



PROJECT FACTS

Residential / commercial	Bristol (Totterdown)	12 terraces
Building use	Location	No. dwellings

PASIVHAUS STRATEGY

1. Employs continuous insulation through its envelopment without any thermal bridging - therefore the envelope is extremely airtight
2. High performance windows and doors (triple glazing)
3. South facing dwellings, therefore exploits the sun's energy for heating purposes - typology (2) has been designed with wooden shutters over large openings, this has been done for both privacy reasons and to manage solar gain to minimize over heating.
4. Super thick insulation - brick and blockwork wall build up with 300mm Rockwool insulation and SIP panels for roof
5. Stacked services
6. Triple height space through centre of stairs with skylight - enables good ventilation and solar gain through the core of both dwelling typologies

DESIGN PHILOSOPHY

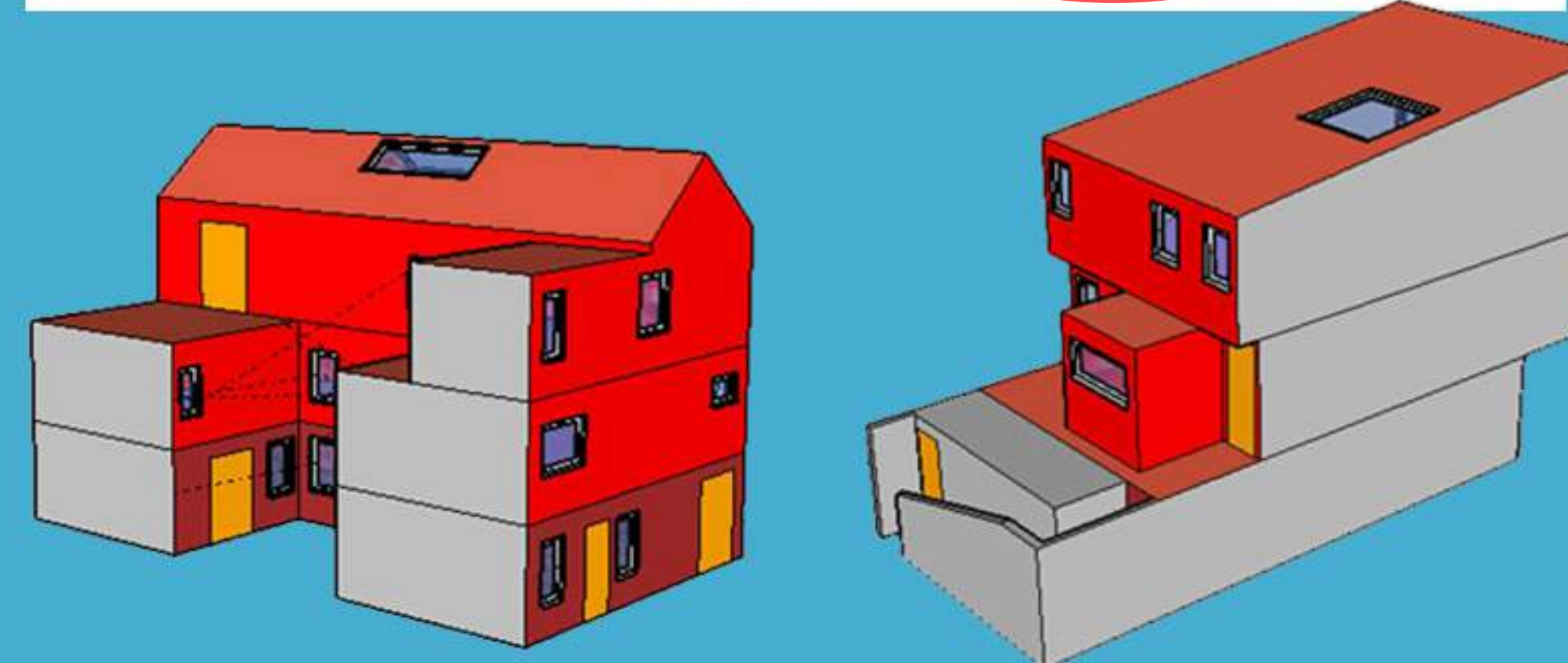
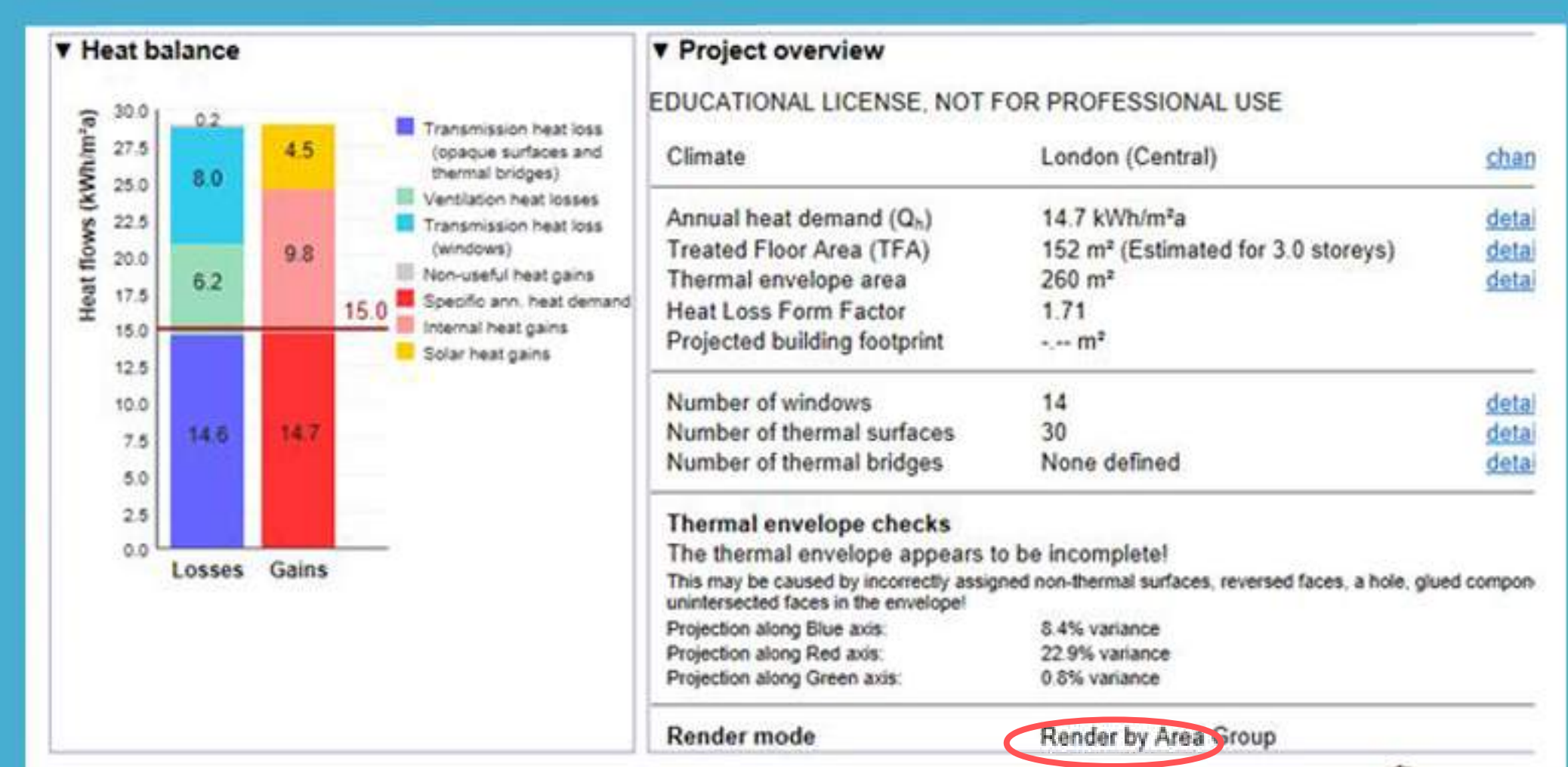
The project design intent was to transform a former brownfield site into new mixed development consisting of 12 terraces, split equally into two typologies (1) young professionals (2) families. The key concept involved creating a masterplan that generated a sense of community through the approach of incorporating lots of public realm. The master plan strategy looks at retaining the site's topography in order to support the use of layers and levels to organise space and separate function. At road level there is a house frontage of typology (1), whilst has seen a transformation into an active river front, containing public functions – including cafes, restaurants and retail. To the east at river level is situated dwelling typology 2.

