

BIOBASED HOUSES

ESJ collab



DESIGNED IN PORTISHEAD UK ©

ESJ COLLAB

A collaborative studio designing regenerative, bio-sourced architecture that moves beyond compliance, creating healthier, uplifting and more joyful places.

OUR MISSION

The way we build needs to change. Our current systems are wasteful, stressful, and often out of touch with the human. By combining intelligent design, local insight, and an understanding of place, we turn sustainability requirements into opportunities. What does it mean to build sustainably? To us, this means circular and regenerative materials, collaboration, and a systems-agnostic approach. Our goal is to ensure the vision, ethos, and environmental, social, and economic ambitions are fully realised. We operate ahead of the curve - delivering projects that move beyond compliance to long-term value, performance, and resilience. We have pan-European experience with building methods and materials, an extensive local and regional network of collaborators, and an in-depth understanding of current and emerging planning policy (FHS). We take the stress away from shifting regulatory landscapes, volatile labour and skills market, and unstable material supply chains. Our process is not based on tick-boxes but on inclusive, holistic systems that create healthier, uplifting, and more joyful places. Where others see obstacles, we see possibilities – What do you see?

- Team -



E | **Éric**

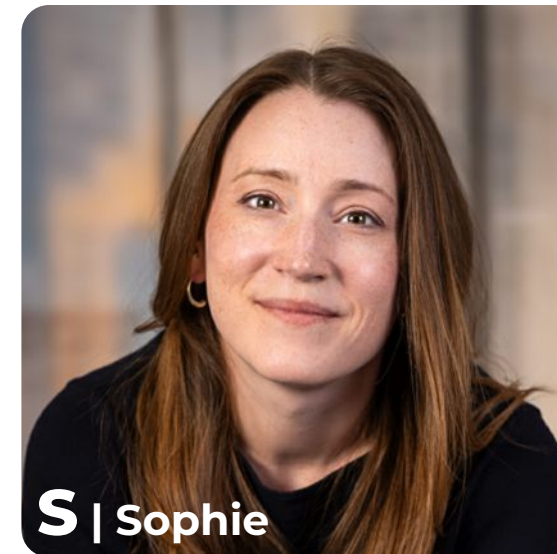
French and Canadian, architect, hands-on designer. Eric brings a people-centred approach to every project, blending method, creativity, and craft. Over 25 years of experience in architecture including bio-sourced projects.

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S | **Sophie**

Architect with roots in spatial planning and urban design. Sophie focuses on creating places that respond to their setting and bring lasting value and enjoyment to those who use them.

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J | **Jenny**

Convenor and place producer supporting circular and regenerative practice. Jenny develops strategies, toolkits, and training for practical implementation - on site and across supply chains

