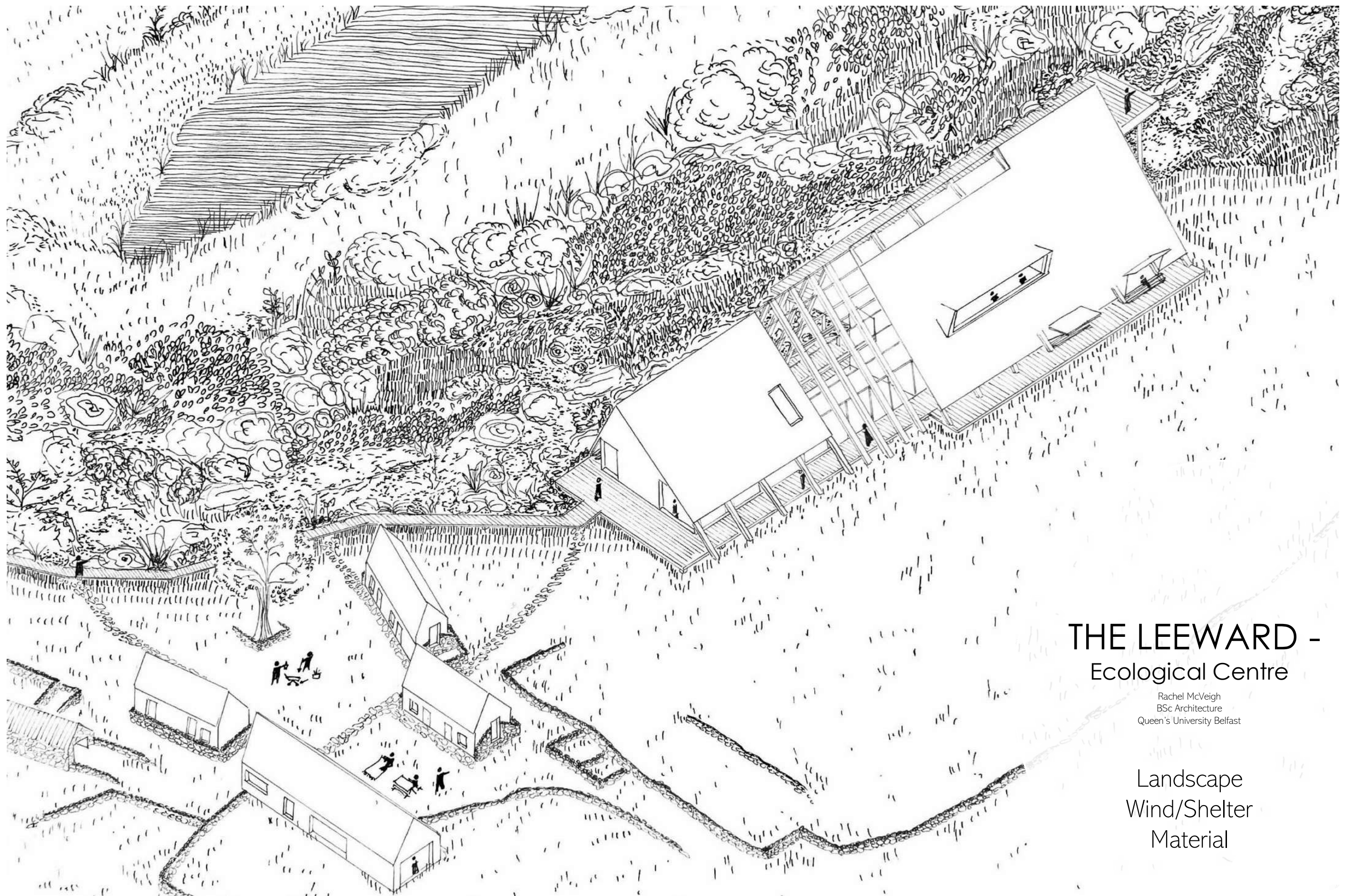
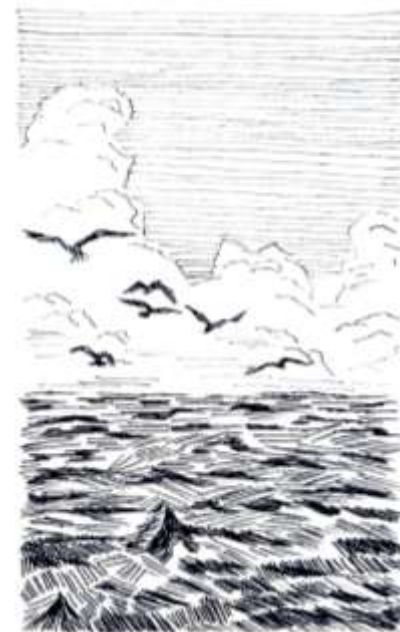




