Oxi-dation

Institute of Metal

Design Presentation

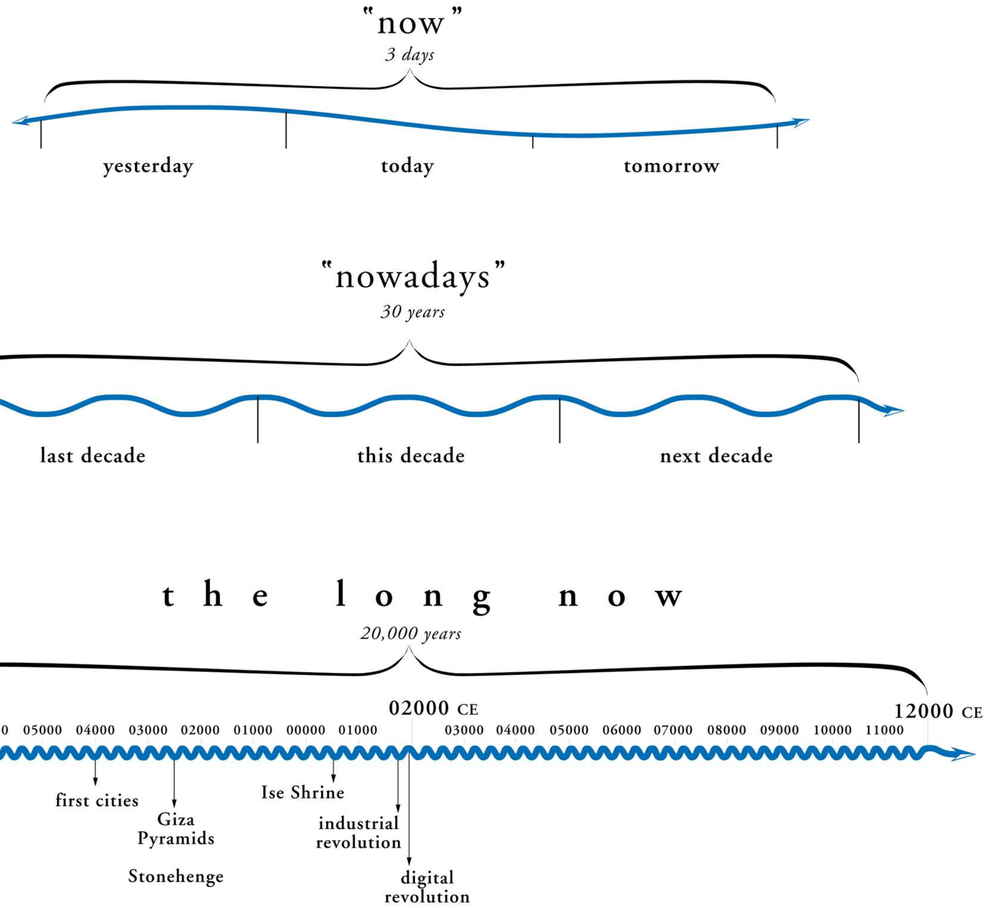
201495504

Project Brief

This project wanted us to look at how we can start to change the landscape of the city of Liverpool, from being a post-industrial area focused on consumption which has resulted in a mono-culture of residential and retail.

The aim, through drawing, modelling and other mediums, is to explore how industry and productive spaces can positively impact the up and coming area of Liverpool, creating an eclectic and rich mix of uses, public spaces and architectural expression.

We will look to create resilient networks at building and city scale through the densification of healthy light industrial workspace uses.



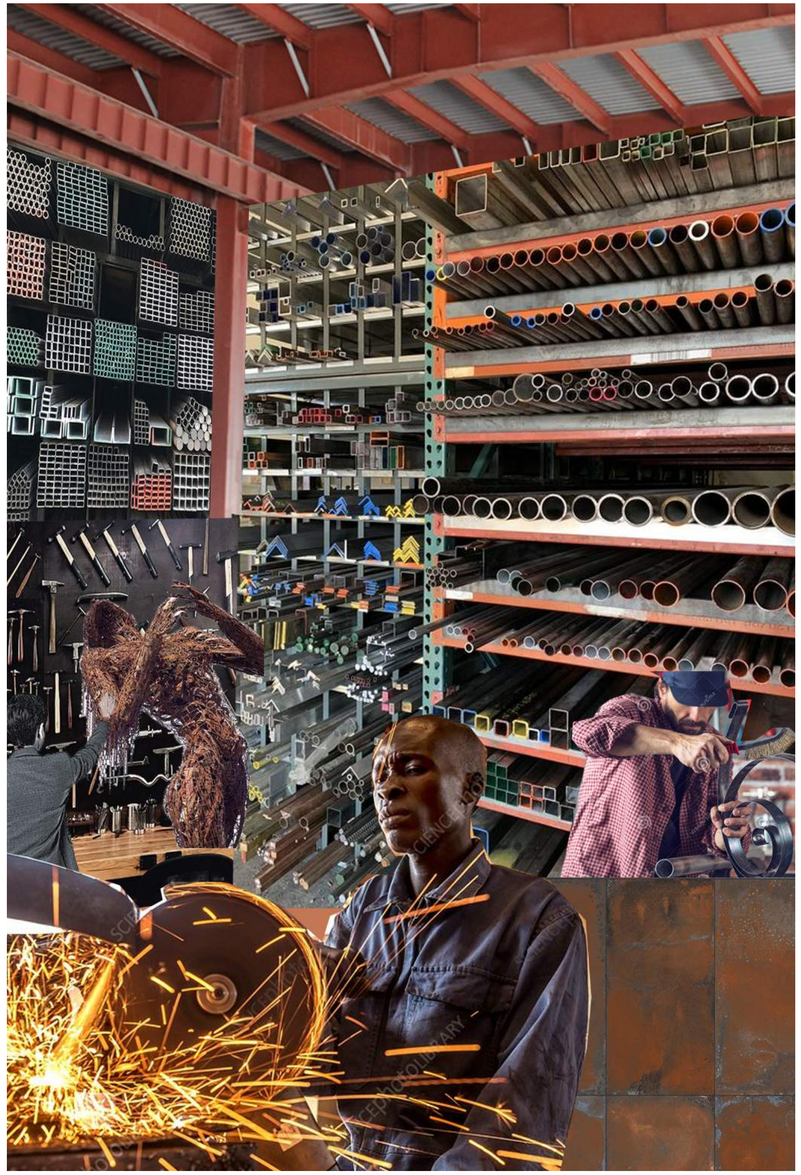
Oxidation through time

Oxidation is caused by a chemical reaction on the metal surface with the oxygen present in the air that causes some of the metal to corrode and form the respective metal oxide on the surface. The key material my institute will focus on are metals that oxidise and in turn become stronger.