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GENERAL CONCEPT

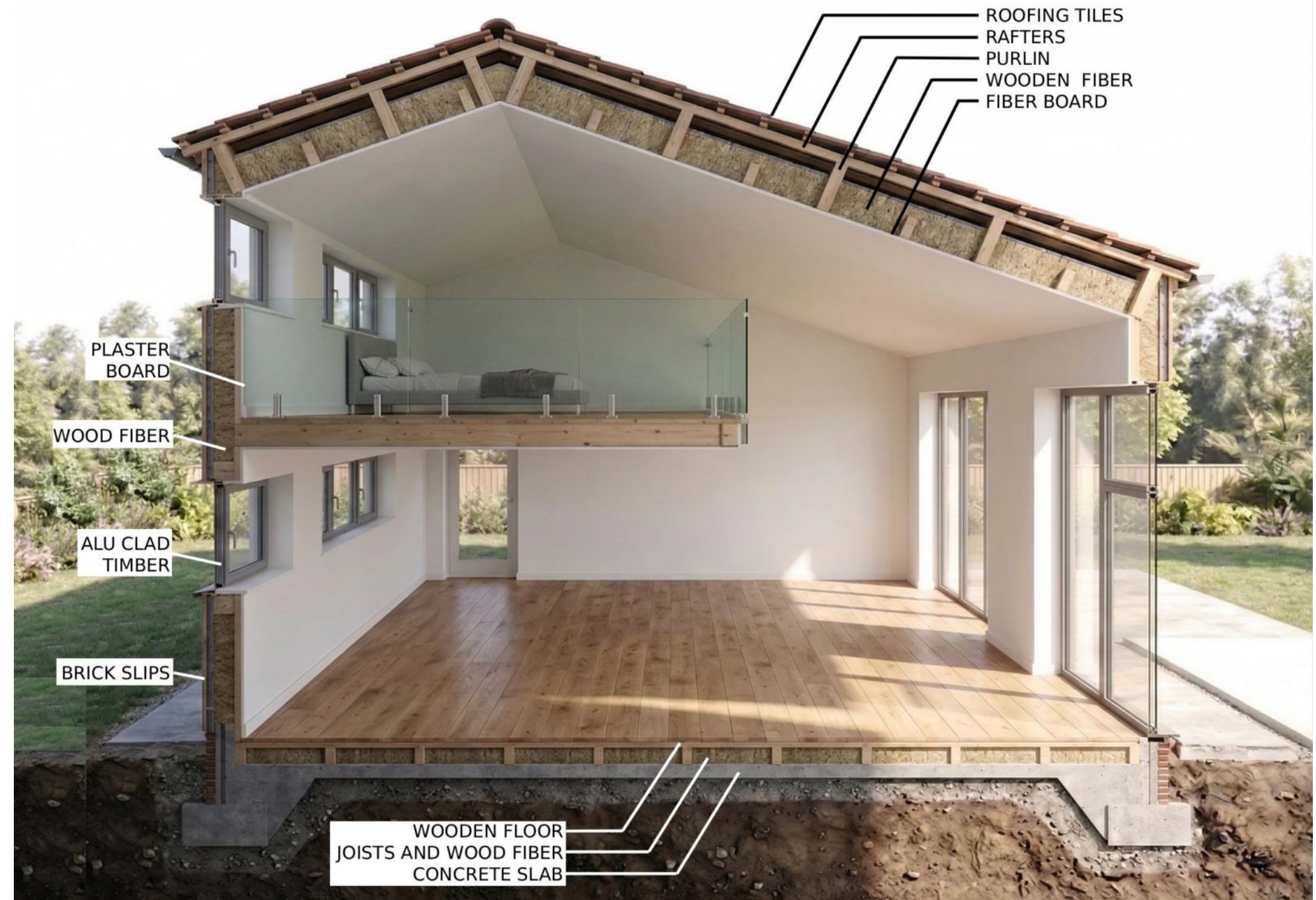
a place to flourish

This project responds to the housing sector by prioritising wellbeing, creating not just a place to live, but a place to flourish.

- The design is developed three-dimensionally so that volume, light and spatial experience define a natural and intimate living environments.
- With health as a key driver, we prioritise natural materials and finishes to ensure excellent indoor air quality, reduce allergens, and support comfortable day-to-day living.
- We look to our bioregion first when considering and sourcing materials – we seek to invest in home grown materials and local skills and economies to broaden our positive impact.
- Orientation is carefully considered, optimising insulation and solar gain to reduce energy demand, reliance on fossil fuels, and running costs.
- The project takes a responsible approach to design, prioritising quality, fairness, and long-term value for both occupants and the wider community.
- We seek to support clients and workforce to confidently deliver projects that achieve the Future Homes Standard - affordably, practically and according to our regenerative design values.

MATERIAL

- Concrete foundations or tires and compact gravel foundations: low carbon, low impact wherever possible.
- Stud framing (sourcing in UK such as Stika spruce) with possibility of offsite construction.
- External envelope clad with brick slips or wood siding
- Alu-clad Timber windows
- Wooden floor



INSULATION

- Thick straw / hemp / wood wool insulation, that achieves the new Future Homes Standard

HEATING & VENTILATION

- Air source heat pump
- Heat recovering ventilation (option)

MODEL 1

1 bedroom – 2 persons

FEATURES

This compact, well-proportioned accommodation provides shared living spaces at ground floor level, with a mezzanine offering the possibility of a private bedroom.

A double-height void above the living area creates generous ceiling height, enhances natural light, and allows for a large window carefully oriented to the sun's path and the context, with sunshades if needed.

The kitchen has independent access to the garden via a glazed door.

The bathroom is neatly integrated beneath the staircase optimising space while keeping services simple.

