



# THE **NINE** QUESTIONS

you must discuss with a  
building designer before you sign  
a letter of engagement.







## ORIENTATION

**Will your designer undertake a detailed site analysis to determine the appropriate layout to suit the characteristics of your block of land?**

The orientation of a building and the arrangement of the spaces within it, is the most significant factor influencing the energy efficiency and functionality of a home. Generally, the building should be orientated so that the 'long axis' of the building faces *True North* to maximize the opportunities for solar gain. Stepping the building, creating courtyards and 'popping out' sections of the building can provide opportunities for increased efficiency in heating and cooling. Locate living areas to the northern side of the house as they have greater heating and lighting requirements.



## FLOOR PLAN / UNIVERSAL DESIGN

**Have you considered the benefits of incorporating aspects of the guidelines for *Universal Design for Housing* into planning your home?**

These nationally agreed guidelines were created to provide a consistent, inexpensive and practical set of recommendations to make houses safer, more comfortable and easier to access for people of all ages and abilities. The Silver, Gold and Platinum ratings represent a trusted, quality seal of approval that gives you confidence that your house has been designed and built with livability in mind. These standards can be used to ensure your building is fit for purpose for its whole life. These days that could be up to 50 years or more. It may not be necessary to fulfill all of the criteria contained in the standard, but you can be assured that the information, dimensions, and suggestions contained in the guidelines are the most up to date thinking on what constitutes a home of the future.





## THERMAL MASS

**Do you have any thermal mass inside your building?**

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Thermal mass is the term used to describe a material that has the capacity to absorb and store heat energy. In NSW, thermal mass is necessary in order to act as a 'heat bank' in winter and in summer to achieve comfort in the home. In winter, mass in walls and/or floors absorbs radiated heat from the sun and re-radiates it into the room at night. So maximize thermal mass in house construction to north facing rooms. A concrete slab on the ground offers a simple way to incorporate thermal mass for solar gain and internal masonry walls can also offer substantial thermal mass performance. A balance of thermal mass in the walls and floors is desirable.

## INSULATION

**Has your designer specified and optimized the choice, quality, and efficiency of the insulation systems to be built into your new home?**

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There are two types of insulation. Bulk insulation such as cellulose, polystyrene foam, wool, glass fibre and rock wool as well as reflective insulation such as Enviroseal, Concertina Foil Batts, Aircell or Homewrap. The "R" value or thermal resistance measures the ability of a material to resist the flow of heat through that material. Insulation, and its careful installation, is one of the most important and least expensive components in a house.

If your designer chooses the appropriate product and maximizes the R-value of the product, this will go a long way to ensuring maximum thermal performance and year-round comfort in your home. It is vitally important that these products are installed and certified by licensed installers to the schedule or details on your plan or energy-rating certificate. Remember it is also important to insulate floors as they can feel cold underfoot and allow considerable heat loss. Seals on all external doors should be mandatory to help in keeping the airtight integrity of your house and its insulation intact.





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## GLAZING AND BREEZE PATHS

**Have you made use of the appropriate window types, coupled with the correct Smart Glass?**

The size and position of windows should be planned according to the direction they face and the type of glazing that is appropriate for that orientation. With the advent of SmartGlass, there are a myriad of choices that can be made to vastly improve the energy efficiency of your home. The type of glass coupled with the number of window options available (Fixed, Sliding, Awning, Casement, Louvre, Double Hung, Bi-Fold and Tilt & Turn) can be a very complex component of your house.

