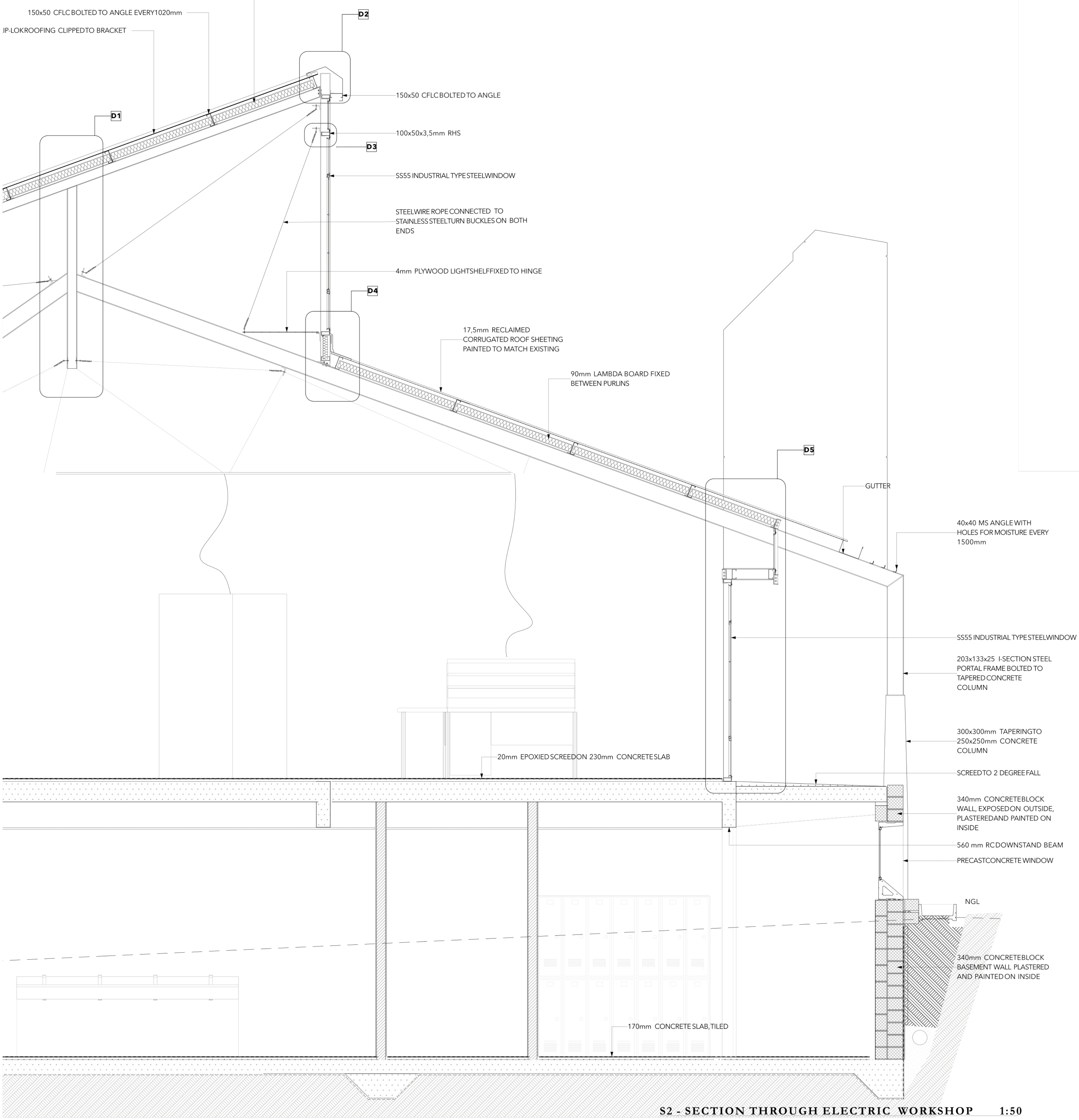
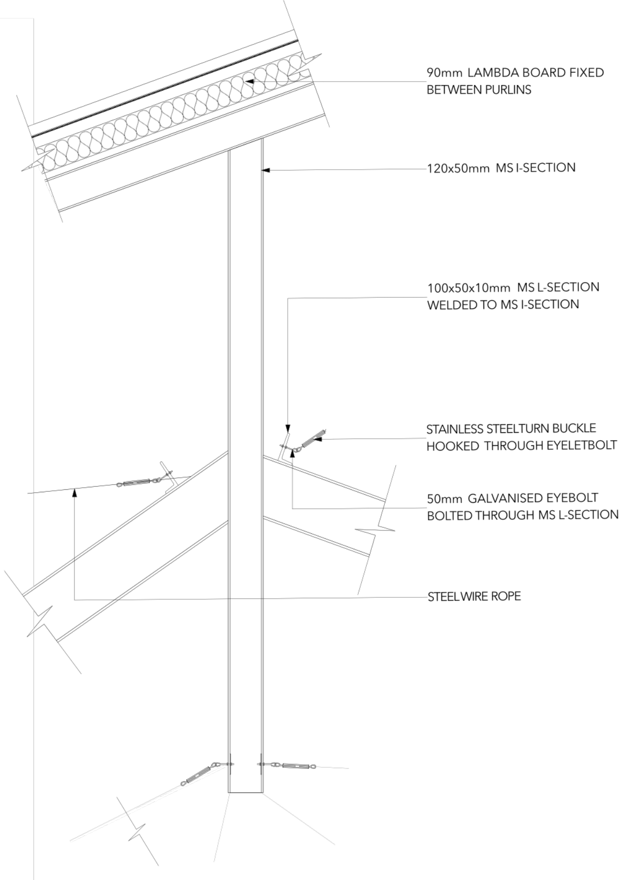