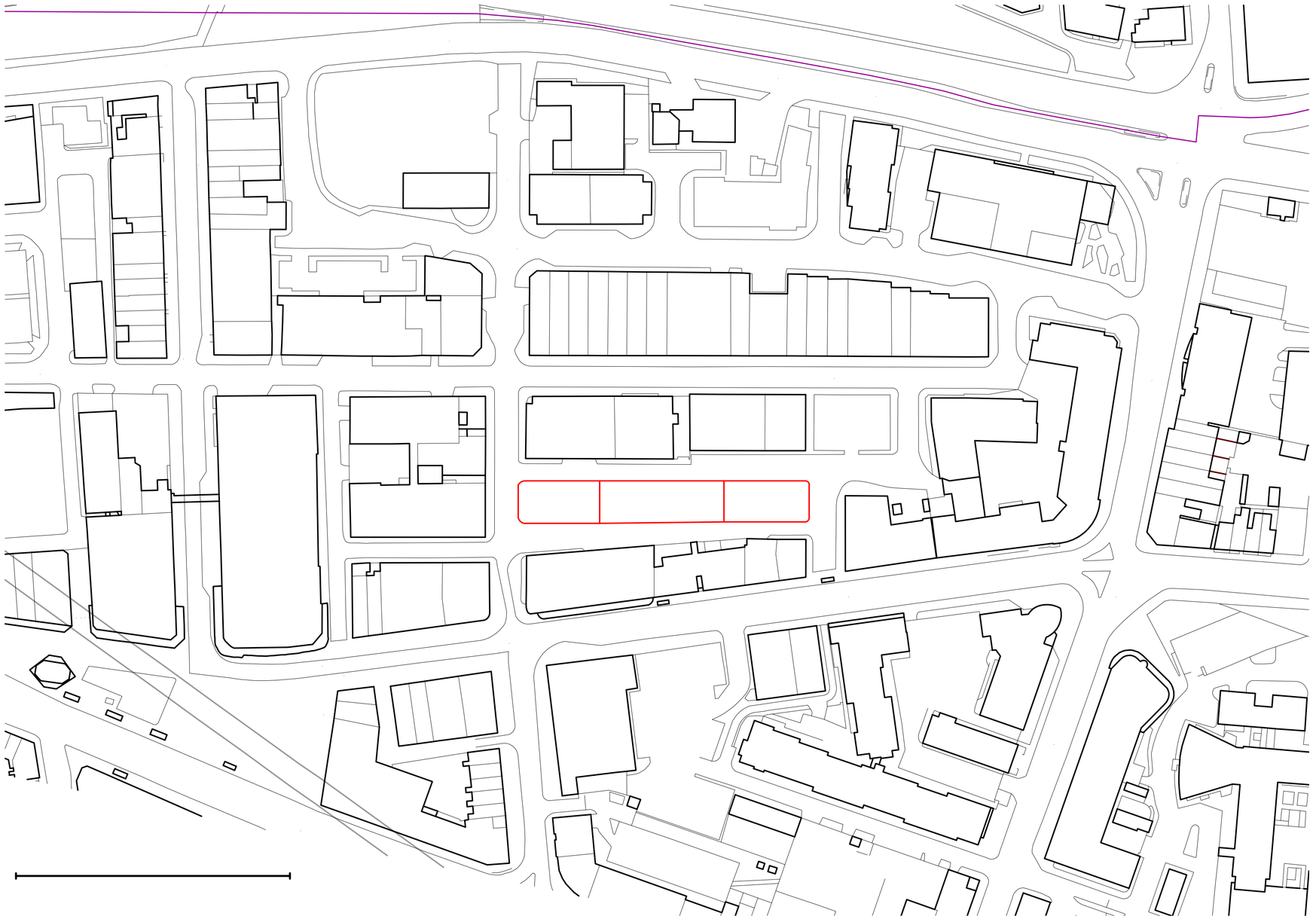
The main driving material of my institute will be Corten, as when it is weathered, it in turn becomes stronger because of the oxidised layer on top which makes them last longer. The look and feel of the material also changes over time.

The institute will look at how these materials can be used in construction for both structure and facade, as well as having classes that show the processes of oxidation and how it can be used to your advantage via construction, art, electrics, etc. There will also be smaller maker spaces where people can go for smaller more bespoke things such as sculptures or hand crafted pieces using oxidise metals.

Chosen material: Corten



1:500 Site map



Site analysis

74 Devon Street

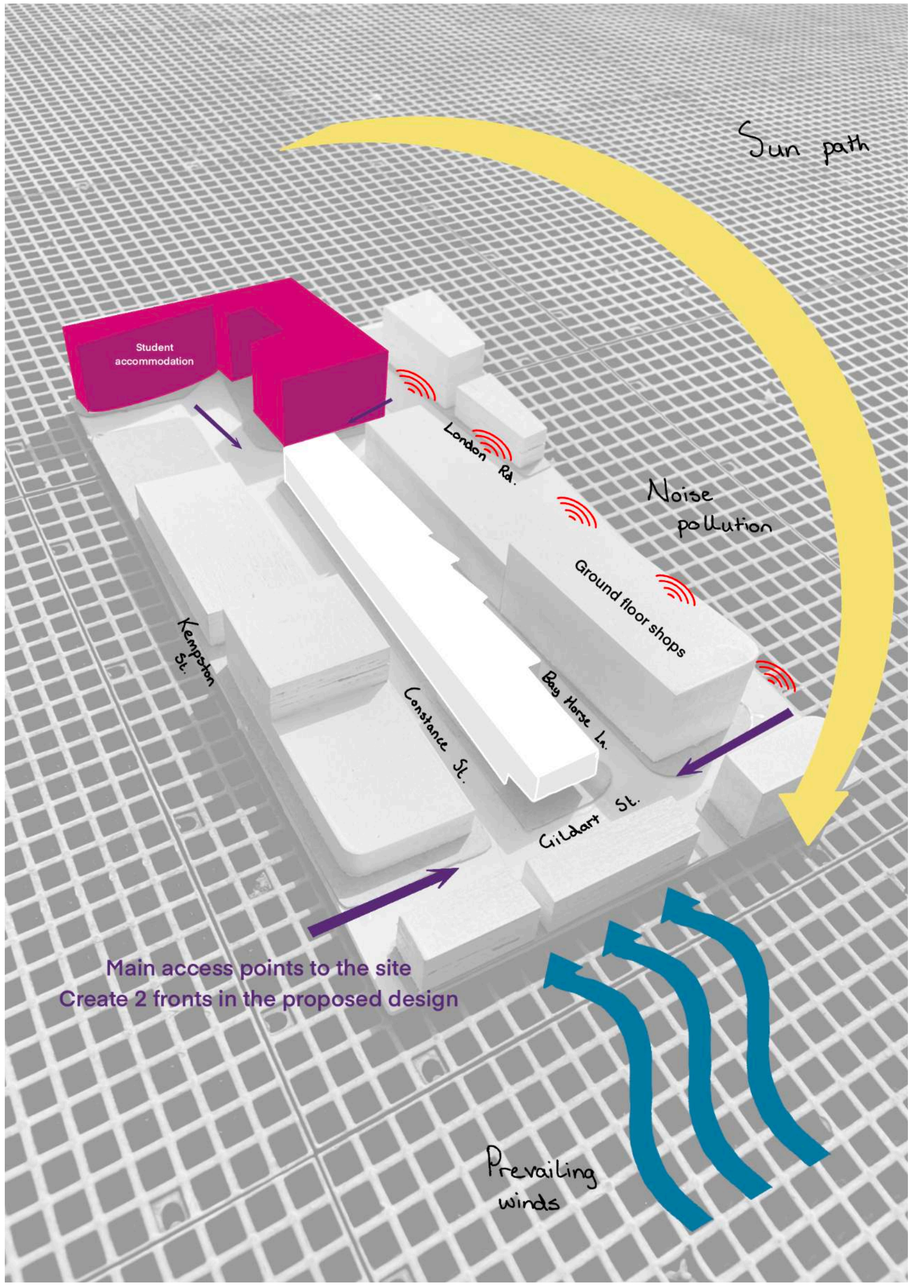
Exposed steel structure that's been erected and left due to bankruptcy
Try and introduce exposed steel frame into my design and show how this structure could be rejuvenated

