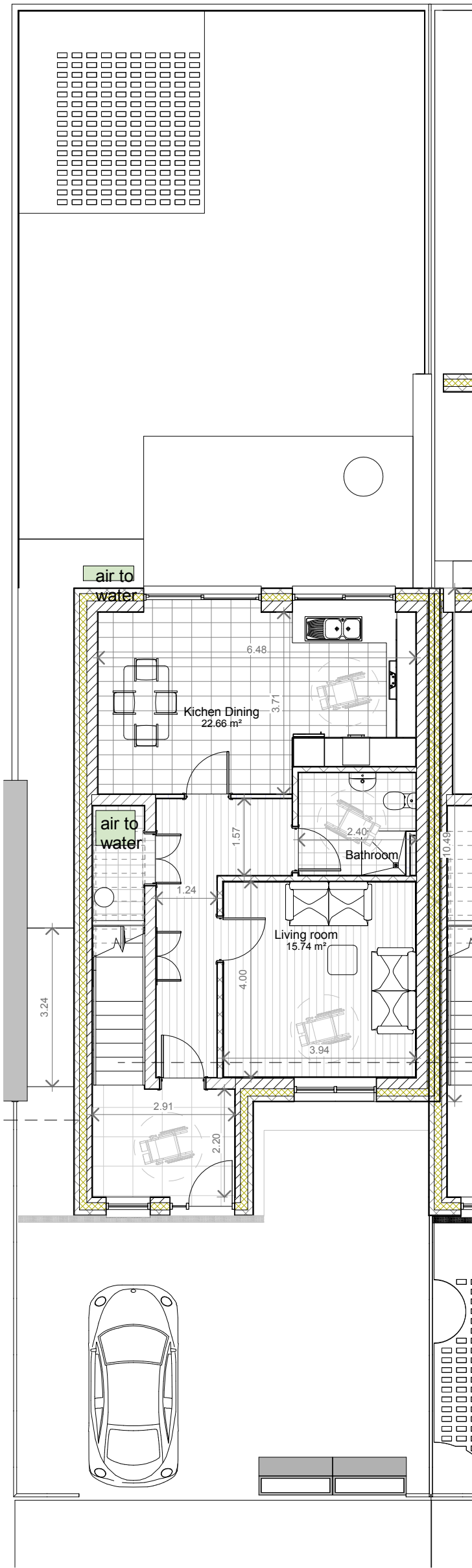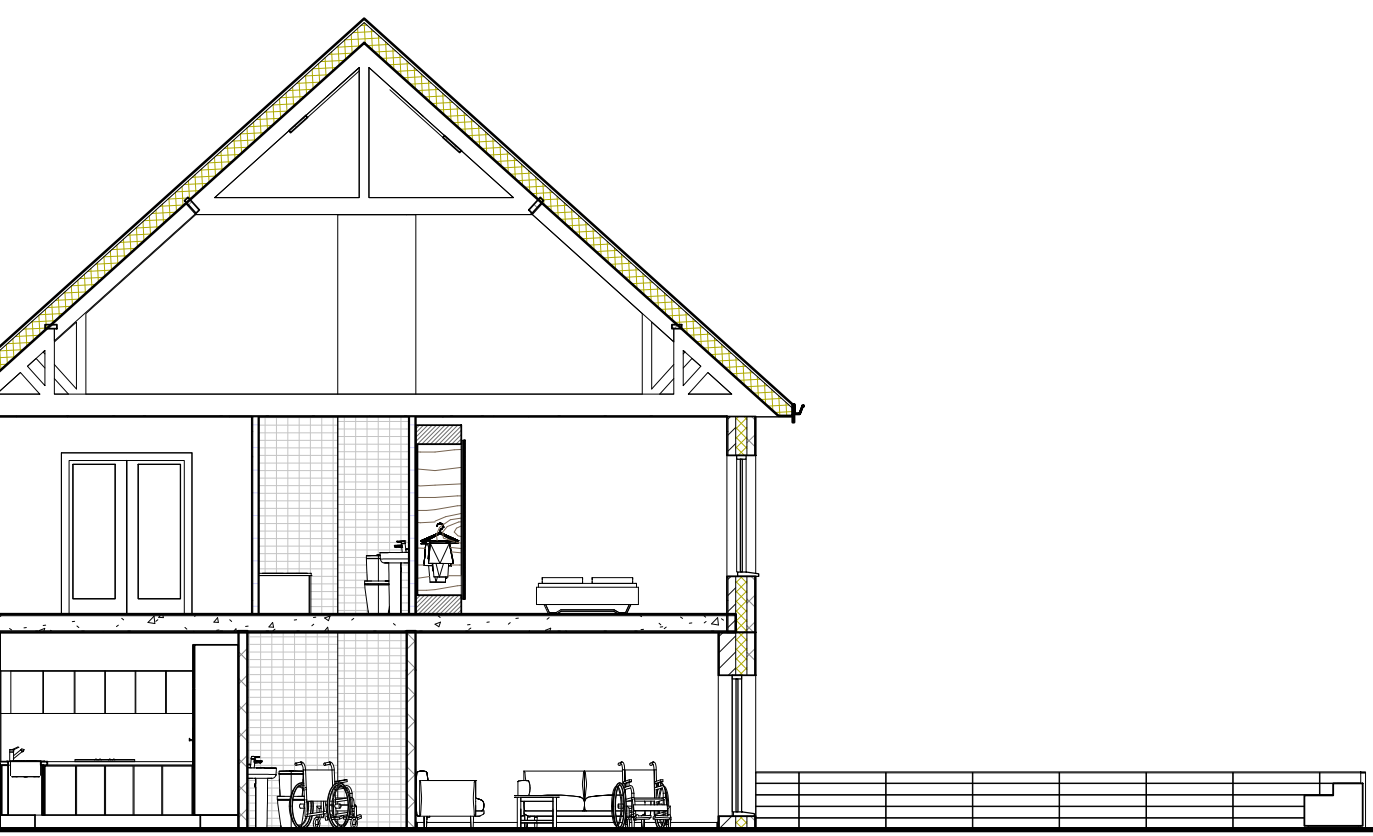**Home for Smart Ageing**, A Universal Design Challenge, seeks to address the issue faced by the State over the next 20 years. Ireland's older population is due double by 2040 bringing with it the need to provide sustainable homes to meet their needs. The Capital Housing Team of Westmeath County Council has approached this issue from first principles. By encouraging older people to remain living within their communities and close to their families we are strengthening the symbiotic social, practical and financial relationship between the Generations where the mutual love and care of family members is reciprocated.