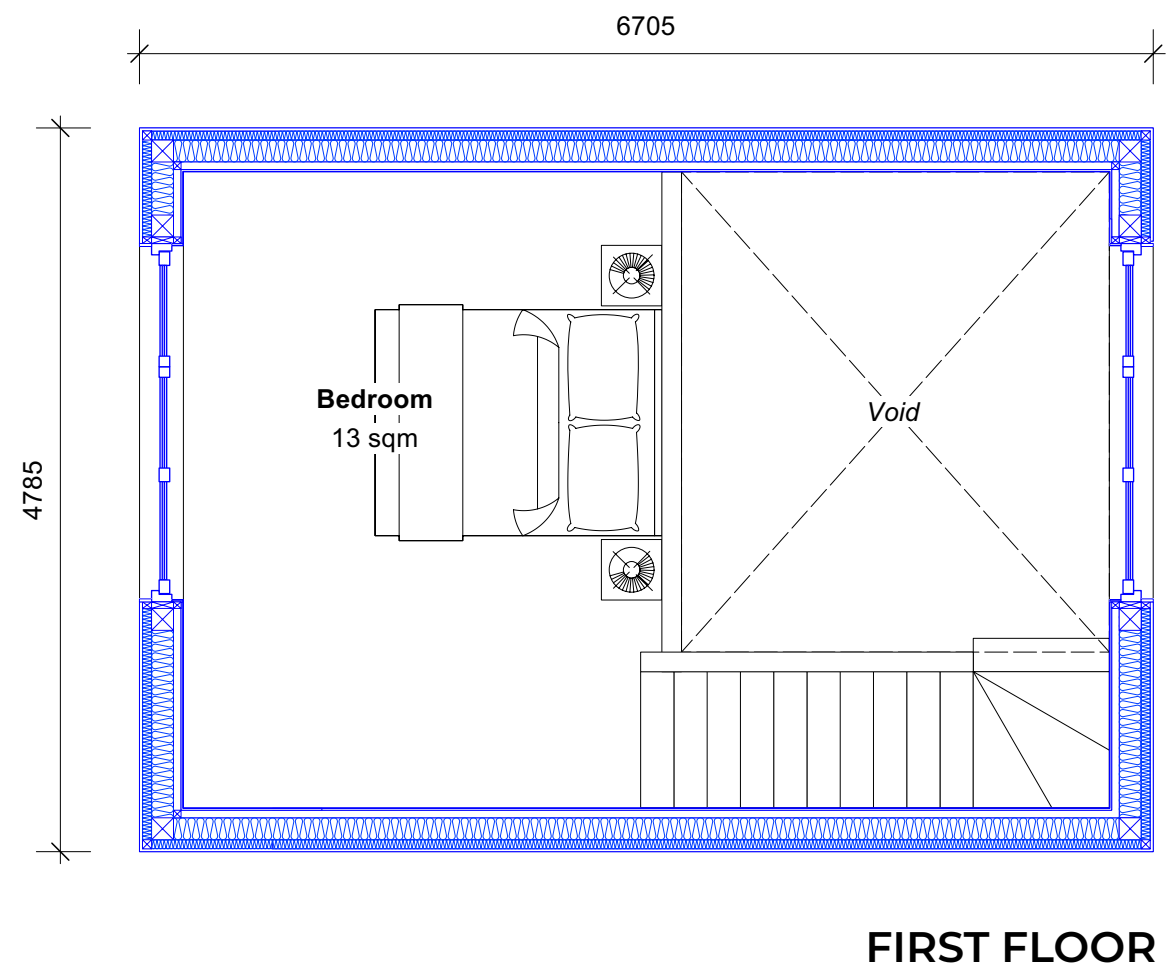
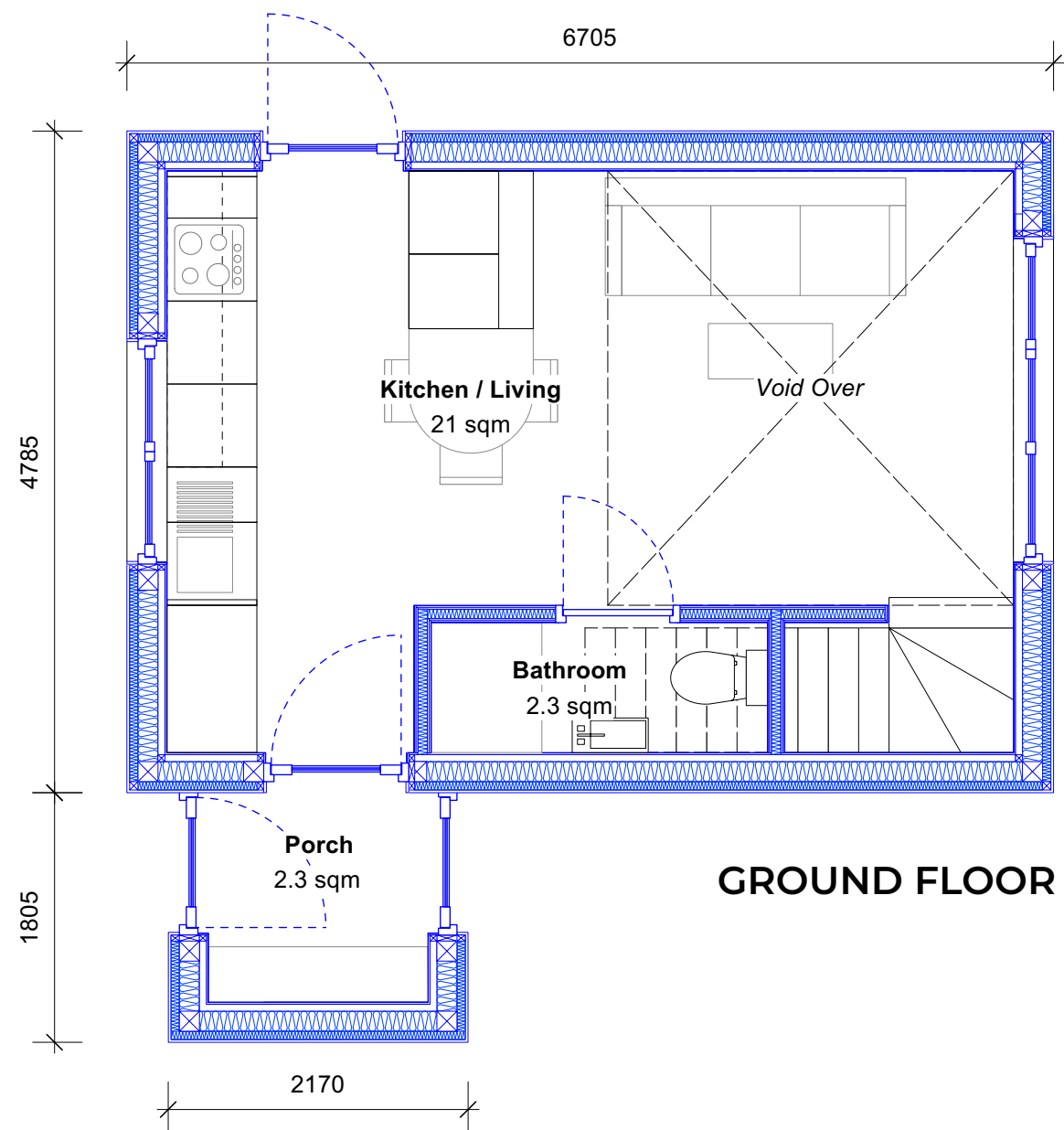
A range of configurations is possible:

- A single-level layout without a mezzanine, designed for accessibility
- Flexible positioning of the main entrance, either before or after the staircase, to balance street access and solar orientation
- A passive house approach on a well-oriented plot



