The Horizon

"A Return to the English Vernacular"

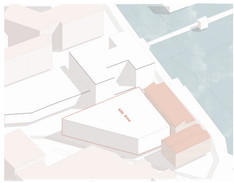
ARC 3003 - Comprehensive Design Projects

Lemar Nassani
28456649

The Horizon is an intergenerational community centre focused on promoting healthy aging through access to nutritious food and opportunities for physical activity. Its program encourages interaction between elderly and youth through shared activities that enhance physical, mental, and social well-being, improving quality of life while helping to prevent the development of chronic diseases.

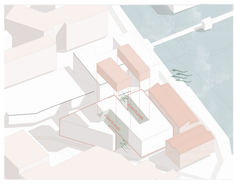
Located between Lincoln's historic High Street and the modern university campus, the project reinterprets the English vernacular as a contemporary architectural response to net zero and sustainability goals. The building's architectural language draws from traditional construction techniques and passive environmental strategies through the use of locally sourced and renewable materials, low-carbon construction methods, environmental zoning, and orientation strategies that maximise daylight and natural ventilation. Accessible circulation, adaptable communal spaces, and strong connections to landscape and outdoor activity reinforce the programme's focus on healthy ageing and social interaction. Through the use of durable materials, flexible spaces, and vernacular principles, The Horizon considers how buildings can age alongside their users, integrating environmental and social sustainability within a single architectural approach.

Massing



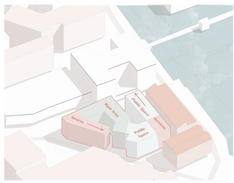
The initial massing defines the site boundary and establishes the building's relationship with its surrounding context in terms of height, materiality, and scale.

Removing



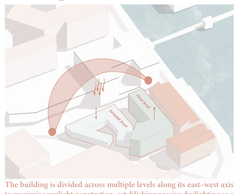
Site analysis informes prevailing wind direction, leading to the integration of internal courtyards as key spaces for air circulation and forming the basis of the natural ventilation strategy

Orienting



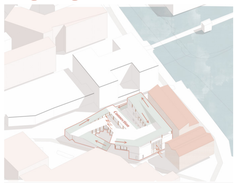
The building's massing is oriented to create zoned spaces that respond to surrounding access routes and the scale and arrangement of neighbouring buildings.

Elevating



The building is divided across multiple levels along its east-west axis to maximise sunlight penetration, establishing passive daylighting as a primary environmental strategy.

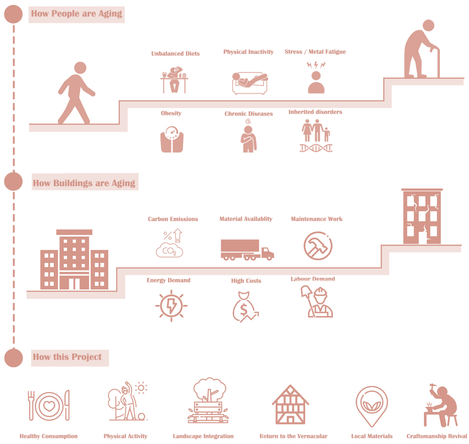
Integrating



The building's multiple levels are connected through a ramped circulation system that integrates the massing with its surrounding context while supporting accessibility and encouraging outdoor activity.

Site Location
Scale 1:1000

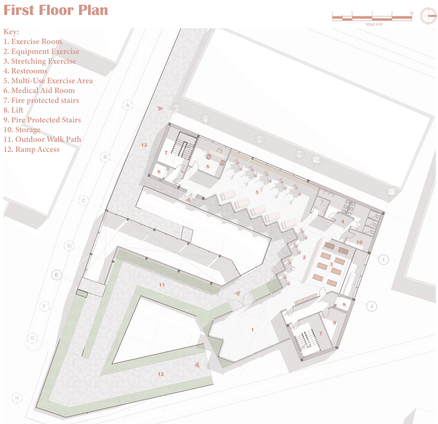
Why this project?