London Road

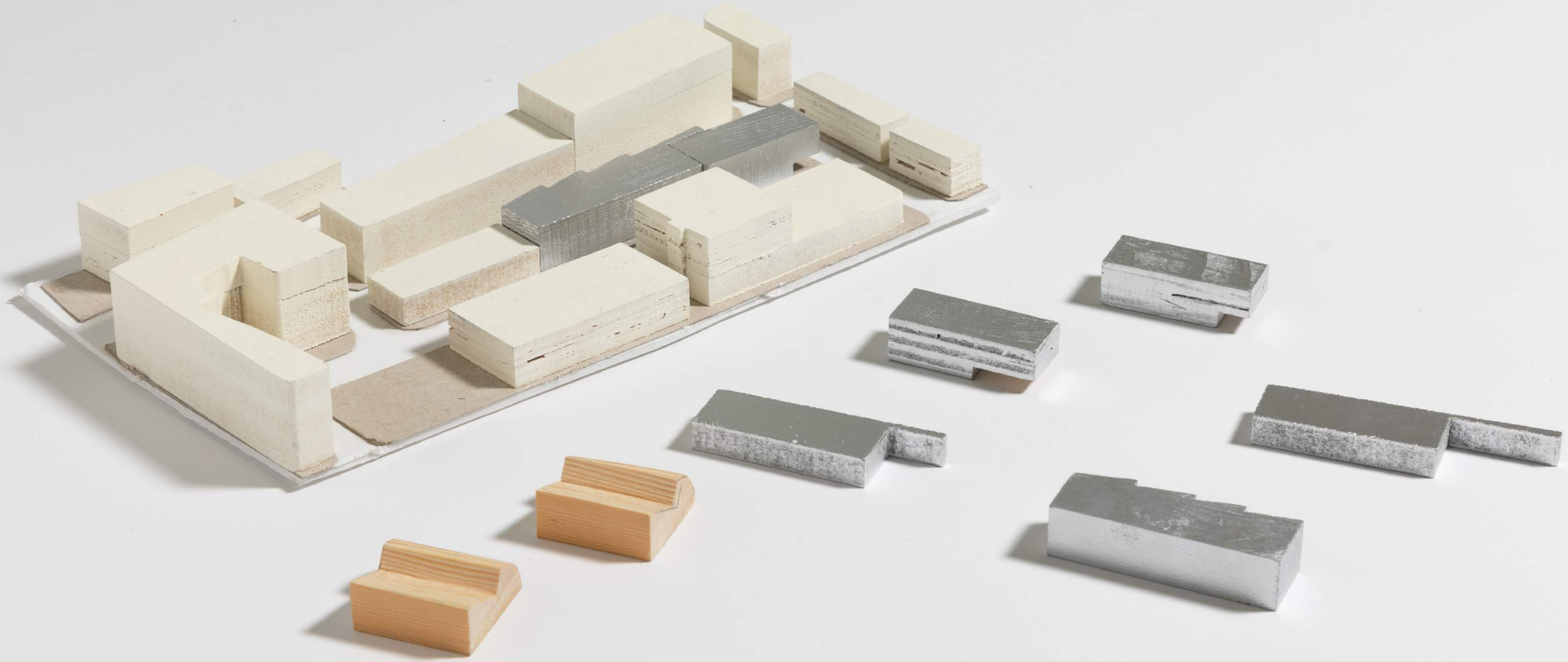
Closest public space for gathering, approximately 200 metres from the site.
No public eating spaces within a half a mile radius.

Closest learning centre is 0.4 miles away to the west of the site and looks run down.
Liverpool collegiate school is the closest school 0.3 miles away to the north of the site across the A580.

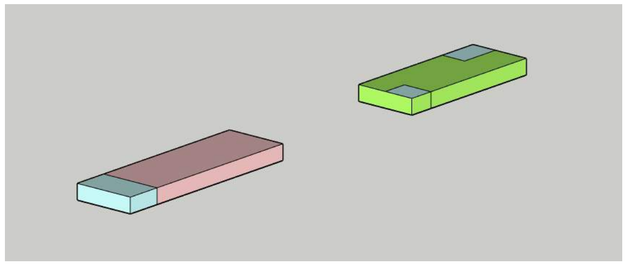
Bringing a teaching centre, public canteen and a maker space will help reinvigorate the fabric district, as well as teach the local community new skills and how they can adapt what is existing and transform it into something new.



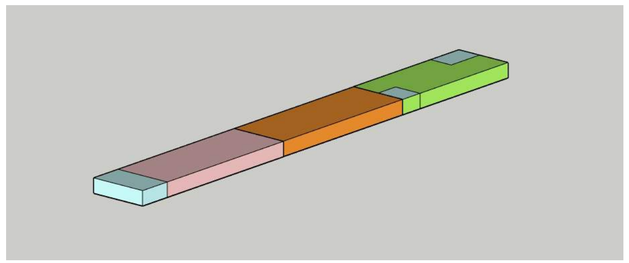
Massing models



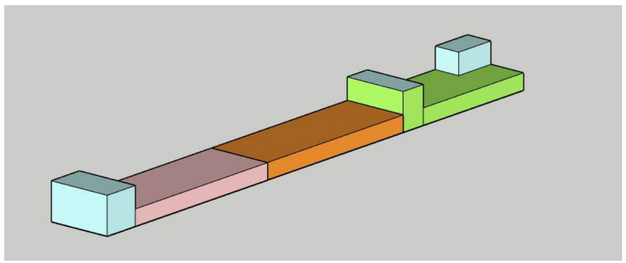
Massing



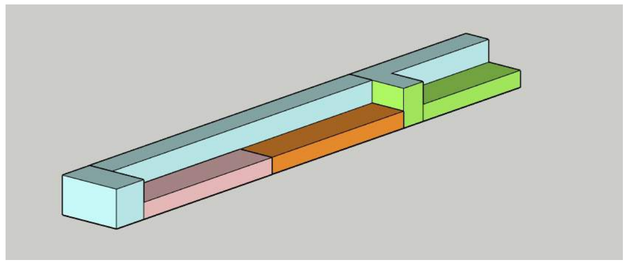
Existing Condition



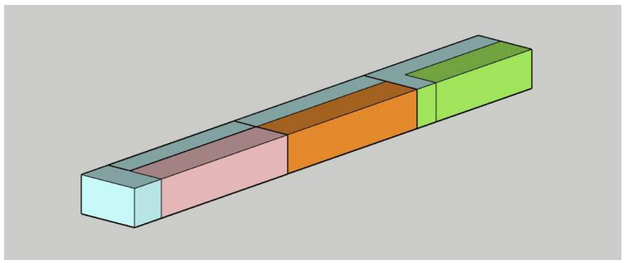
Addition into the middle section of the site



Raise core elements by 4m



Connect cores vie walkways



Bring lower spaces to the same height to create two double height levels of 4m

Social

Production

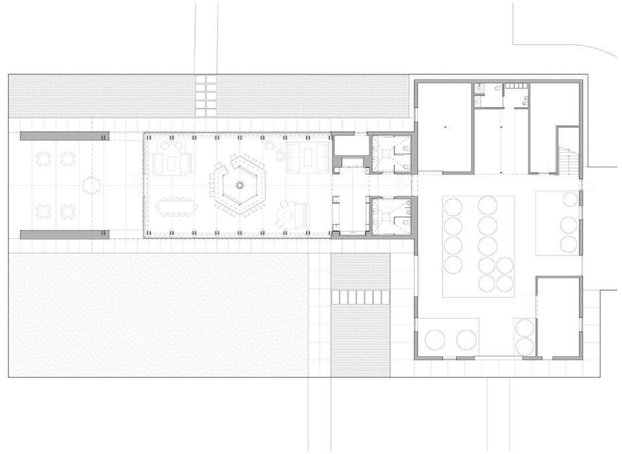
Learning

Hudson Valley Brewery

Aron Himmelfarb

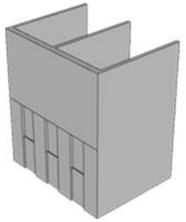
Corten

The extension that took place was clad in corten steel. It's laid over a glulam structure with crisscrossing beams that support the V-shaped butterfly roof. The core idea for this extension was to create more spaces for tasting rooms, which could pose as inspiration for canteen layout and aesthetic. It also could be used as a cladding material to help aid the idea of the long now, as corten steel doesn't need to be changed for 40+ years.