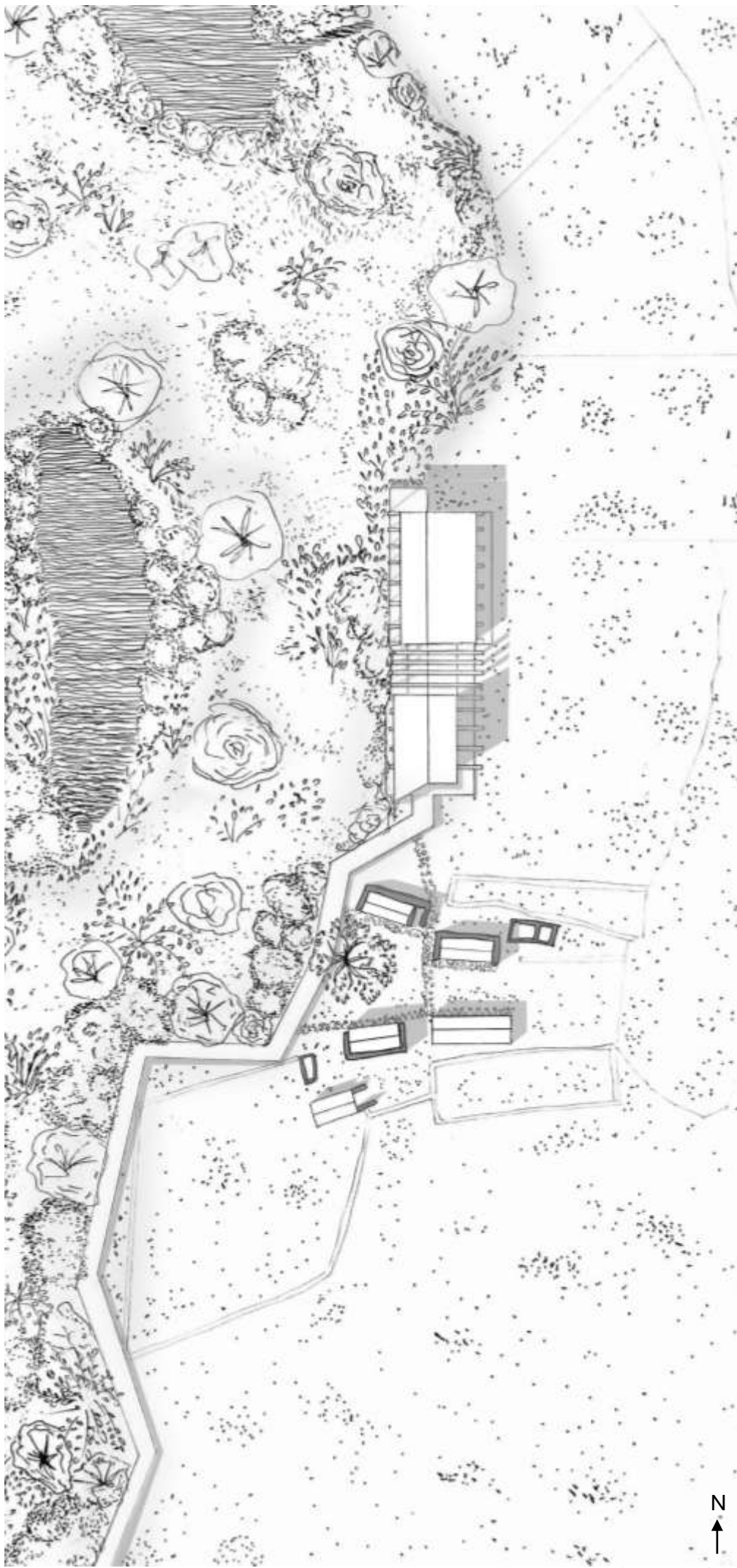
THE LEEWARD - Ecological Centre

Rachel McVeigh
BSc Architecture
Queen's University Belfast

Landscape
Wind/Shelter
Material



Site Sketches



N
↑
SITE PLAN 1:500 @A1



PREHISTORIC ROUNDHOUSE



CLOCHAN



MEDIEVAL COTTAGE



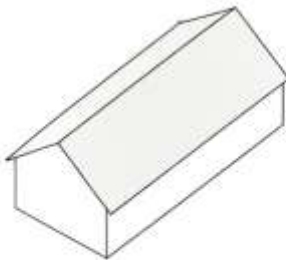
18TH-19THC VERNACULAR COTTAGE



THE LEEWARD

Vernacular Adaption

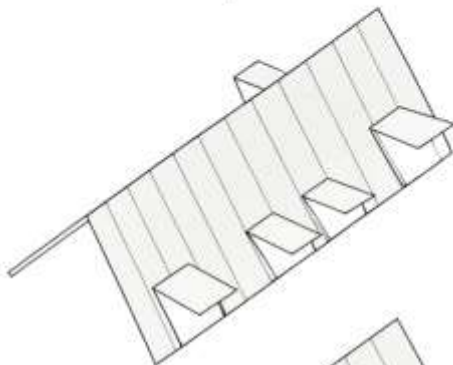
VERNACULAR COTTAGE
Typical pitched roof and gable forms



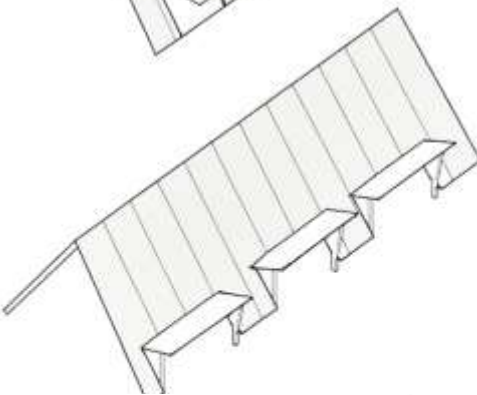
EXTENDED ROOFING
Adaption from the vernacular cottage



TRANSFORMABLE ROOF
Creating openings in the roof that transforms into a space and alters interior conditions