MODEL 1

1 bedroom – 2 persons

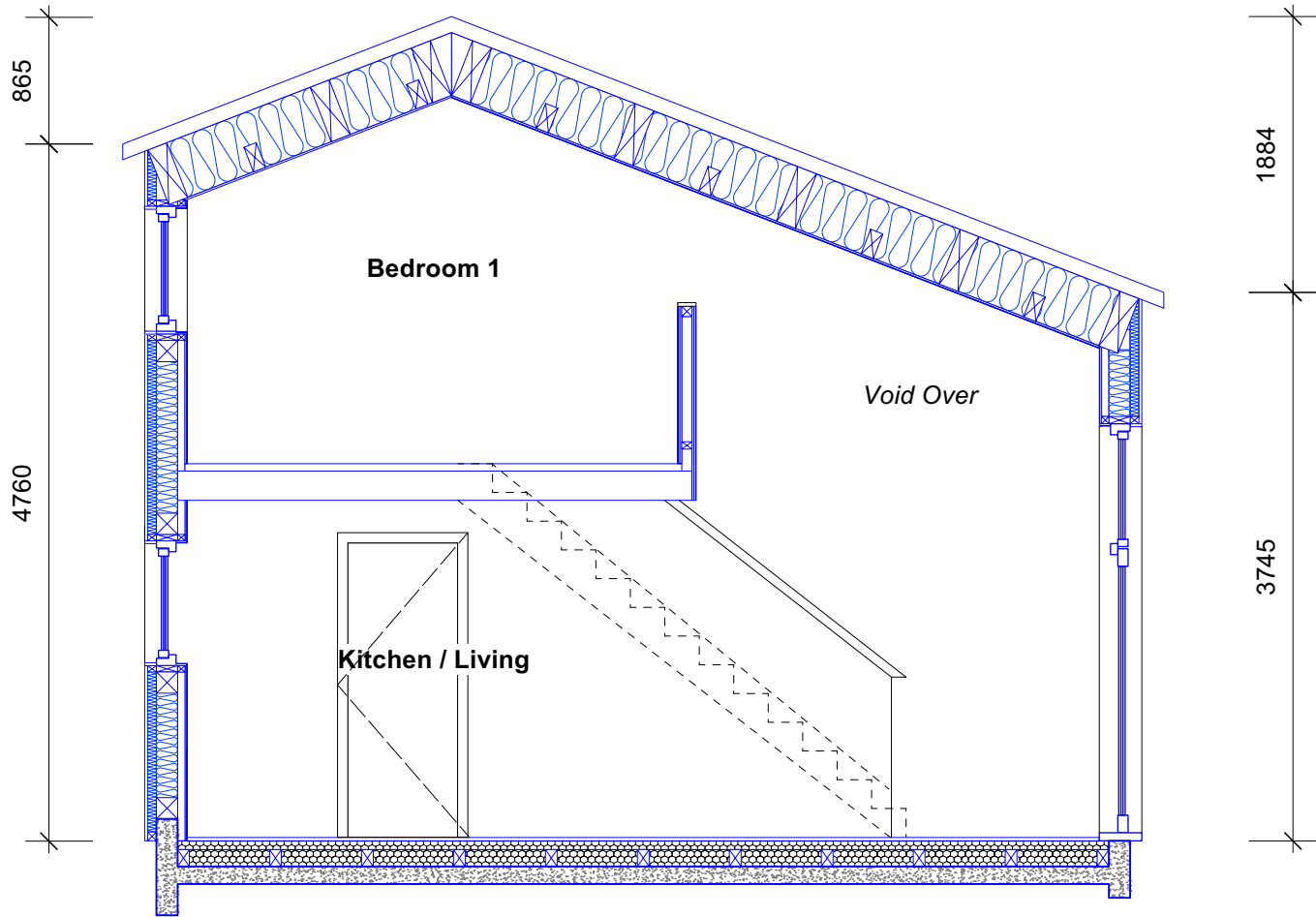


MODEL 1

1 bedroom – 2 persons

The section accommodates generous levels of natural insulation and creates an elegant double-height space above the living area.

Depending on the context, the external envelope can be clad in brick slips or timber weatherboard.



MODEL 2

3 bedrooms – 5 persons

FEATURES

A flexible, well-organised house designed to adapt over time (see page 10). The layout accommodates two bathrooms, regardless of configuration.

