

Mudbrick House Design Guidelines

Achieving a 6 star energy rating for your Mudbrick home



About the Star Rating

The FirstRate 5 House Energy Rating (HER) software is a method for assigning a star rating to domestic building designs. The star rating is based on the energy required to heat and cool your home to a certain temperature throughout the year. In May 2011, a 6-star minimum requirement for obtaining a building permit became mandatory in Victoria. While typically providing great thermal mass, Mudbricks possess a relatively low R-value, with limited capacity for improvement due to the lack of cavity within the brick. In general terms, the rating tool is weighted towards having a high R-value of insulation which can be designed into walls, roof and floor cavities. The R-value represents the capacity of an insulating material to resist heat flow. The higher the R-value, the greater the insulating power.

Optimising Your Mudbrick Star Rating

One of the key considerations for Mudbrick designers is the location of opportunities for increasing the R-value in external walls. Typically, one would expect more windows to be built towards northern rather than eastern orientations. There may well be opportunities to define some walls to the west and south as 'dead walls,' or walls that are less important aesthetically. Externally, these may be walls confronting paling fences, walls facing onto carports or garages, or walls forming part of a utility area compromised by hot water services, piping, or other appliances. In high-pitched roofs and dormer windows, the apex may be insulated and panelled with rough-sawn timber. Internally, it is advantageous to locate opportunities such as walk-in robes, substantial shelving, pantries, kitchen/ bathroom/laundry tiled and cupboard areas, to which an added R-value can be applied.

The following will provide some guidelines in how to achieve a higher R-value and star rating within a typical Mudbrick house design. The aim of this guide is for designers to achieve the mandatory star rating without compromising that which is truly valued and integral to a Mudbrick home.



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By Nillumbik Mudbrick Association Inc.
Download the full version from
www.mudbrick.org.au under Information



Feature: Internal character and look of Mudbrick walls, in particular, living and high-use areas of house

Treatment options:

Locate potential 'dead walls.' If there are any interior walls not readily seen or not significant aesthetically, such as walk-in robes and wardrobes, pantries, kitchen/bathroom/laundry tiled areas, shelving and cupboard areas, the following treatments may be applied:

- Expanded or extruded polystyrene fitted behind cabinets or shelving
- Timber stud cavity wall with insulation batts (may be finished in timber cladding, corrugated metal, gypsum board and render, if required)
- Expanded or extruded polystyrene with render or gypsum board finish, if required
- A second skin of reduced thickness Mudbricks, providing a cavity for insulation.

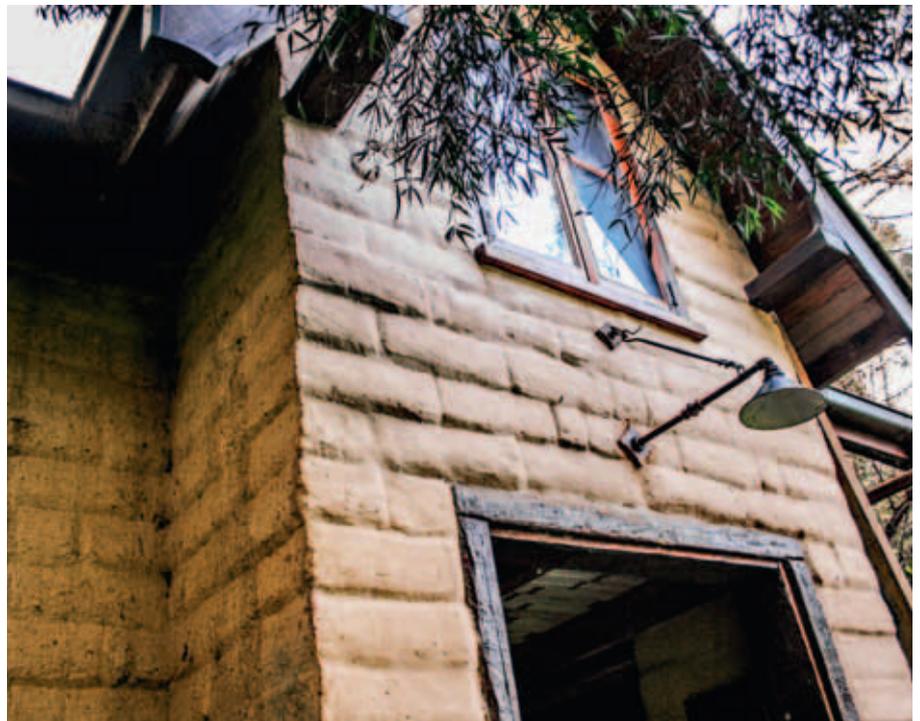
An example of loadbearing walls

Feature: External character and look of Mudbrick walls, in particular, front of home and elevations which are readily visible

Treatment options:

Locate potential 'dead walls.' If there are any exterior walls not readily seen or not significant aesthetically, such as walls confronting paling fences, walls facing onto carports or garages, or walls forming part of a utility area already compromised by hot water services, piping, or other appliances, the following treatments may be applied:

- Corrugated iron, colorbond, weatherboard or rendered finish attached to timber frame, providing a cavity for insulation
- Rigid expanded or extruded polystyrene with render finish
- Double skin Mudbrick, providing a cavity for insulation (Mudbrick thickness in this scenario approximately 150mm rather than usual 250mm).





Other considerations to improve Star Rating

- Maximise glazing to north orientation
- Minimise glazing to south and west orientations
- Use glazing with low U-value and high solar heat gain coefficient (SHGC). Clear double glazing with a large air (preferably argon) gap provides good performance in Melbourne's climate zone. Low-E or tinted finishes can be added for windows impacted by summer sun
- Use sealed downlights with covers, allowing insulation to be fitted close around fixture housing inside ceiling
- Design eaves to protect glazing in summer and provide solar access in winter
- Locate living areas to north and east of house, with bedrooms to south
- Use adjustable external shading devices, particularly over windows impacted by direct summer sun
- Maximise winter solar access to brick, tiled and concrete floors
- Maximise winter solar access to internal brick, stone and Mudbrick walls. ▲

Feature: Brick paving and solid finishes to concrete slab on ground

Treatment options:

- Install extruded or expanded polystyrene board beneath concrete raft slab as per manufacturer's recommendations
- Waffle slab construction incorporating R2.0 pods
- Install extruded or expanded polystyrene board around the perimeter of the brick floor (not recognised in FirstRate 5).

Feature: Brick paving – no slab

Treatment options:

A cost effective way of producing a finished product with limited processes is to lay clay bricks on solid or compacted ground subject to soil test and engineer's requirements

- Install extruded (XPS) or expanded (EPS) polystyrene board over a layer of sand and vapour barrier/membrane, or as per manufacturers recommendations (this treatment is made more important in the event of 'in-floor' heating)
- Install extruded or expanded polystyrene board around perimeter of the brick floor.

Nillumbik Mudbrick Association (NMA)

The NMA aims to protect and promote the mudbrick building industry, and to strengthen Nillumbik's standing as Australia's most important mudbrick region.

The Nillumbik Mudbrick Association Inc. (NMA) was formed in June 2004, principally in response to the introduction of the FirstRate 5-star energy rating program for buildings.

The NMA Inc. welcomes members both from within and outside the Nillumbik Shire, who share their passion and commitment for the future of the earth building industry.

Become a member today at:
www.mudbrick.org.au

