

The Domino House

Why is modular housing the way forward?

- Patterns change in our lives, so the domino modules described below are designed to add on as required as needs and circumstances dictate. Modules can be added in almost any pattern - side by side, end to end, over-lapping or however suits your design ideal. They can also be separated in a pavilion style creation, making adding or taking modules away even easier.
- Start with a couple of modules as a simple first home buyer project, and add to them as families grow and change over time.
- Please note that the design presented below is a low cost option...
- If you want something more unique or sophisticated, this system can give it, but like all architectural offerings, the wow factor costs money!

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ACKNOWLEDGEMENTS

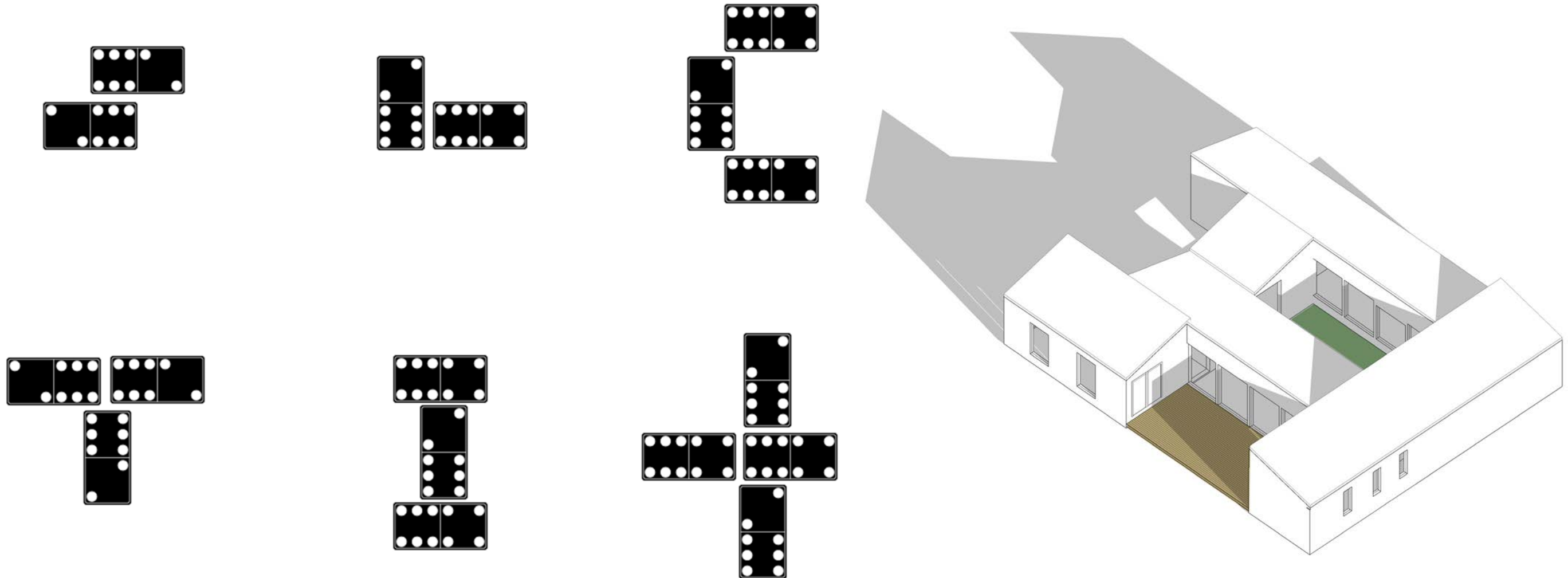
With thanks to Will Harvey-Jones for rendering my hand drawn plans to this high quality

The Domino effect

All the pieces fall down in sequence.

In The Domino House domino modules can be bolted and screwed apart and relocated.