Ground floor

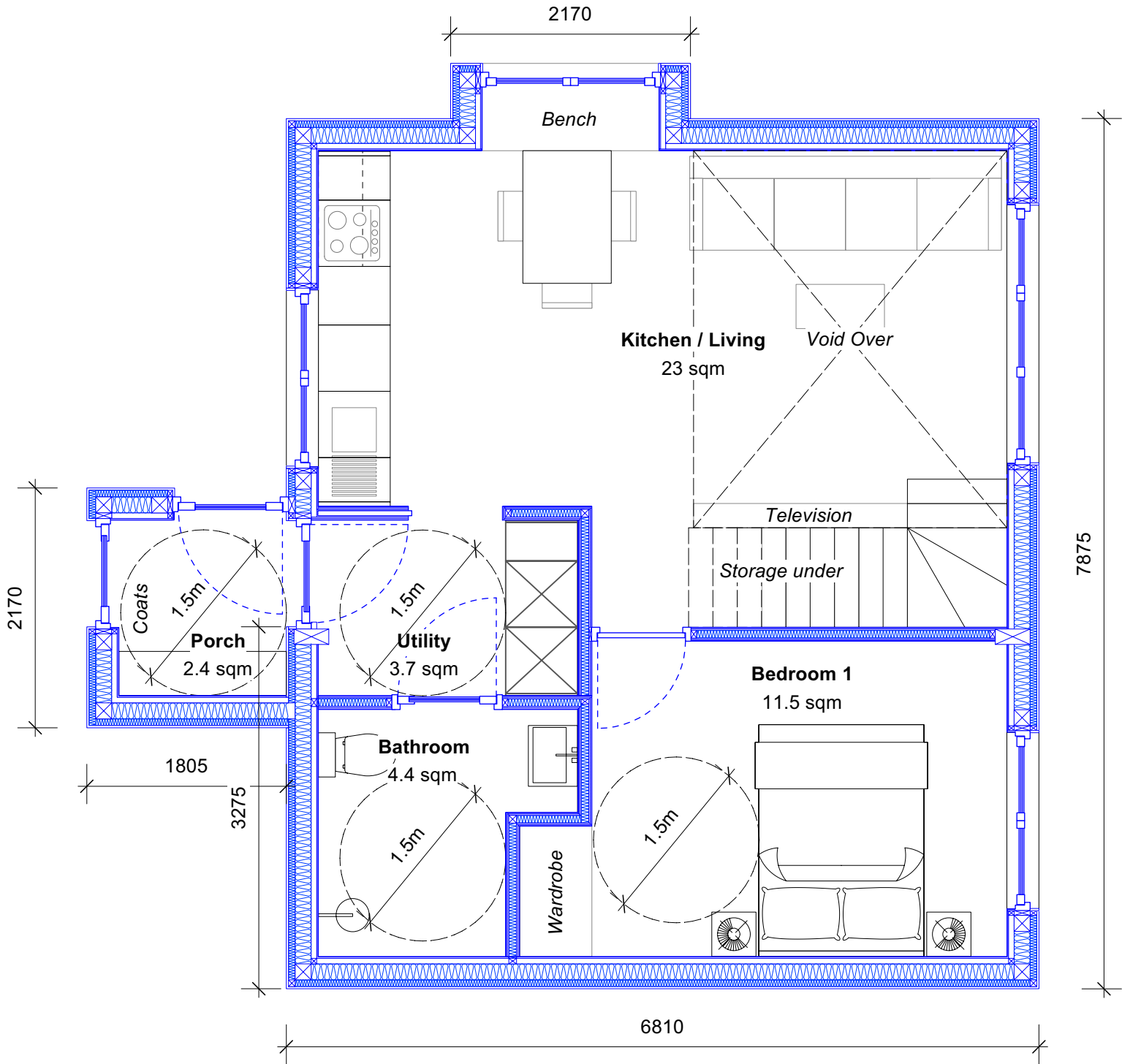
A functional, light-filled space with an open-plan kitchen leading into the living area. A bedroom with direct access to the garden. A double-height void above the living space creates generous ceiling height, enhances natural light, and allows for a large window oriented to the sun's path. This level is fully accessible for people with reduced mobility.

First floor

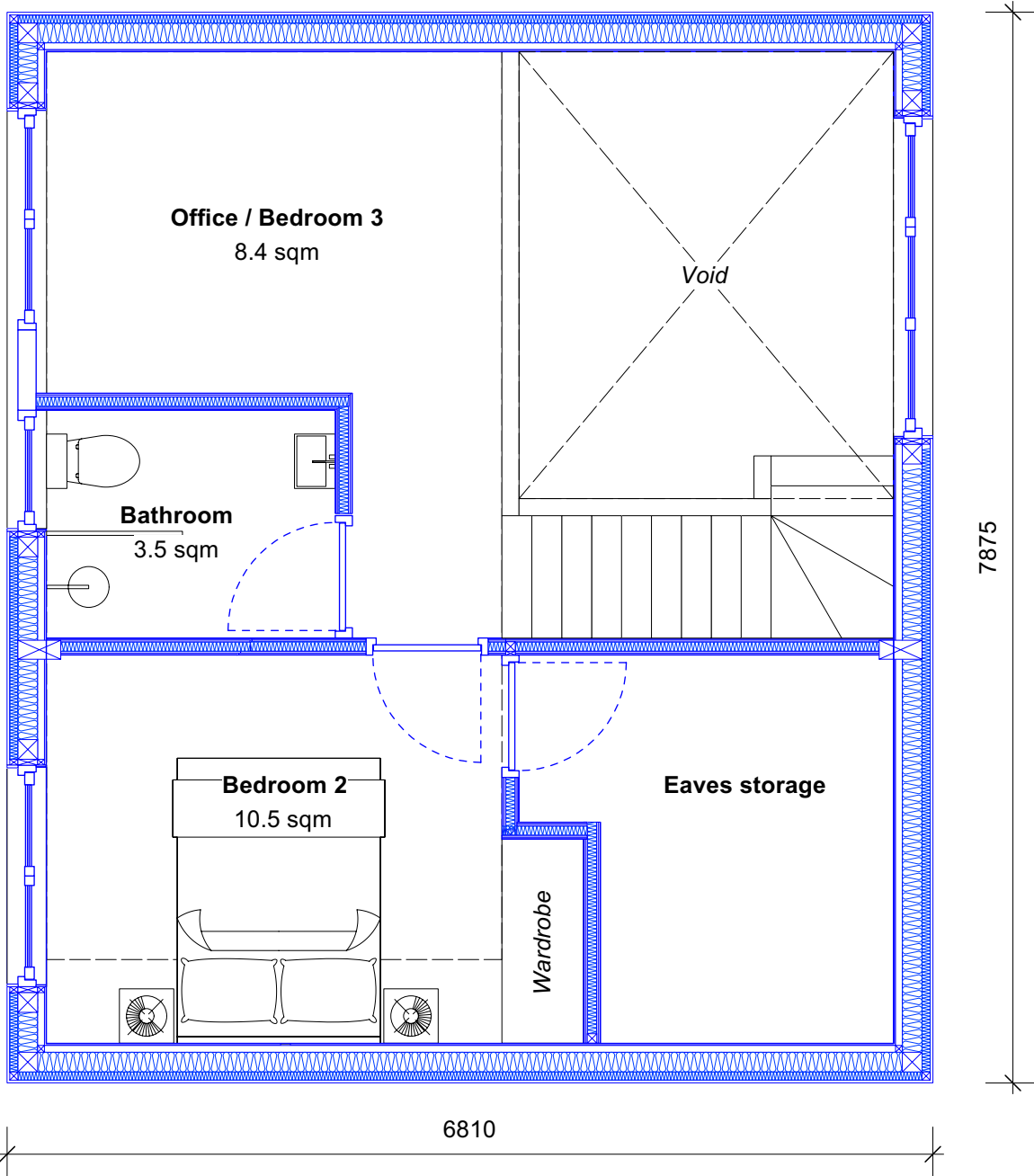
A compact arrangement including a principal bedroom and a mezzanine suitable for a study or additional bedroom. An independent bathroom. Potential for further development within the roof space.