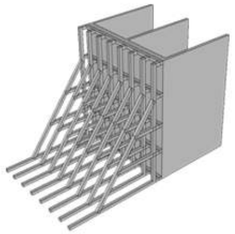


Facade retention

Upon inspection of the floor plans I decided to retain the existing brick walls but get rid of the internal walls and flooring to allow for one larger, more open space. Keeping the external load-bearing brick wall and adding in a glulam strcuture on the internal for added support for the walls and roof.



Phase 0
Existing Condition



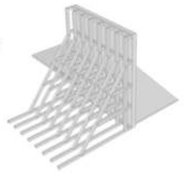
Phase 1
Structural Consolidation

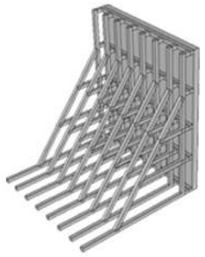
3
Diagonal bracing

2
Add scaffolding columns

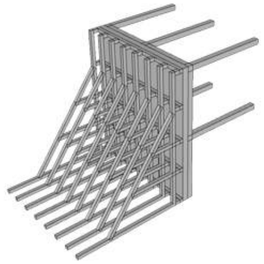
1
Horizontal wailers

1
Demolish internal
walls and flooring





Phase 2
Internal wall and floor
demolition

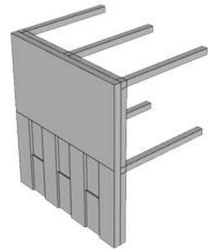


Phase 3
Addition on new glulam structure
