



**Timber Queensland Talk – A Critical look at Australian
Housing and the Future of Alternative Residential
Construction.**

Presented By Anthony Rigg

This report will not depict a single real project but rather attempt to look critically at Australian housing and offer conceptual ideas for structure and design in the future. Ever since the GFC hit in 2007, our practice, Bleuscape Design, has become increasingly interested in alternative construction and the manipulation of materials in the hope of responding with relevance to the times we live in.

We exist in a period of time where things are changing so rapidly that to look at something in only one way is to be overconfident. In his Boyer Lecture address in 2008 Rupert Murdoch stated, 'The future belongs to those who can find solutions from a multitude of angles'.

In Australia, one of the areas that desperately needs a little innovation is housing, in particular low-cost housing. Recently, Stockland's chief executive for residential communities, Mark Hunter told Fairfax that the average four-bedroom home has shrunk by 20% since 2007 (see Figure 1.1). He said, 'Smaller three-bedroom, two-bathroom homes are 'the new sweet spot' in the market'. While reducing the size of our homes is, by and large, a good thing it is just as well because in their 2011 August report, I was shocked to read the average lot size in their green-fill subdivisions is now down to a minuscule 481m² with 50% of them under 450m², the average frontage being 8.5m.



Figure 1.1 – Stockland Average Lot Size 2008-2011
Taken from Stocklands FY11 – Results Pack – 10 August 2011



Figure 1.2 – Divine – Mountview, Redbank Plains

This kind of offering seems to be happening across the board. I give you one of Divine's latest, a 658+ lot subdivision in Redbank Plains, where the lot size gets down to under 300m² (see Figure 1.2).

This is what is being offered up to the majority of the Australian public as being appropriate. With houses to match our public is being stifled by monotony and plainness, two factors that are rarely considered as suppressing the Australian psyche.

are we actually increasing the desire and desperation for difference (see Figure 1.3)?

Could we be contributing to what Alain De Botton calls 'Status Anxiety'? He suggests that our level of satisfaction in life is relative to how we view ourselves when compared to others. If we see an individual or family that we view to be our equals moving ahead or achieving something we have not we are more likely to experience greater levels of envy and resentment (Status Anxiety – Alain De Botton).



Figure 1.3 – Sub-division Example

By limiting the choice of a design, and ending up with what is essentially the same as ones neighbour

Let's liken it for a moment to clothes. Go into any high school that requires a set uniform, and you will immediately see kids subverting monotony in the search for individuality. They are the ones that are always trying to push the boundaries, introducing nose or tongue piercing, shorter skirts, baggier pants or the school hat on backwards. It is evidence of the human instinct to desire independence and uniqueness.

Could we actually appease levels of frustration through conceiving our buildings form out of a response to place even in these green-lot subdivisions? Does this not seem more natural than through fake phydoric columns, porte cocheres and herbal mouldings, all decorative, yet irrelevant facade treatments that attempt to hide the 'sameness' in form beyond (see Figure 1.4).



Figure 1.4 – Luxury McMansion Example

Before I get too wound up about the project home I must also consider how my own industry has contributed to the problem. Architecture's lack of ability to sustain an ongoing positive effect in the low-income demographic is disgraceful. It is a known fact that architecturally driven solutions start at around \$2500 per square metre. That fact alone voids the argument for most people between custom vs buy off the plan. The majority of people out there simply can't afford one-off design's built in traditional methods which, is precisely why only 3% of homes built are conceived out of the mind of the architect.

If the architectural profession does not seek to seriously impact the way 97% of us live, then it only emphasises the difference between the have's and the have-nots and therefore, is ultimately destructive upon the very culture it seeks to impact.

Back in 2007 Kent Nordin, senior executive and general manager of Ikea Australia presented a lecture hosted by the Historic Houses Trust under the title of 'Out of the Box'. He said, 'In Europe Ikea's prefab houses are designed to be affordable for a single parent on the equivalent of a nurse's wage'. He went on to say, 'When we have house and land releases people literally camp out over night at our store shop fronts to sign up for this housing stock.' Now whether or not you think Ikea is qualified to be designing homes. The fact of the matter is they are providing people who probably would never have the means to purchase a home with the opportunity to get into their own place. This is something that Australia is seemingly unable to do.

I remember once hearing a random comment made by a gentleman who lived in 'Kingo', Jorn Utzon's low-cost housing development in Europe. He said, 'I have lived in this place for 25yrs. Every morning I walk out into my beautiful courtyard, the warm sun hits my face, and I say, thank you Mr. Utzon'.

This comment, along with Mr. Nordin's lecture, has sent our company on what has become a somewhat obsessive journey into the world of alternative construction and prefabrication in the hope of finding a cost-effective model that could offer an alternative to the monotony of brick facades and tile clad roofs we see sweeping our suburbs. To me, it is not enough to just have a cost-effective product though, it is much bigger than that. It is about bringing design back into people's lives, a reason to get happy about coming home, an infusion of delight no matter the socio-economic status of the occupant.