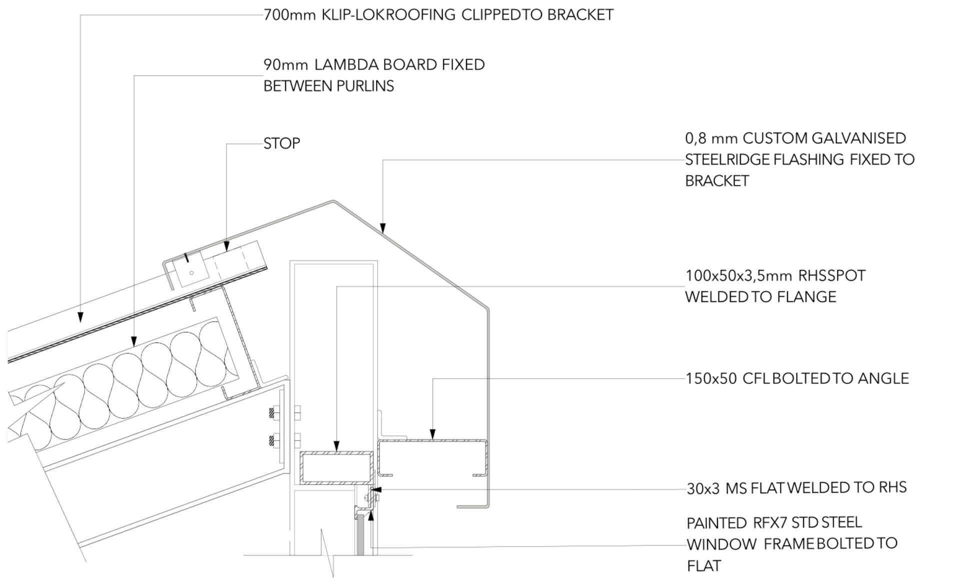