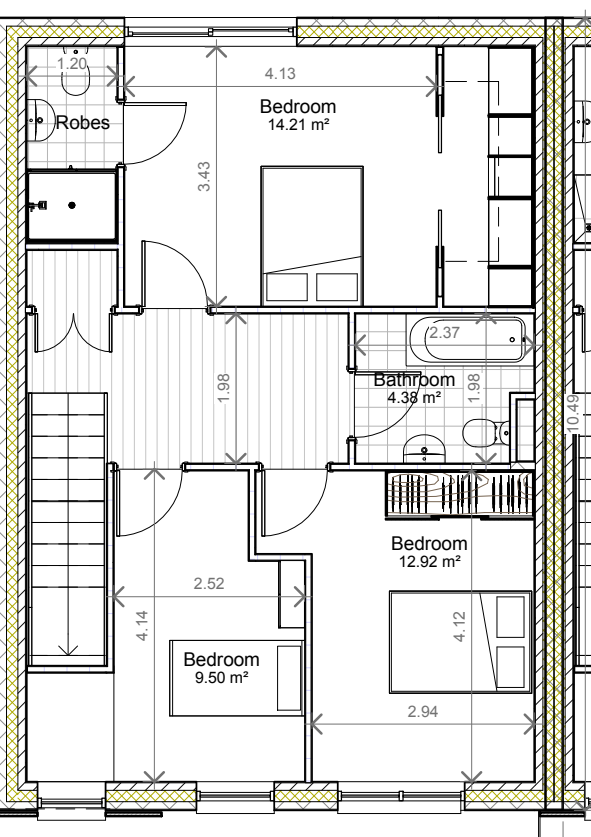
Our solution is a forward thinking approach to multi-generational living where we propose a home which is affordable at construction stage but – by the addition of significant but cost effective interventions – allows the home to be adapted for multi-generational living at a later stage. This prototype provides for the conversion of a three-bedroom two storey house into a two-bedroom universally accessible ground floor apartment with a three-bedroom two-storey unit above.