As we all know during the evolutionary process of traditional building, we see many different trades, all using specialist skills, to produce an end product over a considerable period of time. Is there a way of looking at building where we could maximise the use of just one core ingredient to produce unbelievable refined outcomes?

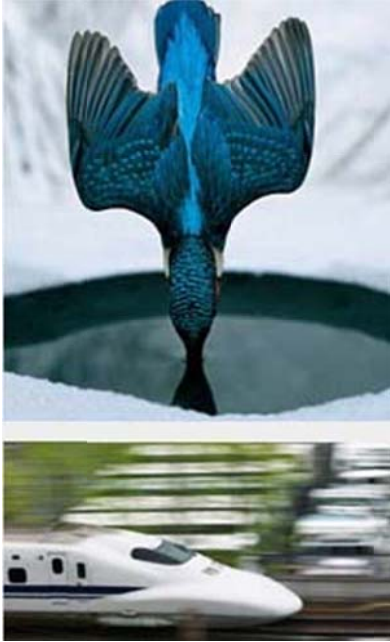


Figure 1.5 – Biomimicry in Action

At Bleuscape, we are attempting to do just that, and the journey has led us down the road of biomimicry. If you haven't heard of this term already you soon will. Within the next 5 years, I believe it will be one of the most significant problem solving guidelines known to mankind. Biomimicry is taking the recipes of nature and applying them to design related problems. A very quick example of where biomimicry has been applied. Japan makes use of extremely fast bullet trains that can travel up to speeds of 275km per hour. When first being trailed, they discovered that in a tunnel the air pressure build up at the front of the train was causing a sonic boom of sorts which was creating major sound problems for passengers who were waiting on subway platforms. An avid bird watcher made the connection between the high-speed train entering a tunnel, and the kingfisher piercing the water to snatch its prey (see Figure 1.5). The profile was then applied to the nose of the trains, not only did they fix the sonic boom problem, but it unintentionally increased the running efficiency of the trains by 20%. That is the power of biomimicry.

So how does this apply to construction? One of the biggest issues faced in design is the cost normally associated with achieving flexibility through material strength. At Bleuscape, we are looking at the geometrical patterns found in nature to produce solutions for the residential market. You see nature is all about efficiency. When it needs strength, it provides it and when it doesn't it minimises it. So far, we are in the final stages of designing a system that can be manipulated in a similar way a tree caters for molecular efficiency. If you do a cross section through different parts of a tree, you will discover that its fibrous make up differs in density depending on the load needed. In the same way, our building system can allow for a change in mass over connections, openings or load points effectively doing away with the need for steel and traditional lintels configuration. Rather than being made up of a specific material the geometry can be applied to almost anything, including timber. Having said this probably its most significant achievement is the fact that once in panel form an entire house can be constructed out of only three individual components and be assembled by anyone. Unfortunately, I am not at liberty to show you the geometry just yet, however the designs I am about to show you are all worked out to maximise our system...just to stir up your curiosity!

The first home I want to show I have called 'The courtyard house' (see Figure 1.6). I thought it appropriate to at least try and design an arrangement that could work in a Stockland style sub-division. As designers and architects the one thing that we have a level

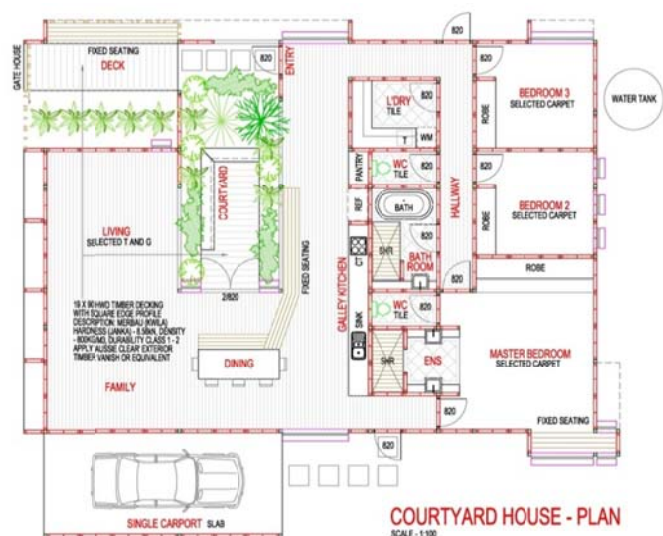


Figure 1.6 – Bleuscape Design – Courtyard House Plan

of control over is the layout of our designs. I once heard the famous Melbourne architect Sean Godsell say that we need to design with a level of compassion in mind, architecture is about creating the incidental moment through spatial configuration. It should cater for a strong and deliberately precision which results in journey, discovery and reward. In this design, we have attempted to do the same. One arrives via a gate-house which only gives a partial glimpse of the beauty in landscape beyond. For those invited in a heavily landscaped courtyard awaits. While private from the outside, once inside, the public space offers a transparency that allows for a total opening up. In a way, the internal open plan living can become an private veranda flooded with light and breeze. Separating the public from the private is a service's strip housing the galley kitchen and wet areas. This keeps all the services in one area additionally offering a sound barrier between the two spaces. The carport is located near a rear entrance to the kitchen for bringing in the shopping.