The masterplan creates a central axis that runs perpendicular to the River Avon, creating a line which not only in effect becomes the organising element, indicating the divide between public and private movements but captures key views. The development has used Holland Park Mews as materiality precedent, therefore using a loadbearing brick and blockwork wall build up with 300mm thick insulation and exterior render. However, the roof explores the use of Kingspan SIP panels, whilst the floor detail introduces the use of timber joists.

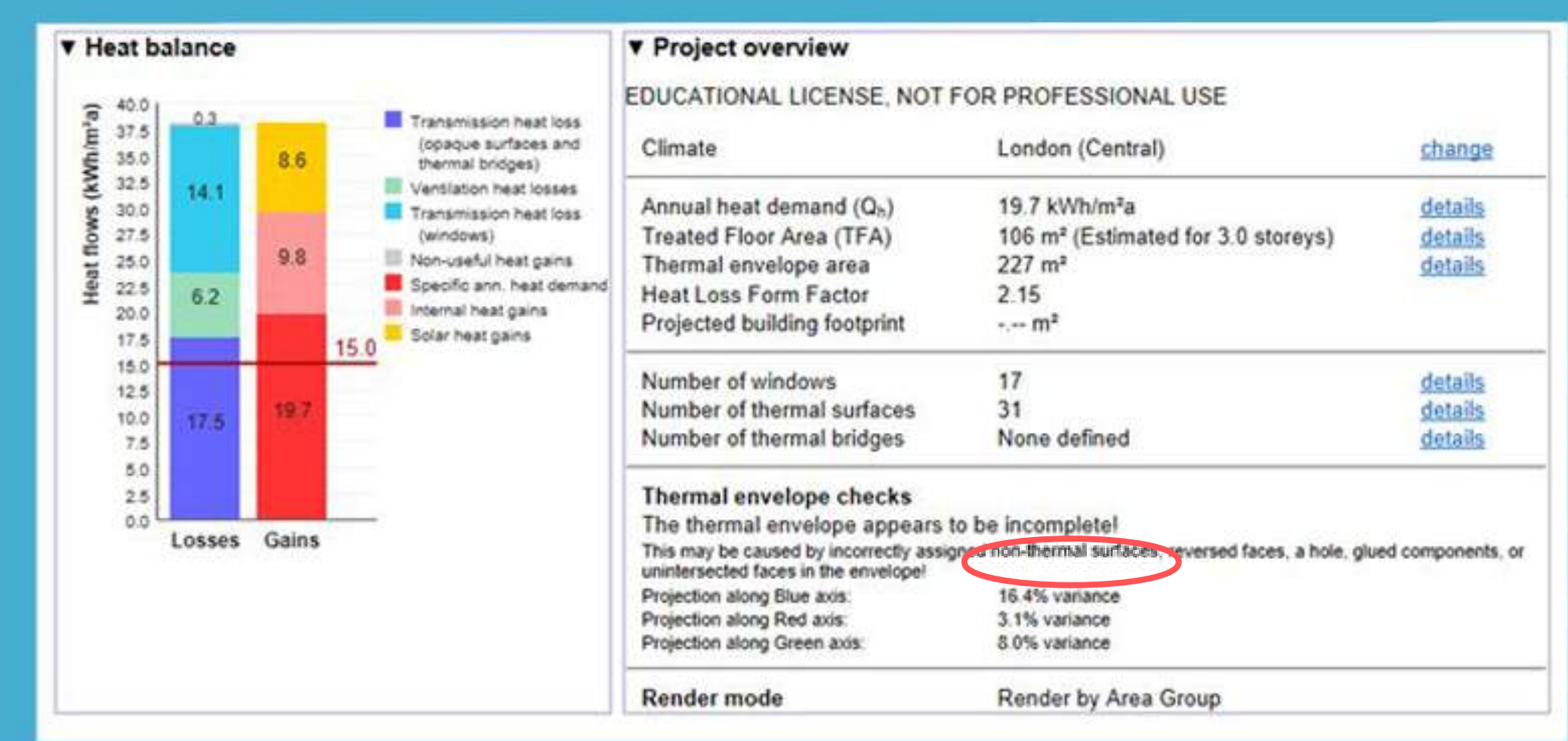
PREDICTED PERFORMANCE

Wall 0.14 W/m²K U-Values	Roof 0.10 W/m²K U-Values	(1) 14.7 kWh/m²a (2) 19.6 kWh/m²a Annual heat demand
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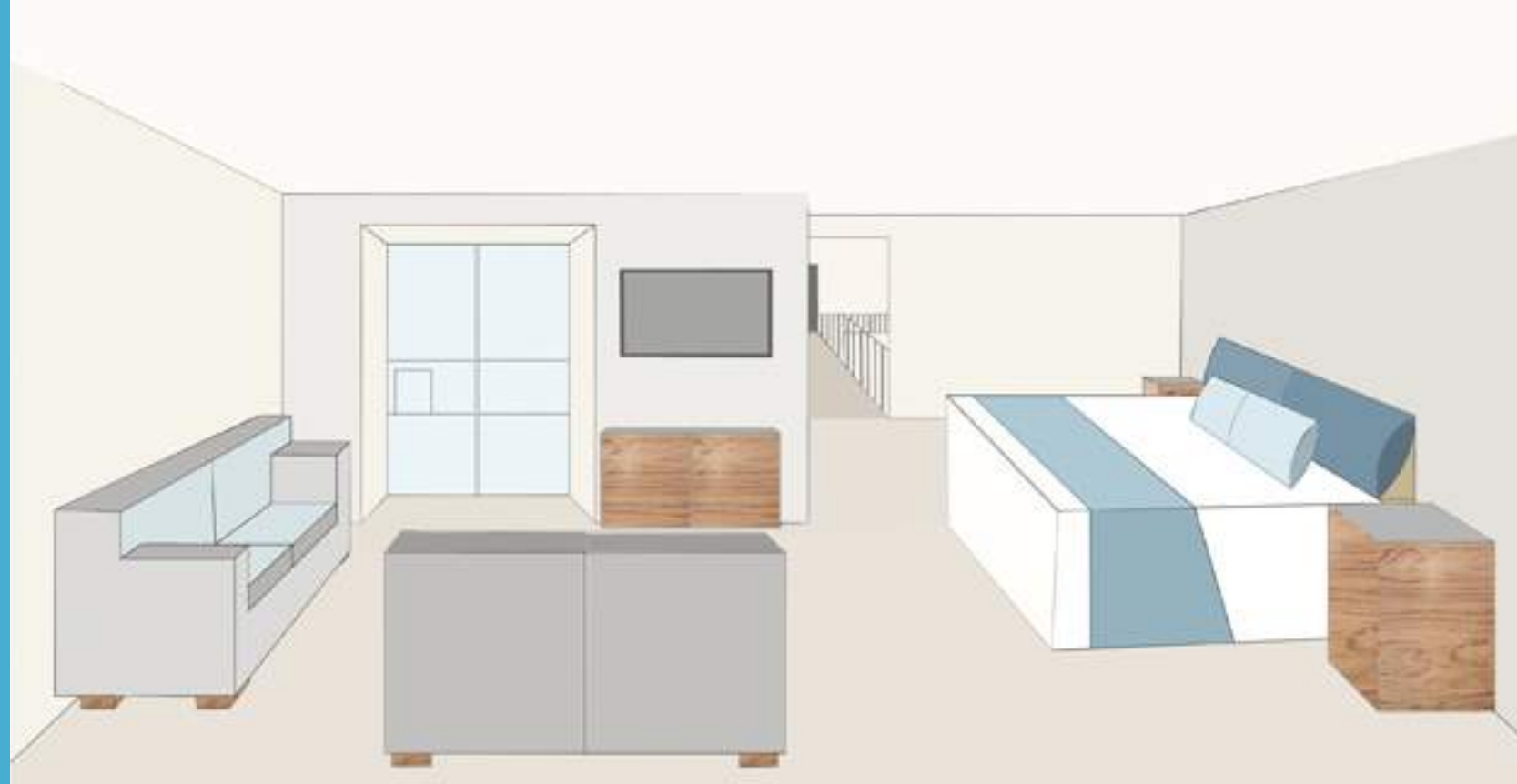
TYPOLOGY ONE - YOUNG PROFESSIONALS