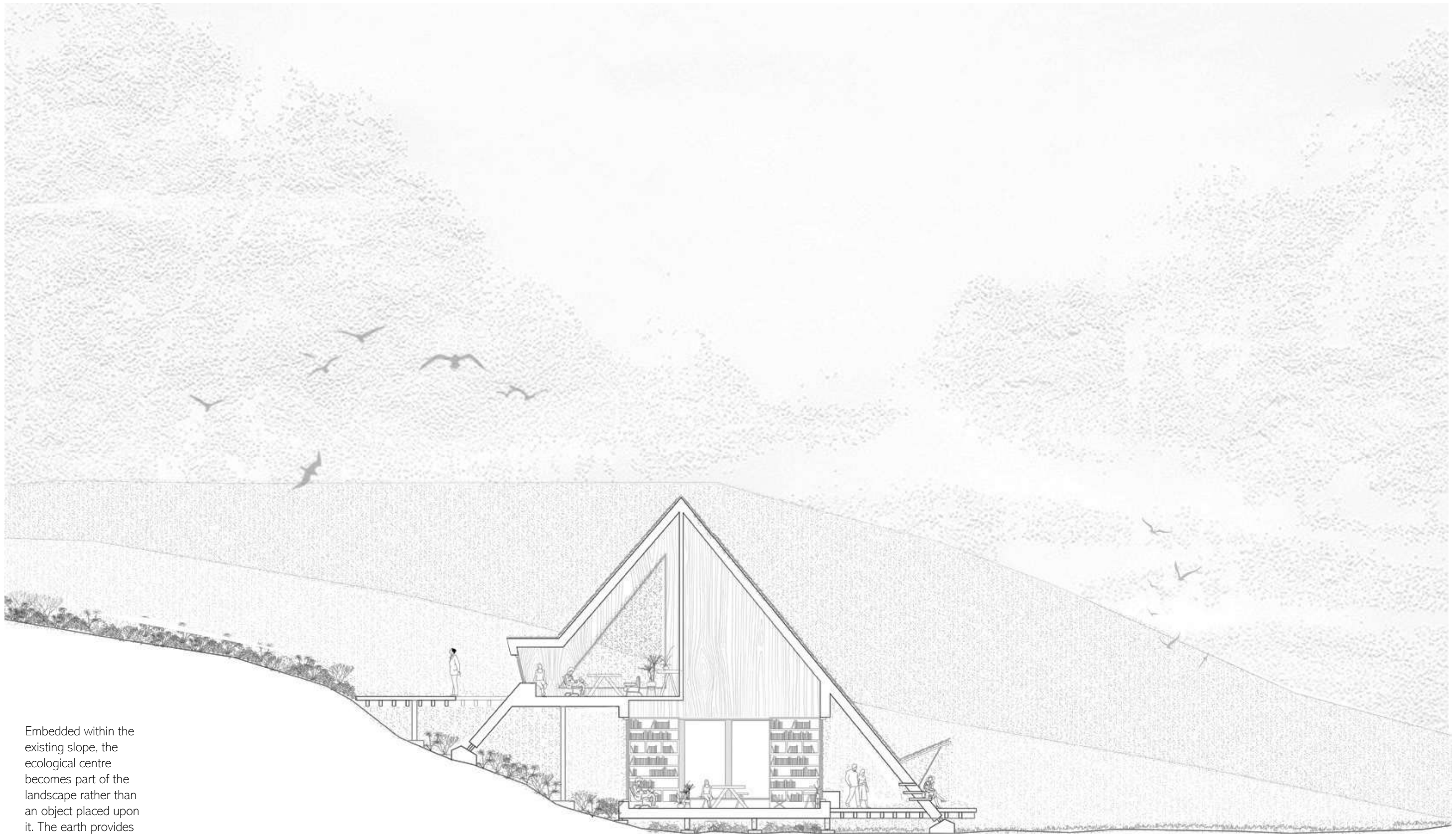


SUSTAINABILITY
Openings allow for more natural ventilation and light to enter interiors on calm days whilst framing views.

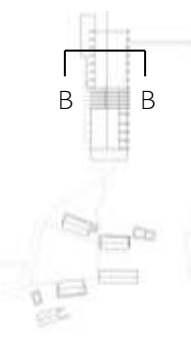


SHELTER
Openings remain closed in harsh conditions to provide shelter and protection from wind





Embedded within the existing slope, the ecological centre becomes part of the landscape rather than an object placed upon it. The earth provides shelter from prevailing south-west winds, while the transformable roof responds to changing weather conditions by regulating light, ventilation and protection. Together, these strategies create a building that works with Rathlin's climate rather than against it.