The house is clearly a box for ease of construction but offers a memorable experience that anticipates connection and communication with the occupants and the landscape. It's a different approach to the project home model that barely makes a connection to an increasingly smaller outdoor space. Our design brings it all inside allowing for a much more intimate connection with outside. Below are some external images that show a box doesn't have to look boxy (see Figure 1.7).



Figure 1.7 – Bleuscape Design – Courtyard House Perspectives

Two of the most beautiful things you can offer people when designing them a home is to allow for natural breeze and sunlight. These two elements when controlled create serenity and a peace within a dwelling that is rarely seen in the average house design.

The second house is called 'The Sloping Site House'. This design started its life as a real project for a neighbour. The 432m² site had a gentle slope to it, the only down side that it faced west, not the best orientation for the Southeast Queensland climate.

As we began to design this home, it dawned on us that there was an opportunity to try and solve two problems at the one time. I wanted to achieve exactly the same result by building it either onsite (in-situ) or modular making it transportable.

The key to producing a product that encapsulates the essence of simplicity is to create an ease of construction no matter the circumstance. What made this site a little more difficult was it did have a slope. Ask any modular building company about slope and they will most likely tell you to go elsewhere for your build. I had to come up with a system that allowed for slope but at the same time retain its build simplicity.

Just remember that when dealing with transferable buildings it is important to get your sizes right. I chose the overall size of 12m x 3.4m which is the maximum transportable size here in Queensland before you have to use pilot cars. Some companies do like to build up to about 17m long but when traveling across longer distances they incur added transport costs.

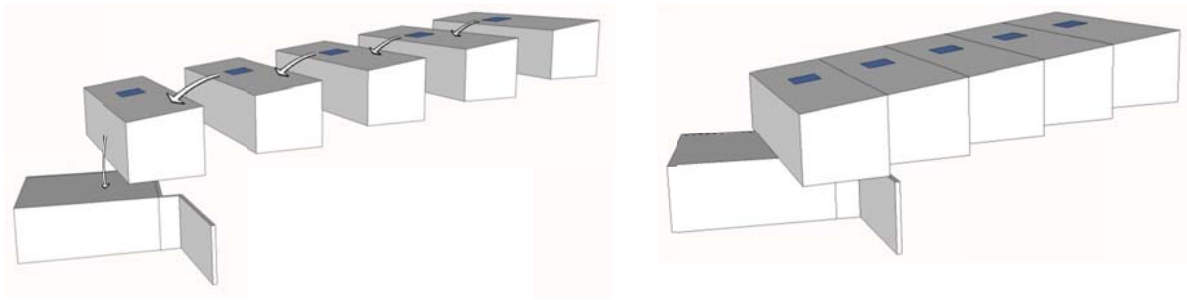


Figure 1.8 – Bleuscape Design – Sloping Site House Modules

To achieve symmetry, I made sure that each pavilion’s skillion roof (sloping roof) lined up with the next. This would, when finished, allow for one continuous roofline at exactly the same gradient. When positioned each transportable would naturally cater for the slope in the land (see Figure 1.8). By strategically placing the same number of small steps at the back edge of each module I could allow for a trafficable interior.

Now that I knew how I was going to construct the shell I had to make it personal and site specific. With public space to the north along with bathrooms that will warm up as they get winter sun, bedrooms to the south creating a sense of retreat and privacy (see Figure 1.9), part high walls central to each pavilion with identically operable skylights above creating a breezeway for air movement and natural light corridor. Centrally from each platform one's eye is drawn down towards the lower levels while at the same time allowing for a guided perspective through the skylights above (see Figure 1.10).

