

Bezant Consulting
DriTherm® Cavity slab Assessment Summary

Knauf Insulation employed the services of Bezant Consulting to carry out an assessment on the benefits of using DriTherm Cavity slab in double brick construction compared to an uninsulated wall.

A series of NatHERS energy ratings were conducted using AccuRate Sustainability software V2.3.3.13 SP2 based on a typical single storey residential dwelling (see appendix A) incorporating DriTherm Cavity slab in the external double brick walls.

The plan used was considered to be typical of residential dwellings constructed in the Perth metropolitan area in recent years.

The following specifications were applied to this assessment:

- Floor - concrete slab on ground (uninsulated)
- External walls - cavity brick (110/50/90 clay brick)
- Single brick to garage and store rooms
- Internal single brick (90) plastered finish
- Roof - hipped roof pitched at 25 degrees
- Metal or tiled (refer optional results)
- Typically 500mm wide eaves
- Ceilings flat throughout
- R4.0 Earthwool® ceiling batts
- Windows - standard generic aluminium, clear glazed
- Cavity wall insulation
- Conditioned space – 224.5m²
- Unconditioned space – 57.3m²

The purpose of using the plan was to provide optional results for the following variations:

1. Two roof options - metal roof sheeting and tiled roofs (based on pitched roofs with flat ceilings),
2. Eight cardinal orientations** (house rotated through 360°, where 0° = North, 45° = North West, 90° = East, 135° = South East, 180° = South, 225° = South West, 270° = West and 315° = North West) – the orientations are based on the direction which the rear of the house faces.
3. Insulated versus uninsulated external walls (throughout, excluding single brick walls)
4. Four NatHERS climate zones** (as indicated above, based on Perth, Bickley, Swanbourne and Mandurah)

**A range of orientations were explored to determine the effect they may have on the overall thermal performance of the house.

**The Climate Zones selected were considered to be areas within which most Perth based builders operate and traditionally use masonry cavity brick construction.

Actual street addresses were entered into the software.

(DriTherm® Cavity slab Assessment Summary CONT'D)

Project Address	NatHERS Climate Zones
Ellenbrook WA 6069	13 Perth
Armadale WA 6112	47 Bickley
Alkimos WA 6038	52 Swanbourne
Baldivis WA 6171	54 Mandurah

Refer <http://apps.nowwhere.com.au/DCCEE/climatezonemaps> for further information.

Results – Heating and Cooling Loads** + Star Ratings: Insulated Walls

Climate Zone	Average % decrease in heating/cooling loads	Average Star rating Improvement
13 – Metal Roof	-24.8%	+1.0
13 – Tiled Roof	-24.4%	+1.0
47 – Metal Roof	-21.6%	+0.9
47 – Tiled Roof	-27.5%	+0.9
52 – Metal Roof	-25.0%	+1.1
52 – Tiled Roof	-25.3%	+1.1
54 – Metal Roof	-24.1%	+1.1
54 – Tiled Roof	-24.0%	+1.1

**Heating and cooling loads are determined as being the conditions under which the occupants are most likely to be thermally comfortable within the building.

Why are Star ratings important?

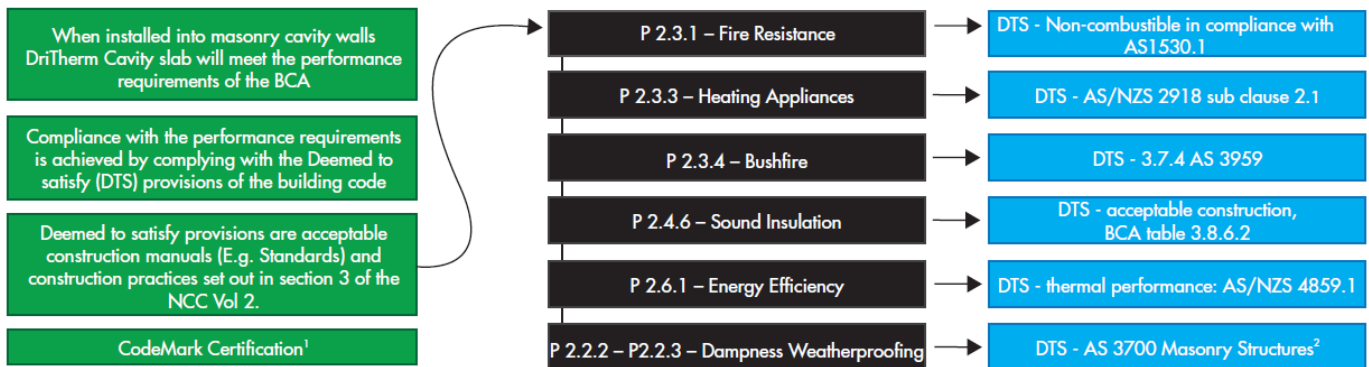
Star ratings determine the potential thermal comfort of Australian homes on a scale of zero to 10 stars. The more stars, the less likely the occupants will need heating or cooling to stay comfortable.

Houses with higher star levels are considered more thermally comfortable than those of lower star levels with those rated at 10 stars considered thermally comfortable without the need for artificial heating and cooling.

