

# Brayford Ripple Centre

Developed for a sustainable future, a unified construction and environmentally conscious system for the benefit of people and wildlife. A project for developing everyone, an intergenerational space benefiting the elderly, the youth and those that need it most. Support for all.



Designed for everyone, but with the elderly and single parent house holds in mind, the project aims to provide space for community to grow and people to share knowledge and experiences for the benefit of others.

Including a swimming pool in the design was important as the city centre lacks a walkable swimming pool. Therefore it was valuable to create something accessible by all, as it is only a 300m walk from the train station and has a bus stop right outside.

Public Swimming Pools  
1,200,000



WMMMM  
MMMMM

Around 7 out of 10 single parents are disabled, compared to 15% of couple parents

37% of families with dependent children in the UK are headed by a single parent

3 in 4 families with dependent children in the UK are headed by a single parent



Benefits of learning to swim as a child should not be overlooked. Safety, Confidence, Mental well-being and improved health are just a few. Especially in the Brayford location, swimming is a valuable skill because of falling into the water.

## Spatial requirements of elderly people

- Declining strength: less ability to lift limbs or step high
- Hearing handrails and assistance available where needed
- Sensory impairments: vision, hearing loss, reduce concentration
- Avoid overly complex layouts, prefer layouts that are obvious, intuitive, reduce cognitive load
- Reduced mobility: slower movement, use of walking aids
- Doors, corridors, pathways wide enough for walking aids and wheelchairs
- Circulation spaces: enough room to turn, space to manoeuvre
- Need for assistance: sometimes space is needed for a caregiver or attendant to help
- Plan Kitchens and bathrooms to maximize efficiency and create a simple to use environment for both users and assistants

## Spatial requirements of children

- Safety and Security
  - Child proofing: providing safe fixtures, clear lines of sight, no sharp edges, non-toxic materials
  - Spatial design and boundaries, allowing for exploration and personal development while still having boundaries in place to prevent danger and risk of injury
  - Adequate security from the outside, keeping children safe and have measures to stop unauthorised access
- Stimulating activities and areas
  - Space to grow basic skills, being creative: drawing, making, reading, gardening
  - Integrating the natural environment, providing essential fresh air and a hands-on experience with nature
- Inclusive environment
  - Furniture sized for children (chairs, tables, benches)
  - Elements designed to include children, e.g. floor to seating