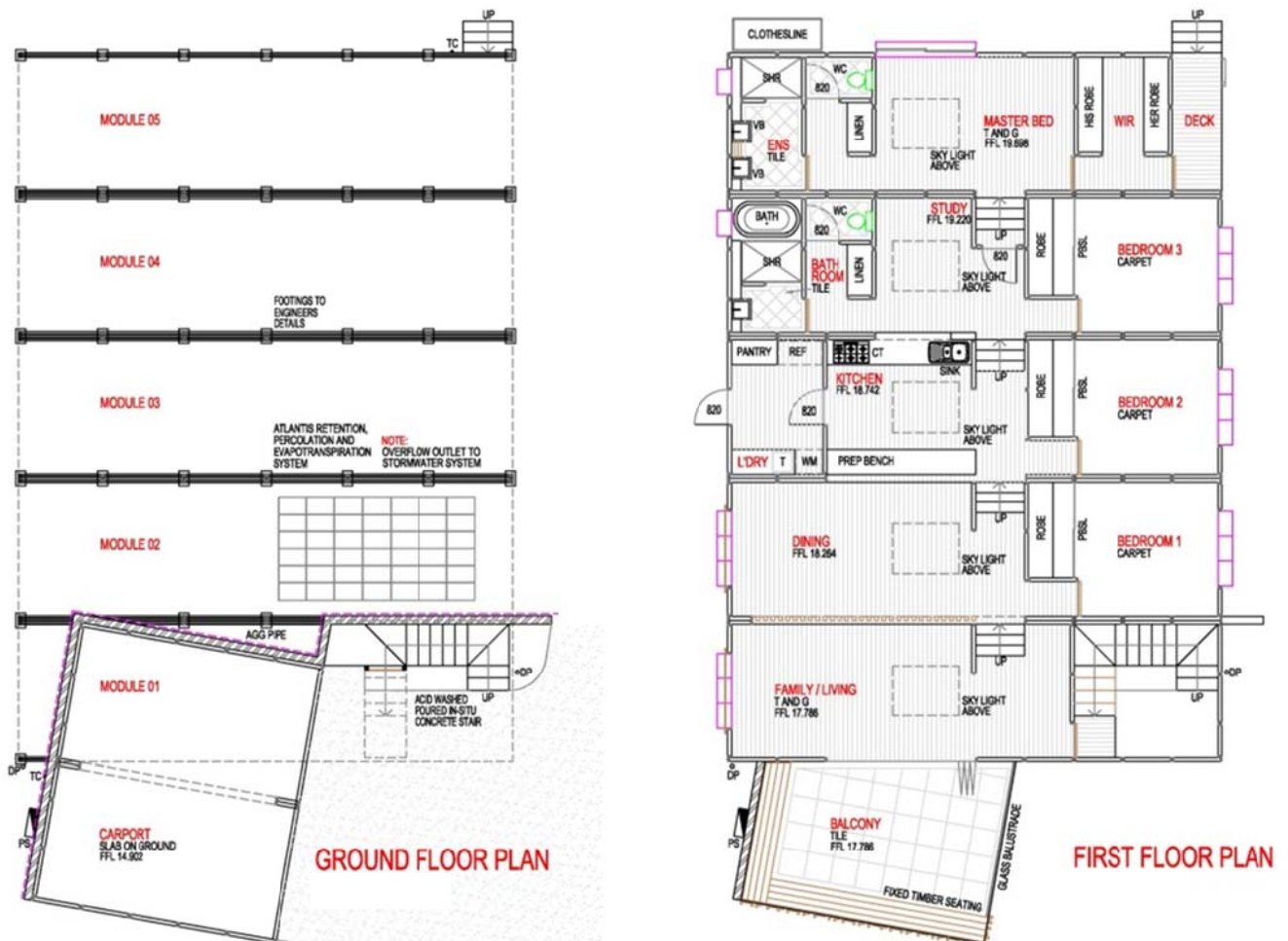


Figure 1.9 – Bleuscape Design – Sloping Site House Plans

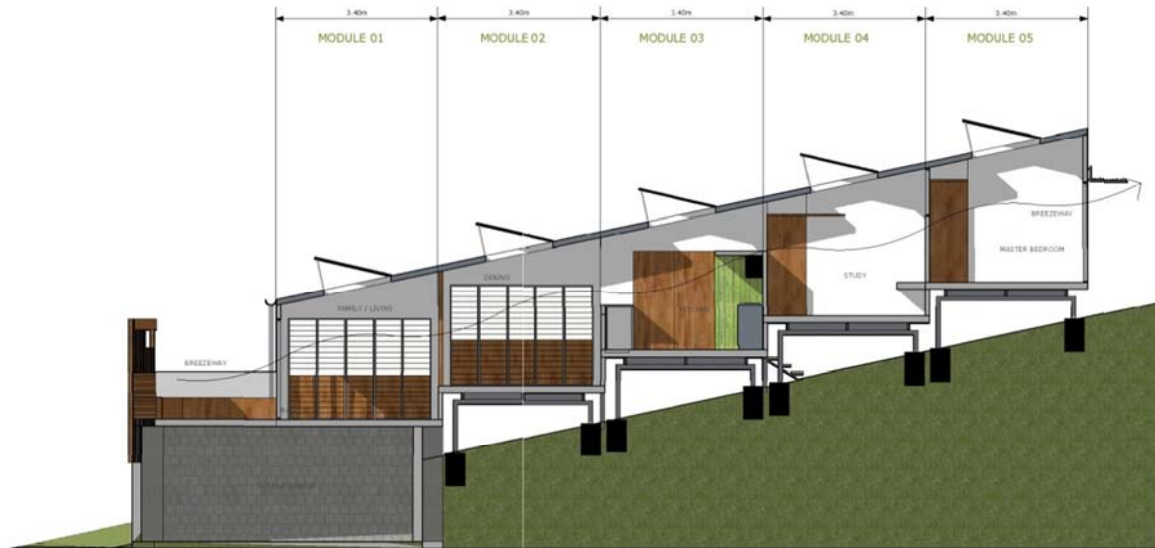


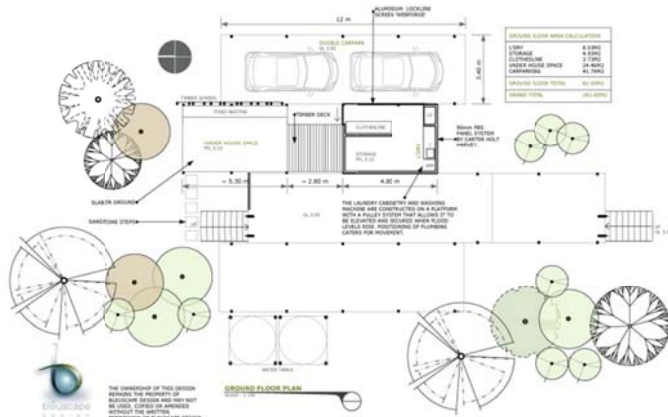
Figure 1.10 – Bleuscape Design – Sloping Site House Section

Thus, this design solves problems in a way that creates ambience and comfort. It’s literally thinking ‘inside the box’ that allows for a modular, prefab build on a site that would normally be considered off-limits to this style of construction. Here are some images that show a few perspectives of The Sloping Site House (see Figure 1.11).



Figure 1.11 – Bleuscape Design – Sloping Site House Perspectives

For us at Bleuscape Design, the devastation the floods wreaked across our state earlier this year highlighted the lack of thoughtful design particularly in disaster-prone areas. So we got to work and created the following response. It is called ‘The New Queenslander’.



As seen in the ground floor plan this area contains the laundry, clothesline, storage space, laundry stack, double carport and a public space for social interaction and kids play (see Figure 1.12).

About, 60% of the ground floor area is open but completely secure. The

Figure 1.12 – Bleuscape Design – The New Queenslander – Ground Floor Plan

screening allows for potential flood water to pass through with relative ease. The laundry cabinetry and washing machine are constructed on a platform with a pulley system that allows it to be elevated and secured when flood levels rise. The positioning of plumbing caters for movement.

The first floor level consists of public spaces with an office located near the entry. The layout of this area is designed to be open plan with doors that open it all up to the decks promoting great cross-ventilation. If this level was to flood, the ability to open all sets of doors allows for water to move through and easily escape. This design feature would also aid with the clean-up job after the water subsides. It is purposefully void of major internal walls and is linear in form.

The final level houses the bedrooms and bathrooms and has two spaces directly up the stairs to the right and left (the outdoor room and playroom). Both these areas can act as dry storage space specifically allowing for minimal transport distance when carrying valuables or heavier items to safety in the event of a flood (see Figure 1.13).