Conclusions from the assessment:

- DriTherm Cavity slab provided a significant improvement to the thermal performance of the residential project assessed.
- The total area of insulated cavity brick walls assessed was 154.44m² (approx. 74% of external walls, with the remainder being single brick walls). As the wall to floor ratio increases, the external walls have a greater impact on the thermal performance. Therefore, the benefits demonstrated in the report would be greater as the wall to floor ratio increases.
- Heating and cooling loads were typically reduced between 21% and 26% (dependent upon location and orientation).
- Star ratings were improved by between 0.8 and 1.2 stars, often meaning that a NCC/BCA non-compliant project without cavity wall insulation became a compliant solution when DriTherm Cavity Slab was included**. A copy of the full report is available upon request.

BCA Compliance Pathway NCC Volume 2: DriTherm® Cavity slab



1. The CodeMark Product Certification Scheme:

The Australian Building Codes Board (ABCB) and New Zealand's Department of Building and Housing (DBH) manage the CodeMark Product Certification Scheme in their respective countries. The Joint Accreditation System of Australia and New Zealand (JAS-ANZ) accredits certification bodies, who in turn evaluate and certify building products.

Relevant legislation requires building control authorities to accept CodeMark certified products.

Third-party CodeMark certification bodies evaluate and certify products to ensure they meet the specified requirements of the Building Code. CodeMark certificates are accredited from internationally recognised accreditation bodies, offering increased credibility and acceptance of a certificate holder's CodeMark certified products.

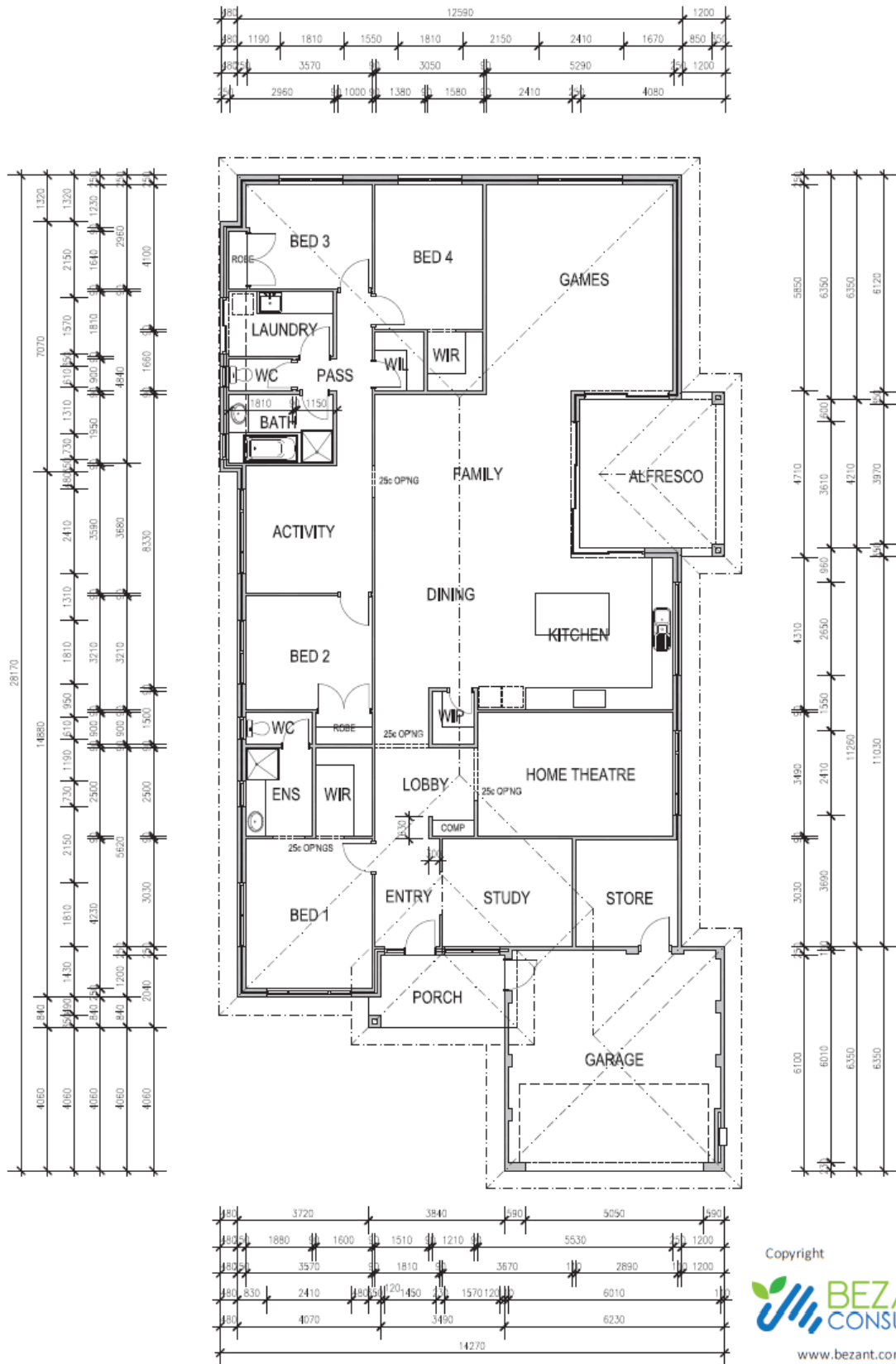
More details and scheme rules are available on the ABCB website: www.abcb.gov.au/product-certification/codemark

2. AS 3700 states "Where insulation material is placed in a cavity, appropriate measures shall be taken to ensure that the moisture resistance of the wall is maintained".

In addition to the DTS provisions Knauf Insulation has achieved CodeMark certification, demonstrating that all performance requirements have been met including the moisture resistance requirements.



Appendix A.



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