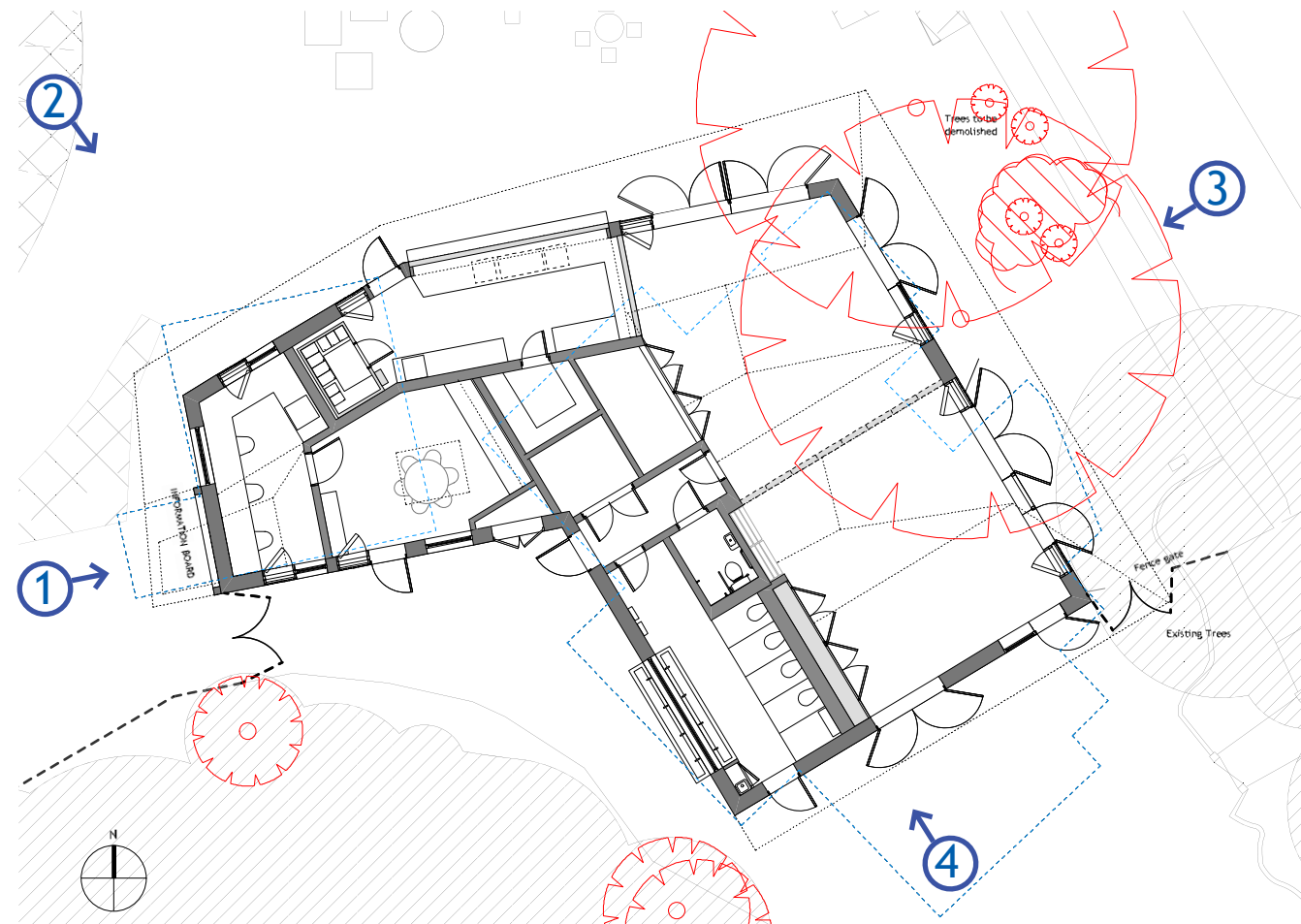


## 6.3.4 Scale

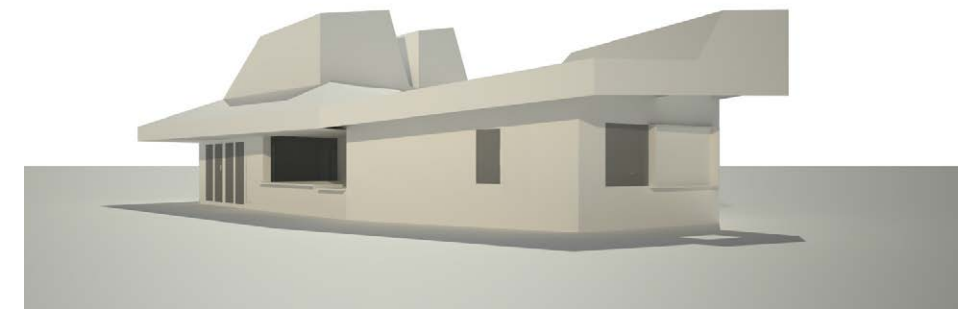
The L shaped plan allows the new building volume to sit in the same area of footprint as the existing building volume while creating a specific and varied volume at each elevation.

The roof features three chimneys, 2 over the learning studios and one above the office and the information point. Height and orientation of the chimneys have been designed to direct light to bounce off of the side walls within the chimney. This brings in diffused light into the space eliminating the need for artificial light during the day time.

The slope above the cafe, volunteer room and office area is at a minimum pitch of 5 degree to keep a non-imposing roof volume towards the site entrance.