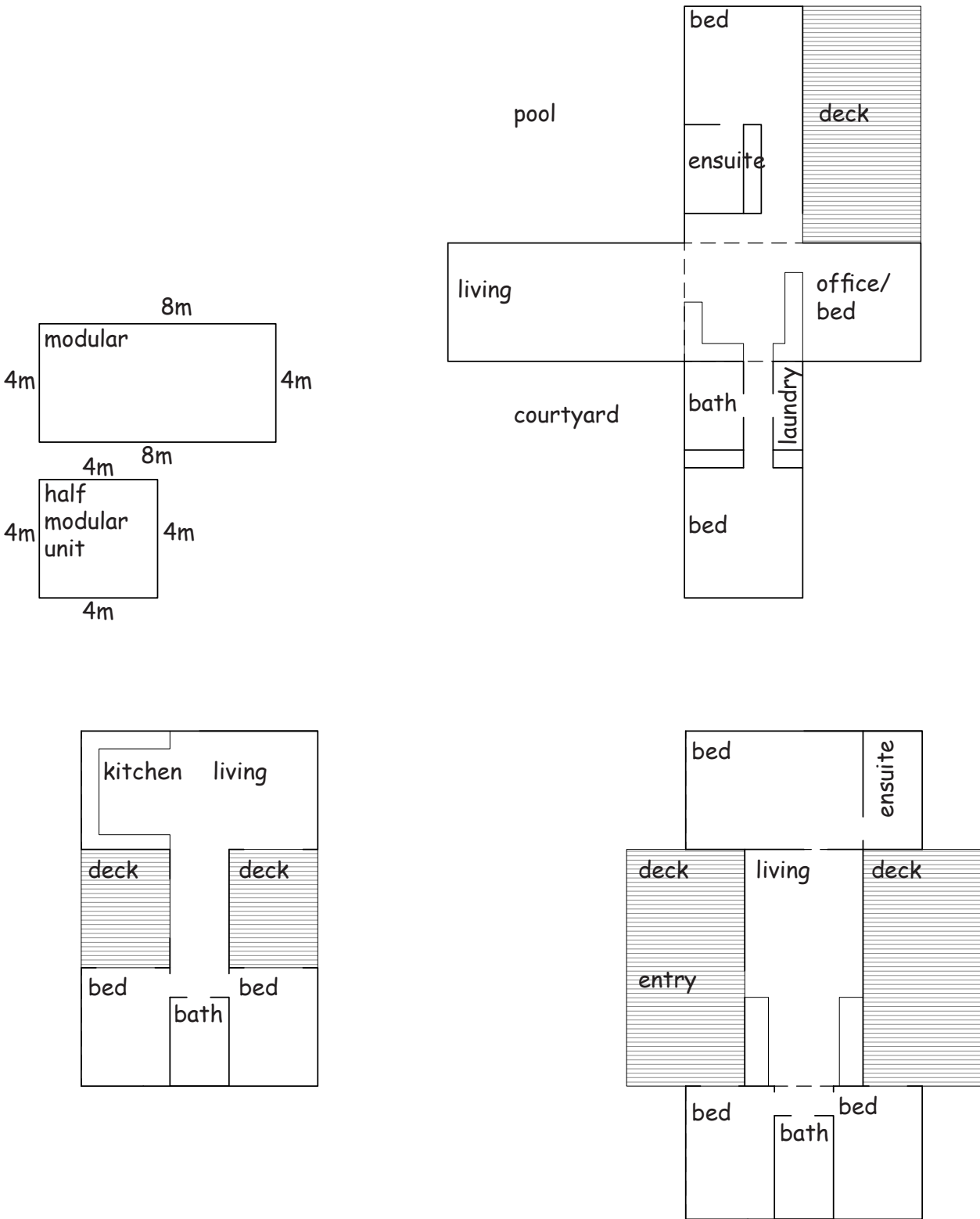
flatpacked + demountable + relocatable



Build your own Domino dwelling

The board with a grid on it is there for you to use.
Choose from the domino modules provided
and place them on the grid.

Here are some ideas to get you going...



