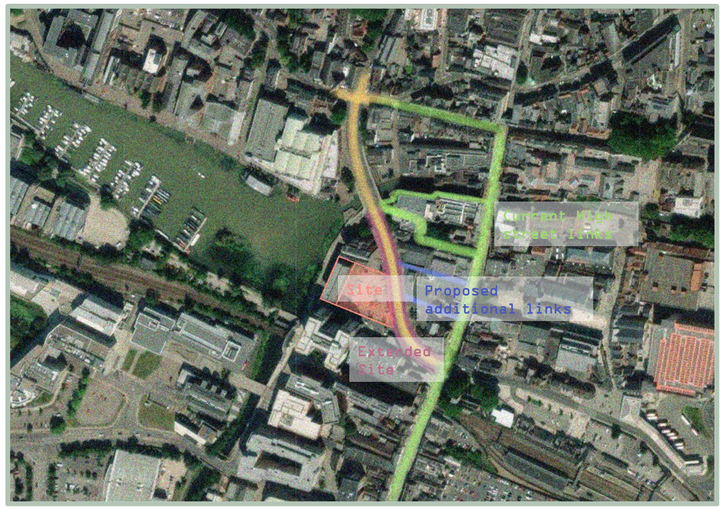
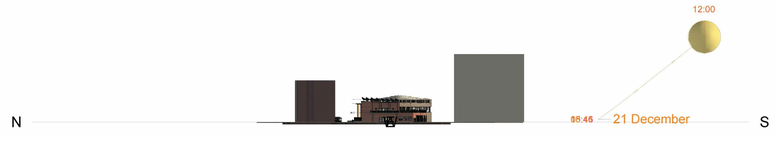
Common Court Community Centre

Net Zero Optimised

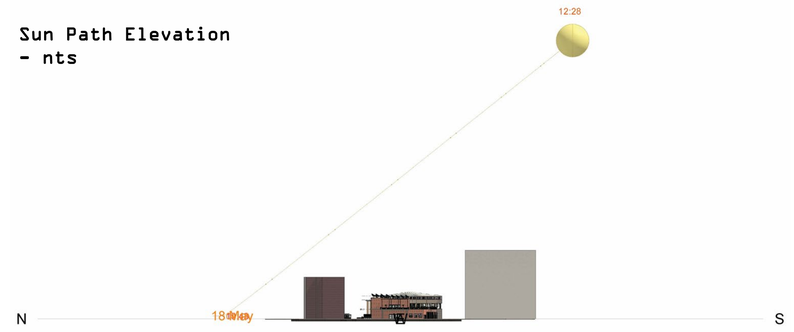
Louie Findley
26330343

Improved Links proposal.





Sun Path Elevation - nts



Section - nts

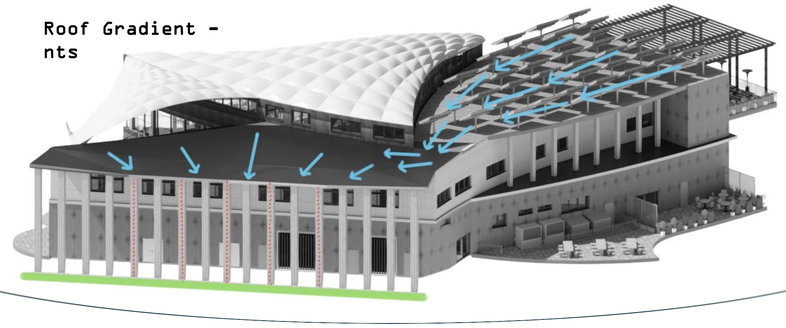
This section diagram shows how the building responds to the sites solar study. The roof area provides 307 metres squared worth of solar panelling which is all south facing to maximise its efficiency.