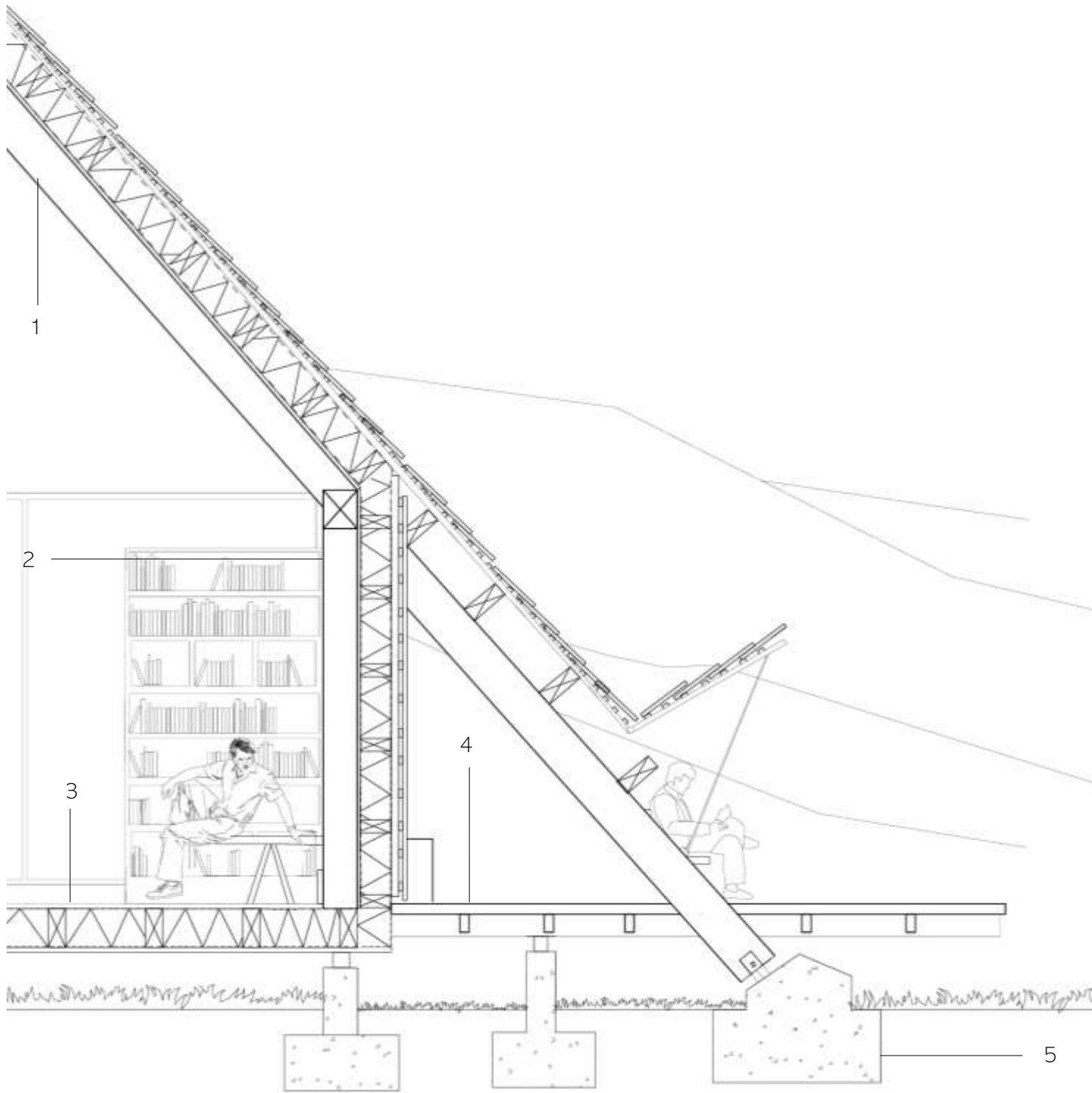


SECTION B 1:100



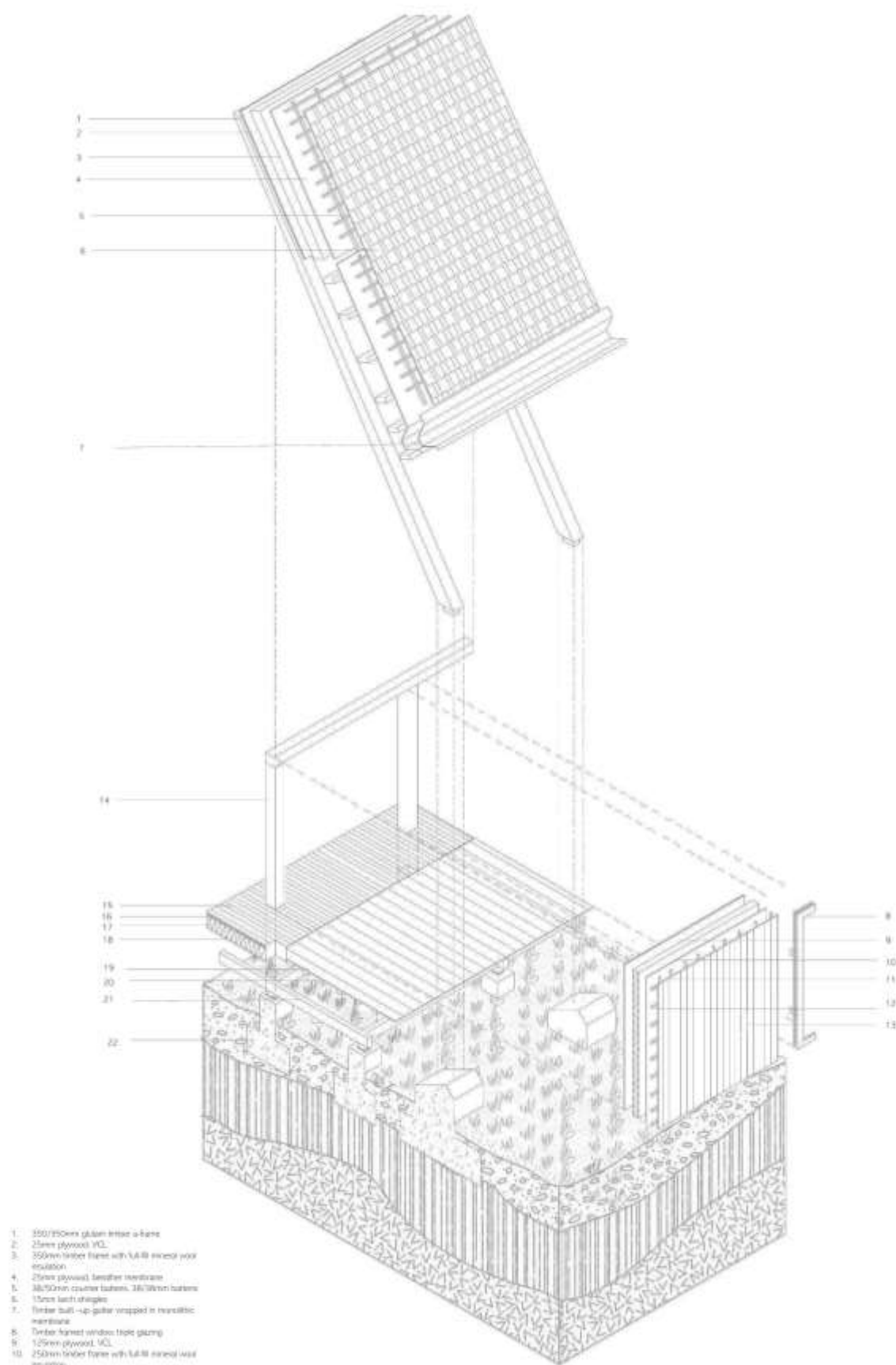
“Doing More with Less”