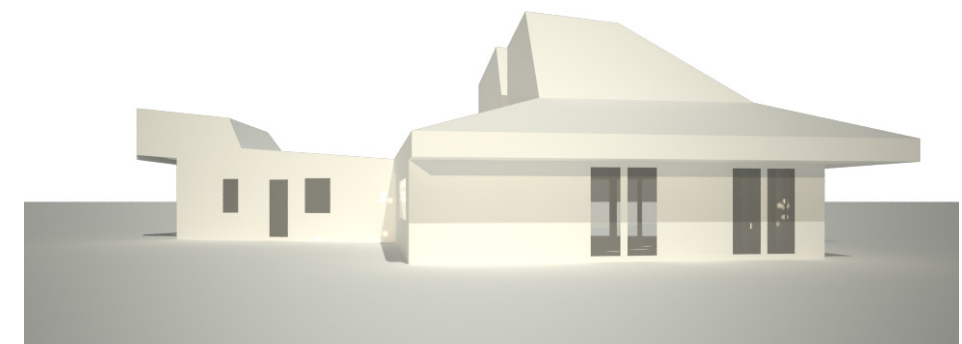
View 1



View 2



View 3

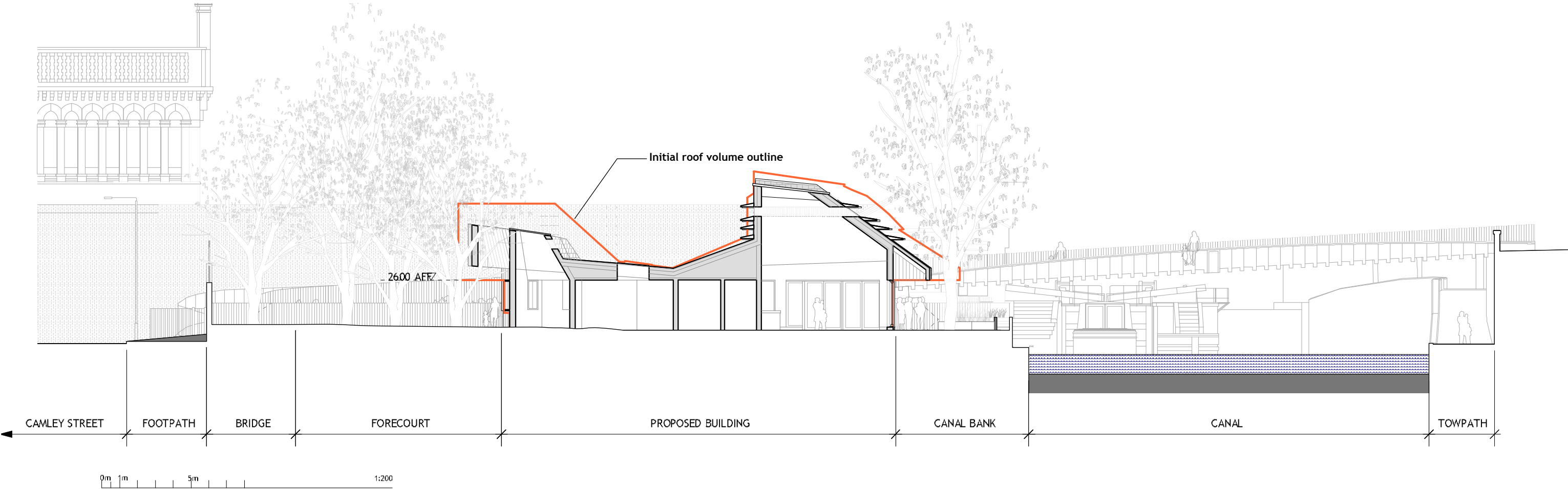
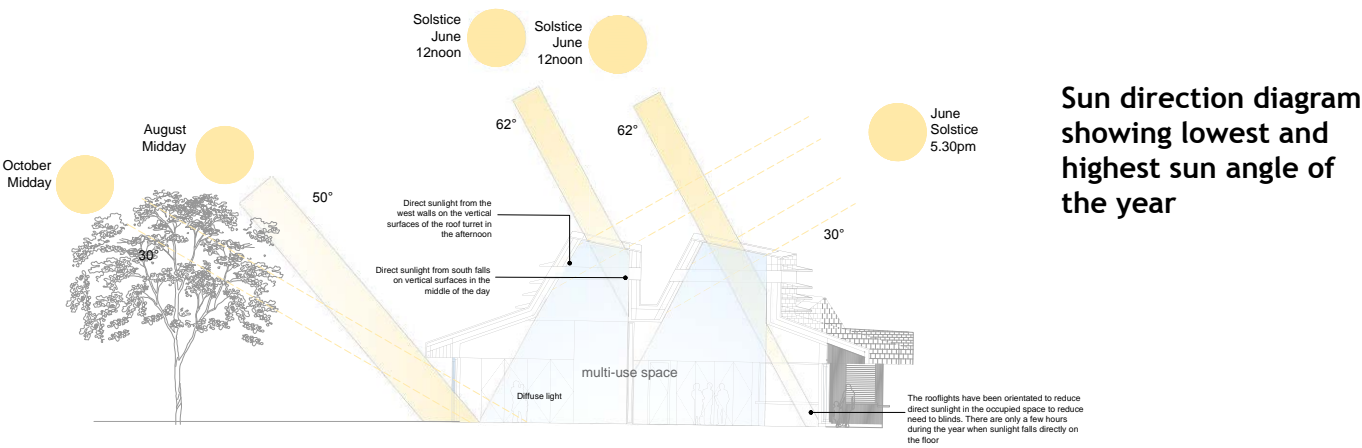


View 4

### 6.3.5 Roof Design

The roof extends beyond the building edge along the North, East and South end to create a coherent datum line and provide a covered walkway guiding visitors along the building and into the site.

The volume of the roof is specifically proportioned to the use and plan layout. The largest and most public internal space, the learning studio has a generous ceiling height with two roof light chimneys, which let in diffused natural light into the learning space. (refer to: section 6.4.3 for the design characteristic of the chimneys.)  
The roof volume above the entrance area has been reduced following the pre-planning consultation. The soffit line lifts up towards the entrance area, creating a visual lift and perspective line which makes the building appear to open up towards the entering visitor. The roof chimney above the entrance lets natural light in from above, making it a significant welcoming feature for the visitors combined with the LWT information board.