for support and rigidity

3
Floor and roof beams
slotted in place

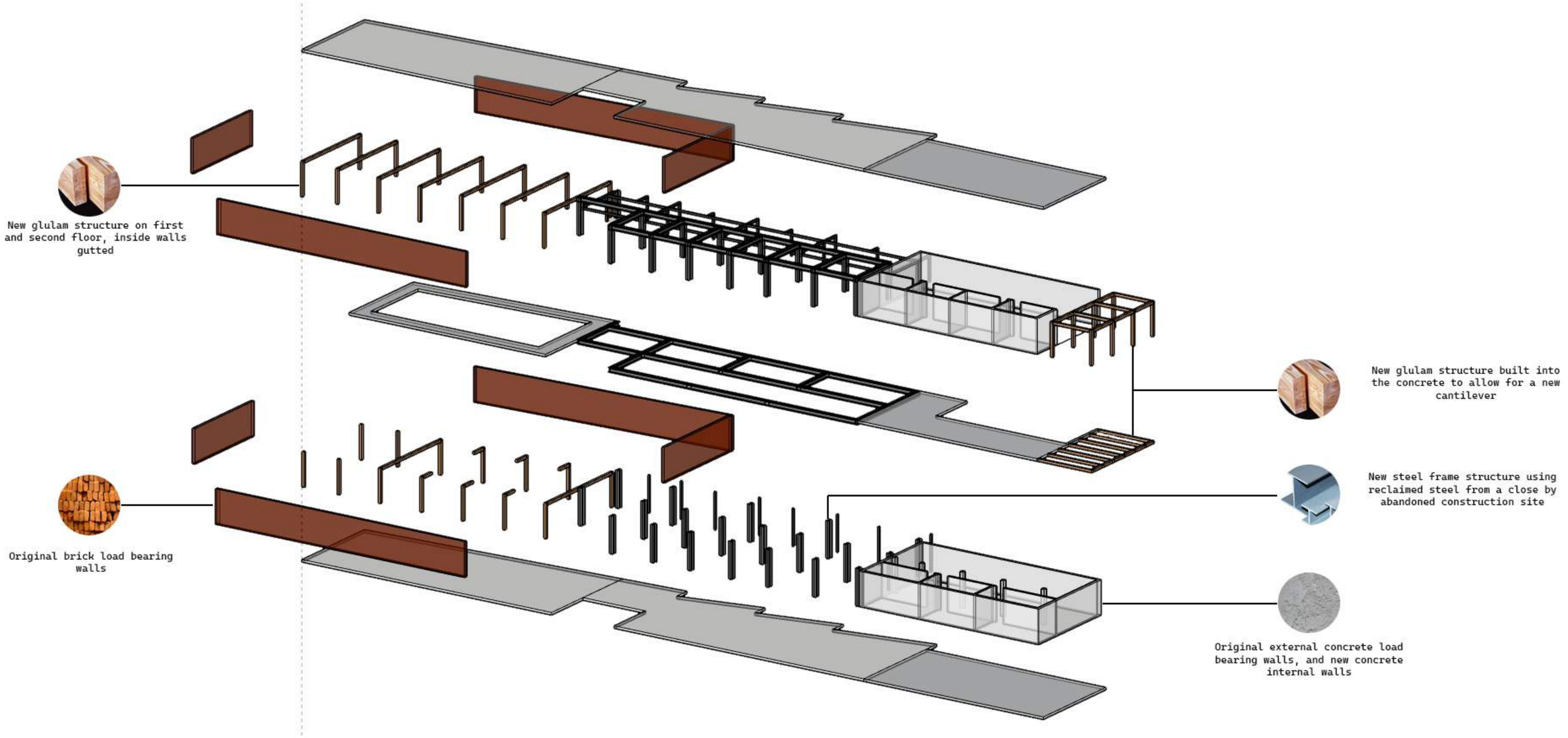
2
Horizontal beams
slotted into place

1
Vertical glulam beams

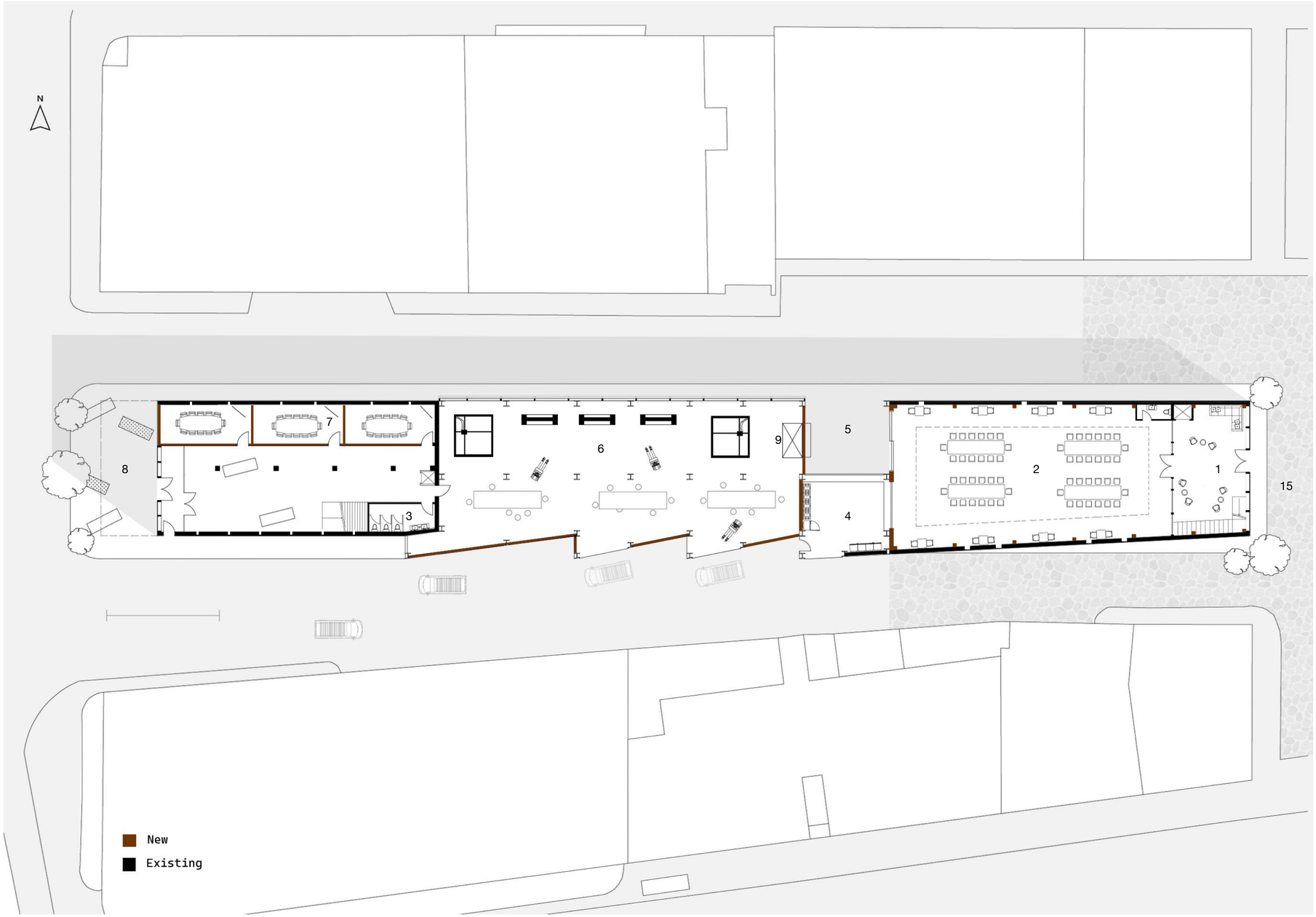


Phase 4
Completion

Structural Isometric

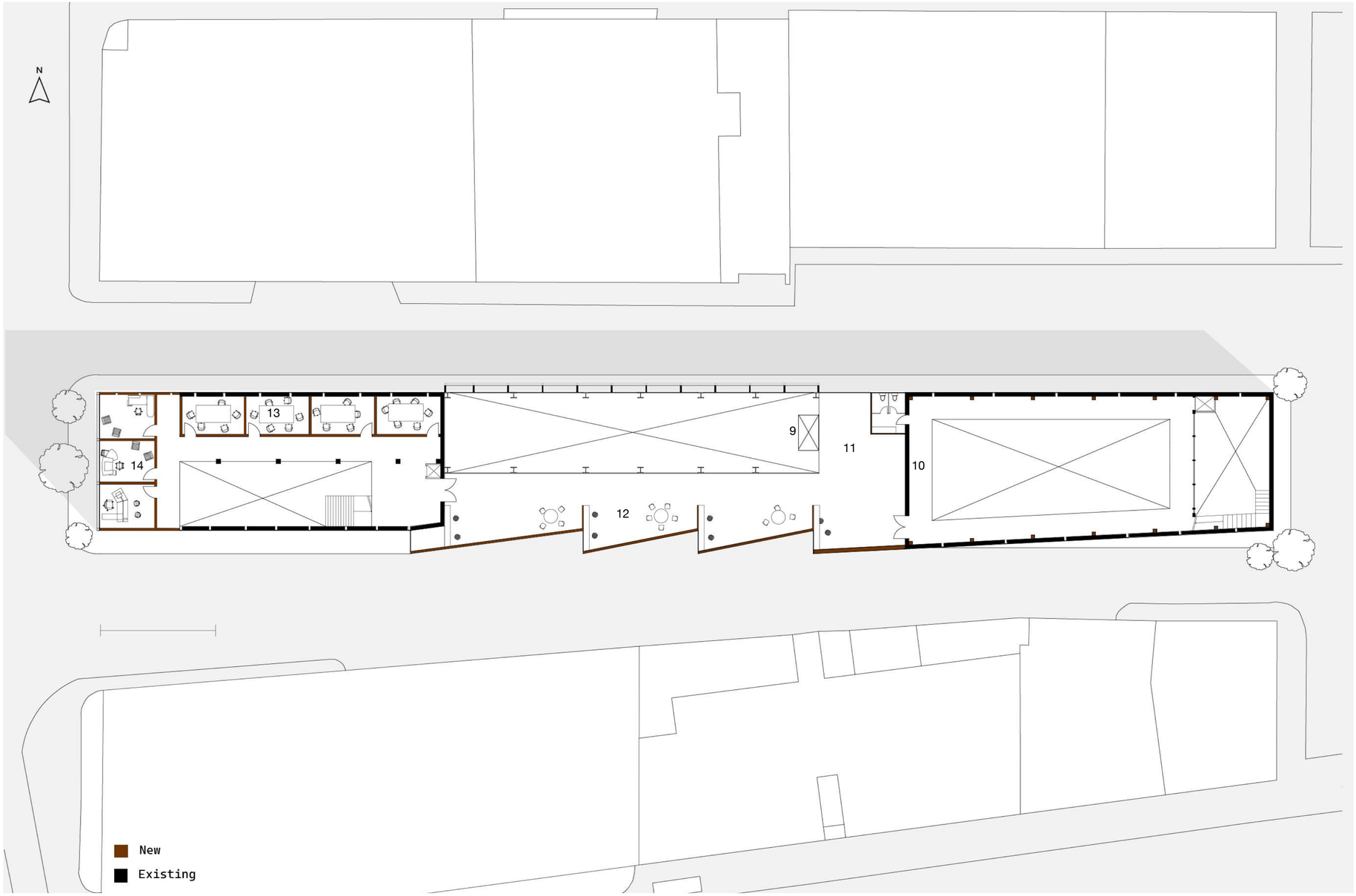


Ground floor plan



1.Buttery
2.Canteen seating area
3.WC
4.Kitchen
5.External food area
6.Industrial maker space
7.Large teaching rooms
8.Outdoor seating area
9.Heavy goods lift
15.Pedestrianised area

First floor plan



9. Heavy goods lift
10.Mezzanine/gallery
11.Workshop viewing area
12.Personal workshop space
13.Small teaching rooms
14.Private offices

Material palette

Weathered Corten

Corten Panels

Ash Wood
(Glulam)

Industrial Brick
(Red & Dark)

Recycled Concrete

Mild Steel
(Recycled)

