



PASSIVE MEWS II

RDA Architects

Concept design

The house was built on the owner's old garage, in the back garden of a grand Georgian townhouse she was looking to downsize from. Access is via a narrow mews lane which provided a key constraint to the construction. The owner's brief was centered on comfort and ease of use, but through her profession as a Physio Therapist, it was clear that health was also very important; this made the Passivhaus approach an easy choice.

Exploring the mews typology we focused on maximising natural light with the house, enhancing the internal living spaces and making them feel more spacious and luxurious. The two 'lanterns' at the front and rear became dominant features that dramatically contribute to this. Internally, a clean and simple material palette was chosen to contrast with the Client's antique furniture.

The overall design concept was to play on the industrial service nature of the mews lane, maintaining a subservient presence to the townhouse. The elevations use a combination of brick and steel that are softened with red cedar detailing. Chamfered timber soffits and slight variances in the brick depth bring lightness to the elevations that are animated with sun and shadow.

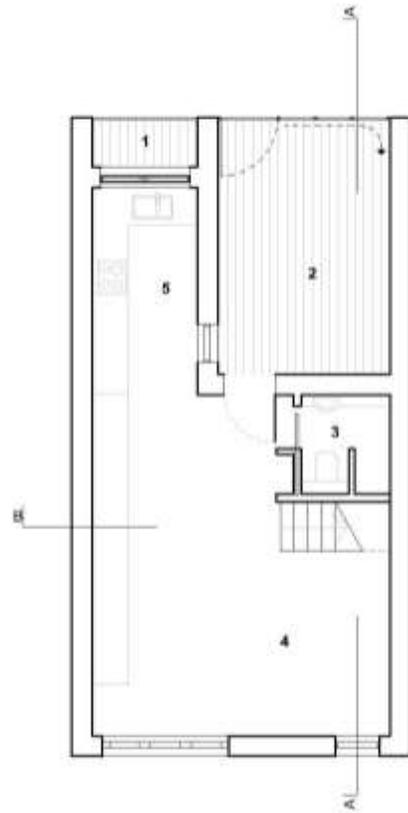
Recognising the importance of outdoor amenity, the house also offers a compact rear courtyard, which slides open to reveal a swimming pool underneath. In addition to this, a first floor terrace is accessed off the master bedroom, providing a more sheltered and private outdoor space.



