Life Panels.

CASE STUDY

2021

BYRON BAY HOUSE BUILD

Located in Byron Bay, construction was carried out by a skilled owner builder, whilst Life Panels contributed to the detailing and wood fibre system.

The aim of the project was to reduce the need for mechanical cooling and have a high performance home that cost less to run than the current offering provided by standard homes.

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CONSTRUCTION DETAILS

This home is one of the first fully vapour permeable buildings in Australia.

Understanding how moisture, heat and cold behave enabled the build to work and provide a more consistent ambient indoor temperature.

Roof

From outside

1. Trimdeck roof sheets
2. 50mm anticon blanket
3. 35mm horizontal (70mm void & vented)
4. 35mm vertical batten
5. Proclima mento
6. 60mm combi over rafters
7. 2 x 90mm flex 180mm rafters
8. Top hat batten 30mm
9. Plaster

Insulation alone = R 6.55
Total system = R 8

Walls

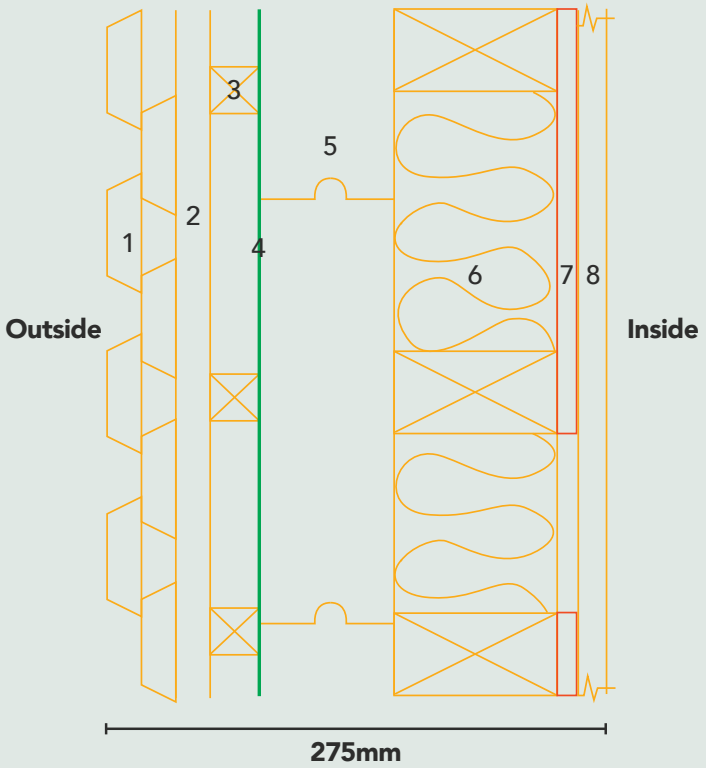
From outside

1. Charred silver top ash BAL rated (2 layers or 25mm timber's and overlapped by 25mm) board and batten
2. 35mm Horizontal with stainless 2mm mesh and vented top and bottom
3. 25mm vertical
4. Proclima solitex
5. 60mm Combi
6. 90mm x 45mm frame with 90mm flex
7. Intermittent bracing
8. Gyproc

Insulation alone = R 4.55
Total system = R 6

The original part of the house used FC sheet on battens and then timber cladding fixed to the surface.

WALL BUILD UP



SPECIFICATION

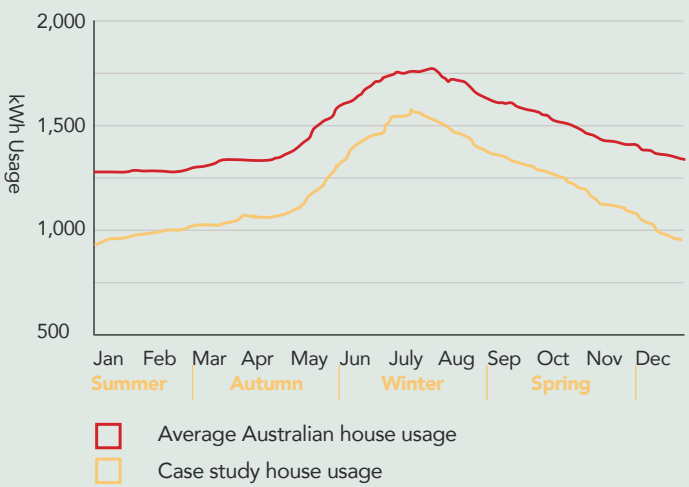
- **BAL rating = up to 29**
- **Aircon NO**
- **Gas NO**
- **Water Heater**
- **Heat pump wall heaters - only used when internal drops below 20 degrees.**
  (used sporadically between June - Sept)
- **Water tanks - No town water**
- **Septic and waste water - No town connection**
- **Solar 23kw system**
- **Basic aluminium windows and doors**
- **Concrete slab with underfloor heating**
- **Wood burner**
- **350m² of living space over 2 floors**
- **500m² of Roof**
- **Average cost for build of $2500 - 3000/m²**