The atrium also adopts ETFE panelling in order to maximise its solar gain and natural sunlight transfer. This is reduced in the winter due to the solstice; Solar gain will be specifically. beneficial mostly in winter

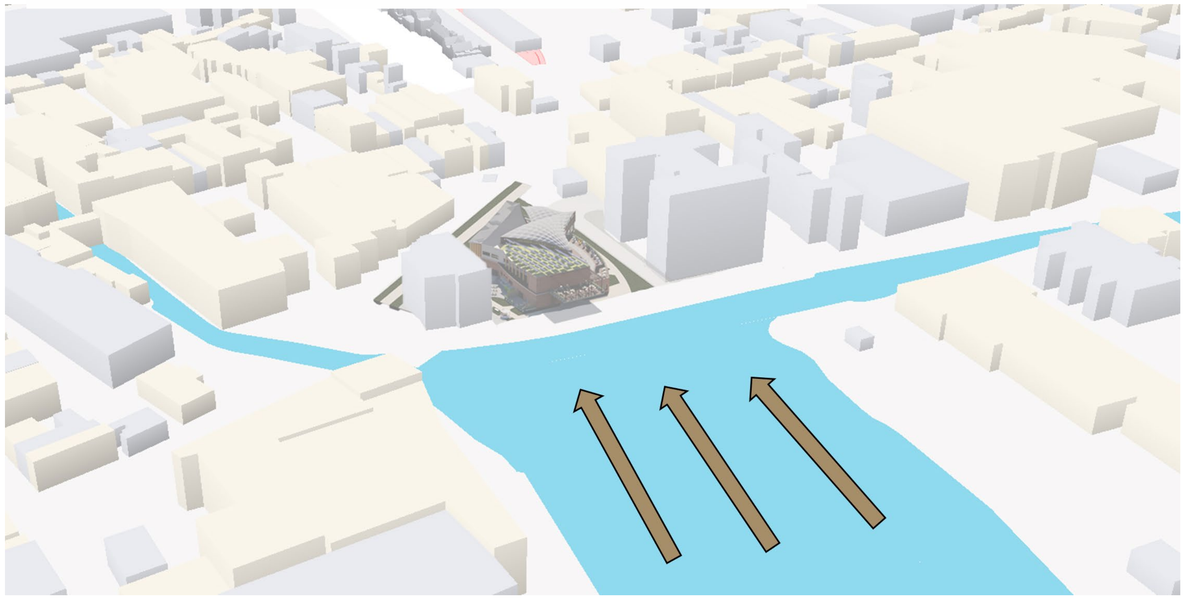
Combined with this is a green roof Which gives many benefits. Firstly, the water absorbed can slowly evaporate into the surrounding atmosphere which will cool down the solar panels and allow for them to run more efficiently. It also reduces the intensity of rainwater run off during heavy rainfall as it can be absorbed.

As seen best on the north elevation, the building has a natural gradient from its west to its east face. This means that rainwater naturally travels along this path and down chain drains, into a French drainage system.

Roof Gradient - nts



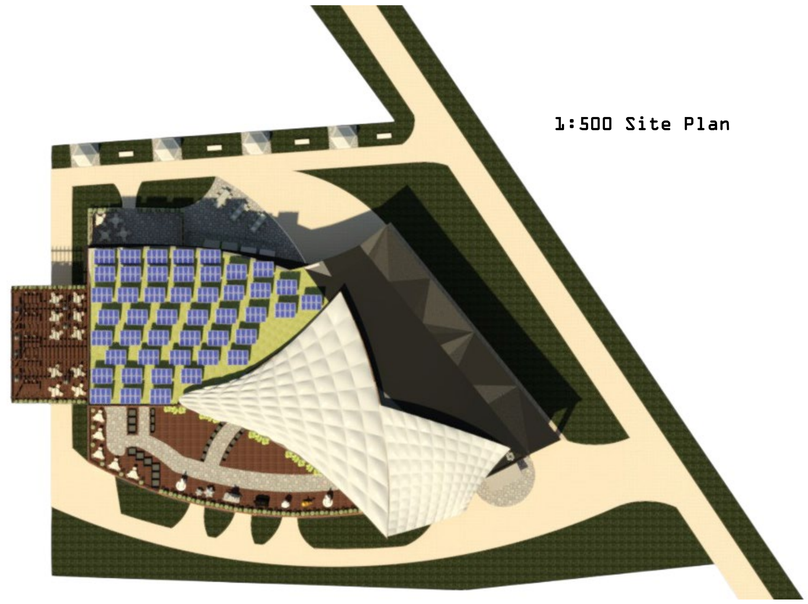
The French drain system then transfers rainwater into a storm saver tank, which reuses this water for non-potable uses within the building.