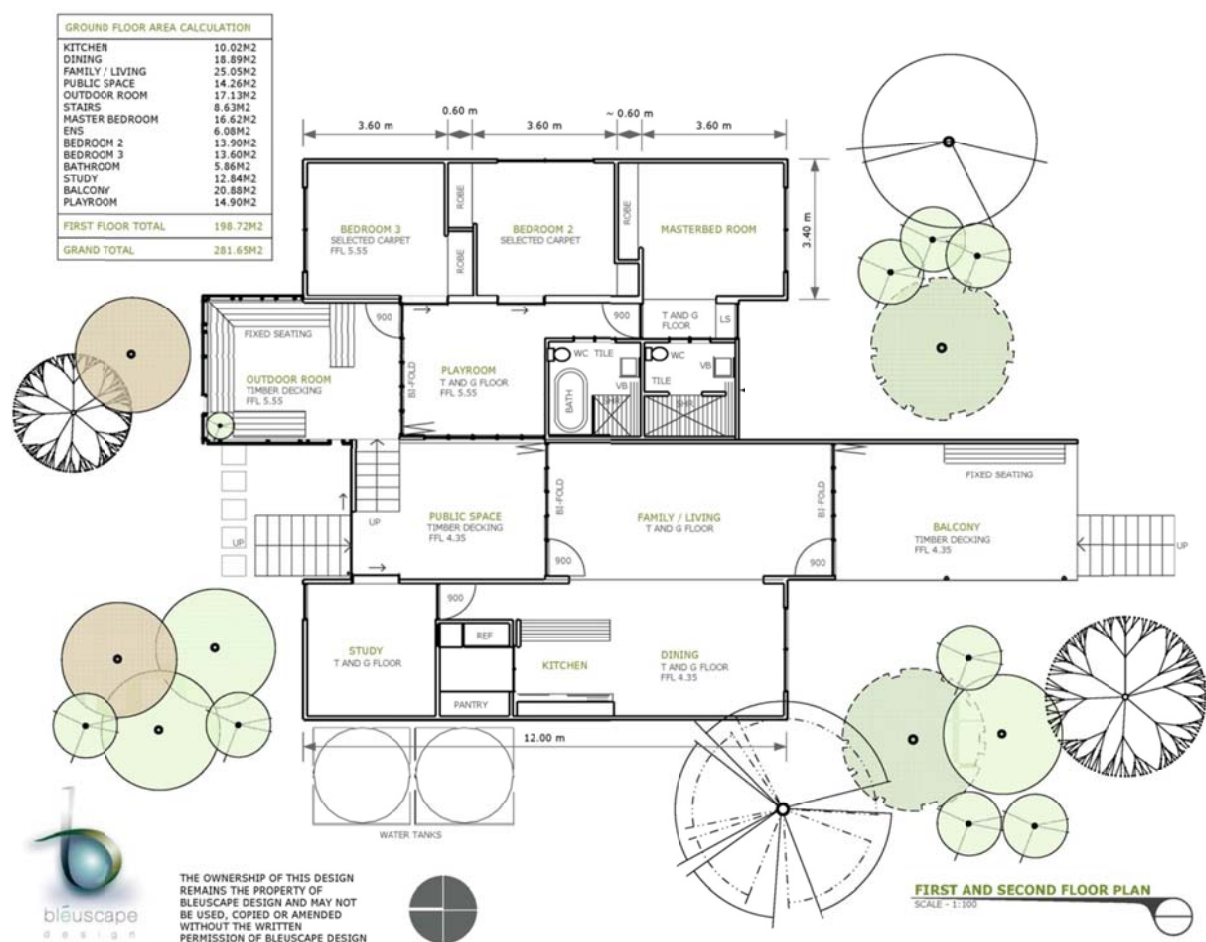


Figure 1.13 – Bleuscape Design – The New Queenslander – First Floor Plan

The overall form of this building is modern. However, it draws influence spatially from the indoor-outdoor experience that has become synonymous with typical Queenslander homes (see Figure 1.14).

It is a sub-tropical design that promotes great solar passive qualities but with the flexibility of closing off areas to define space. Like 'The Sloping Site' house this design could be constructed on-site in a prefab manner or in a modular format, the levels being divided up into 12m x 3.4m increments.



Figure 1.14 – Bluescape Design – The New Queenslander – Perspective

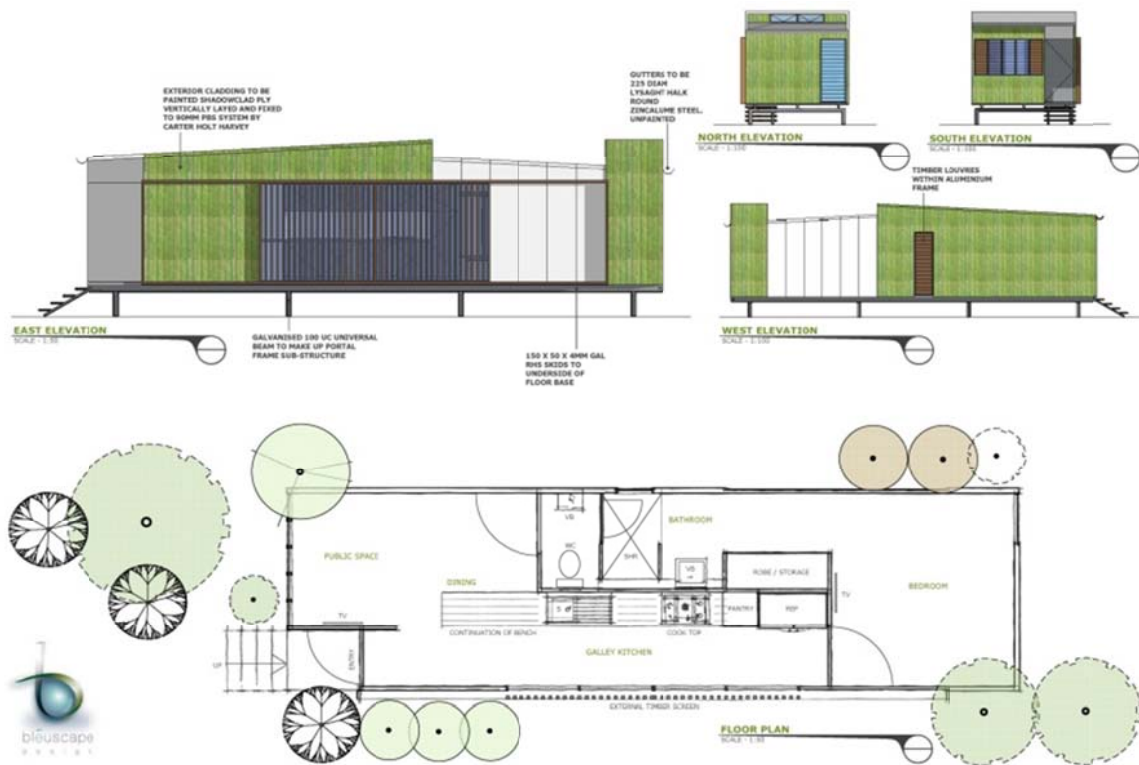


Figure 1.15 – Bluescape Design – Mining Hut Plan & Elevations

What if your build was located remotely out west in a mining camp? Up to now, people working in mining camps generally live in fairly poor designed spaces that are configured more to appease tradition than to revive the weary body of a worker.