We have evaluated the proposal using the extensive experience of Westmeath County Council in the procurement of housing . We have engaged structural, economic, M & E and property expertise to support our prototype together with case studies advocating multi-generational living.

We believe that our proposal addresses the challenge raised by the competition - **Home for Smart Ageing** - and represents an exciting, innovative and implementable solution.

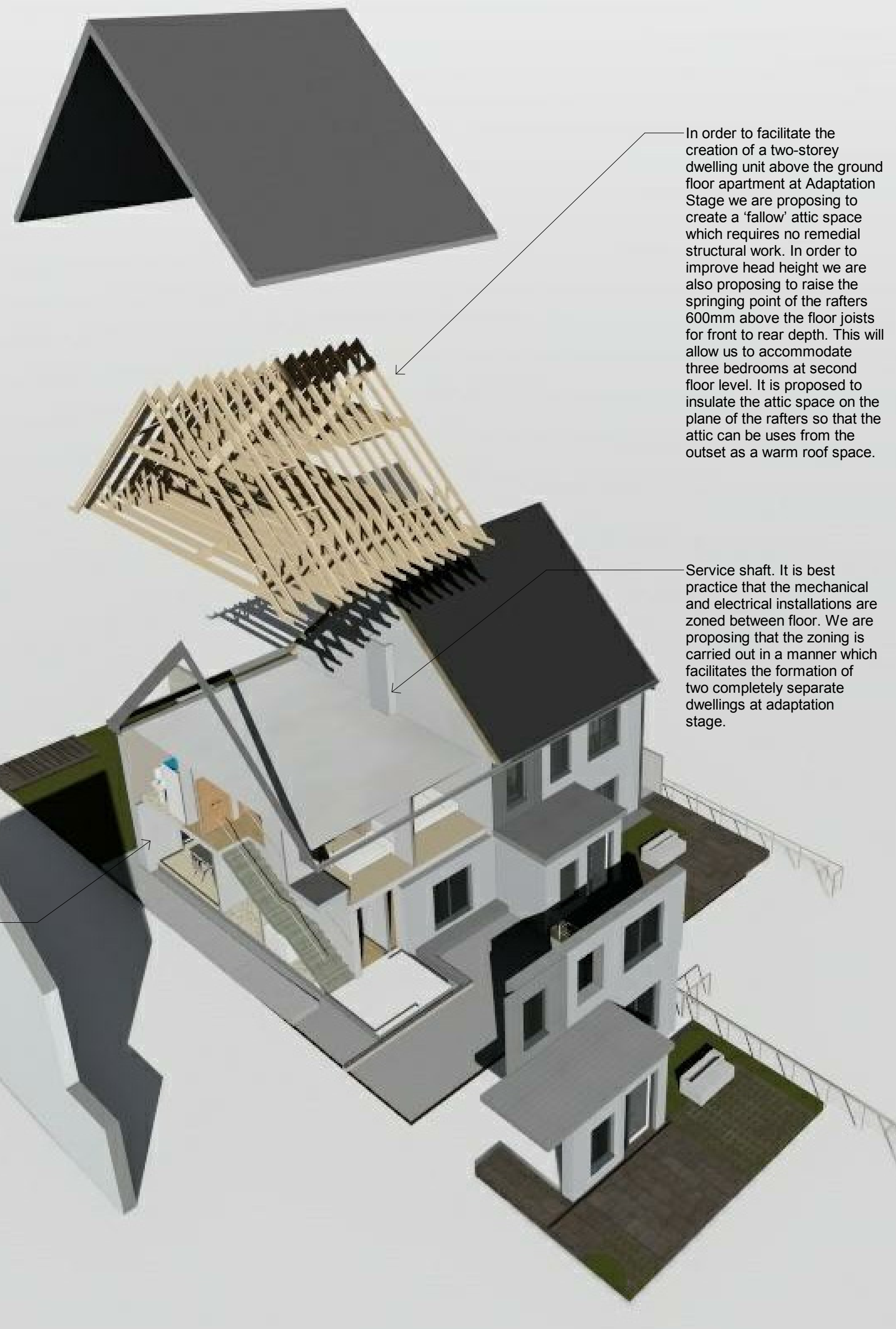*Phase 1 -Ground Floor*

Phase 1 -First Floor

Phase 1 .
Exploded perspective.