Site Context Diagram - nts

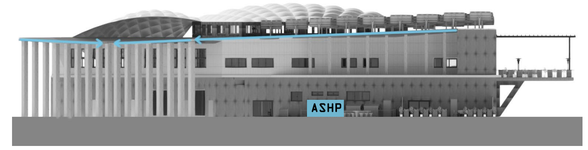
As seen on the improved links proposal diagram. The site proposes to extended out onto the carriageway.to appeal and connect with the high street and integrate the university area. The site design proposal supports this with walkways connecting all parts of the site, encouraging this transition.

1:500 Site Plan



Windows are placed around spread generously around the centre to let cool air through especially on its west face, utilising the bray fords steady and continuous cool air flow into the building. Interior spaces are also designed in a way which allows this air to travel through horizontally and into the central atrium. The atrium, having received more solar gain than other spaces in the building needs to be cooled. The cross ventilation enters the atrium and pushes all the hot air upwards and out of the windows at the top.

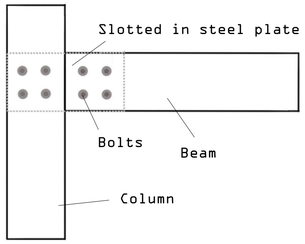
Behind this section, on the north face of the building are two Air source heat pumps. The two units produce 130Kw/h of electricity which meets the estimated demand Of 100-120kw/h. And has a lower embodied carbon than traditional heating as it harnesses hot air instead of generating heat.