MODEL 2
3 bedrooms – 5 persons



GROUND FLOOR



FIRST FLOOR





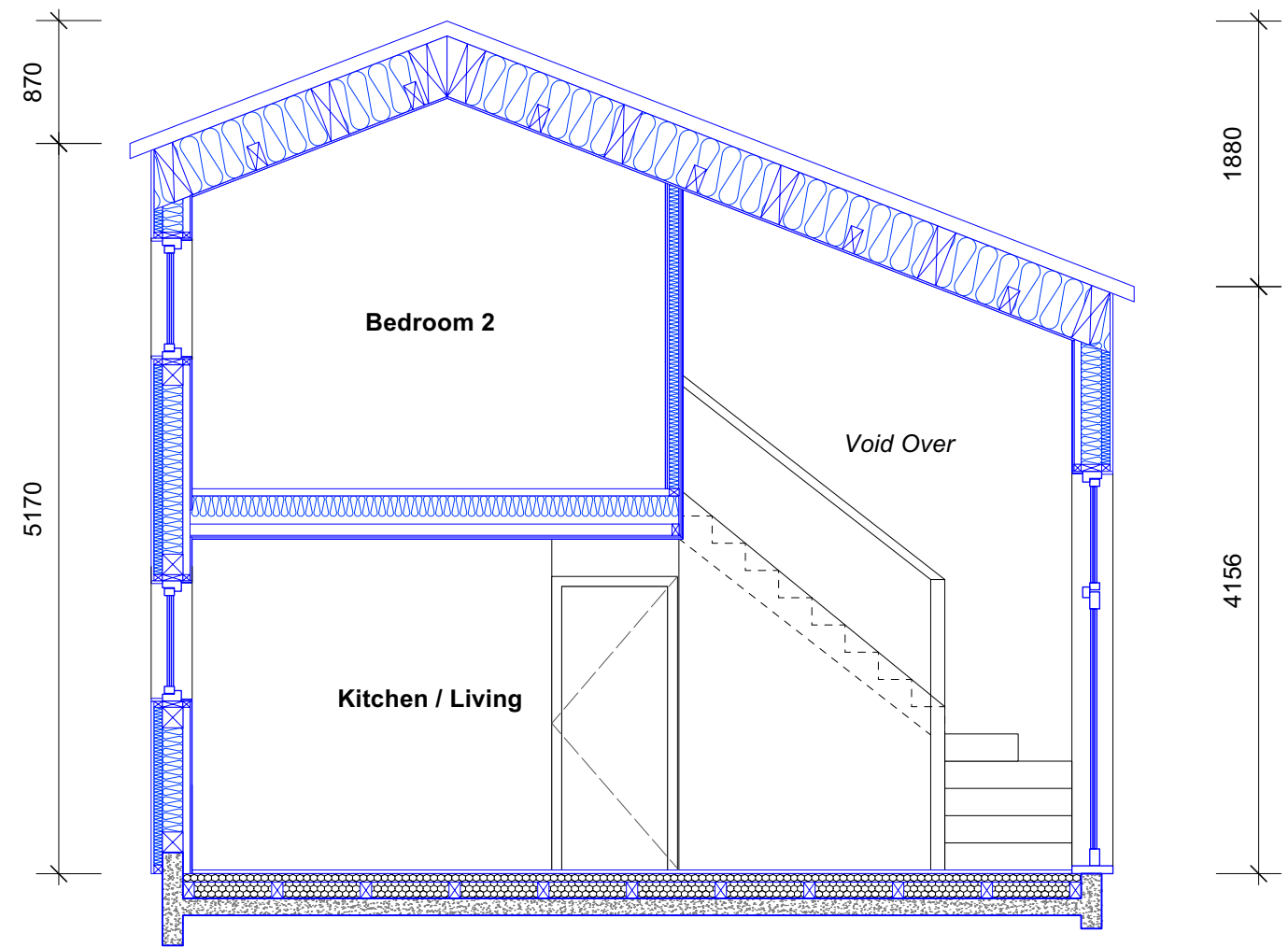
MODEL 2

3 bedrooms – 5 persons

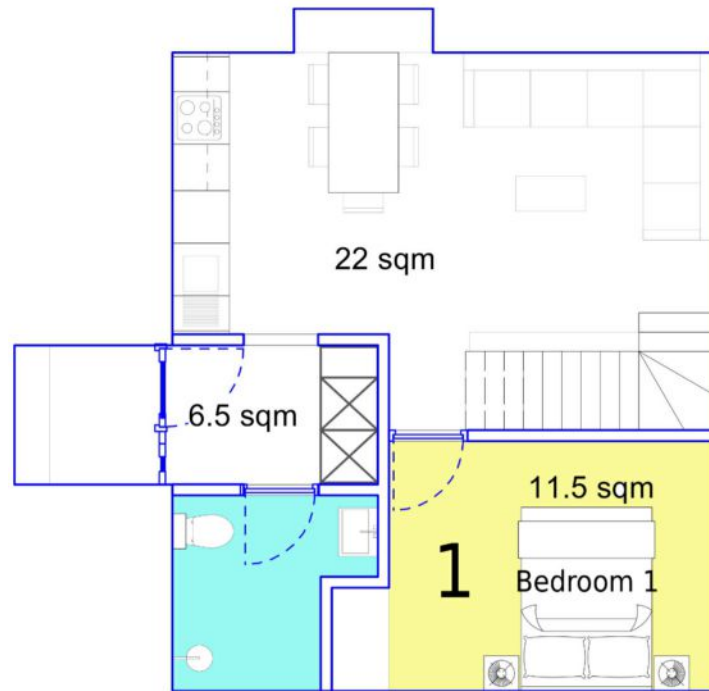
The section accommodates generous levels of natural insulation and creates an elegant double-height space above the living area.