We are future-proofing the construction of any rear extension at Adaptation Stage by forming the rear wall using a steel goalpost structureat Construction Stage. This will allow easy breakout of the rear wall of the house without any difficult and time consuming temporary support or the retro fitting of a column and beam frame. The minimal cost of creating the steel goalpost will create significant savings at Adaptation Stage. There would most likely be two lintels for openings on the rear wall as standard construction. The extra over cost to form the steel goalpost would therefore be minimal. Regardless if the house was ever to be used as a multi-generational home most home extension are formed by breaking out the rear wall. This intervention would therefore benefit any standard extension.

In order for the ground floor to become a separate compartment at Adaptation Stage. The first floor and stairwell are constructed in a way that ensures they achieve full compliance with Part B, Fire and Part E, Sound of the Building Regulations. The most obvious way of achieving this in masonry construction is by the use of a concrete floor and stairs. This can also be achieved in timber frame construction with the use of metal webbed floor joists The extra-over cost of the proposed compartmentalisation compared to standard timber joist construction has been considered and evaluated.

Even disregarding the Adaptation Stage there are benefits to creating a fully fire-rated and sound-proofed first floor reducing air and structure borne sound while improving fire safety. The use of a concrete first floor is also more compatible with underfloor heating.
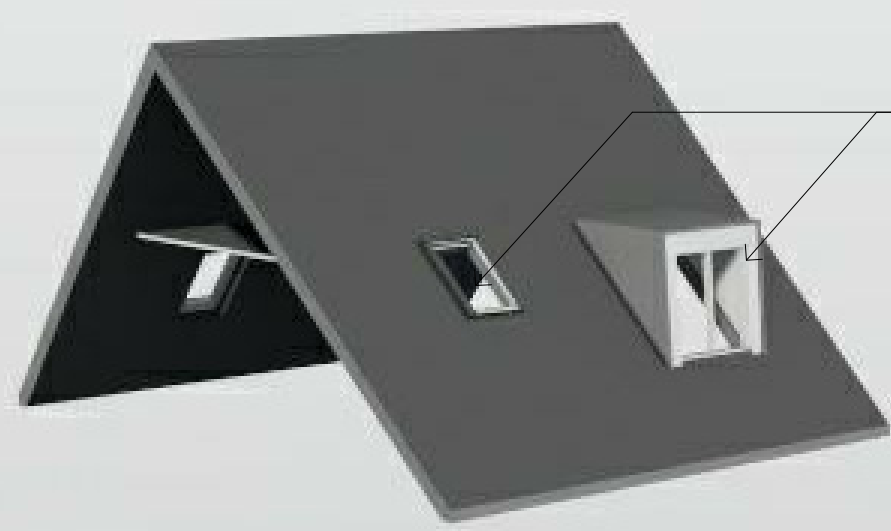
In order to facilitate the creation of a two-storey dwelling unit above the ground floor apartment at Adaptation Stage we are proposing to create a 'fallow' attic space which requires no remedial structural work. In order to improve head height we are also proposing to raise the springing point of the rafters 600mm above the floor joists for front to rear depth. This will allow us to accommodate three bedrooms at second floor level. It is proposed to insulate the attic space on the plane of the rafters so that the attic can be uses from the outset as a warm roof space.

Service shaft. It is best practice that the mechanical and electrical installations are zoned between floor. We are proposing that the zoning is carried out in a manner which facilitates the formation of two completely separate dwellings at adaptation stage.

Phase 2 .
Exploded perspective.