ENERGY USAGE

20% LESS

1. The average Australian home consumes 6,500kwh (kilowatt hours) per year with an average annual spend of $1,966* ($491 per quarter).
2. This case study usage is 6,086 kWh per year with an average annual spend (including underfloor heating) of $1,620 ($405 per quarter).
3. By incorporating wood fibre into the build saves around 20% of their energy costs compared to an average Australian home.

*Disclaimer - Averages as reported by https://www.energymadeeasy.gov.au



DESIGN REVIEW

Problem

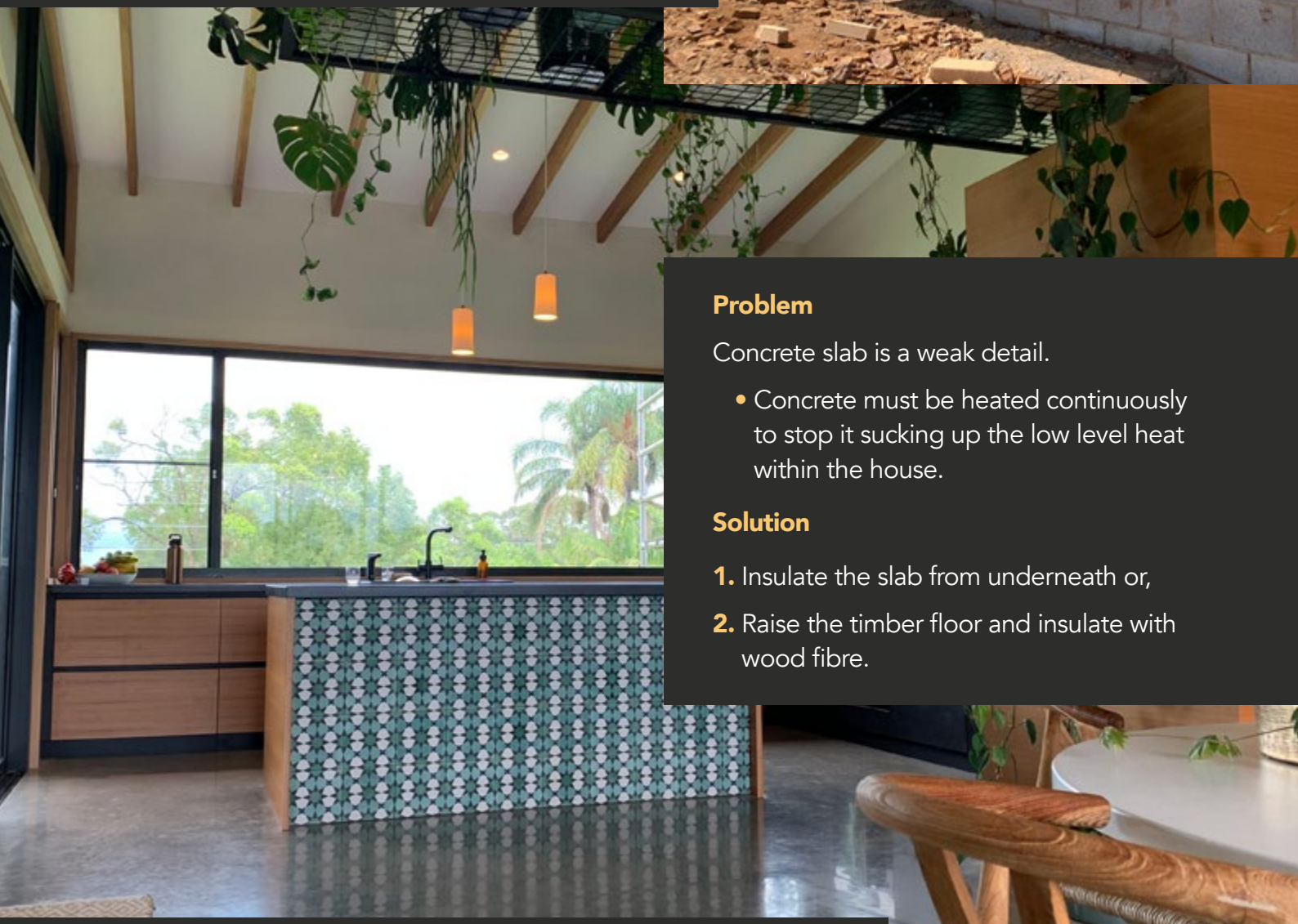
The Windows are a weak point.