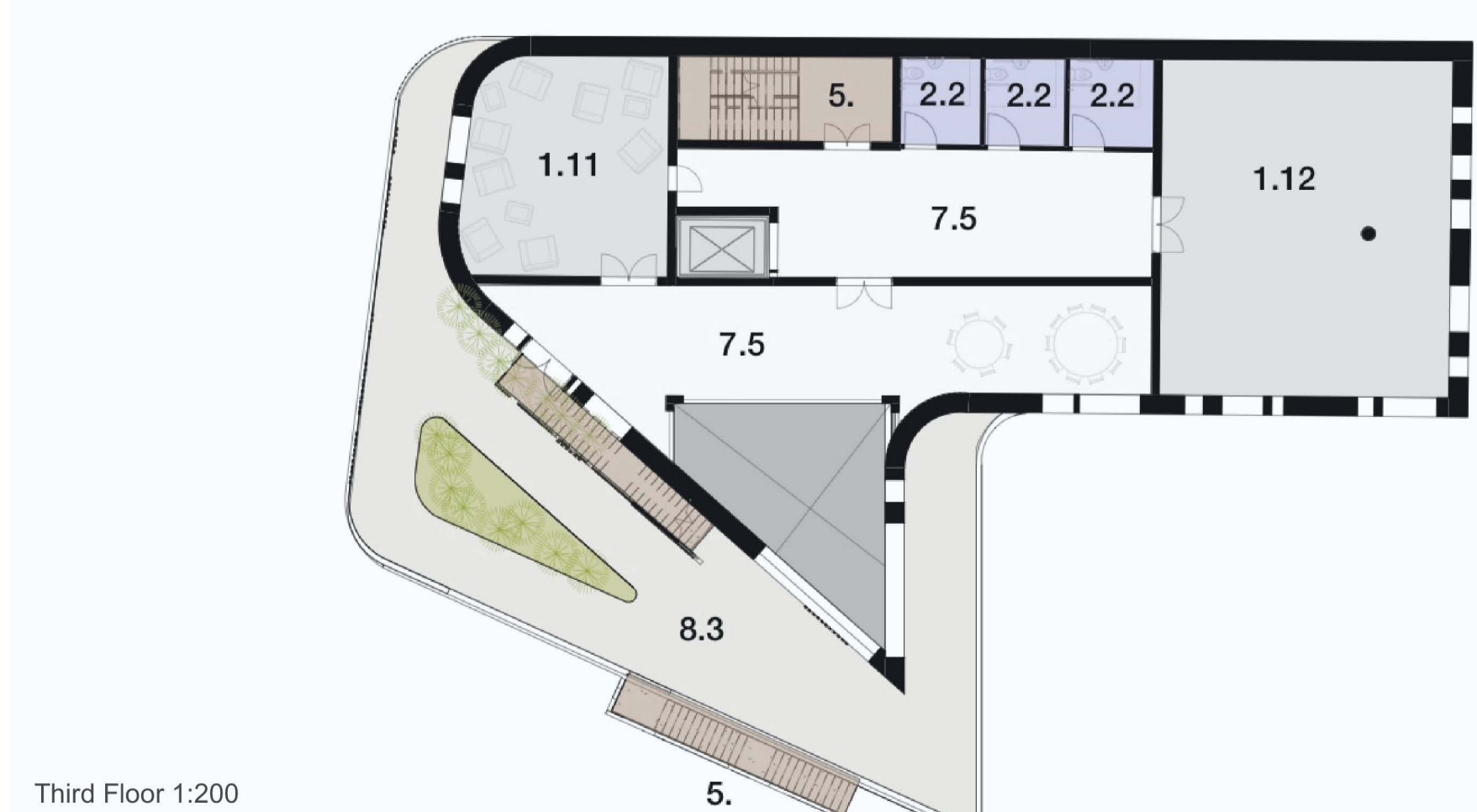
Ground Floor 1:200



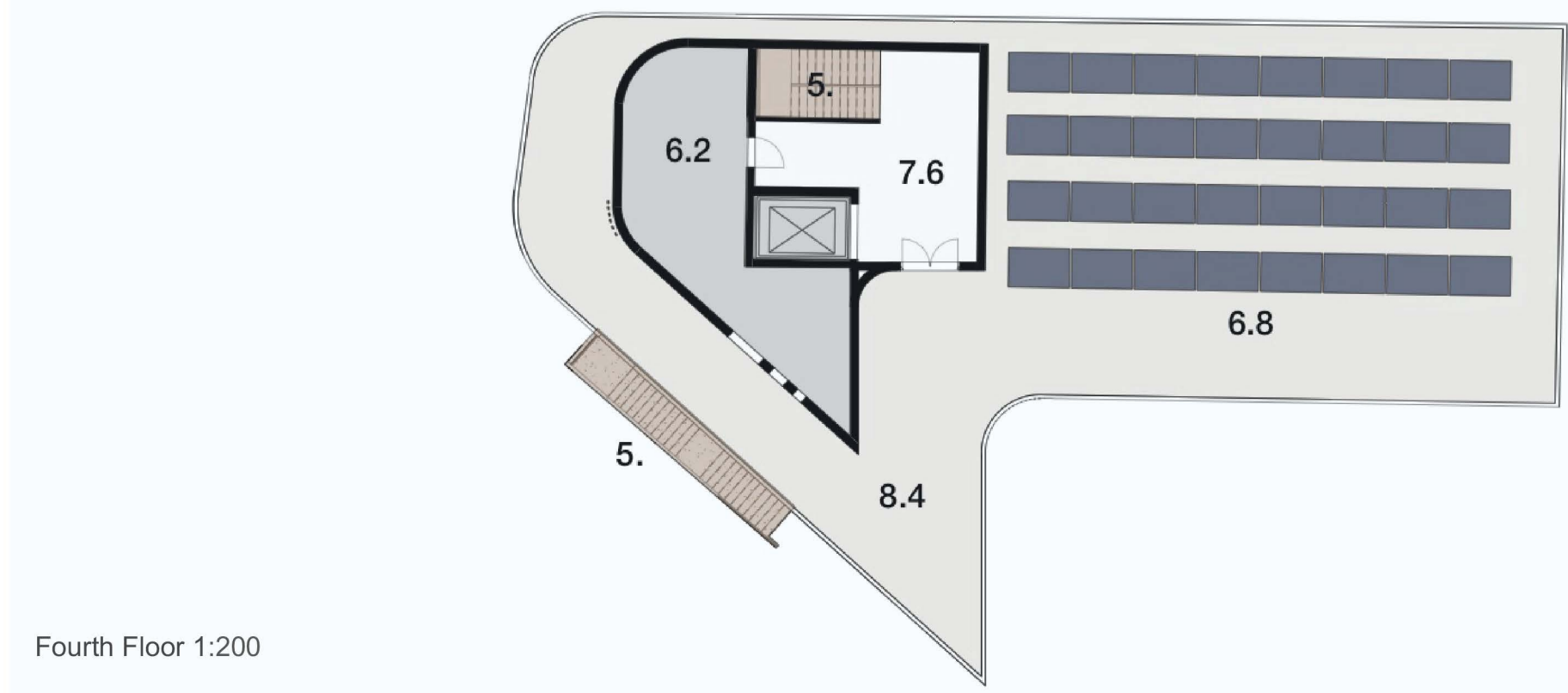
First Floor 1:200



Second Floor 1:200



Third Floor 1:200



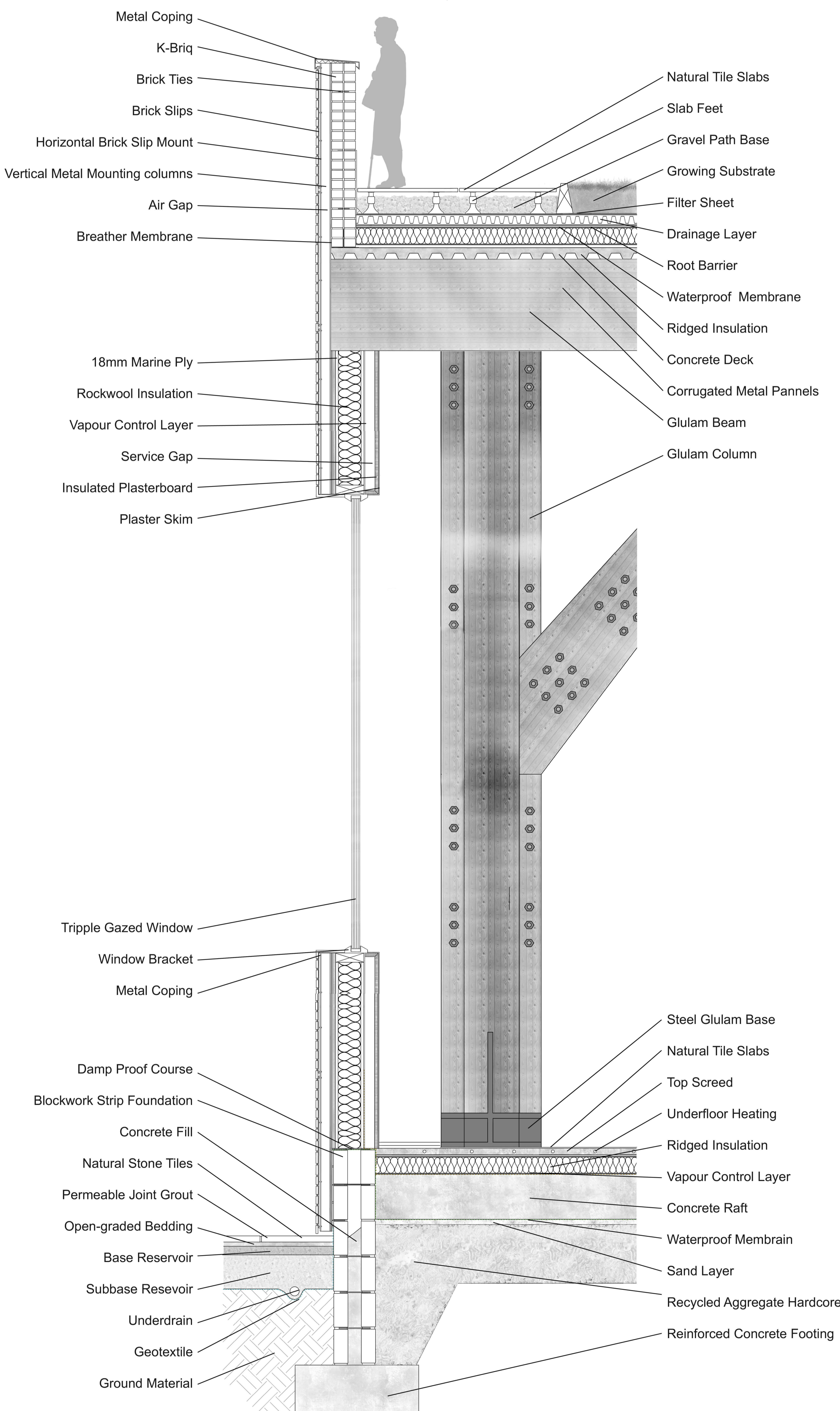
Fourth Floor 1:200

- 1. Activity Rooms
  - 1.01 - Food Store - 150m<sup>2</sup>
  - 1.02 - Cooks - 100m<sup>2</sup>
  - 1.03 - Storage - 100m<sup>2</sup>
  - 1.04 - Medical Rooms - 200m<sup>2</sup>
  - 1.05 - Storage - 100m<sup>2</sup>
  - 1.06 - Sleep Area - 100m<sup>2</sup>
  - 1.07 - Storage - 100m<sup>2</sup>
  - 1.08 - Storage - 100m<sup>2</sup>
  - 1.09 - Storage - 100m<sup>2</sup>
  - 1.10 - Storage - 100m<sup>2</sup>
  - 1.11 - Storage - 100m<sup>2</sup>
  - 1.12 - Storage - 100m<sup>2</sup>
- 2. W/C
  - 2.01 - Non-disabled W/C Women's
  - 2.02 - Non-disabled W/C Men's
  - 2.03 - Disabled W/C
  - 2.04 - Family W/C
- 3. Shower
  - 3.01 - Non-disabled Shower
  - 3.02 - Disabled Shower
  - 3.03 - Family Shower
- 4. Changing
  - 4.01 - Non-disabled changing
  - 4.02 - Disabled Changing
  - 4.03 - Family Changing
- 5. Stairs
- 6. Miscellaneous
  - 6.1 First Aid
  - 6.2 First Room
  - 6.3 Storage
  - 6.4 Outdoor Water Play Area
  - 6.5 Playroom
  - 6.6 Disabled Parking
  - 6.7 Training Area
  - 6.8 Intergenerational
- 7. Corridor and Communal spaces
  - 7.1 Ground Floor Atrium
  - 7.2 First Floor Corridor
  - 7.3 First Floor Corridor
  - 7.4 Second Floor Corridor
  - 7.5 Third Floor Corridor
  - 7.6 Fourth Floor Corridor
- 8. Outdoor Terraces
  - 8.1 First Floor Terrace
  - 8.2 Second Floor Terrace
  - 8.3 Third Floor Terrace
  - 8.4 Fourth Floor Terrace

Materials have been chosen to fulfil a sustainable and environmentally conscious mindset. The materials have neutral tones, and will demonstrate a relation to the adjacent buildings and familiarity to the public while suggesting sophistication and quality. Also chosen for their structural properties: glulam, zero-carbon aims: K-Briq, and fire resistance: charred timber.