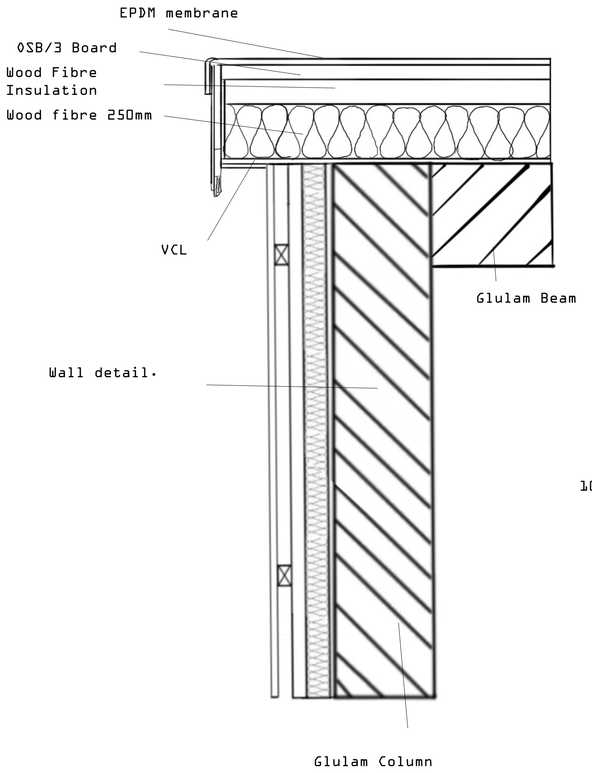
North Elevation 1:500

Section 1:100

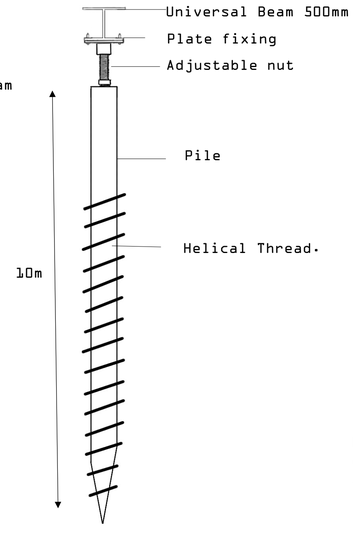
Glulam Connection 1:20



Wall to Roof Detail 1:10

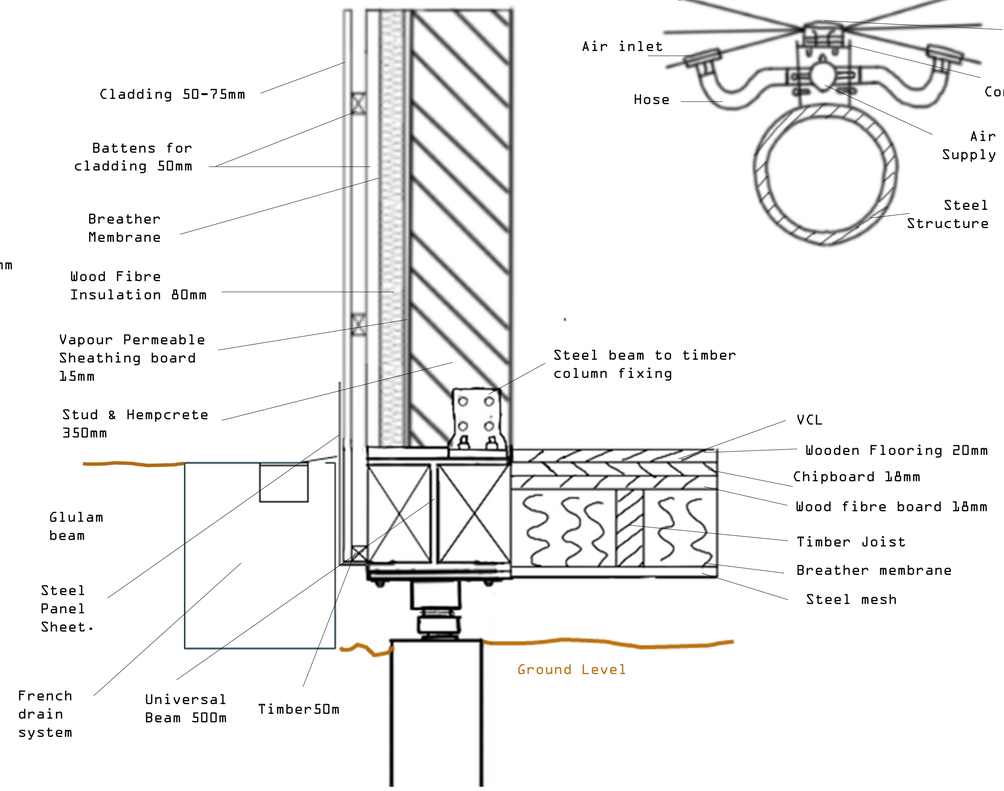


Screw Pile 1:40



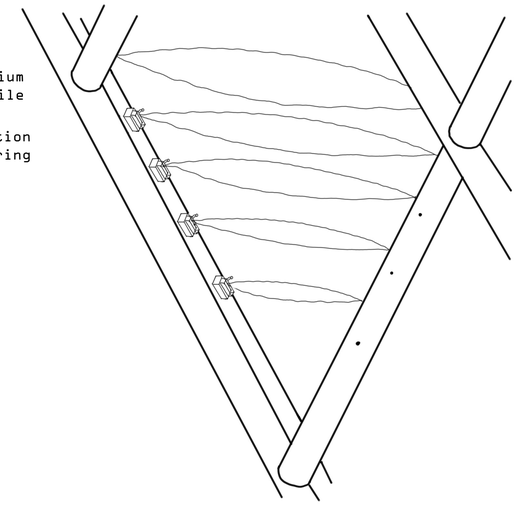
Wall Detail 1:10

U-Value - 0.17 W/m2k.c

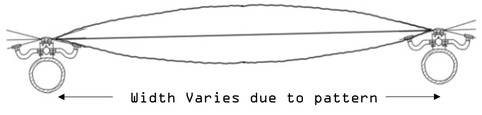


ETFE Structural Support Detail 1:10

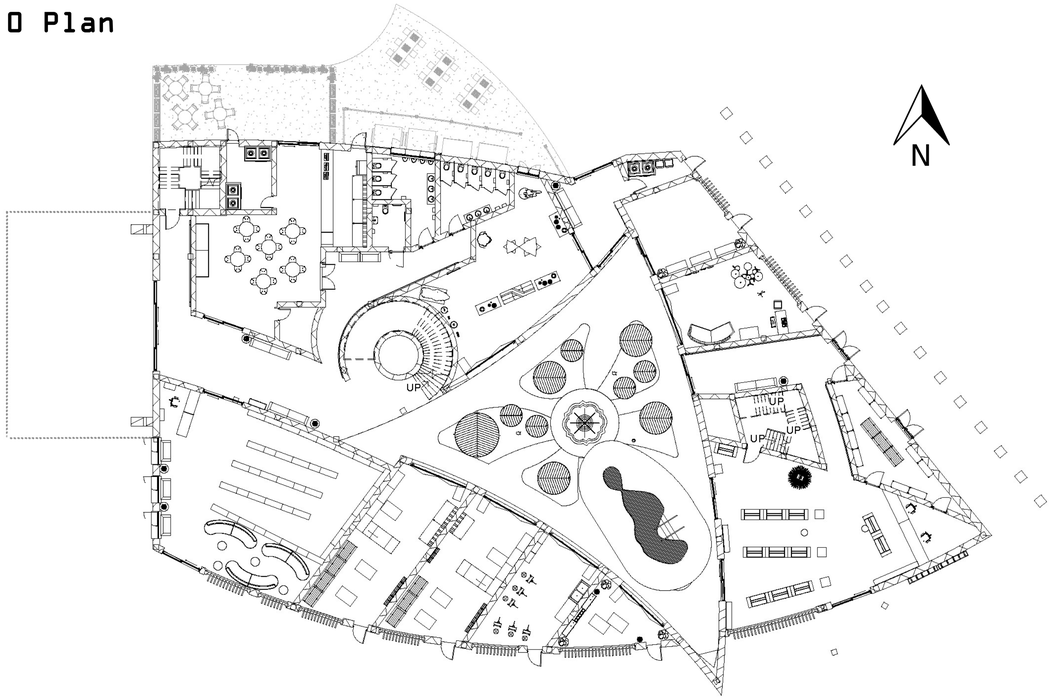
ETFE Roof Fixing in grid pattern - nts



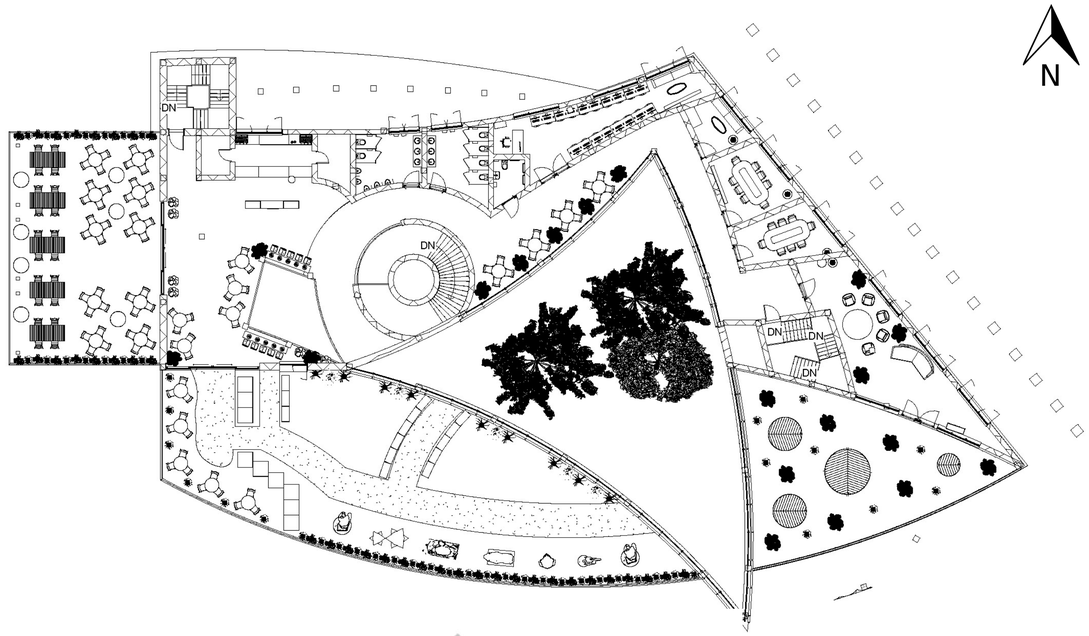