TYPOLOGY TWO - FAMILY



Typology (2) - Bedroom interior view



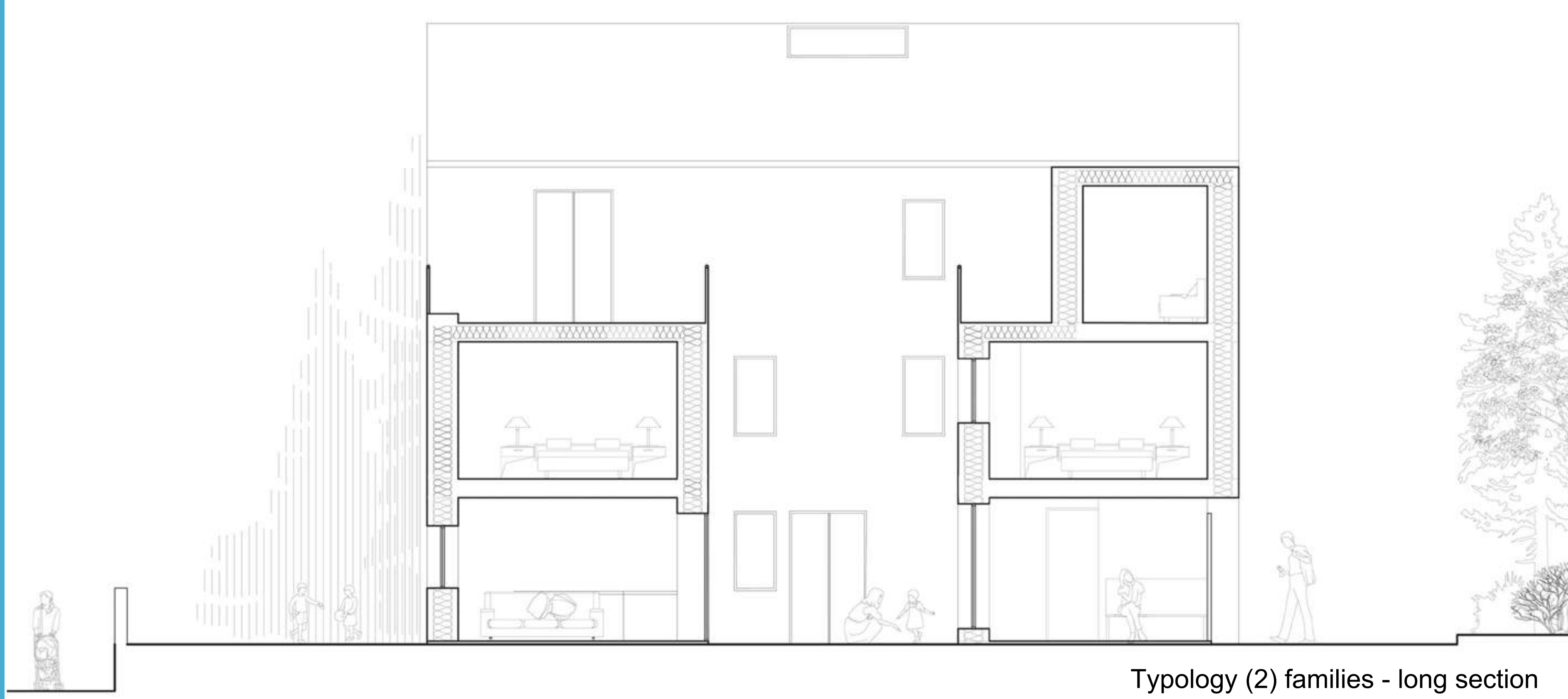
Typology (1) - Kitchen diner interior view



MATERIALS

Brickwork offers very high compressive strength, enabling the support of high loads such as cantilevers that typology (1) requires. Clay bricks and concrete blockwork both have high thermal mass, thereby if by building – having internal masonry walls and concrete floors is subjected to a heating and cooling cycle that crosses the comfort zone, the walls and floors will maintain a relatively stable level of heat energy for an extended period.

The manufacture of bricks and blocks (clay or concrete) generally uses a high amount of energy; however, this investment of embodied energy is in most circumstances repaid by the longevity of the material. Masonry homes have a long life span, require little or no maintenance and are highly recyclable, this therefore adds to their potential as a sustainable form of construction.



Typology (2) families - long section



Masterplan strategy

References

Australian Government (2013) YourHome - Brickwork and blockwork. Available from: <http://www.yourhome.gov.au/materials/brickwork-and-blockwork> [Accessed 12 May 2018].

Passivhaus (2011) Basic Principles. Available from: <http://www.passivhaus.org.uk/page.jsp?id=17> [Accessed 12 May 2018].