**K-BRIQ**  
RECYCLED CONSTRUCTION WASTE  
2.1 kg CO<sub>2</sub>e/kg  
100% WPC  
100% RECYCLED  
100% ZERO CARBON  
100% ZERO EMISSION  
100% ZERO WASTE  
100% ZERO POLLUTION

Kenotek K-Briqs are a key-part of the development, offering a much superior alternative to regular bricks. By using recycled construction waste, it helps off-set the demolition of the previous building on the site. In areas of the building K-Briq slips will be used, allowing for less material to be used and lowering the carbon miles involved in transport

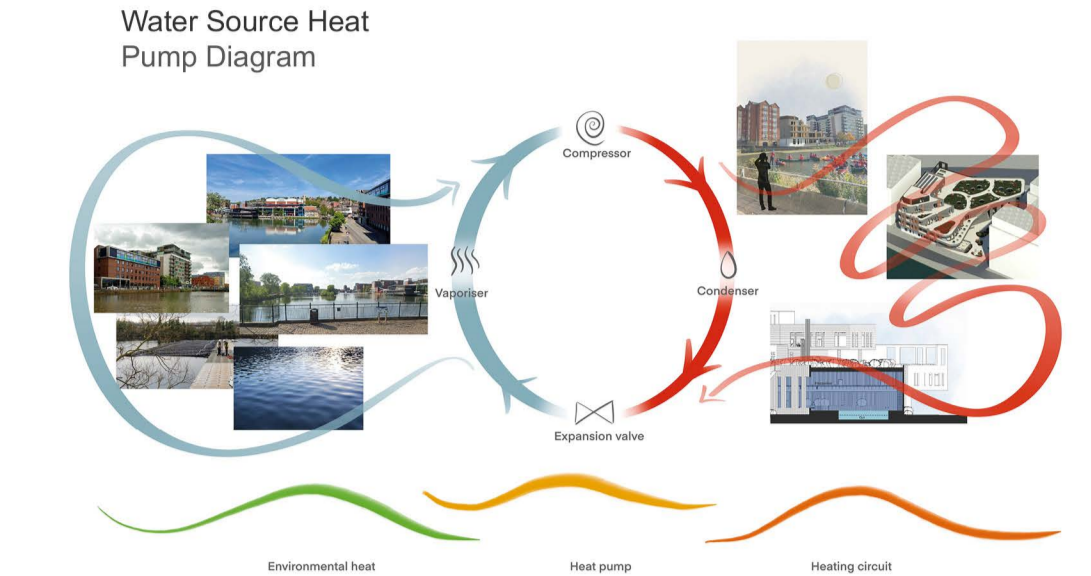


Structural viability has been addressed through the use of both steel and glulam columns and beams. Steel responds to the required structural safety and efficiency while glulam allows wide open spans and supports sustainable practices reducing the embodied carbon. Detail conveys the importance of recycled materials e.g. the use of K-Briqs, lengthening the life-cycle of these fabrics. This practice reacts directly with Sustainable Development Goal 11, Sustainable Cities and Communities, providing a strong service for the community designed to last.

**11 SUSTAINABLE CITIES AND COMMUNITIES**



**1:100 Scale Section Highlighting Sustainable and Net-zero Design Features**



- 6. WSHP - Water Source Heat Pump, used to generate sustainable heat energy by transferring stored energy in the Brayford Pool into pipes within the building
- 7. Balconys - Add overhangs to the windows reducing direct sunlight into the building during hottest times of the day
- 8. Water Management System - Stormsaver Active Attenuation and Rain Water Harvesting System, allows captured rainwater from roof runoff and the french drain to be stored and reused to flush toilets, water plants, and released into the ground when it is driest increasing lag time and - reducing flood risk