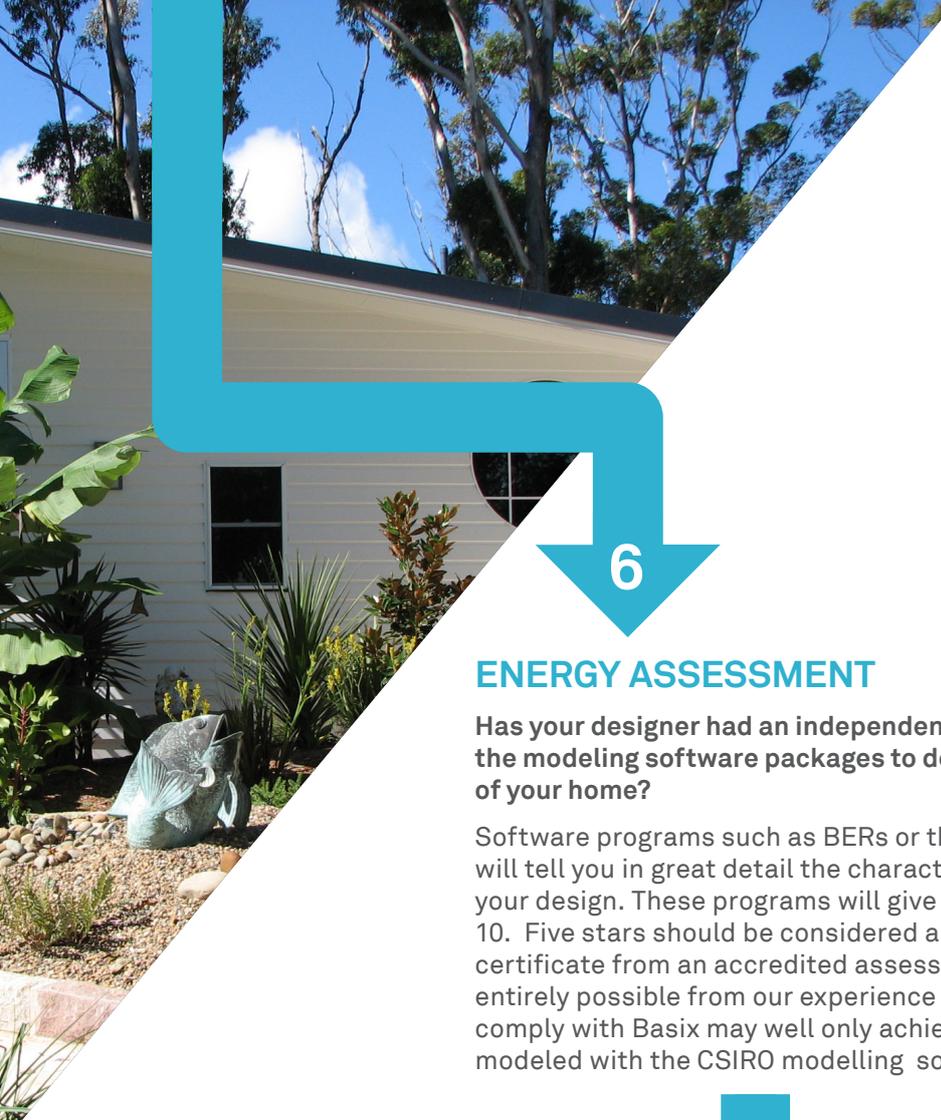
Door options can be just as complex with Sliders, Stackers, Bi-Folds, Slide Away and Concertina.

All these windows and doors work or operate in vastly different ways and it is the designer's job to advise you on the most appropriate options for your particular circumstance. Awnings, for instance, work well on the side of your home where weather and rain prevail. If left open on the south side of a house then storms or rain showers from that direction will not enter the building. Louvres are an excellent choice for creating a breeze path, and double hung windows allow cool air to enter a room near floor level and allow warmer air to escape through the opening at the top. Casements, though not as popular these days, are excellent at scooping air into the building that may otherwise pass by other window types. Window type and glazing is an extremely important factor in your house design and a great deal of thought and planning should go into this aspect of the design.

Windows should be located in such a way as to maximize the benefits of natural ventilation in order to minimize the necessity for artificial environmental controls that use energy. Air conditioning should not be required in a well-designed energy efficient home.

External shading devices are also a very effective way of keeping your house cool in summer while allowing maximum access to winter sunlight.





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## ENERGY ASSESSMENT

Has your designer had an independent assessor run your design through one of the modeling software packages to determine the real-world energy efficiency of your home?

Software programs such as BERs or the CSIRO program AccuRate Sustainability, will tell you in great detail the characteristics and actual energy efficiency of your design. These programs will give your project an energy star rating from 1 to 10. Five stars should be considered a minimum and only NSW does not require a certificate from an accredited assessor as part of the approval process. It seems entirely possible from our experience at *True North Design Co* that houses which comply with Basix may well only achieve a rating of 3 stars or possibly less, when modeled with the CSIRO modelling software.