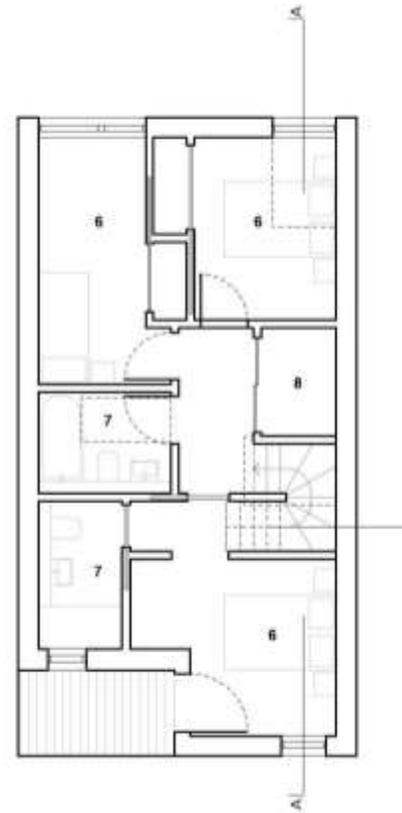
Site Plan



Plans



Ground Floor Plan

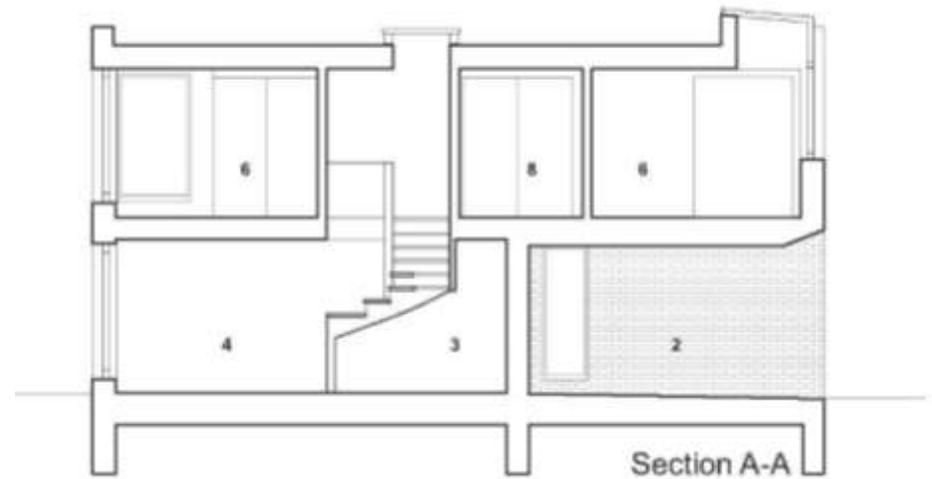
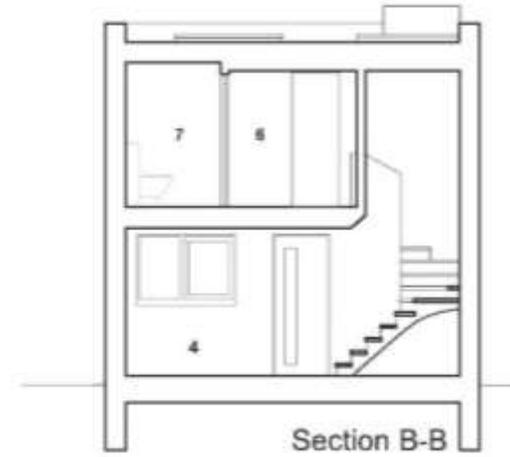
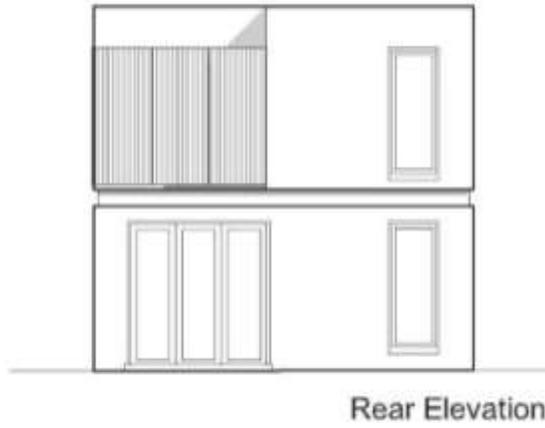
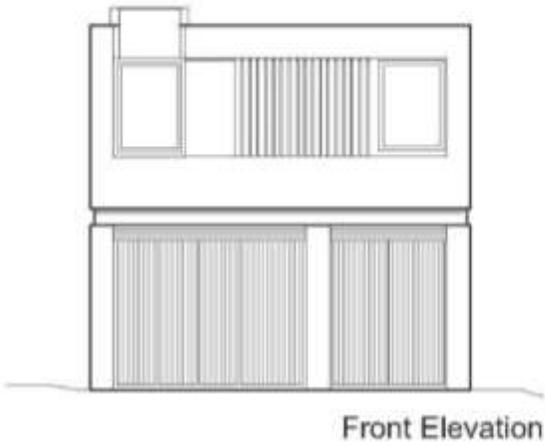


First Floor Plan

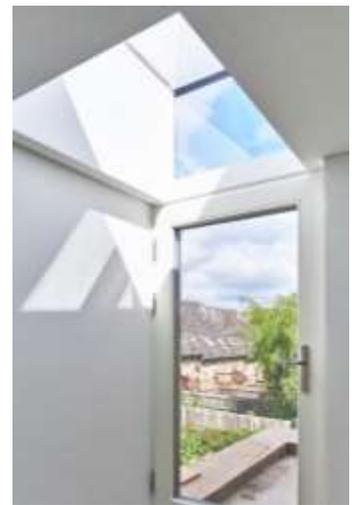


- 1. Refuse
- 2. Garage
- 3. Toilet
- 4. Livingroom
- 5. Kitchen
- 6. Bedroom
- 7. Bathroom
- 8. Plantroom

Sections & elevations



Internal & external images



ARCHITECTURAL DESIGN & AESTHETICS

Summer comfort strategy

Comfort within the house is ensured by utilising cross ventilation, stack ventilation and night time purging.