Depending on the context, the external envelope can be clad in brick slips or timber weatherboard.

This model can be adapted for semi-detached housing, with garages positioned between adjoining units.



GROUND FLOOR



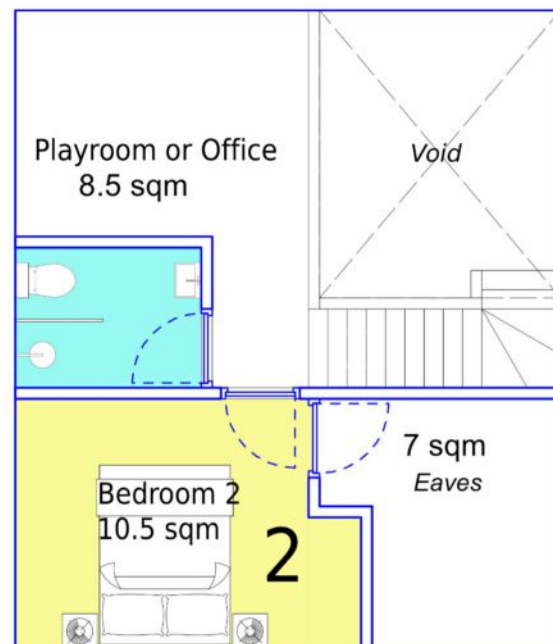
Fully wheelchair accessible + external porch and window seat

EVOLUTION: ALTERNATIVE SCHEMATICS

The design is built upon a versatile, single-framework basis, providing numerous possibilities for the first floor—whether enlarging existing rooms or creating additional bedrooms.

- **The Core Layout:** The standard first-floor plan comprises one bedroom and an office/playroom situated on a mezzanine, alongside a family bathroom.
- **Adaptable Spaces:** A partition can be installed around the mezzanine to create an entirely new bedroom.
- **Expanding the Footprint:** The eaves can be utilised to extend the floor area of the first-floor bedrooms.
- **Future Growth:** As a final stage of evolution, the long-side roof can be raised or increased with a large dormer to accommodate a further additional 4th bedroom.

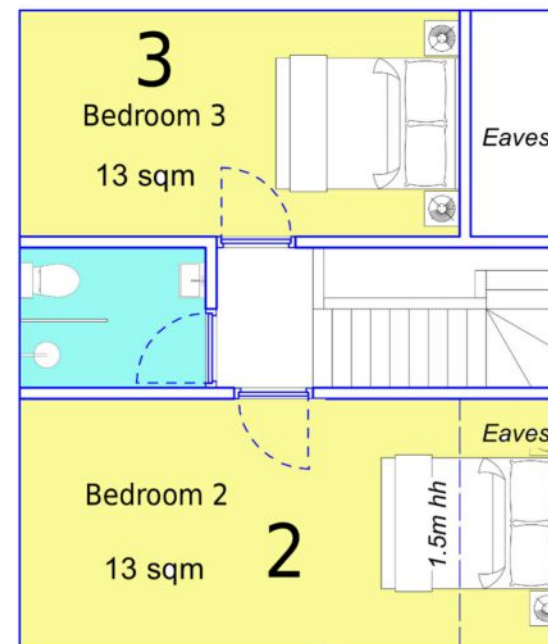
FIRST FLOOR OPTION 1



Low level front sloping roof
As shown in section

70 sqm
2bed 4ppl
NSS = 79sqm

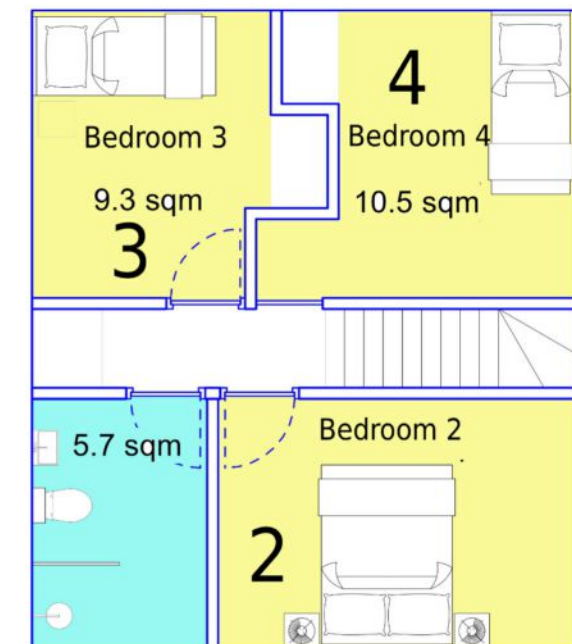
FIRST FLOOR OPTION 2



Levels as per section
Options shown to make use of eaves
(below 1.5m head height) and create
internal partitions to further subdivide
the space

87 sqm
3bed 4-6ppl
NSS = 84 - 102sqm

FIRST FLOOR OPTION 3



Alternative higher front roof to allow for
regularised bedroom heights
throughout.