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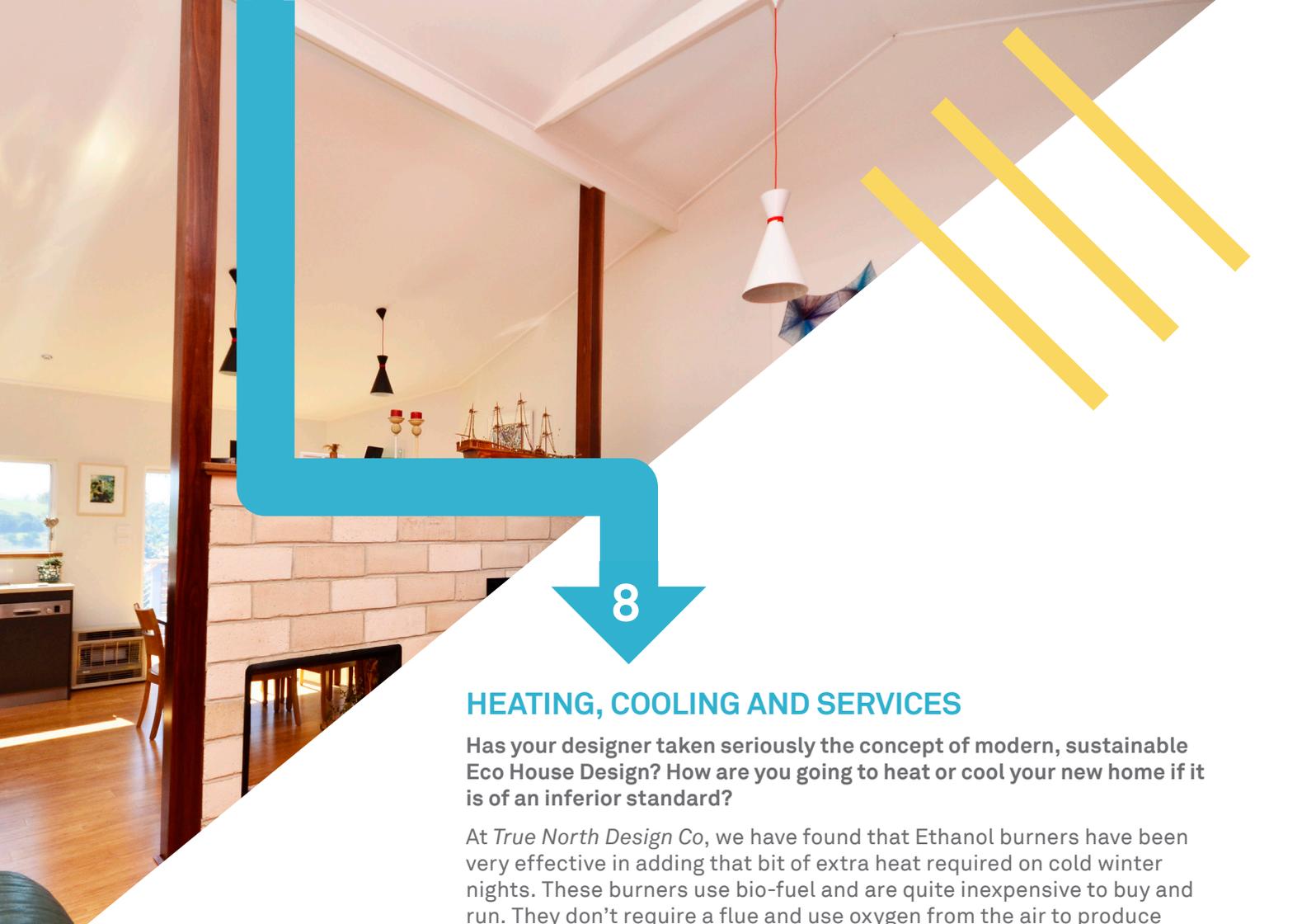
## BUILDING MATERIALS

Have you considered all of the options that are available to you for when choosing the materials to construct your home?

The choices you make at the design stage will have a major impact on the cost, efficiency and long-term durability and maintenance of your home. Make sure the materials are energy efficient and ecologically friendly. Many imported materials are of inferior quality and many are sourced using unsustainable practices. It is common in parts of Indonesia to see islands where all of the large rainforest trees have been completely removed by international logging companies and nothing large enough to build a traditional long boat is left standing.