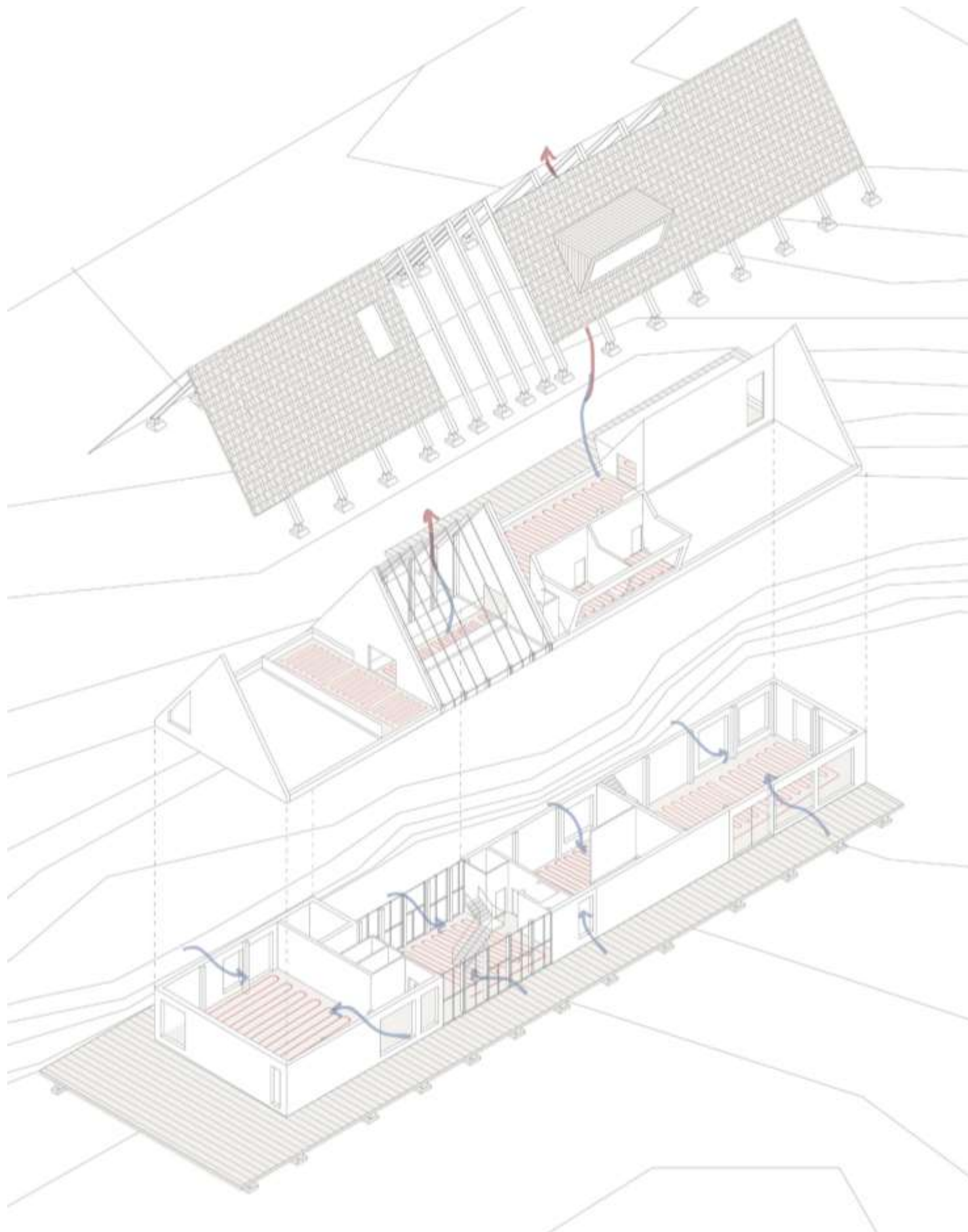
Guided by the principle of “Making More with Less”, the building uses a simple glulam A-frame structure where the construction becomes the architecture itself. A limited palette of timber elements performs multiple functions, including structure, enclosure and environmental control, creating an efficient and low-carbon building system. The extended roof forms a sheltered threshold, blurring the boundary between inside and outside while exposing the timber structure and strengthening the building’s connection to climate and place.