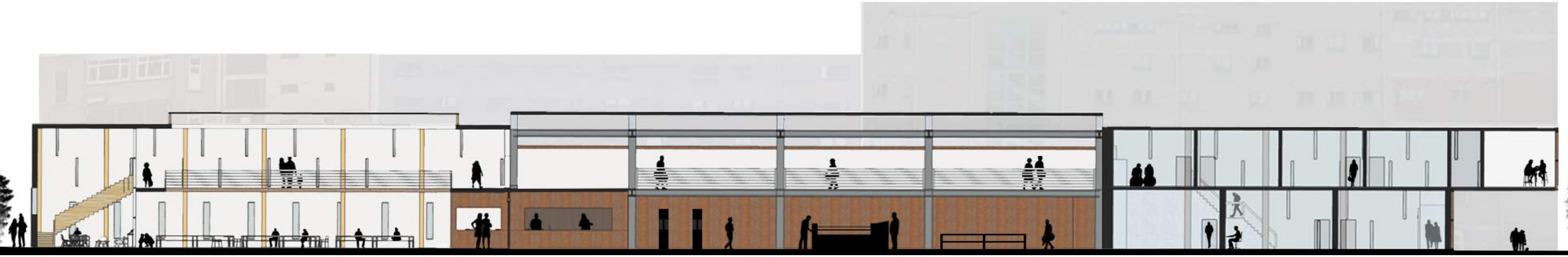
North elevation

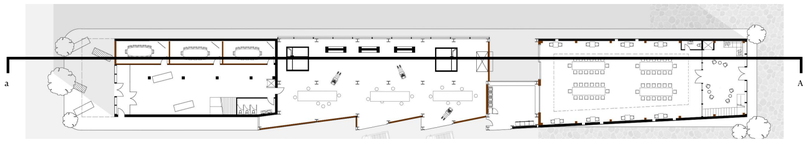
South elevation

East elevation

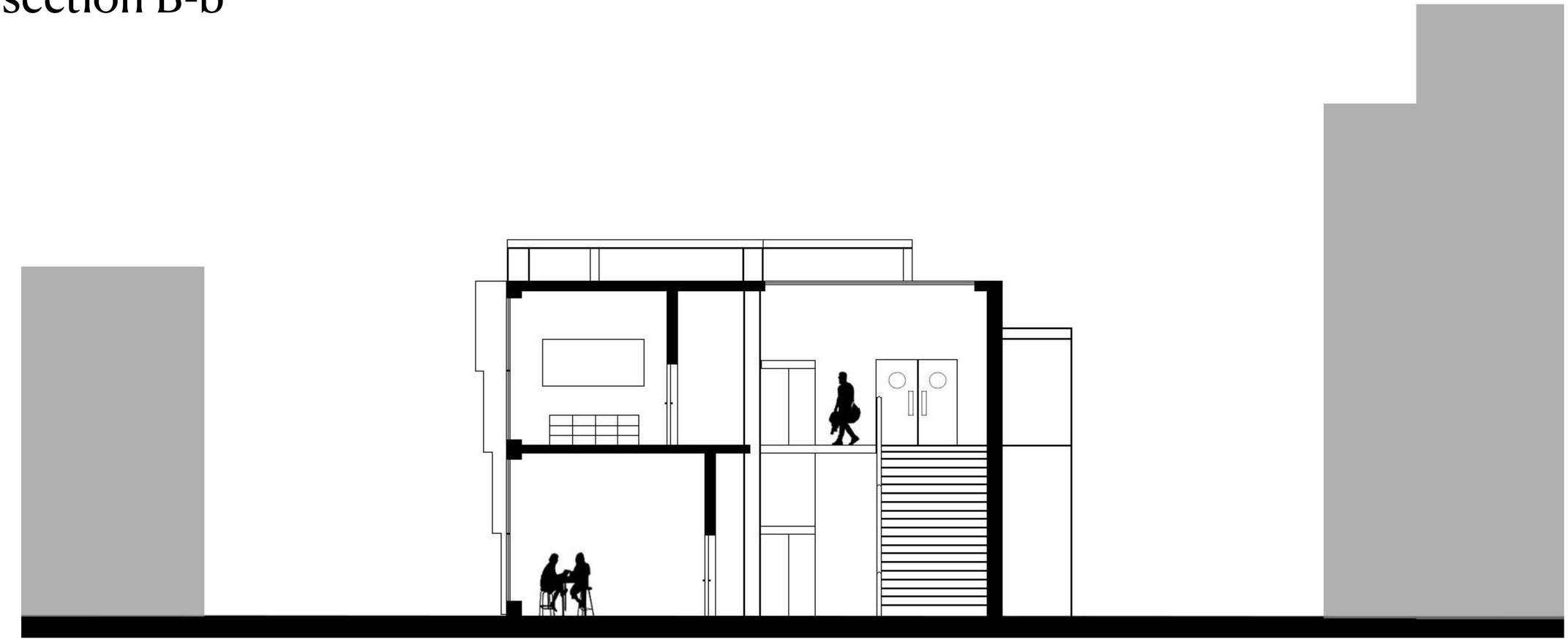
West elevation

Long section A-a





Short section B-b



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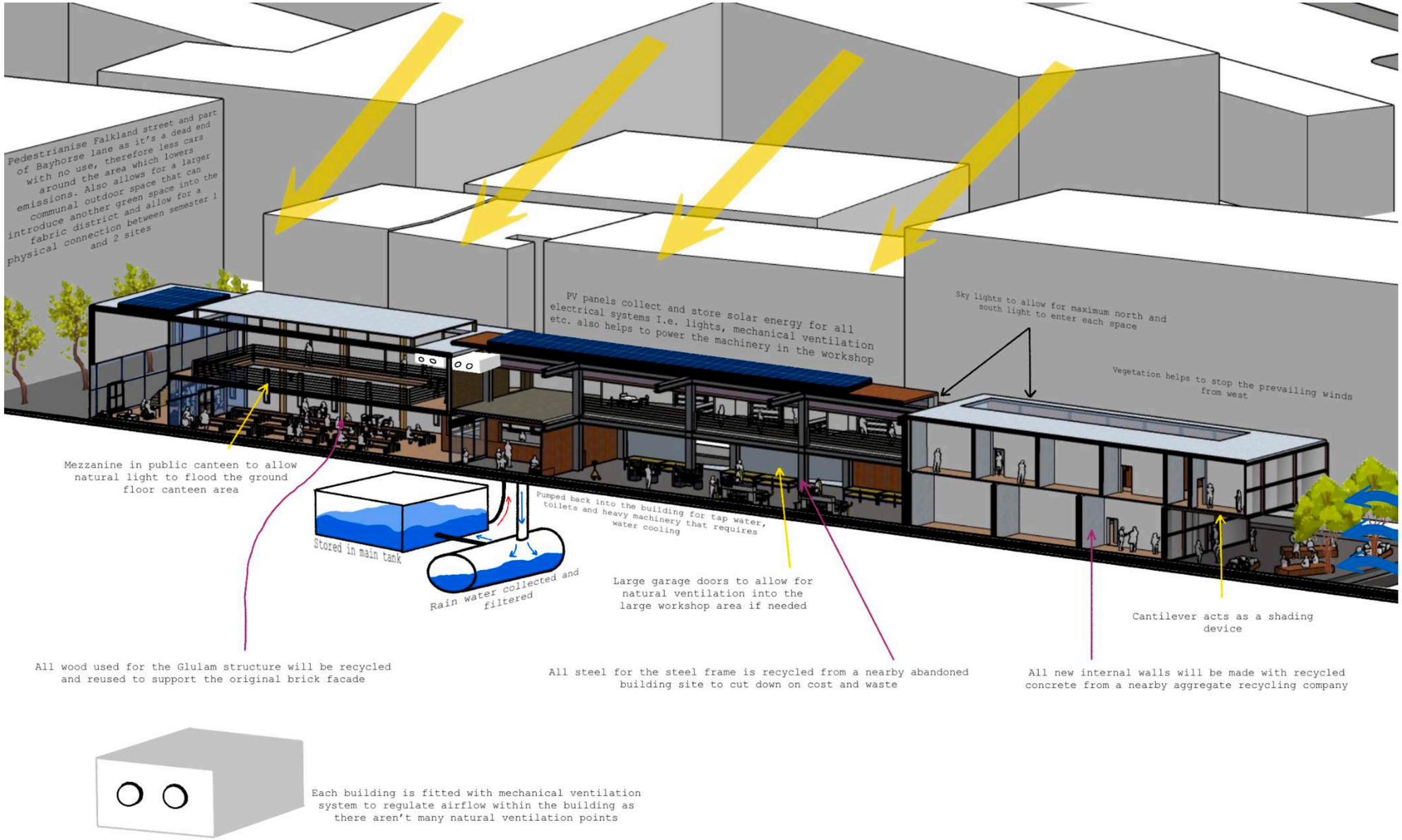
Environmental and sustainability