Building costs can be contained, by using locally produced goods and materials where possible, in smart and innovative ways. Concrete, using recycled steel and fly ash in production, is one example of companies trying to be environmentally smarter. Traditional timber flooring can be up to 5 times the cost per m2 as composite and floating floors. These are all decisions your designer should help you with. There are many choices now that allow you to use non-toxic and non-allergenic materials in the construction process. Be it low VOC paints and Low VOC melamine in cupboards and joinery or water based glues and floor finishes. These can have a huge impact in reducing the possibility of you having 'toxic house syndrome.'





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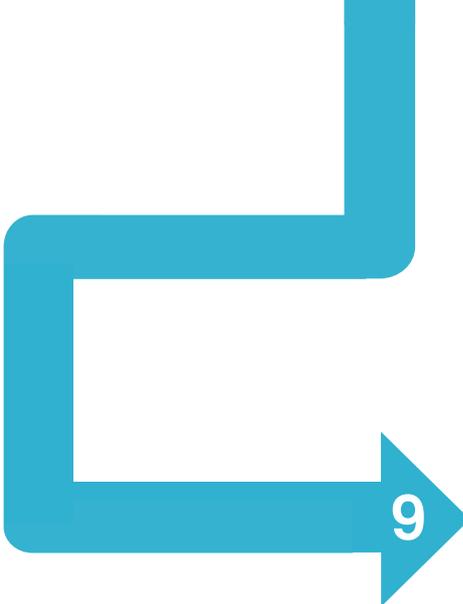
## HEATING, COOLING AND SERVICES

**Has your designer taken seriously the concept of modern, sustainable Eco House Design? How are you going to heat or cool your new home if it is of an inferior standard?**

At *True North Design Co*, we have found that Ethanol burners have been very effective in adding that bit of extra heat required on cold winter nights. These burners use bio-fuel and are quite inexpensive to buy and run. They don't require a flue and use oxygen from the air to produce water vapour and a little CO<sub>2</sub>. Any additional pollutants may be a result of impurities in the fuel so quality ethyl alcohol is recommended. Air conditioning does have a place in modern design but I would suggest it should only be as a last resort. If you intend to install an air conditioner, purchase a smart system such as those by Panasonic and Daiken. Solar PV roof panels can be used to power the unit in summer when you need it the most and when the solar panels are working at peak efficiency. All houses will heat up during long periods of high summer temperatures – those with a higher proportion of thermal mass will resist this tendency far longer than those with no thermal mass. Quality ceiling fans are a great place to start for lightweight homes. Clever use of windows and doors to allow hot air to exhaust and cool air to enter, is paramount.

Decisions need to be made about which is the most appropriate hot water system – perhaps solar PV panels would be a cost efficient solution. Lighting, kitchen and bathroom design, waste and compost management, all fall under the umbrella of good design and should be considered an important part of the building as a whole.





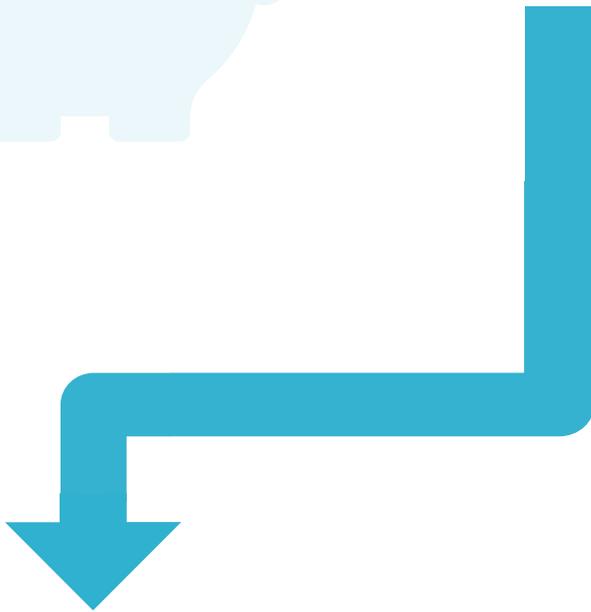
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## PROJECT BUDGET vs ACTUAL

**This is the last, but by no means the least, important consideration in the *True North Design 9 Questions to Discuss with your Building Designer.***

Do you have any guarantee from your designer or architect that the overall project cost will be within the parameters you discussed when you first approached them with your vision or your brief?

A full 50 % of buildings designed by architects are never built and nearly 70% of buildings cost well over the initial estimate. Over the years we've had a number of clients come to our office with cost blowouts on their project plans. Our advice would be to talk with your design professional and ask them to modify the design to fit the agreed budget.



**Contact True North Design Co today**

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