The fabric of the building is understandably built to low u-values and achieved an air tightness of 0.43m³/hr. Interestingly having passed the first air tightness test, the house failed dramatically on installation of the windows, a situation quickly discovered to be through the use of an inferior air tightness tape. The windows are all triple glazed, this was the first time however RDA used outward opening windows, with details needing to be heavily researched in order to perfect them. Shading is mostly gained from the immediate environment, with trees and buildings all in close proximity. Additional shading is however provided through fixed louvres and deep overhangs/recesses.

It was important to us to a low maintenance solution to comfort and ventilation and as such, other than the MVHR unit, the house is designed to have excellent natural ventilation. This is achieved twofold; a rooflight directly above the stair case provides stack ventilation, whilst front to back ventilation is also achieved on both levels. In addition to this, all rooms have generous opening windows, which can be locked in an open position for trickle ventilation.

The approach to services was an area of conflict between RDA and the client in that RDA were sure that a heat element of the MVHR unit would suffice. The client however wanted a conventional heating system and so underfloor heating was installed after confirming in PHPP that this could be accommodated. A small boiler than can be paired back is installed to provide hot water.

On the roof, four PV panels provide an annual yield of just under 1,000kWh of energy. Evidently, the main consumer of energy is heating the outdoor pool. Whilst this is out with the building's thermal envelope and therefore not covered by the PHPP, if the pool were be heated 24/7 all year this would be covered by the energy provided by the PV panels.

No. Occupants:

2

Overheating/year:

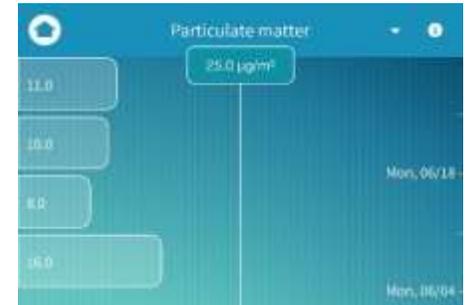
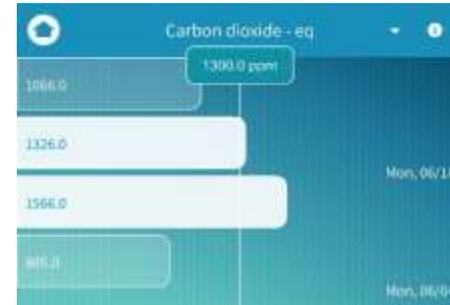
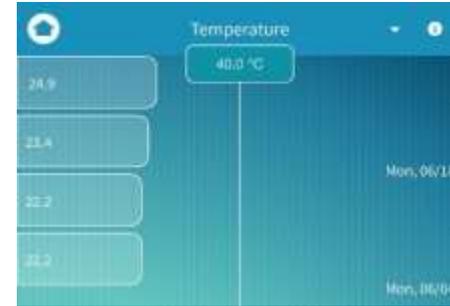
6%



Monitored data graphs/ charts

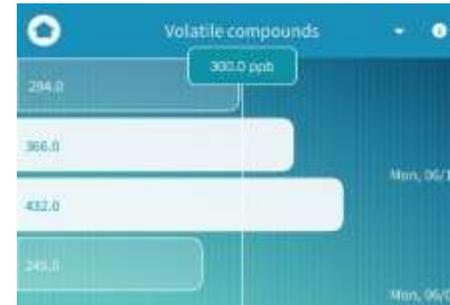
At the time of submission, the house has only been occupied for three months and as such we are still establishing how the house is performing.

The readings opposite however are taken from the month of June 2018 where temperatures have generally been in the low 20's °C.



Client quote

“The house is a joy to live in, it was warm at the start of the year when the temperatures dropped below zero and we had snow on the ground and now in the summer, on the warmest of days, the house is comfortable. I can open the windows and rooflights and the breeze almost immediately cools the house.”