Main interventions.
1. Extension to the rear of the house. accomodating a roof garden for the duplex unit above .
2. Alterations to the existing interior walls. On the ground and first floor.
3. New stairs to attic.
4. Fit out of attic.
   -new stud walls
   -new bathroom connected to plumbing provided in phase 1.
   -Electrical and mechanical fitout.
   Spurs left from phase 1.
   -New dormer windows & roof lights

New dormer window/rooflight at the front and rear of the roof.

Rafters have been trimmed out at phase 1 to accomodate the new roof openings

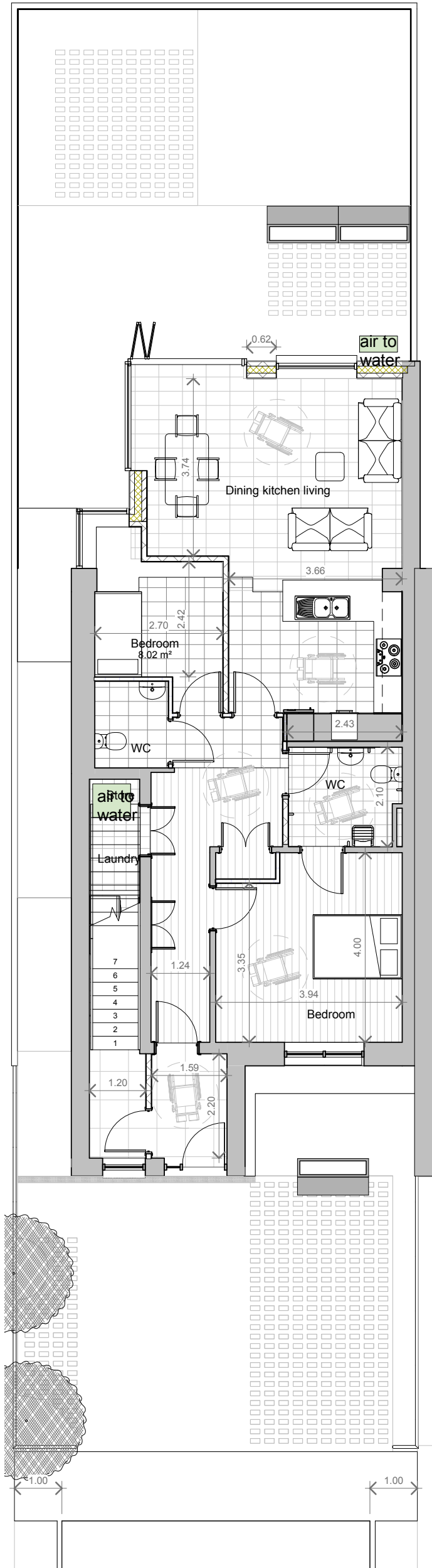First floor open space for the duplex unit.