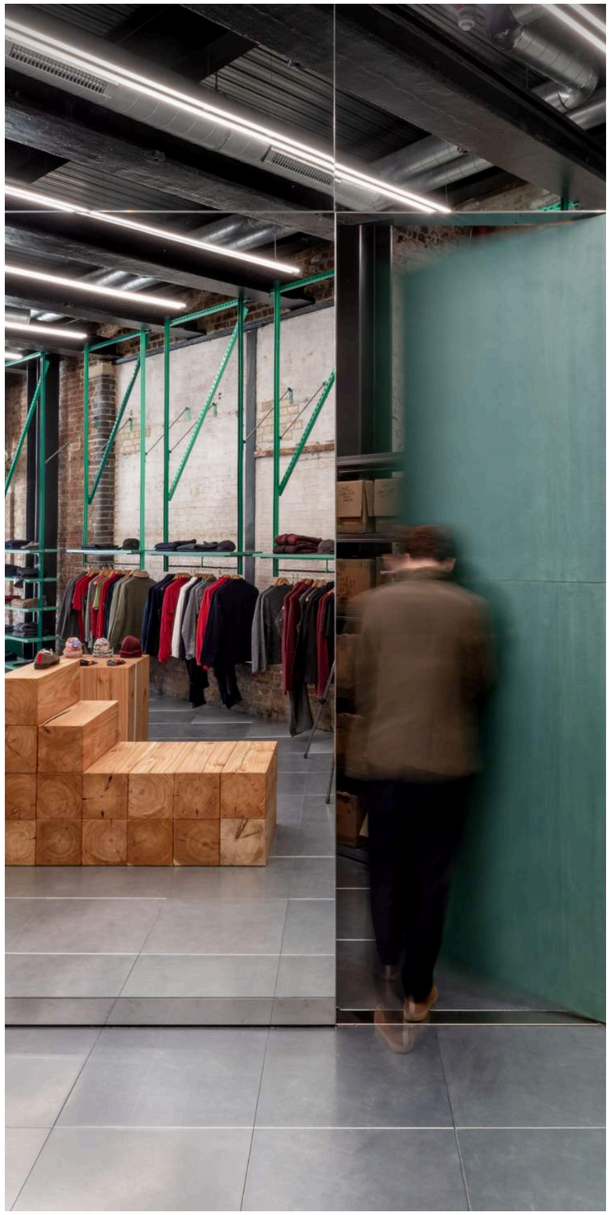
Universal works

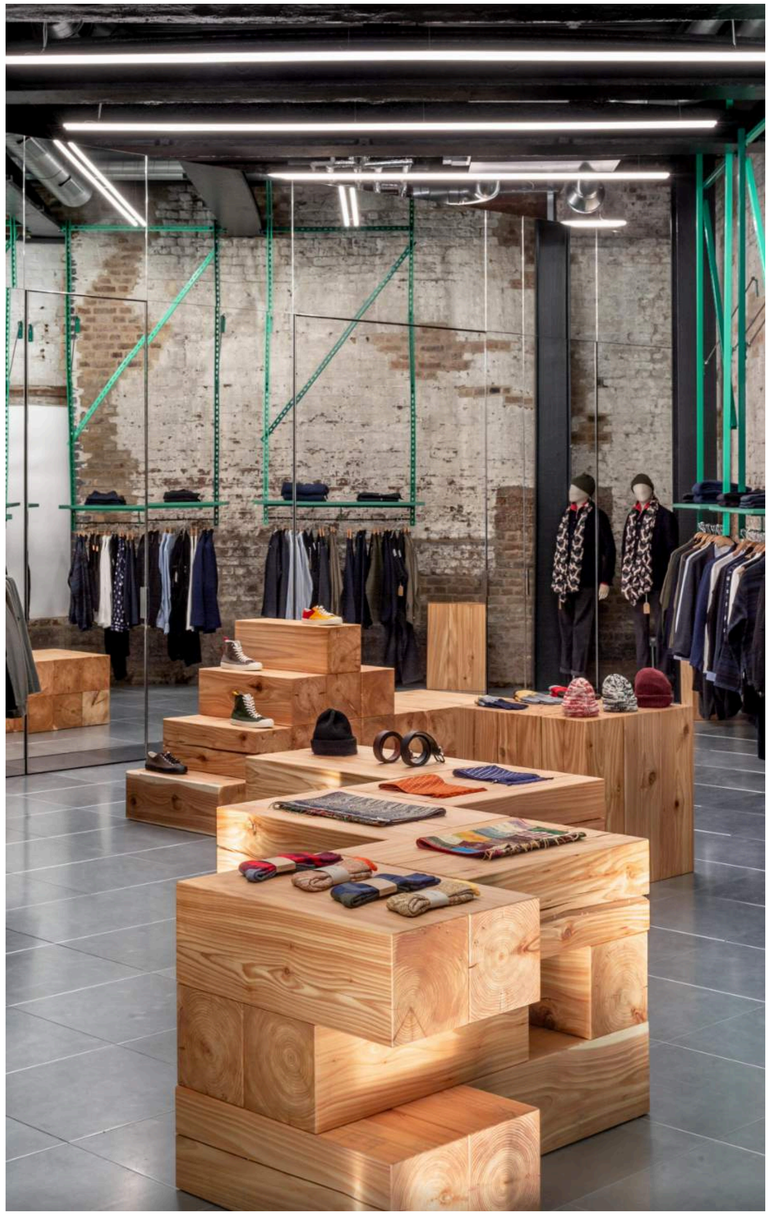
Coal Drops Yard

Raised access metal flooring

Universal works use a raised access metal flooring to give a nice brushed metal finish to the floor. It also creates a space underneath the floor.