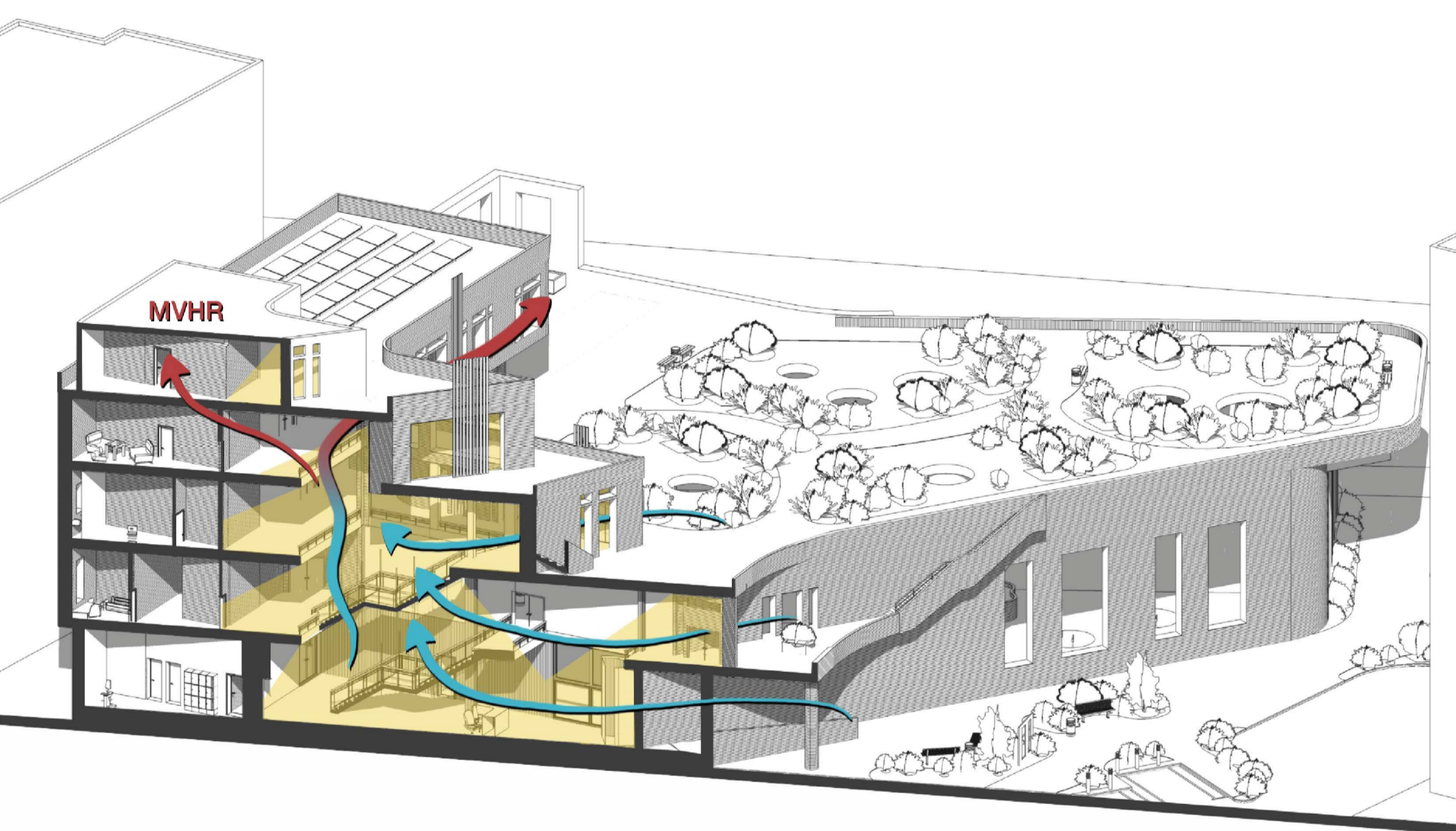
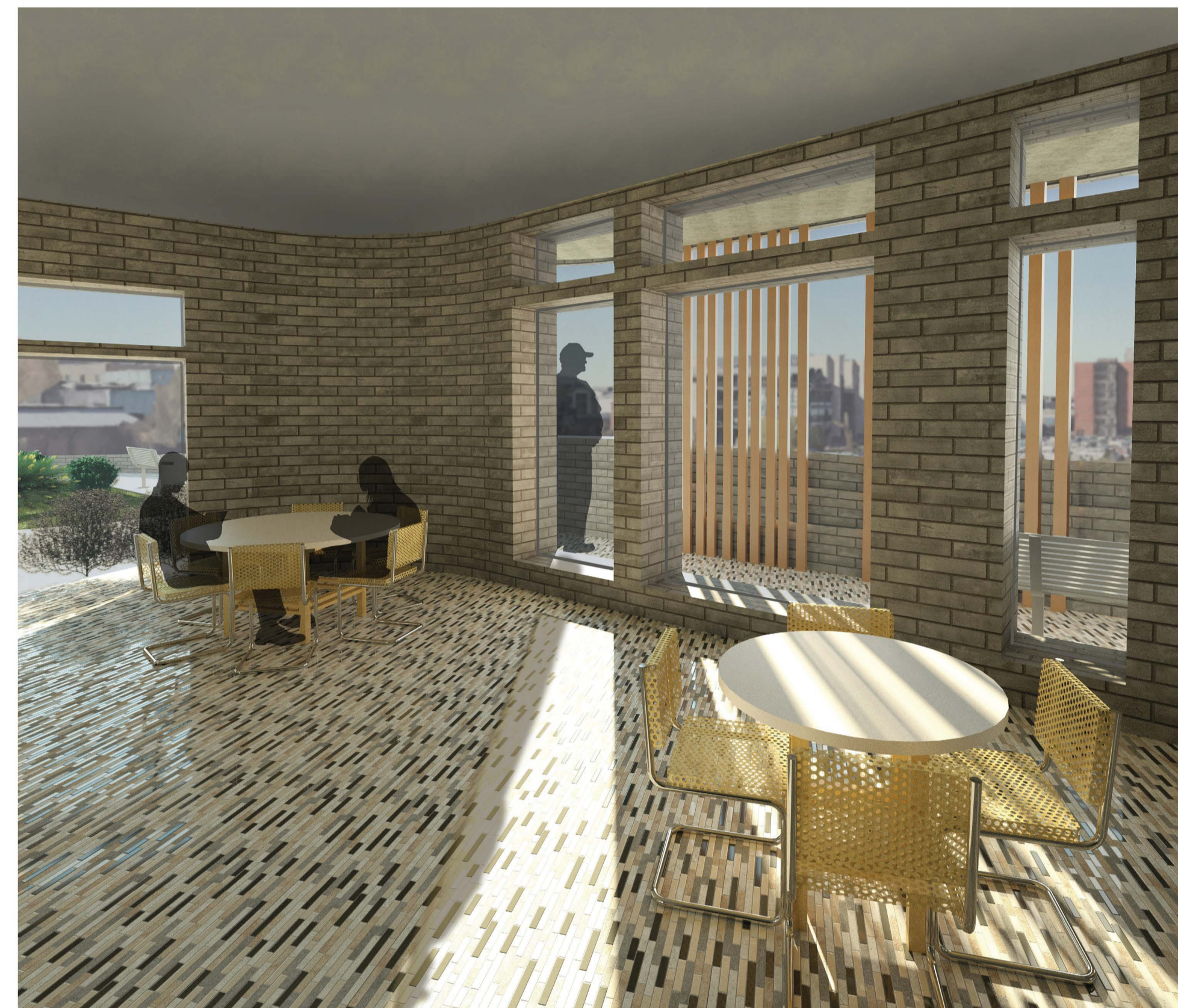
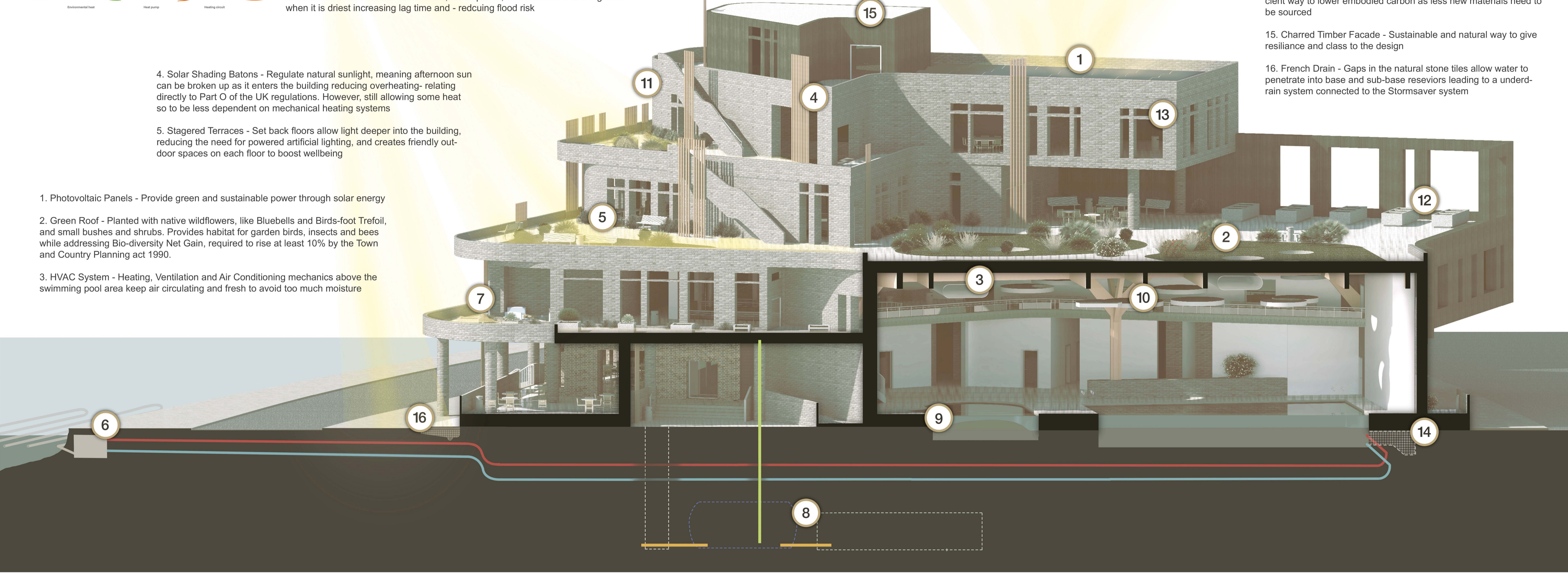
- 4. Solar Shading Batons - Regulate natural sunlight, meaning afternoon sun can be broken up as it enters the building reducing overheating- relating directly to Part O of the UK regulations. However, still allowing some heat so to be less dependent on mechanical heating systems
- 5. Staged Terraces - Set back floors allow light deeper into the building, reducing the need for powered artificial lighting, and creates friendly outdoor spaces on each floor to boost wellbeing