Ground Floor Plan

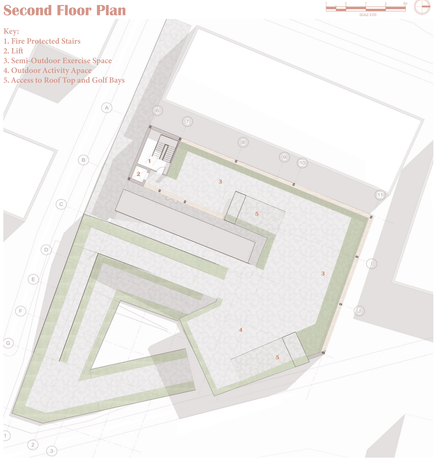
Key:
1. Entrance
2. Community Kitchen
3. Cooking Spaces
4. Restrooms
5. Boxed Meals Prepping
6. Mental Exercise Area
7. Plant Room
8. Fire Protected Stairs
9. Lift
10. Storage
11. Staff Room
12. Front Courtyard
13. Back Courtyard
14. Bicycle Parking

First Floor Plan



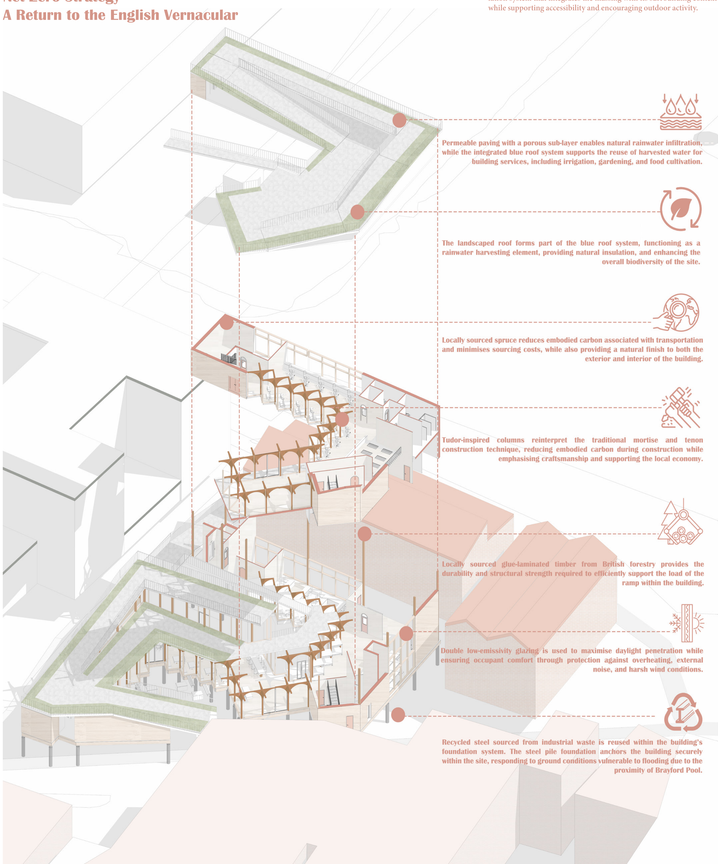
Key:
1. Exercise Room
2. Equipment Exercise
3. Stretching Exercise
4. Restrooms
5. Multi-Use Exercise Area
6. Medical Aid Room
7. Fire protected stairs
8. Lift
9. Fire Protected Stairs
10. Storage
11. Outdoor Walk Path
12. Ramp Access

Second Floor Plan



Key:
1. Fire Protected Stairs
2. Lift
3. Semi-Outdoor Exercise Space
4. Outdoor Activity Apace
5. Access to Roof Top and Golf Bays

Net Zero Strategy
A Return to the English Vernacular



Permeable paving with a porous sub-layer enables natural rainwater infiltration, while the integrated blue roof system supports the reuse of harvested water for building services, including irrigation, gardening, and food cultivation.

The landscaped roof forms part of the blue roof system, functioning as a rainwater harvesting element, providing natural insulation, and enhancing the overall biodiversity of the site.

Locally sourced spruce reduces embodied carbon associated with transportation and minimises sourcing costs, while also providing a natural finish to both the exterior and interior of the building.

Tudor-inspired columns reinterpret the traditional mortise and tenon construction technique, reducing embodied carbon during construction while emphasising craftsmanship and supporting the local economy.

Locally sourced glue-laminated timber from British forestry provides the durability and structural strength required to efficiently support the load of the ramp within the building.