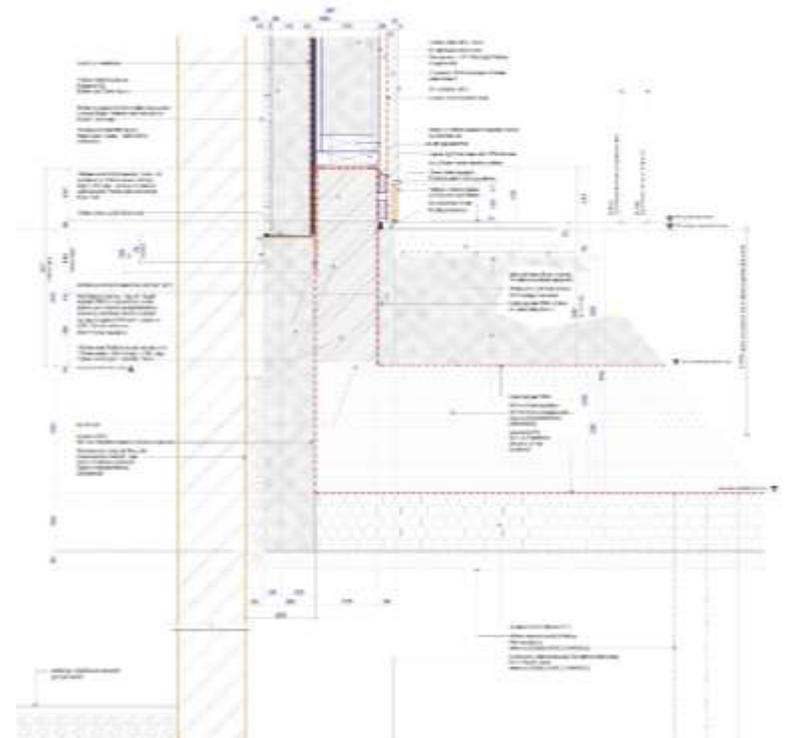


Construction

The detail of the design was predominantly led by the size of the site and the restricted access. In order to maximise floor space, RDA worked closely with Kingspan TEK to detail a wall build up that would achieve excellent U-values and air tightness at the minimum thickness.

In the end, 172mm SIPs were used for the structure, over which 100mm of additional insulation was installed, effectively wrapping an insulation structure in more insulation. This ensure excellent thermal bridging qualities. The make up of the ground necessitated piled foundations, onto which a concrete slab was laid. This meant the line of external wall insulation could be continued virtually unbroken under the house, as seen in detail opposite.

There are several bespoke details on the house, the majority of which can be seen on the front elevation; recessed brickwork, chamfered soffits and fine cedar cladding all help to soften the otherwise angular design, whilst internally sharp clean lines, flush skirting boards and shadow gaps provide a welcome contrast.



Additional Images Light and Shadow



The house is the end of a great story, one which starts with an ageing client, a large house and a small garage at the back of her garden. Having gained planning permission in a fiercely protected conservation area, the challenge was then to build the house.

Whilst the tight site could have been an issue, ultimately good material choice and a well planned construction programme meant this was easily overcome. The most challenging part of construction was having to dig up the single track road without closing it!

Ultimately the majority of the problems were down to having to work with a contractor as their business was unravelling. The client's son stepped in when the inevitable insolvency was declared, forming a new construction company to complete the house. Having a novice contractor finish off the house however proved that you don't need special skills to work on a Passivhaus – you just need diligence and a good attitude. We deliberately designed the house to be simple, in construction and in use, which has paid off over time. The new construction company are now pursuing accreditation as a Passivhaus contractor.

The house was visited by hundreds of people over four days as part of Open House London and Passivhaus Open Days, who had been intrigued by the design of the property and its environmental credentials. There were many locals, with some people coming from further afar to take a look at the project. It was a fantastic opportunity to demonstrate the benefits of Passivhaus construction to the wider London community.

“RDA have designed a very clever layout giving me three bedrooms in a house not much bigger than my old garage. I really thought I would miss the space I had in my old house however the transition has been effortless, due in part to the quality of space I now have.”

“One of the most enjoyable features is the way the sunlight seems to permeate the whole house. Every room is flooded with light making it an absolute joy to be in. Quite simply, I love living here!”

“I'm absolutely delighted that after the difficult experience of working with the first contractor, my son has been able to finish the building of my house and start a construction company. RDA's involvement was invaluable during this time when they managed the changeover, giving me confidence that my interests were being protected throughout.”