ETFE Roof Fixing 1:40



Level 0 Plan



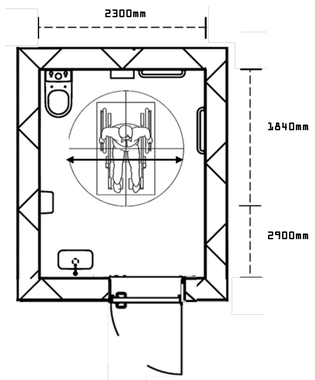
Level 1 Plan



Regulatory Compliance Matrix

Part M Compliance

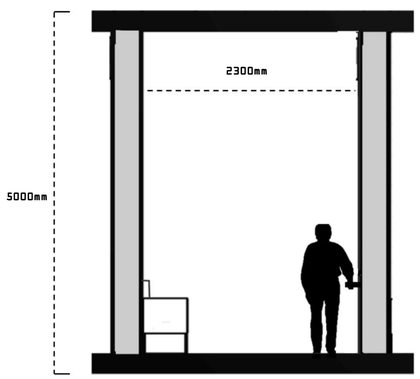
Disabled Toilet Plan 1:50



Disabled toilets abide with Part M - Accessibility regulations, with the minimum required dimensions of 2000mm x 2200mm and a minimum turning circle of 450mm.

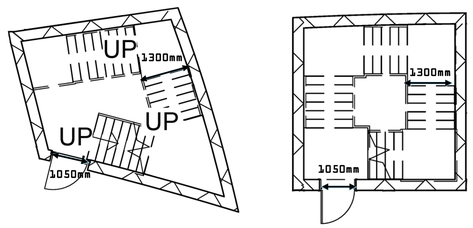