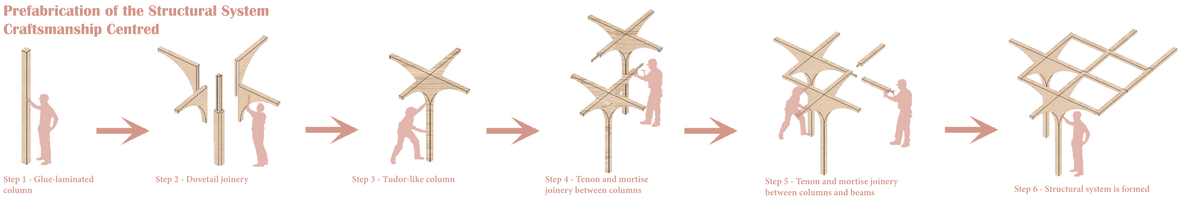
Double low-emissivity glazing is used to maximise daylight penetration while ensuring occupant comfort through protection against overheating, external noise, and harsh wind conditions.

Recycled steel sourced from industrial waste is reused within the building's foundation system. The steel pile foundation anchors the building securely within the site, responding to ground conditions vulnerable to flooding due to the proximity of Brayford Pool.

Front Elevation
Scale 1:100

Side Elevation
Scale 1:100

Prefabrication of the Structural System
Craftsmanship Centred



Step 1 - Glue-laminated column

Step 2 - Dovetail joinery

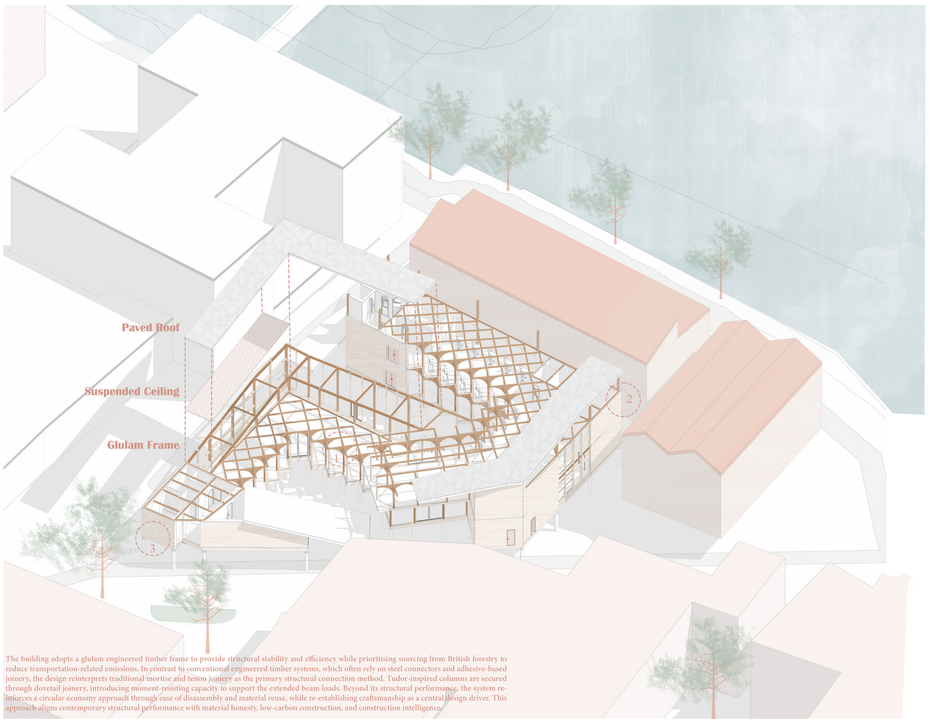
Step 3 - Tudor-like column

Step 4 - Tenon and mortise joinery between columns

Step 5 - Tenon and mortise joinery between columns and beams

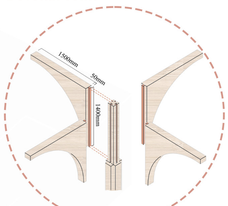
Step 6 - Structural system is formed

Assembly of the Structural System
Reduced Embodied Carbon

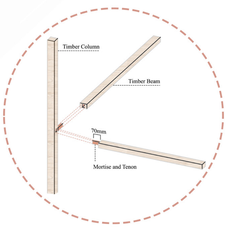


The building adopts a glulam engineered timber frame to provide structural stability and efficiency while prioritising sourcing from British forestry to reduce transportation-related emissions. In contrast to conventional engineered timber systems, which often rely on steel connectors and adhesive-based joinery, the design reinterprets traditional mortise and tenon joinery as the primary structural connection method. Tudor-inspired columns are secured through dovetail joinery, introducing moment-resisting capacity to support the extended beam loads. Beyond its structural performance, the system reinforces a circular economy approach through ease of disassembly and material reuse, while re-establishing craftsmanship as a central design driver. This approach aligns contemporary structural performance with material honesty, low-carbon construction, and construction intelligence.