90 sqm
4bed 5ppl
NSS = 106sqm

PREFABRICATED CONSTRUCTION

Timber stud framing enables a prefabricated approach

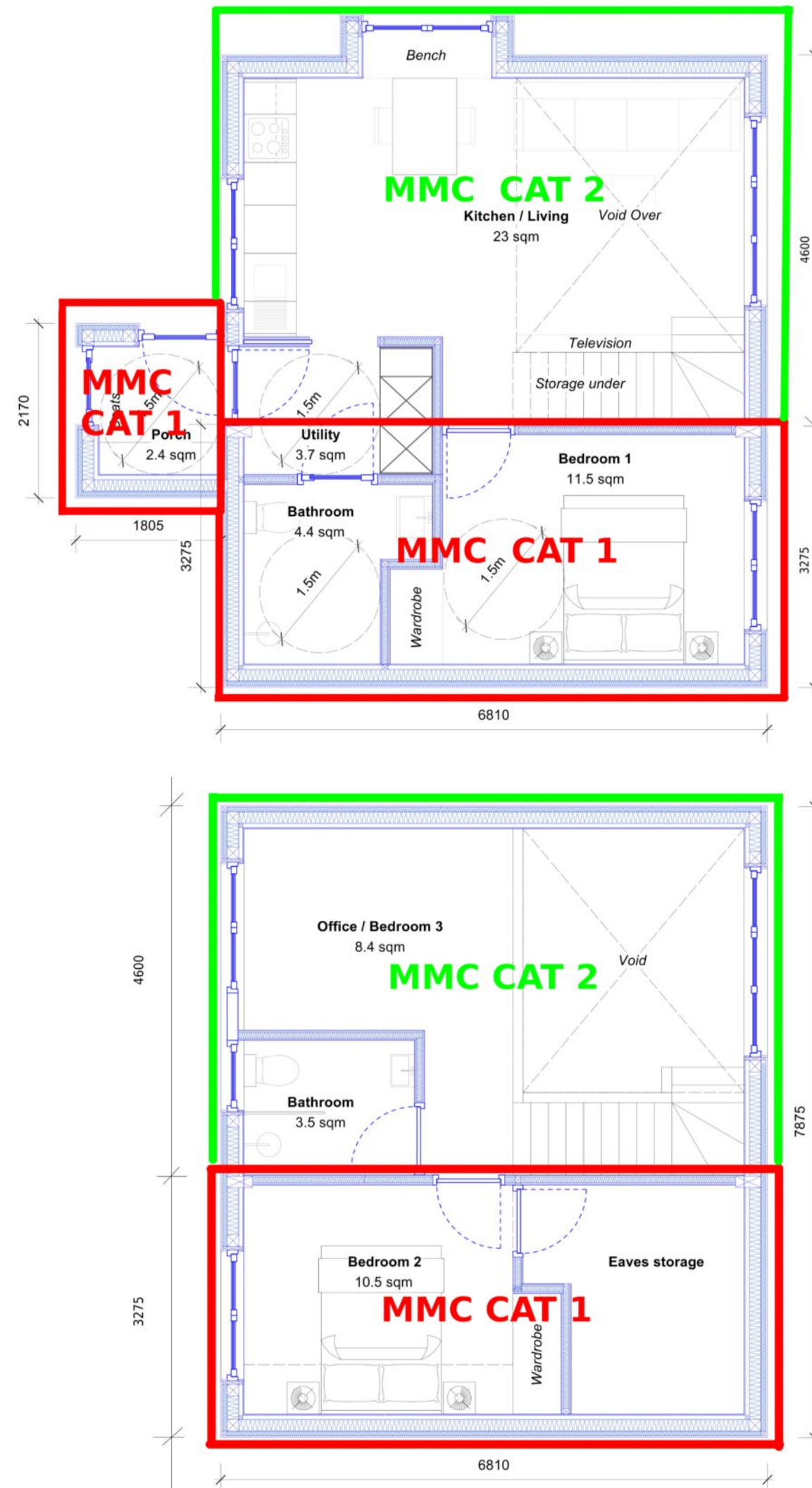
The models have been designed to be largely constructed off site, allowing for improved working conditions, faster delivery on site, and reduced overall costs.

In line with Modern Methods of Construction (MMC), the designs can be delivered using either:

- Category 1 : volumetric construction, where fully finished modules are manufactured off site and transported to site, and/or
- Category 2 : panelised systems, where prefabricated elements are produced off site and assembled on site.

For Model 2 (the family house type), the building can be divided into two main components:

- A volumetric module comprising Bedroom 1 and the bathroom at ground floor level, with Bedroom 2 and the eaves space above. This module measures 3.28m in width and 6.81m in length, allowing it to be transported by lorry.
- Prefabricated panel elements forming the kitchen, living area, and mezzanine office space.



BUDGET DEVELOPMENT

A HOLISTIC AND TRANSPARENT APPROACH

Our approach is holistic, grounded in build quality and fair, considered pricing. Our role is to ensure that every stage of construction aligns with these principles.

We take into account project stewardship, market conditions, project scale, programme, and contractor availability from the outset.

Costs are developed transparently, in collaboration with the client. We establish an initial budget framework early on, aligned with key project milestones, so that expectations are clear from the beginning.

While the internal space standards sit slightly below current government guidance, this is balanced by an efficient layout and the potential to extend the first floor, as outlined on page 10. This approach reduces overall building volume, allowing for improved quality across all stages of construction.

At the outset, we define an overall financial envelope to guide the project. This creates a clear framework within which design decisions can be tested and adjusted in real time. A case study is included to illustrate this approach and support clients in shaping the right project for their needs.