Elevation and Detail Section, 1:50

- 1 350/350mm glulam timber a-frame
25mm plywood, VCL
350mm timber frame with full-fill mineral wool insulation
25mm plywood, breather membrane
38/50mm counter battens, 38/38mm battens
15mm larch shingles
- 2 300/300mm primary timber column
25mm plywood, VCL
250mm timber frame with full-fill mineral wool insulation
25mm plywood, breather membrane
38/50mm counter battens, 38/38mm battens
25/125mm larch cladding
- 3 22/150mm timber floorboards, VCL
60/60mm battens
400mm timber frame with full-fill mineral wool, breather membrane
27mm plywood
- 4 25/120mm timber decking boards
75/150mm joists
Glulam primary beam
- 5 Reinforced concrete pad footing

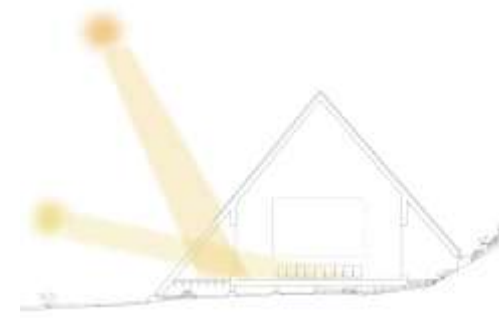




Environmental Strategy

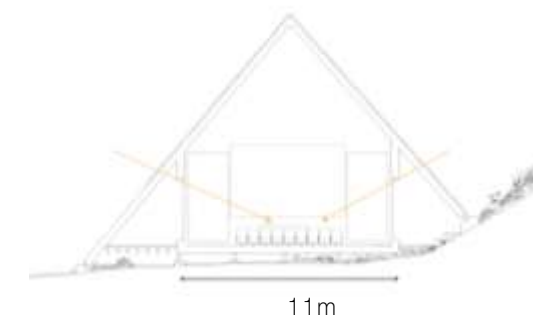
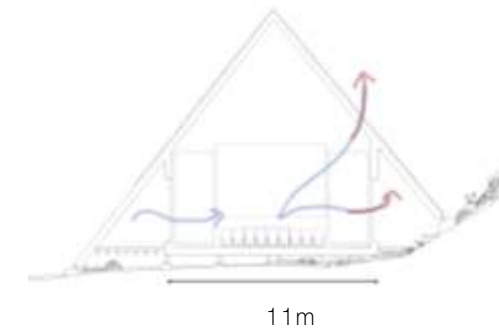
Cooling

Passive design strategies, including dual-aspect openings enabling cross ventilation and stack ventilation in key spaces. Transformable elements allow occupants to regulate solar gain, while extended roof overhangs provide shading.



Ventilation

A mixed-mode ventilation strategy combines natural and mechanical systems – Cross-ventilation, stack ventilation & MVHR

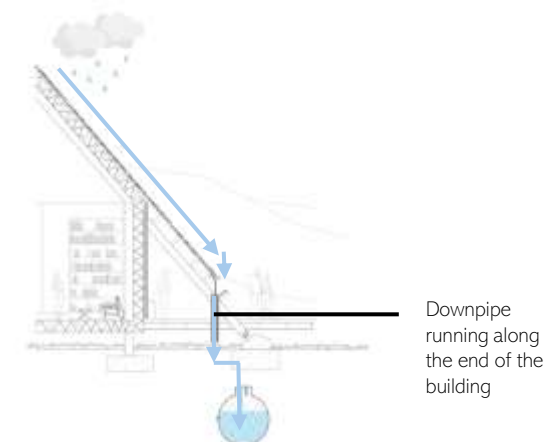


Lighting

The lighting strategy maximises daylight through dual-aspect windows, allowing light to penetrate deep into the plan.

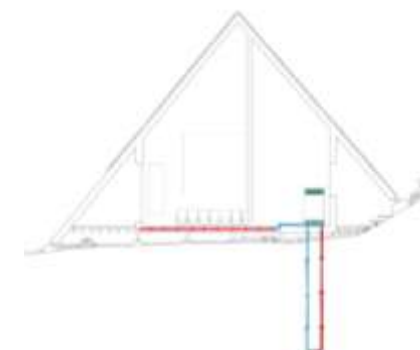
Rainwater Management

Rainwater is collected via gutters along the roof edge and directed through downpipes to a rainwater harvesting system.



Heating

Space heating is provided by a ground source heat pump, distributing low-temperature heat through underfloor heating.