S2 - SECTION THROUGH ELECTRIC WORKSHOP 1:50

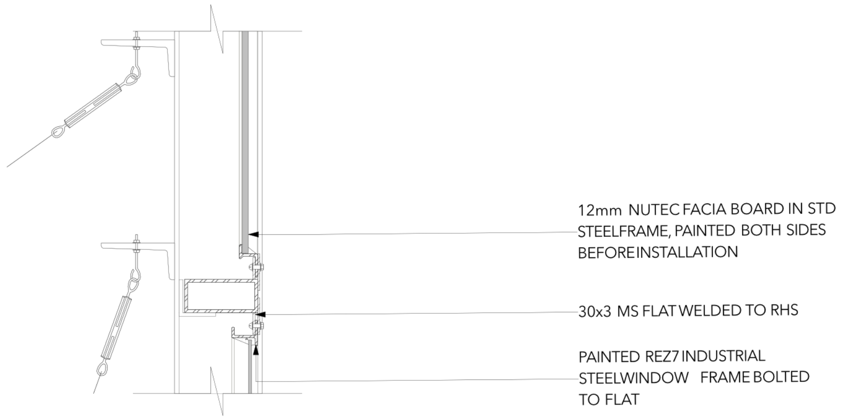
SECTION AND DETAILS



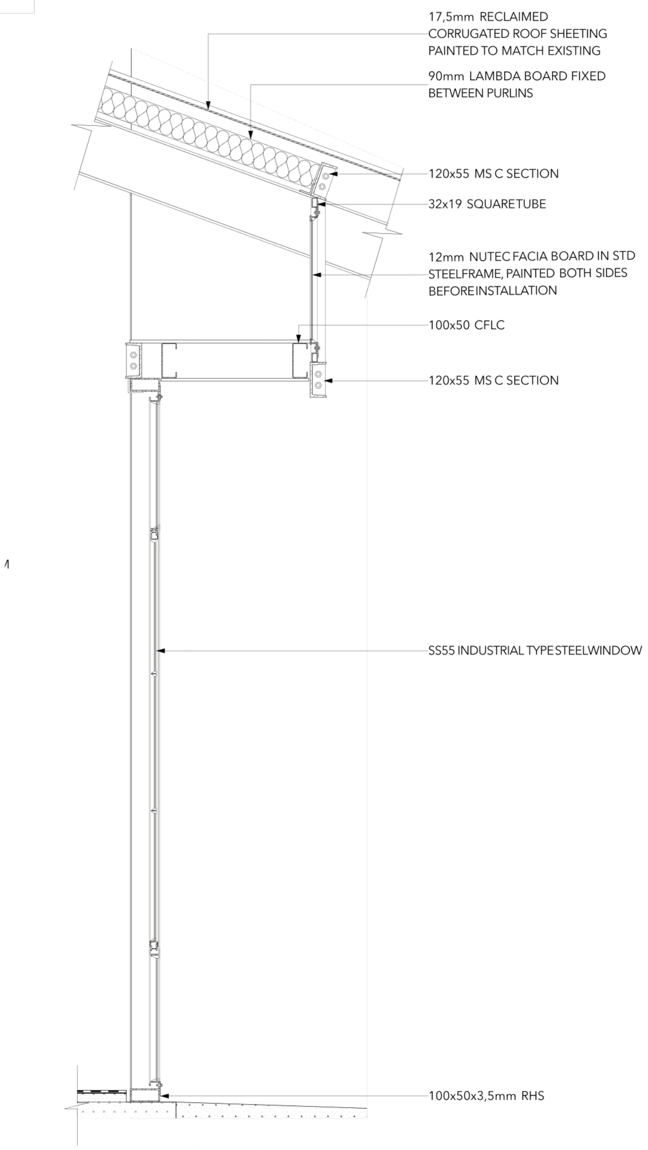
D1 - CONNECTION DETAIL 1:10



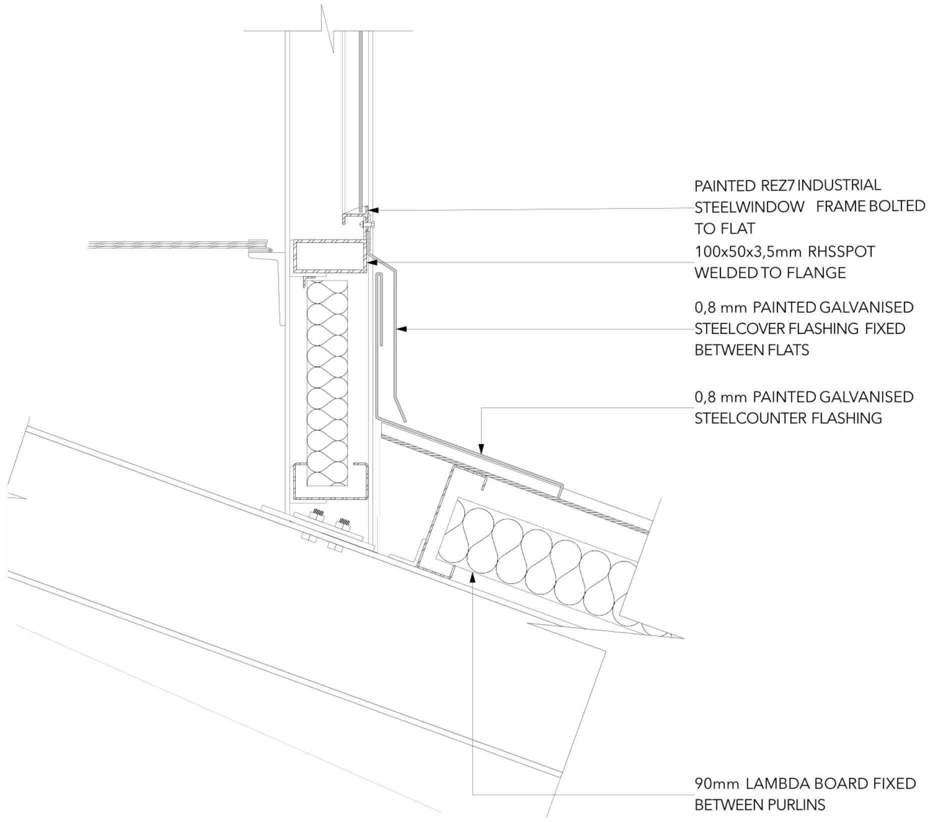
D2 - RIDGE FLASHING 1:5



D3- CONNECTION DETAIL 1:5



D3 - SKYLIGHT DETAIL 1:10



D4 FLASHING DETAIL 1:5