- Aluminium and louvres which are not airtight
- Budget was restricted at this stage of the build
- In colder months or high humidity conditions, too much moisture enters through the louvres and, if closed for too long, the air needs circulating.

Solution

1. Design better ventilation

2. Pay an extra 100k for quality windows and doors.



Problem

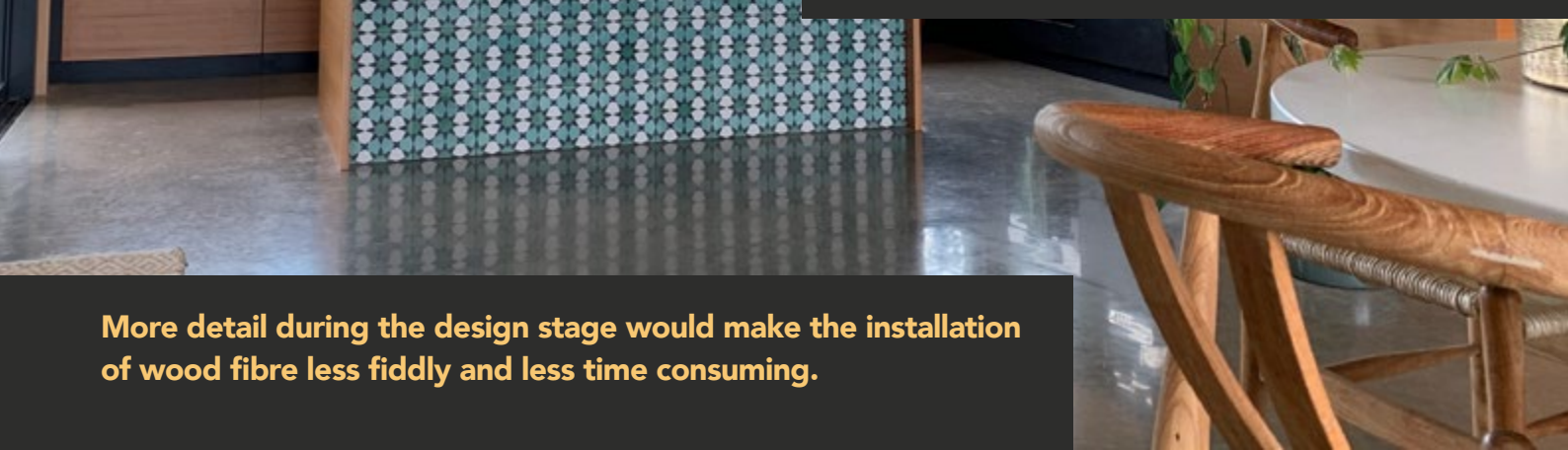
Concrete slab is a weak detail.

- Concrete must be heated continuously to stop it sucking up the low level heat within the house.

Solution

1. Insulate the slab from underneath or,

2. Raise the timber floor and insulate with wood fibre.



More detail during the design stage would make the installation of wood fibre less fiddly and less time consuming.

POSITIVES

1. An amazing sense of satisfaction in contributing to the good of the environment
2. Visitors always comment on how beautiful the home 'feels' inside
3. All rooms have a consistent ambient temperature
4. Completing the roof with wood fibre has meant upstairs is very comfortable. Any discomfort incurred by large glazing is resolved using a purge through opening a window or using a fan
5. Evidence of much better sound absorption/ acoustics before the walls have been completed
6. The heat absorption of boards mean no conductive heat affects inside
7. Peace of mind in knowing the home is continuously wrapped and sealed
8. Non toxic
9. Excellent energy efficiency of the wood fibre.
10. The wonderful living environment far outweighs the hassle of installation