



Rammed Earth Facts

The rammed earth walls of the Earth & Soul Retreat cabins are constructed in place, using formwork in layers 600mm high.



The building material used is decomposed granite soil (commonly called “deco”), from the Braeside Quarry located halfway between Warwick and Stanthorpe.

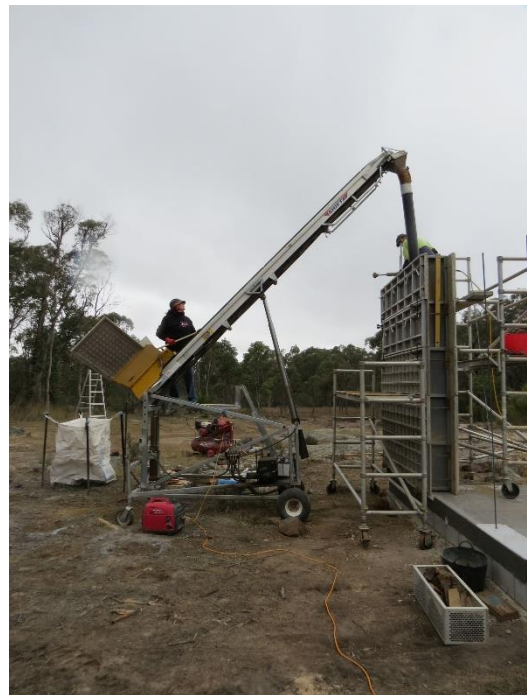


Most granite soils in the Granite Belt around Stanthorpe can be used for building but the Braeside Quarry material has good consistency of colour and granularity, and a suitable clay content ensuring a better-quality finish.

Approx. 5% cement is added to the deco mix and a water-resistant admixture called Plasticure. This is mixed with water to create a material that lightly clumps.



A bobcat is used to transfer the mixed deco from the mixer to a conveyor belt which delivers the soil to the formwork.



The deco is then rammed using a pneumatic stick rammer powered by an air compressor.



The rammed earth wall is immediately complete. The formwork can be removed shortly after the ramming is complete. There is no need to wait for it to become hard as you would with concrete. The finished wall is treated with to remove surface impurities and then sealed to control dust and moisture.

Environmentally friendly

Stabilised rammed earth is one of the most environmentally-friendly and energy-efficient construction materials in the world. Why? Rammed earth is environmentally-friendly because it has low embodied energy. This means it has very little impact on the environment both in its production for use as a building material, and its lifetime as part of the building.

Energy Efficient

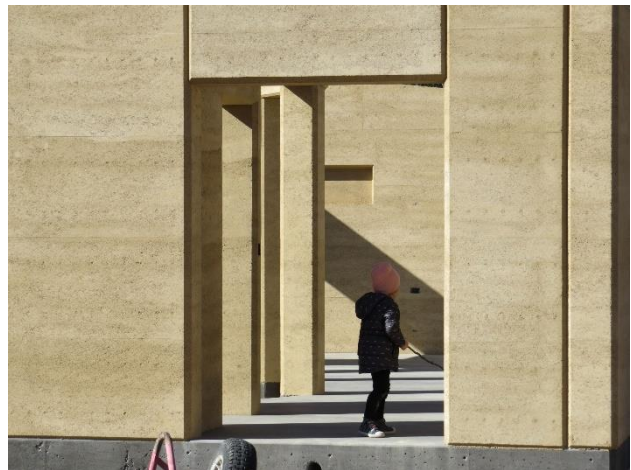
Rammed earth is energy efficient because, unlike most other building materials, if the climate is right (cool night air for passive cooling) it is possible (with correct design) to build a true solar-passive rammed earth home which requires no air-conditioners or space heaters at all. That's a big difference to both the environment and your pocket! How does rammed earth do this? The answer is in utilising correct solar passive design, and use of the high thermal mass.



Solar Passive design

In climates where there is a distinct variation in day and night time temperatures, rammed earth is the ideal choice for a true solar passive and environmentally-friendly home. In such climates it is possible to design and create a home which does not require artificial heating or cooling. Essentially the rammed earth is evening out the day and night temperature.

Note with the Earth & Soul studio units, the buildings are oriented for best use of the seasonal changes in this latitude. In the Earth Retreat the large window shown at right is faced to the north. This is the best aspect for getting the warmth of the sun into the inside of the building onto the rammed earth walls and the polished concrete floor, passively and environmentally heating the unit.



Of course, this outcome requires true solar passive design. In some climates, winter space heating may be required. The Earth & Soul Retreats have a Nectre Bakers Oven installed for warmth and practicality. In winter, when the house is warm inside, the thermal mass will hold the heat and act as a passive heat bank.

In summer, the high thermal mass will keep the internal room temperature many degrees less than the outside temperature, removing the need for air-conditioning.

High Thermal Mass

The key to the superior energy efficiency of rammed earth is its high thermal mass. Because heat and cold takes so long to transfer through the thick rammed earth walls (Load bearing walls are 300mm thick), high thermal mass can actually keep your house cool in summer without any air-conditioning, and warm in winter without any heating!

Reduced Processing

When it comes to rammed earth, an important aspect is the amount of processing that gets done to it. The more it gets processed (the more artificial additives that get added) and the more the materials get transported in trucks, vans, and cars, the less good it does for the environment. So as long as you keep it minimally processed the better your rammed earth structure will be for both you and the planet.

Rammed Earth is not an insulator.

There is no doubt that rammed earth is one of the most environmentally-friendly building materials in the world. However, rammed earth does have a low R-Value, which means that rammed earth is not a good insulator.

Misconceptions about Insulation

Don't be fooled into thinking that building with a construction material which has a high R-Value and a high star-rating is the most energy efficient home you can build. If a house claims to be energy-efficient because it has a high star-rating it simply means the house uses less energy. Less energy than what? Less energy than the same house without insulation? Having a high R-Value it will certainly give you a high star-rating in your energy efficiency assessment, and a house with high R-Value will certainly help your air-conditioners and heaters to run more efficiently there is no doubt about that.

Without all those air conditioners and/or heaters running all day and all night to keep your high R-value and high star-rating home a constant temperature inside, that 7-star house built with high R-value alone (no thermal mass) will very quickly become a hot-box or sauna in summer and a freezing cold coolroom in winter!

With a rammed earth home that just wouldn't happen!! A rammed earth house correctly designed for climate using true solar passive principles won't need air-conditioning anyway! Sometimes you don't even need heating either! (In colder climates where there is not sufficient daytime sun you will need a heat source in winter).

Other Rammed Earth advantages

Rammed earth is also great because it's got health benefits. The composition of rammed earth allows it to absorb and release humidity from the inside of a building, improving air quality and making it especially good for people who suffer from asthma.

Rammed earth is also an inorganic material, meaning that it won't decay and doesn't support the growth of mould.

Living in a rammed earth dwelling is very comfortable. It has a nice feel! To appreciate it you have to come and visit and experience it. It is also very quiet. So, when you live in a quiet location (like we do) and you have a very quiet house, the effect is sensationally soothing and peaceful.

Another great advantage of rammed earth is that there is no maintenance – inside and out. There is no need for painting or other protection.