All hallways and circulation spaces have at least a 2000mm width to allow for sufficient travel space and wheelchair use. And each foyer or hall has a banister and rest spaces.

Hallway Section 1:50



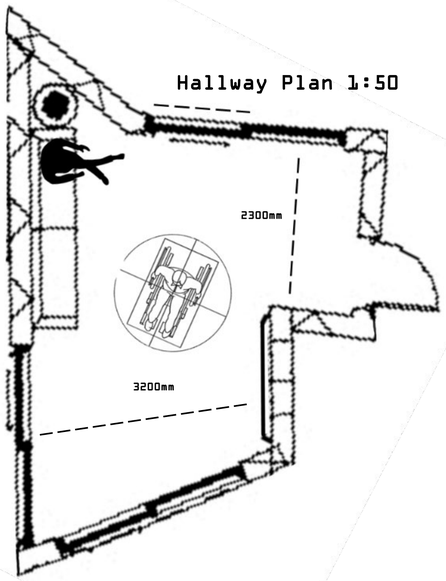
Part B Compliance

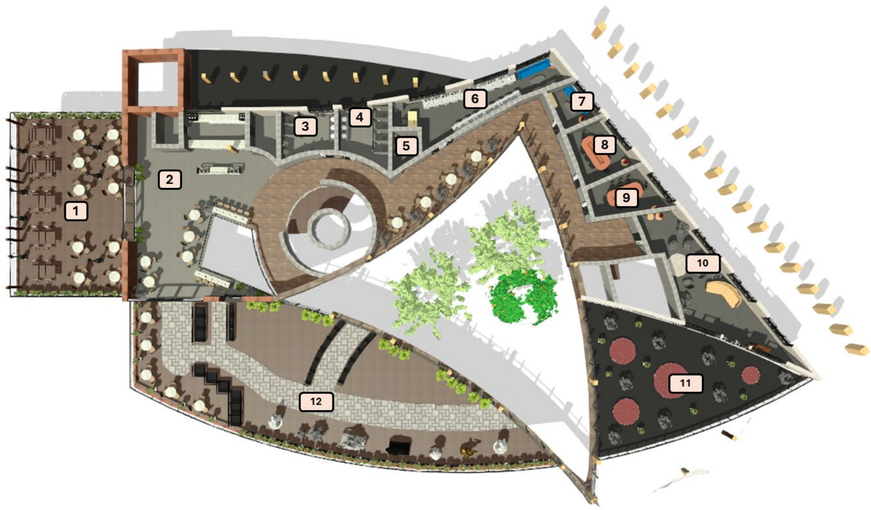
Fire Escape Stairwells 1:100



In line with regulations within the approved part B document. Fire escape stairs have a tread width of 1300mm and fire doors that are 1050mm wide. These are in line with the regulations based off the buildings hold capacity of 132 people.