Considering that most mining accommodation is now demanding personal space instead of shared units we have come up with a layout that again works as a prefab build or a transportable. The design consists of an arrangement that moves from public to private. One little trick we use in this kind of design is to create the illusion of more space than there actually is. This is achieved through continuing the kitchen bench top to become the dining table. It makes the kitchen look bigger and frees up area in the living room for whatever you want it to be. Likewise, in the bathroom, the vanity

hob is continued into the shower to hold soaps and other toiletries. The bathroom acts in a galley fashion allowing any work mates who might be visiting to use the restroom without moving into the ensuite or through the private areas. One final feature of this design is the two highlight windows that are specifically positioned above the cooking area and the ensuite so that any hot air generated from either spaces can rise up the raked ceiling and escape (see Figure 1.15). As with most of our temporary housing designs, they fit together to create a master plan that allows for flexibility in layout. For example, each single unit can be joined to create larger dwelling's housing more bedrooms or managers quarters with office space. Thoughtful design makes a huge difference to the way we get to experience habitation.

The last project I want to show involves the manipulation of an already existing product. Over the past year, our company has come to respect the operations and innovations of Carter Holt Harvey. Through regular phone catch-ups and a few meetings, we have been lucky enough to be exposed to some of their future directions in material innovation.

One of their interests is in a product that is relatively new to Australia but has been used in Europe very successfully for decades. This product is called CLT or 'Cross Laminated Timber'. Recent innovations in its use have seen projects like Waugh Thistleton Architect's 'Murray Grove scheme' in the UK emerge (see Figure 1.16). The Murray Grove building is a nine story structure and is currently the world's tallest modern timber residential building. It is the first of its kind to integrate load bearing walls, floor slabs, stairs and lift cores entirely constructed out of CLT timber.

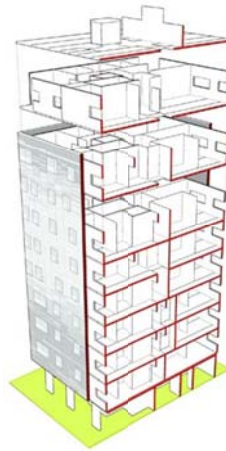


Figure 1.16 – Bleuscape Design – The New Queenslander – Perspective

In complete contrast to traditional forms of high rise construction where the use of steel and concrete have been produced through highly intensive means this building is totally carbon neutral managing to store a staggering 186 tonnes of carbon within its structure over its lifetime. Added advantage come through speed of construction, which saw this project delivered in just 49 weeks.



Because of mounting pressure for companies and business alike to understand and reduce their own carbon footprint we have seen Grocon, one of Australia's largest construction companies announce its plans in March of this year to build 'Delta', an apartment building located on the Carlton United Brewery site in Melbourne. It is the first Australian proposal utilising CLT and demonstrates the growing interest in prefabrication and alternative sustainable options (see Figure 1.17).

The use of CLT in single detached housing, however, is fairly rare as the material itself is a quite expensive but like most prefabricated system, when its use is considered through strict symmetry build efficiencies push the product into ever expanding applications. So, with this in mind our office has spent time looking at a conceptual configuration that could be used as a modern

Figure 1.17 – Grocon's 'Delta' Apartment Building Melbourne

housing option. This idea maximises the use of CLT as a structural floor, wall and roof arrangement. Each panel is triangular in shape and when erected achieves a structure that finds its strength through compression and tension. Every panel in this design is identical and is routed out through the use of C&C machinery; the constructed form can be built to lock-up within just 1 day with a light weight crane (see Figure 1.18).