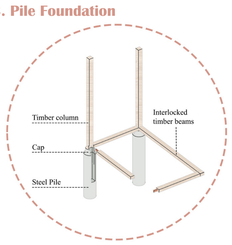
1. Dovetail Joint



2. Tenon and Mortise Joint



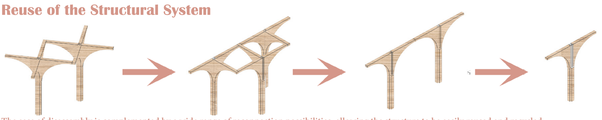
3. Pile Foundation



Disassembly of the Structural System

The use of interlocking mortise and tenon joinery reduces embodied carbon during both construction and dismantling by eliminating reliance on additional fixings and industrial connections.

Reuse of the Structural System



The ease of disassembly is complemented by a wide range of reconnection possibilities, allowing the structure to be easily reused and recycled.

Environmental Section

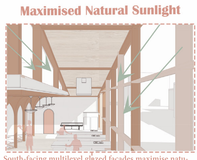
Sustainable Landscape Integration

The landscaped roof functions as both a drainage system and a programmatic space that encourages outdoor activity, integrating environmental and social sustainability.

Natural Shading Devices

The structural system reinterprets the vernacular jetty technique as a design feature that provides natural shading while allowing daylight penetration.

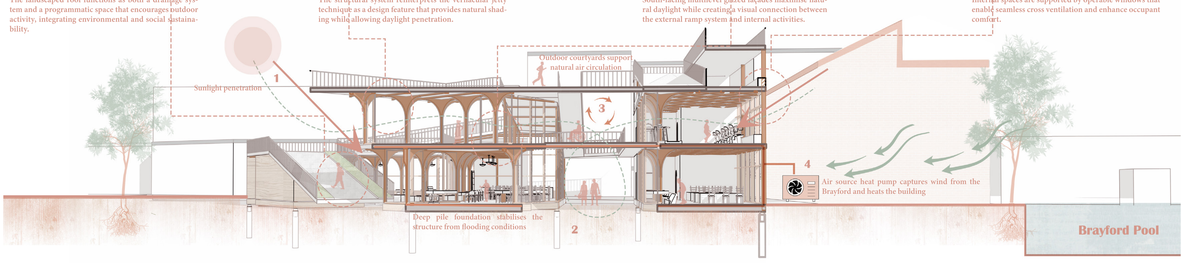
Maximised Natural Sunlight



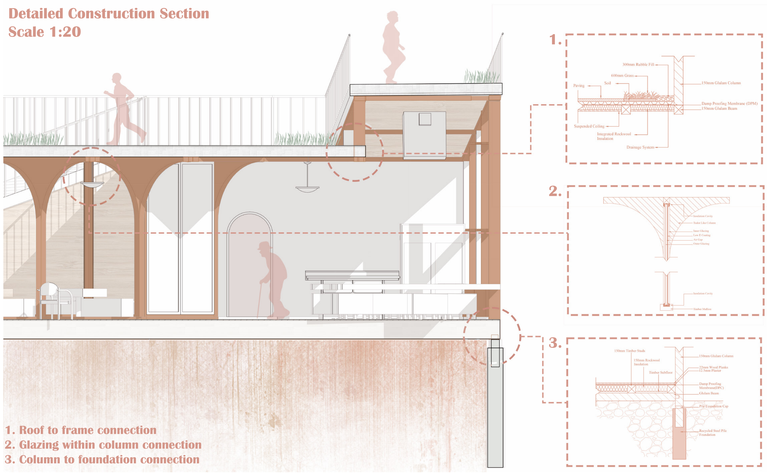
South-facing multilevel glazed facades maximise natural daylight while creating a visual connection between the external ramp system and internal activities.

Passive Cross Ventilation

Internal spaces are supported by operable windows that enable seamless cross ventilation and enhance occupant comfort.



Detailed Construction Section
Scale 1:20



1. Roof to frame connection
2. Glazing within column connection
3. Column to foundation connection

Ground Floor Fire Plan
Scale 1:200

First Floor Fire Plan
Scale 1:200