## 6.4 Sustainability - Building

### 6.4.0 Introduction

The building has excellent sustainability credentials. Key measures include:

- \* Super insulated building envelope
- \* Naturally daylit spaces via roof lights
- \* Naturally ventilated, with secure façade ventilators for passive night cooling
- \* Heating using a water source heat pump extracting low grade solar heat from the canal
- \* Heat recovery mechanical ventilation to WC area
- \* Low flow taps and dual flush toilets to encourage lower water consumption
- \* Rainwater collected from the building and surrounding hard standing is discharged into the pond within the park. All artificial lighting will be high efficiency LED
- \* Low air permeability (air tightness)

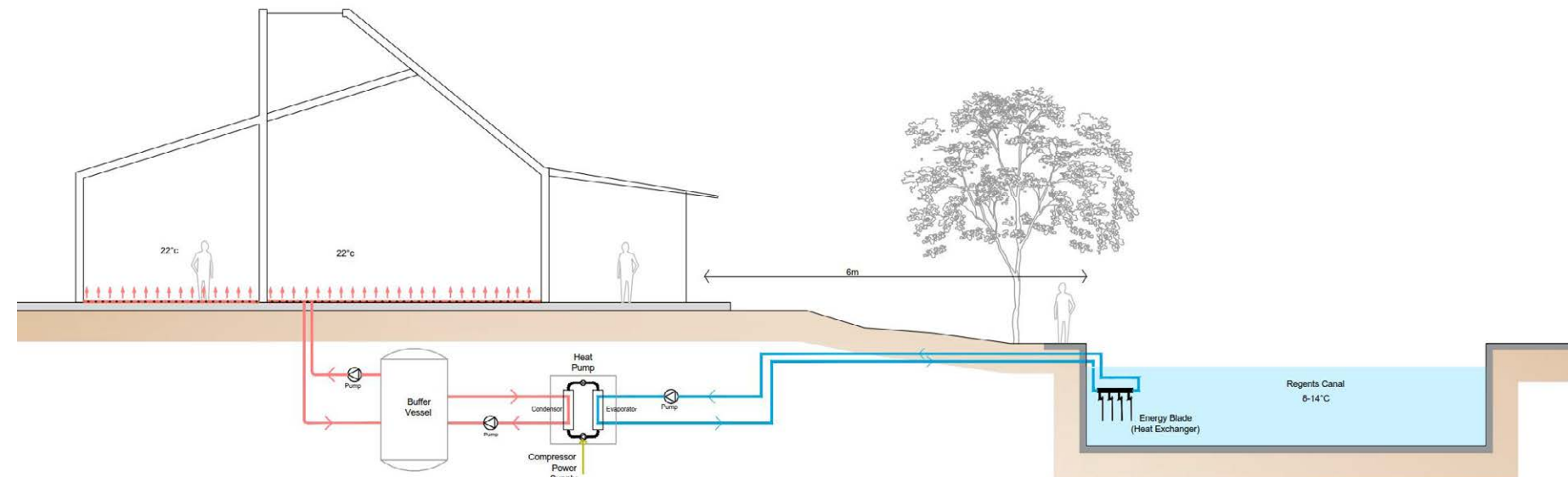
### 6.4.1 Energy Strategy

Our approach is based on using simple passive principles complemented by established technology that is well understood, easy to operate and maintain. The energy strategy has been developed using the following energy hierarchy:

1. Using less energy (Be Lean)
2. Supplying energy efficiently (Be Clean)
3. Using renewable energy (Be Green)

The first and most important stage of the energy hierarchy focuses on the thermal envelope of the building to improve the thermal performance and reduce energy demand. With a high performance building fabric and using passive design measures to make full use of natural light and to maximise natural ventilation the cost and environmental impact of the buildings's active systems have been reduced dramatically. The key aspects of the energy strategy are discussed in the following sections.

Canal Heat Source Diagram



View to canal edge from site:  
The water source is adjacent to site



# 6.4.2 Heating & Ventilation Strategy

The key rooms are ventilated through openings within the façade and opening rooflights. At night time in the summer, the multi-use space shall be ventilated through secure façade openings and openings in the chimneys. This strategy will help prevent overheating in warm weather.

All main spaces incorporate visible air quality sensors to alert users when to opening windows and rooflights in the winter to maintain sufficient air quality.

The building shall be mostly self-heated by the heat released by the occupants. The small demand for active heating will be limited to pre-heating at the beginning of each day during cold weather to get the building up to temperature before occupation.

This reduced heating load will be provided by a water source heat pump extracting heat from the adjacent canal. The canal water provides a stable low-grade heat source that will be warmer than the air temperature in the winter.

The heat shall be delivered by low temperature underfloor heating, controlled using a programmable and self-learning controls to help energy saving.