- 1. Photovoltaic Panels - Provide green and sustainable power through solar energy
- 2. Green Roof - Planted with native wildflowers, like Bluebells and Birds-foot Trefoil, and small bushes and shrubs. Provides habitat for garden birds, insects and bees while addressing Bio-diversity Net Gain, required to rise at least 10% by the Town and Country Planning act 1990.
- 3. HVAC System - Heating, Ventilation and Air Conditioning mechanics above the swimming pool area keep air circulating and fresh to avoid too much moisture

- 9. Cut and Fill - Using material excavated from the swimming pool to build up the base, especially in the outdoor seating area, to create th 800m raised floors. Re-using material reduces removing carbon rich soil from the site and saves carbon miles.
- 10. Glulam Beams and Columns - Sustainable timber sourced from the UK used to create large spans across the pool space and meaning less material needed in total, lowering embodied carbon
- 11. K-Briq - 95% recycled bricks, and require no firing, reducing carbon generate creating materials

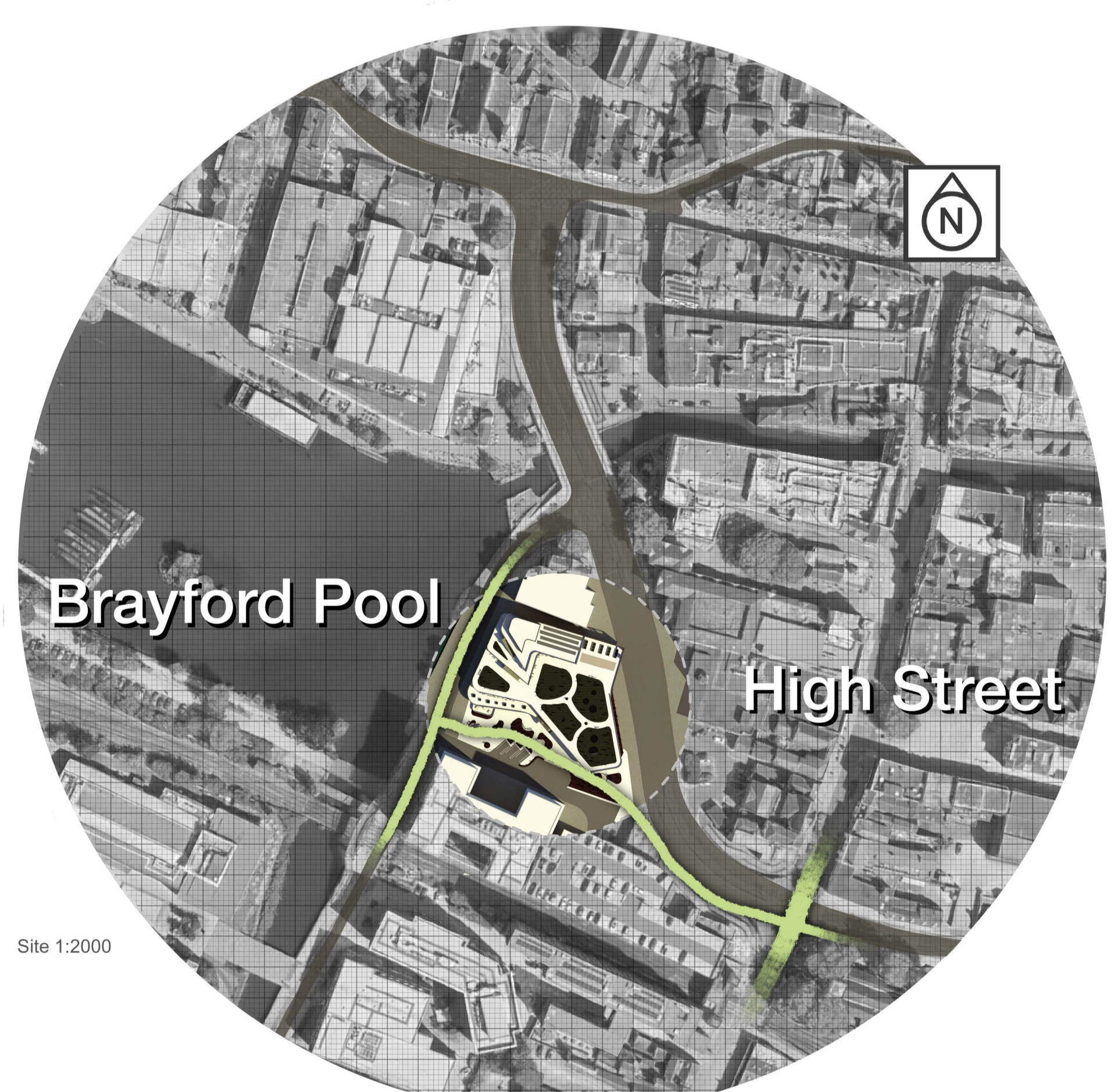
- 12. Vegetable Garden - Provides valuable community and teaching space, incentivising sustainable social practice
- 13. Tripple Glazed Windows - Argon filled tripple glazed windows give superior heat retention and sound proofing, offering a U value of 0.9 W/m<sup>2</sup>K. They also reduce condensation, aligning with elements of Part C of the UK regulations. Being up to 50% more efficient they provide significant energy savings.