Hallway Plan 1:50





Level 0 Schedule of Accommodation

Room Number	Room Name
1	Pump Room 1
2	Main Hall
3	Kitchen
4	Male Toilet
5	Disabled Toilet
6	Female Toilet
7	Storage Room
8	Exhibition Hall
9	Pump Room 2
10	Workshop 1
11	Workshop 2
12	Stock Room
13	Shop
14	Courtyard
15	Workshop 3
16	Workshop 4
17	Workshop 5
18	Workshop 6
19	Library

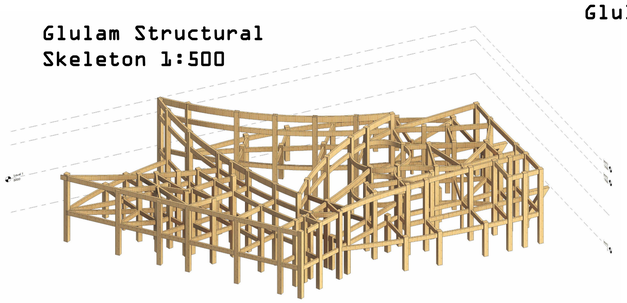
Level 1 Schedule of Accommodation

Room Number	Room Name
1	Balcony Seating
2	Cafe
3	Male Toilet
4	Female Toilet
5	Disabled Toilet
6	Computer Suite
7	Private Room 1
8	Private Room 2
9	Private Room 3
10	Rehabilitation Room
11	Rooftop Garden Area
12	Outdoor Seating and Activity Space

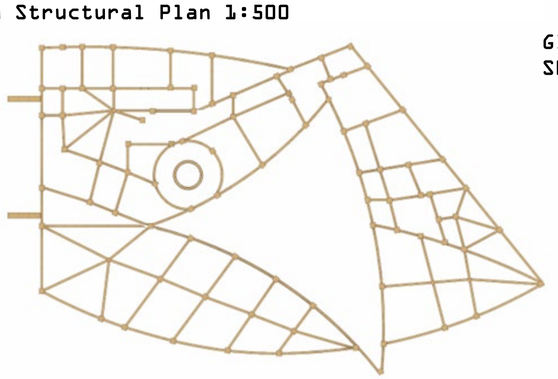
Physical Section Model originally 1:100

The glulam frame structure was chosen as a lower carbon choice than a steel structure for example. It also allows for a tailored wall detail which can be specifically chosen in order to achieve a lower u value rating and achieve an airtight envelope. Other than functional values, it also is aesthetically pleasing and has been complemented by other materials.

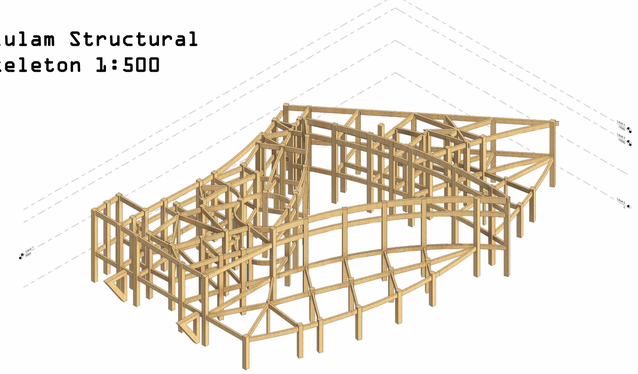
Glulam Structural Skeleton 1:500



Glulam Structural Plan 1:500

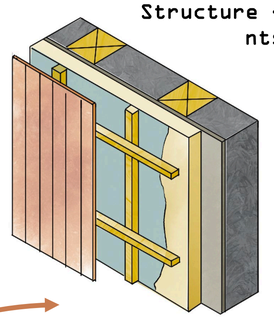


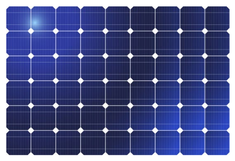
Glulam Structural Skeleton 1:500



Wall Structure - nts

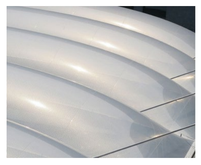
As mentioned, the glulam frame offers versatility with the wall detail. The batons on the exterior side which create an air gap also allow for a variety of fixtures. The same wall detail will be used for the entire envelope of the building, but the exterior panelling will be different for specific parts.