New extension to for 2 bedroom apartment on ground floor.
The beam at the back of the house is insitu from phase 1 and reduces the cost and simplifies the construction.
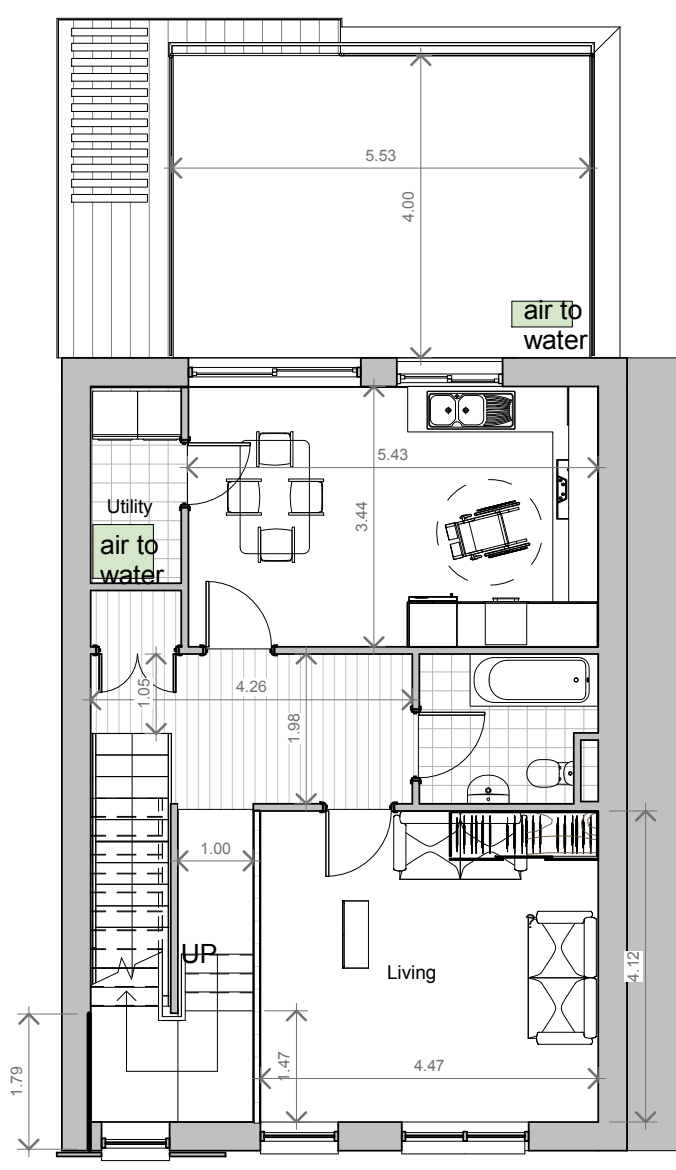
Existing ensuite converted to new utility room for the duplex unit.
This reduces the cost for plumbing and waste .

New stairs to converted attic. Floor joists have been trimmed out at phase 1 to accomodate this

Fire rated floor and fire rated and accessible stairs built at phase 1 makes it feasible to convert the first floor and attic to a duplex unit.

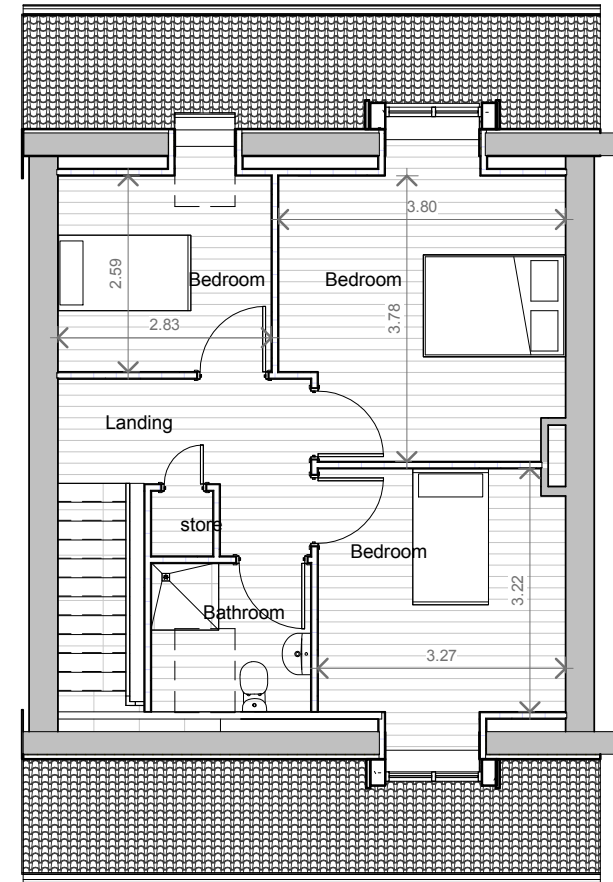provision for 2 car parking spaces.

Phase 2 -Ground Floor

Phase 2 -First Floor

Phase 2 -Third Floor

Paul Hogan M.R.I.A.I. Dip.Arch., B.Arch.Sc.,M.Sc. Spatial Planning, H.Dip Data Analytics
Patrick Henderson M.R.I.A.I. B.Architecture.., H.Dip Project management, H.Dip Computing
Eoghan Lynch BSc hons Spatial Planning, MEconSc, M.I.P.I.

WESTMEATH COUNTY COUNCIL
Comhairle Chontae na hIarmhí

Multi-generational Homes
A concept design for adaptable lifetime homes