- 14. Recycled Aggregate Hardcore - Reusing the past buildings material means a less wasteful construction process and more efficient way to lower embodied carbon as less new materials need to be sourced
- 15. Charred Timber Facade - Sustainable and natural way to give resilience and class to the design
- 16. French Drain - Gaps in the natural stone tiles allow water to penetrate into base and sub-base reservoirs leading to a under-drain system connected to the Stormsaver system

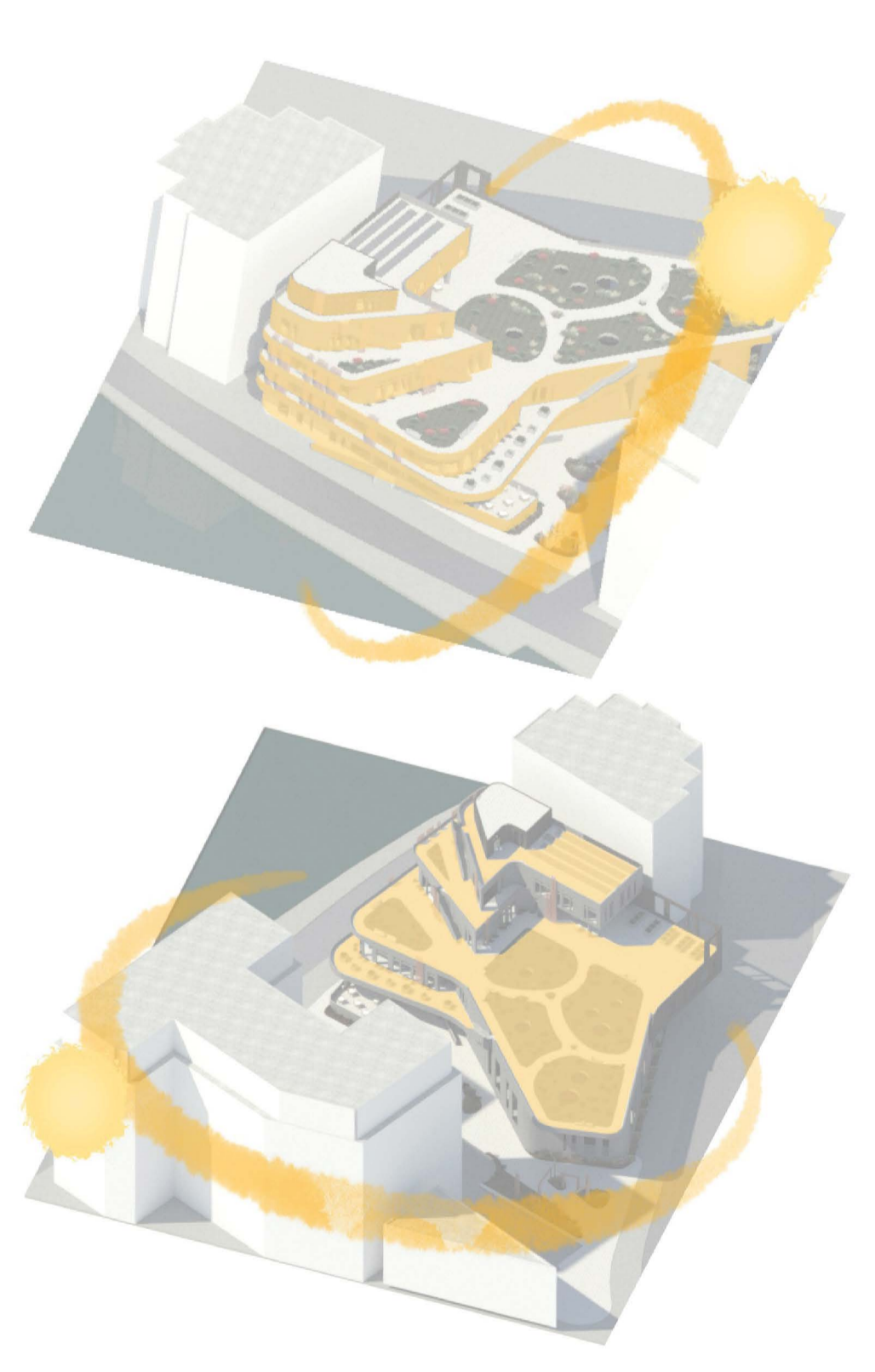


**7 AFFORDABLE AND CLEAN ENERGY**

The main atrium section of the building acts as a large stack ventilation system, drawing fresh air in through the base. When it is cold and warm air needs to be conserved a Mechanical Ventilation with Heat Recovery system takes the warm air that has risen and recirculates this with fresh air to keep the energy in the loop. This sustainable practice relates to Part L of the building regulations, and contributes towards Sustainable Development Goal 7, Affordable and Clean Energy- aiming to increase energy efficiency and reduce carbon emissions.



**Sun Path Intergration**  
As a result of site observations, the building has staggered floors to take advantage of the sunlight that passes over the adjacent building. These floors create outdoor areas that are safe for visitors to enjoy away from traffic. Having a prominent west facade designs for the afternoon sun, with balconys designed to give space to appreciate the sunset over the Brayford pool



The outdoor landscaping has been considered carefully, aiming to create a dynamic corridor between the highstreet and the brayford pool. This space will include bubbles of greenery, benefiting the environment and health of the public through de-stressing and cleaner air.

A water play area involving fountains, waves and tubes is designed to educate children and help them understand fluid dynamics through play. This is adjacent to the outdoor cafe area, allowing for parents to watch their children safely.

Squared timber arches line the route, designed wide enough for wheel chairs, crafting a whimsical passage for all to enjoy. This liminal moment starts the journey through the site. The use of natural materials highlights the sustainable dialogue of the project, reminding passers by of the zero-carbon aims.