Solar panels for renewable energy generation

A green roof to produce a bio-solar array which catches rainwater run off and increases efficiency of solar panels..



ETFE panel roof to enhance lighting effect and produce solar gain.

Glulam frame, providing a strong, renewable skeleton.

Stone Panel cladding.

Clay panel cladding.

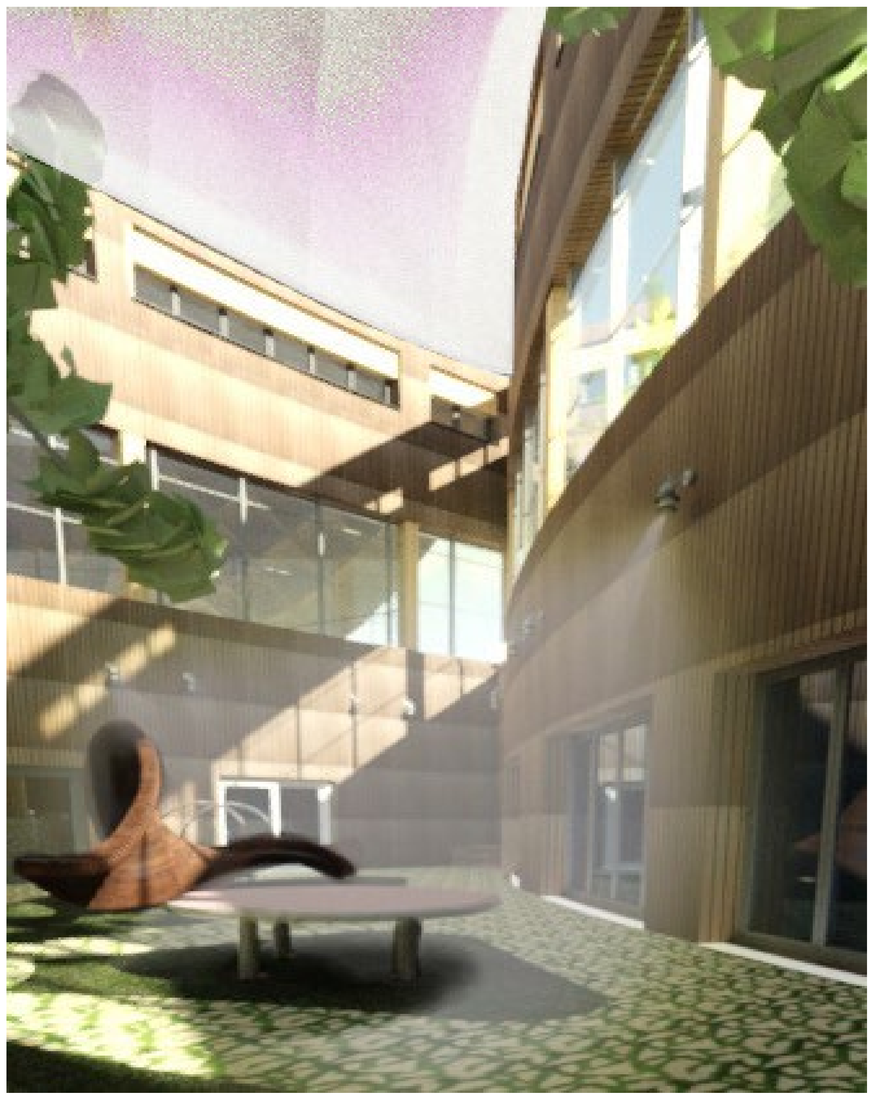
Treated reclaimed wood panelling.

South Elevation 1:200

West Elevation 1:200

North Elevation 1:200

East Elevation 1:200



The atrium uses an ETFE roof to allow as much natural light in as possible. Sometimes in winer periods, or in evening/night operation the atrium would need to be supported by artificial light. Spot-lights will be dotted around the atrium in order maintain its bright nature. And led lights will follow the perimeter of the atrium walls to project onto the bubble panels to create a more scenic and immersive experience.