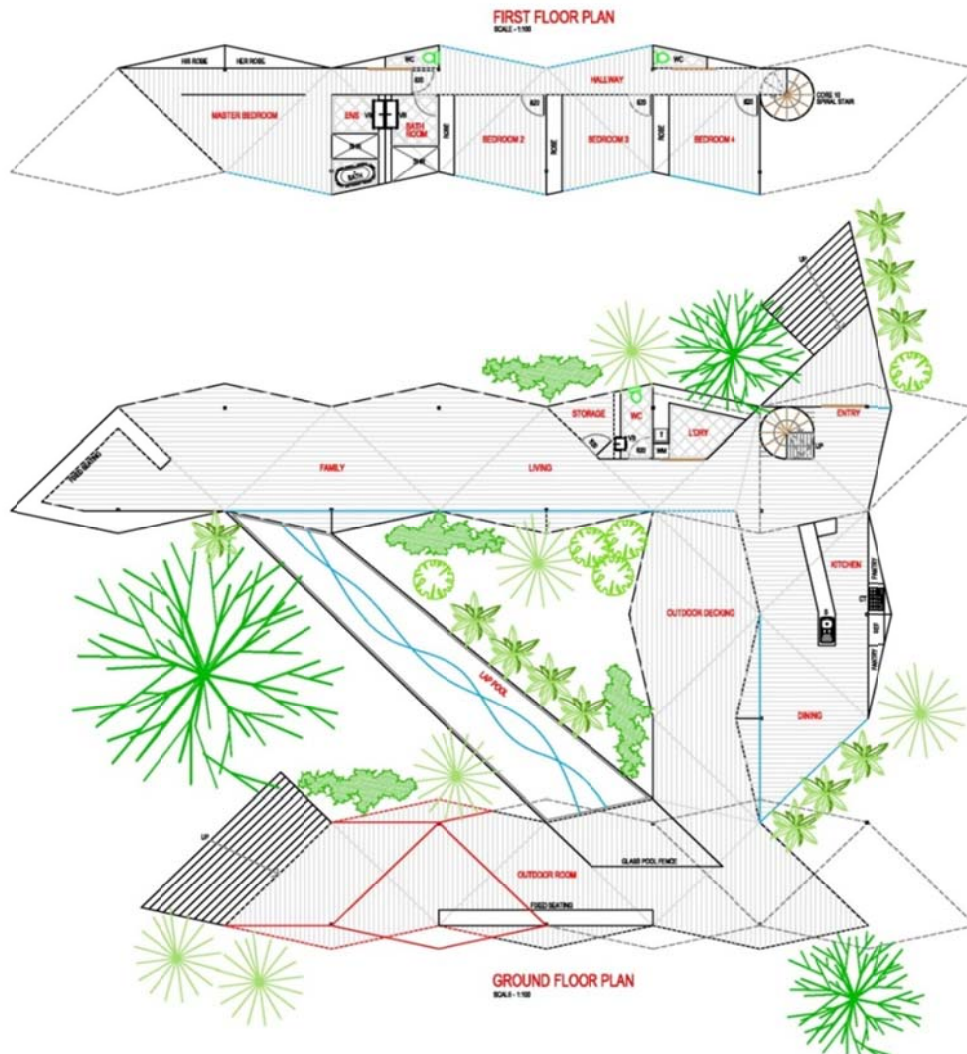


Figure 1.18 – Bleuscape Design – CLT House Plan

As you can tell the resulting form is quite abstract. While it may not appeal to everyone aesthetically as an experiment, it offers a proposed direction for the future. It attempts to once again, maximise the application of just ‘one core building material’ in an incredibly efficient manner thus continuing to support our ideas of alternative construction through prefabrication (see Figure 1.19).



Figure 1.19 – Bleuscape Design – CLT House Perspective

To me this is a powerful and optimistic era because recessions can enable very imaginative directions and when this is coupled with natural disasters, it produces a potent platform for transition.

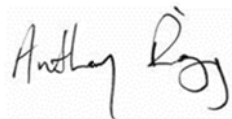
And we have seen this over the ages haven't we. Great changes come out of hardship. A moment of crisis is just the time to think very confidently about how we can do things better in the future. To a certain degree, we have come out of a period of wealth and excess. So, if this moment in time enables a change of mindset and puts an end to, for example, the age of the blotted McMansion, well it will have been a social good in a way. That's not to say there is more social ill in hard times than social good, but somewhere within all this conversion, it is my hope that there is a modest and smart silver lining that points us toward relevancy in the way we can live. The old saying, small and smart instead of big and dumb.

Housing is a funny thing, unlike commercial or industrial architecture, I have found that it is quite a dangerous thing to be interested in. To develop new ideas in construction is to come up against a level of idleness or comfort. As Australians we are by nature conservative, especially when it comes to housing, and we tend to adopt what I call an 'upgrade mentality'. The length of time that people spend in one place is getting shorter and shorter. We build and design a certain way to ensure resale value is maximised, to build anything else is a risk. Therefore, I would like to submit a theory. I believe that the majority of what we build is procured out of fear and speculative future circumstances that have been very little to do with liability and embracing what each site is offering from an environmental perspective. It is up to companies interested in innovation and organisations like 'Timber Queensland' to push and lobby for change because what we are up against institutionalisation itself.

I believe that we are fast moving towards a tipping point where we will see the emergence of technologies that will change everything we know about building. However, we need to take a leaf out of the book if nature. Nature always creates circumstances favourable to life itself. I'm going to leave you with an old Greek proverb that I think is worth considering when thinking about habitation, because it's really not just about me, or my company, or my profit. It's much broader. It's much more far-reaching.

It's not just an old Greek proverb. It's a challenge that awakens our core to a generation that is yet to exist, and yearns and plans for their success.

The proverb states: 'A society grows great when old men plant trees whose shade they know they shall never sit in'.



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