Landscape Sensitivity — Minimise Disturbance to Rathlin’s Sensitive Ecology



SECTION 1:100



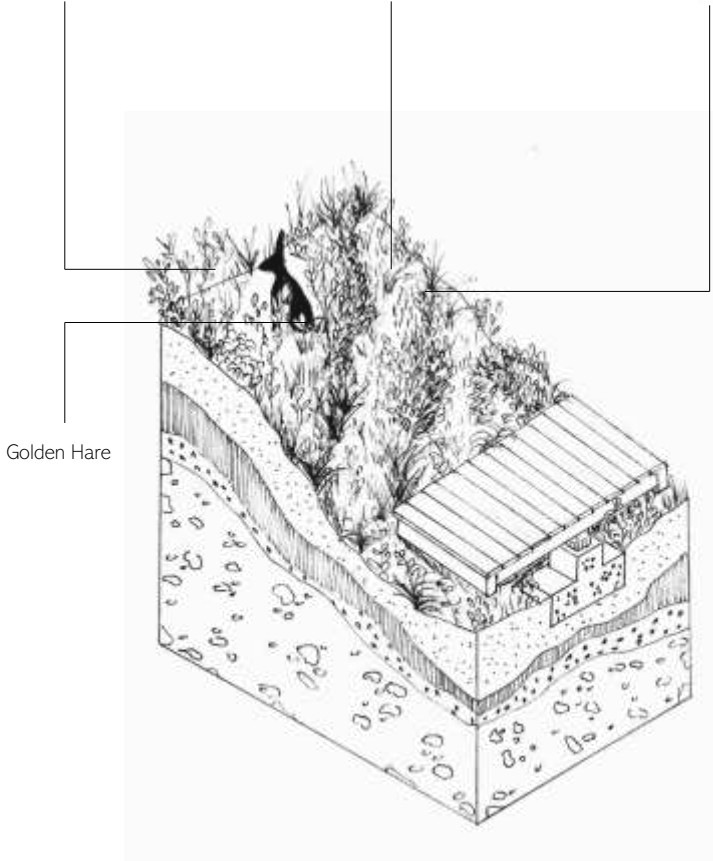
Round Leaved Sundew



Pyramidal Bugie

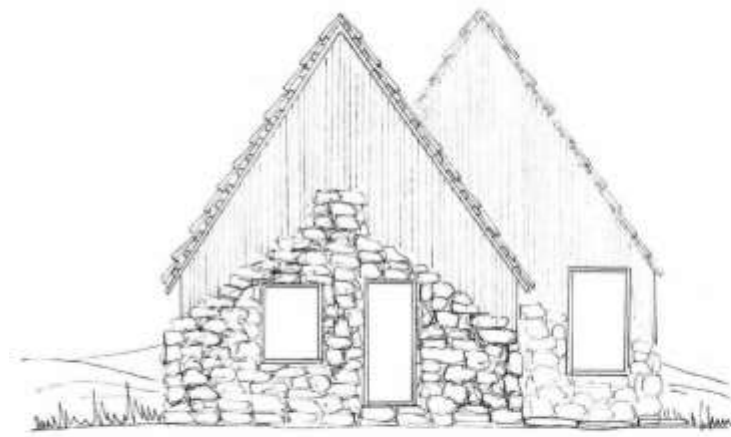


Marsh Marigold

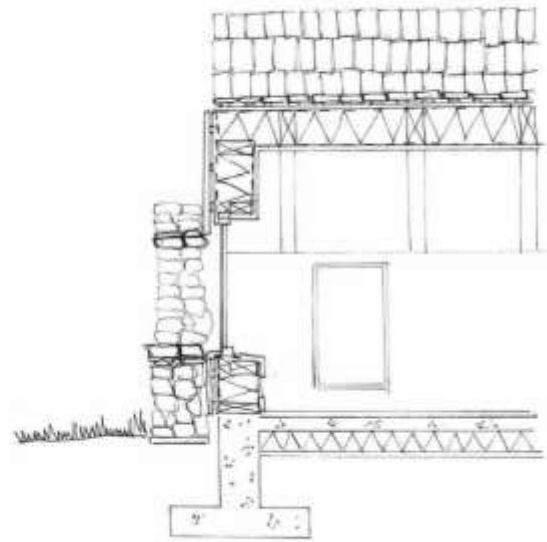


“Touch the earth lightly” – Glenn Murcutt

Re-use of Ruins — Integration rather than Replacing



FACADE ELEVATION 1:50



DETAIL SECTION 1:50



SECTION 1:100



Viewing Deck



Lecture Hall

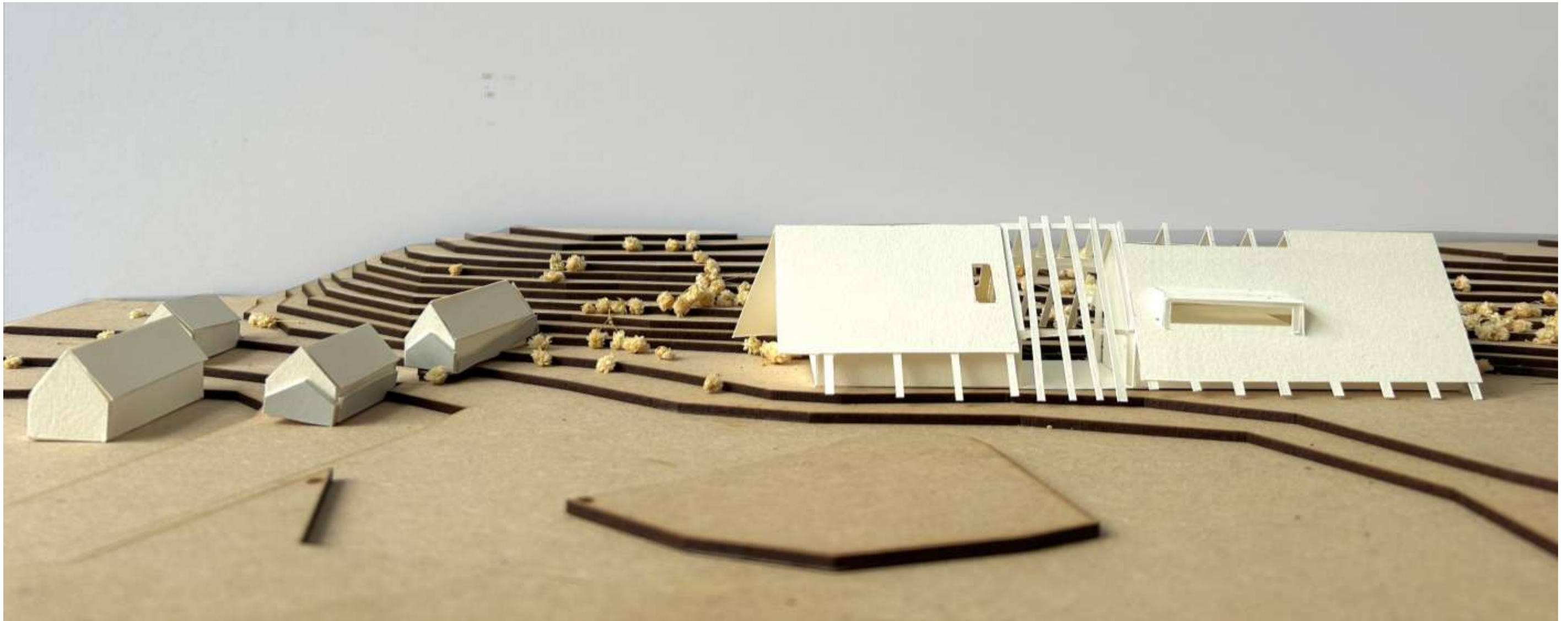


Living Area



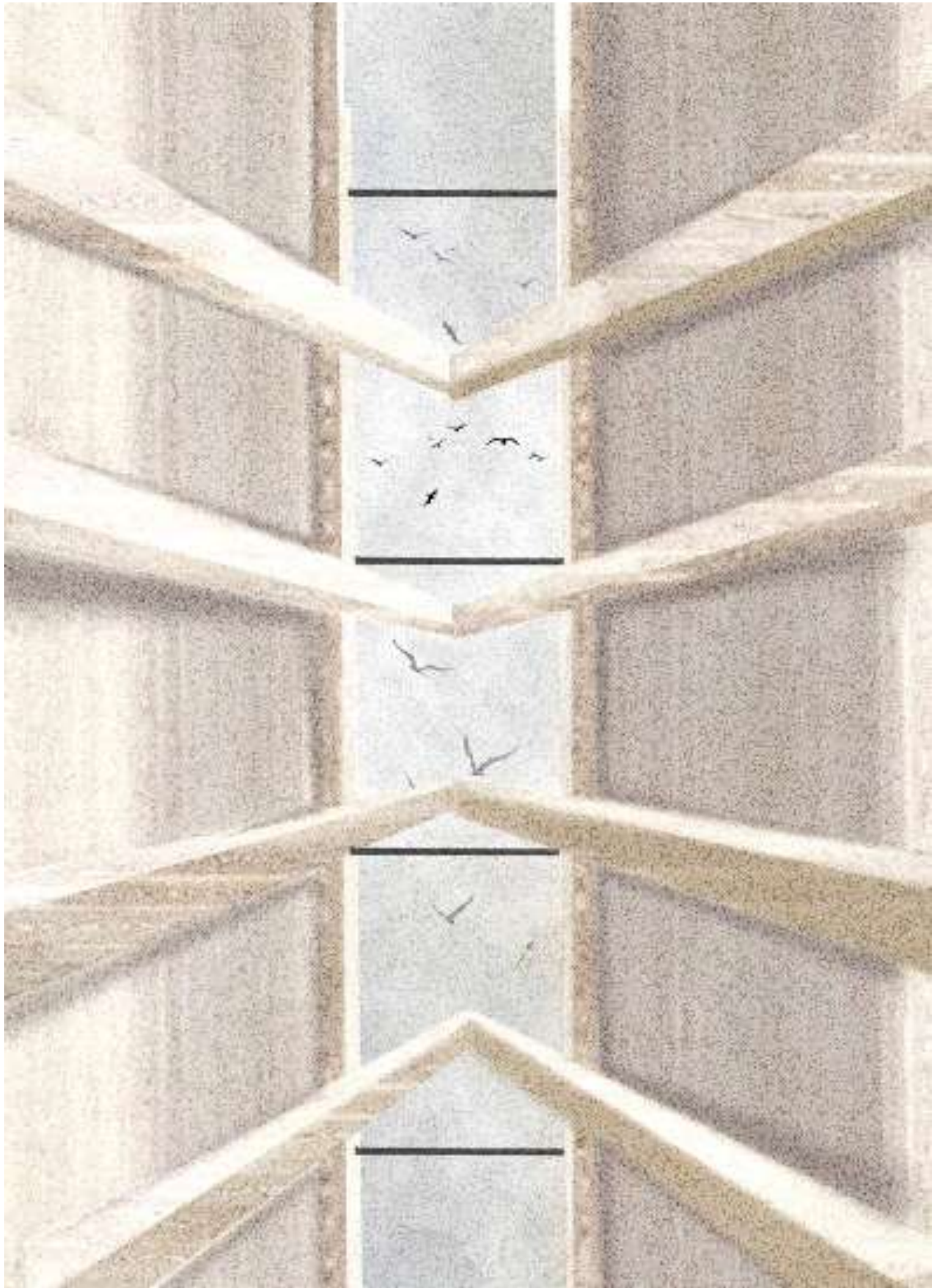
Observation, Research & Retreat

The building is designed around observation, research and retreat, with carefully framed views towards the landscape and East Lighthouse. Exposed timber structure and natural light shape the experience of the lecture hall, while quieter accommodation spaces provide opportunities for reflection. Together, the ecological centre and accommodation form a cohesive composition embedded within the landscape.



Embedding within the Landscape

1:250 Massing Model



The Leeward

Shelter & Connection

Shelter is often understood as separation from nature. The Leeward proposes the opposite: a place of refuge that allows us to connect more deeply with the landscape, its rhythms, and the life it sustains.