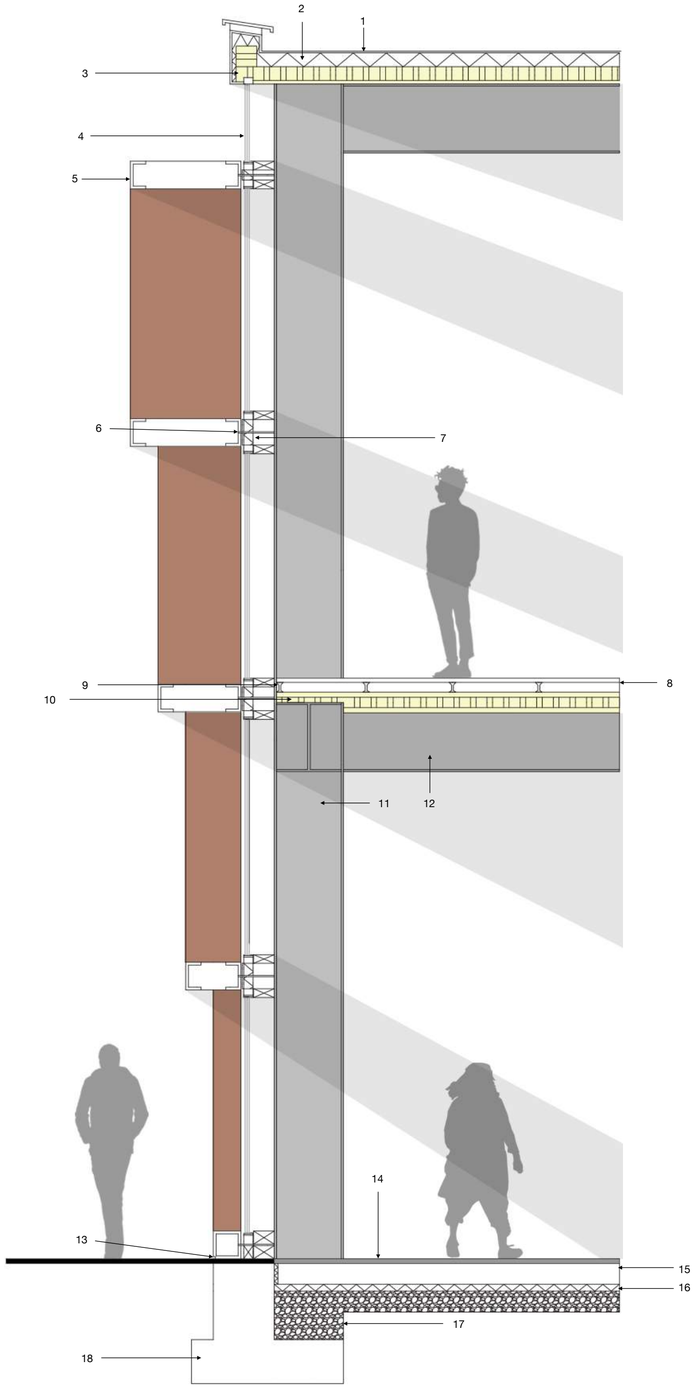
This flooring could be used as the workshop first floor material as it is cohesive with my design and I can also use the gap underneath the flooring as a routing space for things like electrical systems, and if access were needed then it wouldn't be hard for people to access and resolve the problem.

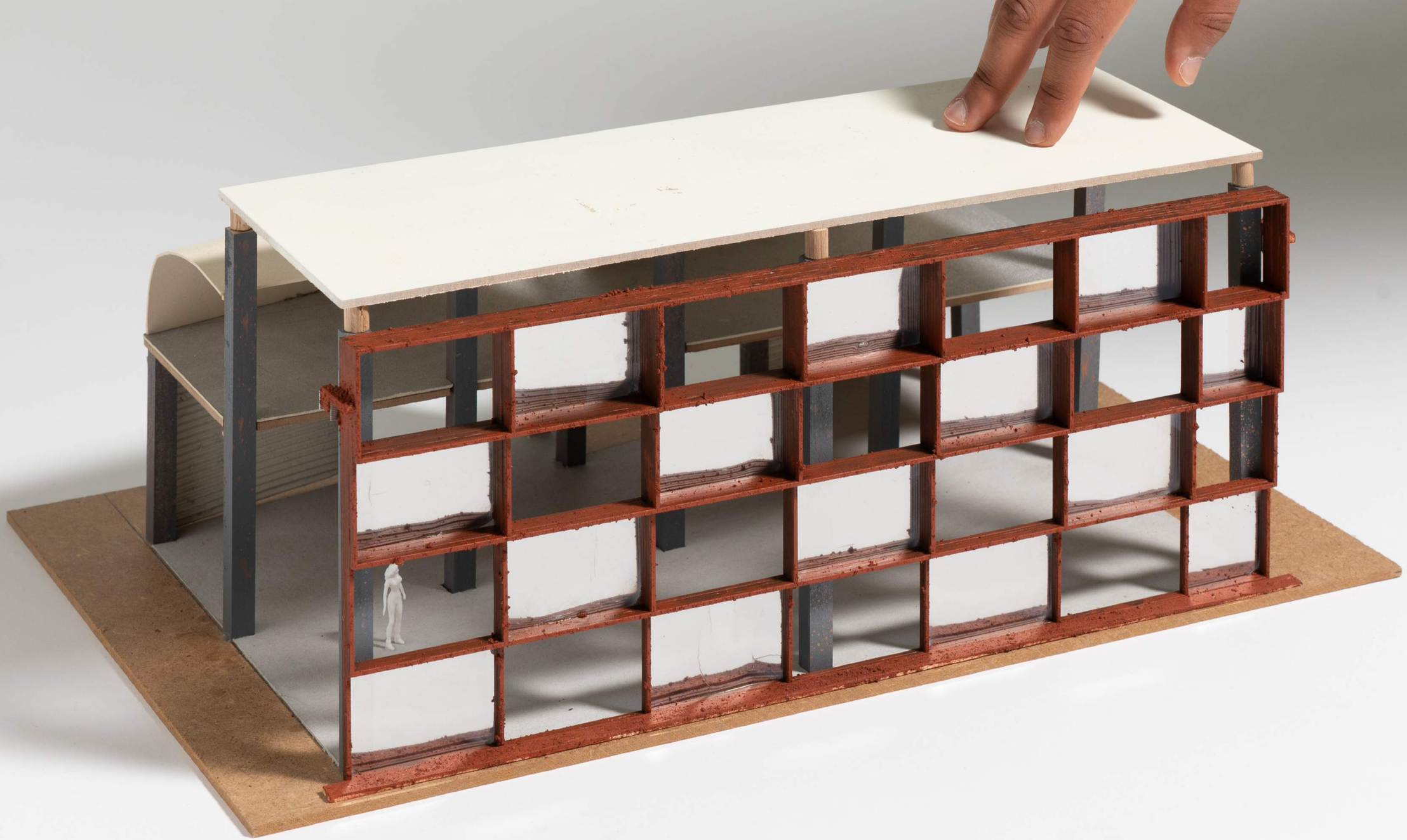




Detail section 1:20

1. EPDM Rubber roofing membrane - 12.5mm
2. Rigid Insulation - 100mm
3. CLT Roof Slab - 100mm
4. Schuco Triple glazing - 32mm
5. C-shaped frame - 110mm x 200mm
6. Bolt - 10mm
7. Schock thermal structural connector - 79mm x 274mm
8. Raised access metal flooring - 30mm
9. Flooring pedestals - 70mm
10. CLT floor slab - 150mm
11. Steel Column - 500mm
12. Steel I-beam - 500mm
13. Shadow gap - 15mm
14. Metal flooring - 35mm
15. Poured concrete - 150mm
16. Rigid insulation - 50mm
17. Compacted hardcore - 150mm
18. Reinforced concrete footing






Oxi-dation
401


Workshop spaces
401 menu
1. Chicken tenders and fries
2. Smash burger and fries
3. Jacket potato with any toppings
4. Fish and chips


Oxi-dation
401
1. Chicken tenders with fries
2. Smash burger and fries
3. Jacket potato with any toppings
4. Fish and chips with gravy


KSHOP
1
1
2
How To Sculpt Metal
Metal Working
Corten