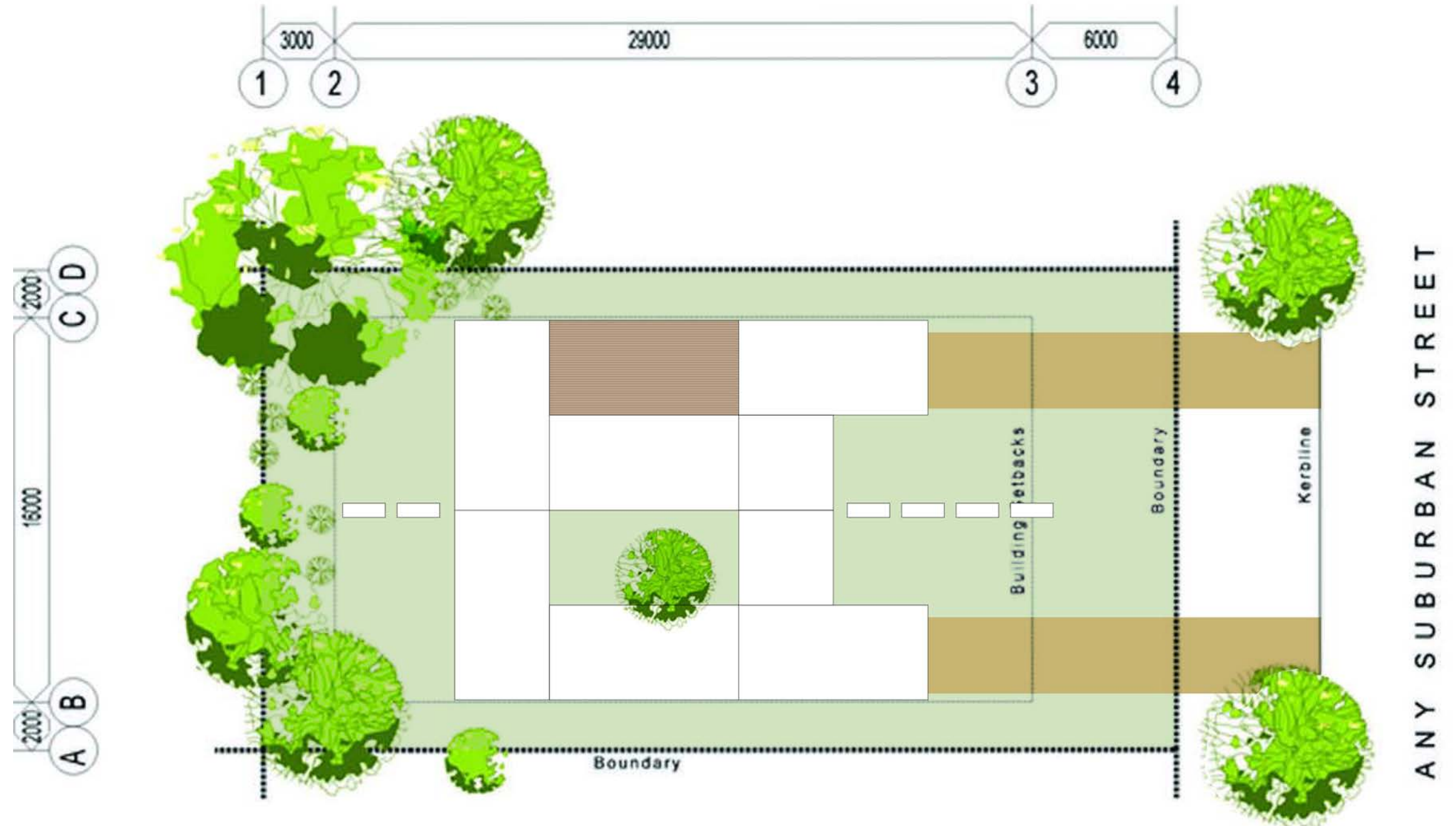
Site Plan 1:200

The structural system is based on the "Stack Shack" developed for the 2014 (innovation award-winning) entry to this competition.

Each "Domino" module is 8 x 4 metres with an optional 4 x 4 metre ("half domino") version for minor additions. For this project, skillion roofs have been specified, although pitched roof and combinations of pitches are equally possible

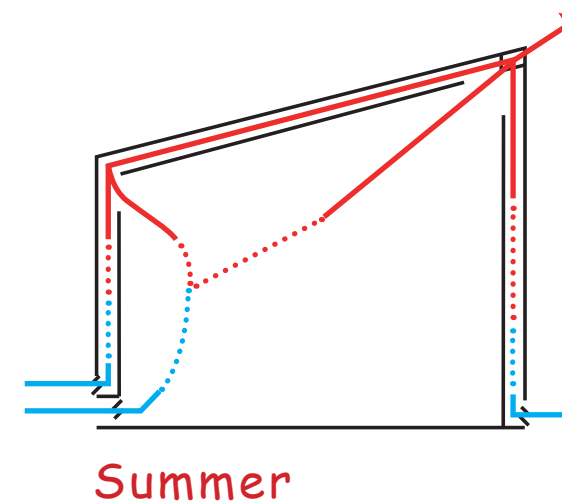
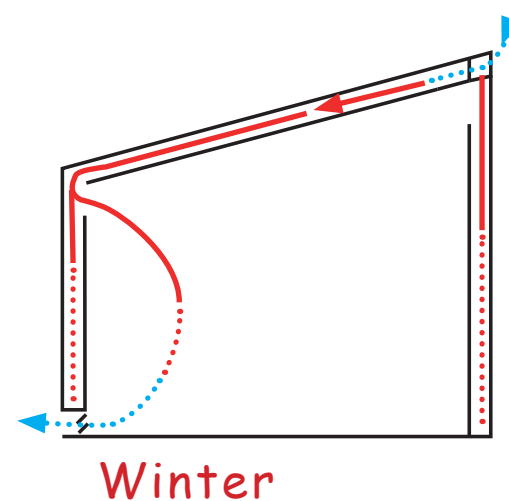
The key design elements are:

- The outer structure is a simple portal frame shed kit from any chosen supplier. Computer aided design allows almost any basic design shape and openings to be provided
- Within this engineered exterior, factory prefabricated rooms (made from Structural Insulated Panels - SIPs), are erected with an inter-skin void of 150-200mm
- Modules can be readily added as required over time as life's demands change

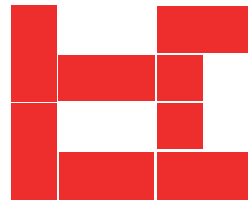


Thermal control system

- The structure provides an inbuilt solar active system - as the sun heats the building's outer skin, air in the inter-skin void warms and rises and is expelled through vents in summer. In winter the exhaust vents are closed, and warm air is diverted inwards to the interior



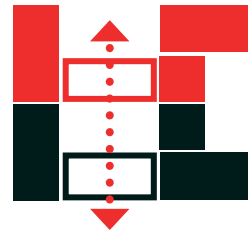
Ground Floor Plan 1:100



Modular Units



Sliding Wall Separation



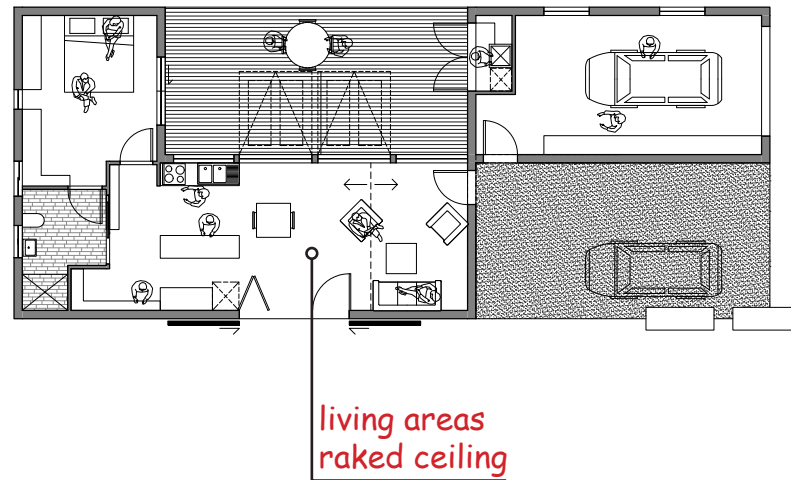
Indoor/ Outdoor Living Connection

Sustainability

- Structural materials have low embodied energy, being basically a colourbond outer skin and inner pod of colourbond/fibre-cement SIPS sandwich panelling.
- The structure itself acts as a heat generator in winter, with active solar driven cooling in summer. Solar driven fans provide the driving force.
- North facing roofs carry solar panels and solar hot water units.
- Both the shed outer skin and the SIPS panel inner are prefabricated in factories, minimising waste and significantly reducing on site construction times.
- Unsightly services are all roughed in within the inter-skin void, saving the usual time and money spent in encapsulating plumbing and electrical runs in walls and in the slab.
- Water walls on the east-west centreline of the building optimise the water storage footprint and deliver it close to the garden areas. A solar pressure pump delivers water to where needed in the house.
- Shrubs and bushes outside the western walls (and wardrobes within) reduce heat penetration. Windows are minimal tall slots (solid louvres) set deep between robes.
- Clerestory windows allow hot air to escape high up in raked ceiling areas.
- Shrubbery on the southern side and in the courtyard cools air entering through inlet vents specifically provided on adjacent walls (glass louvre sets low down).
- A solar clothes dryer adjacent to the laundry is powered by a solar fan driving hot air from the inter-skin void.



Life Happens



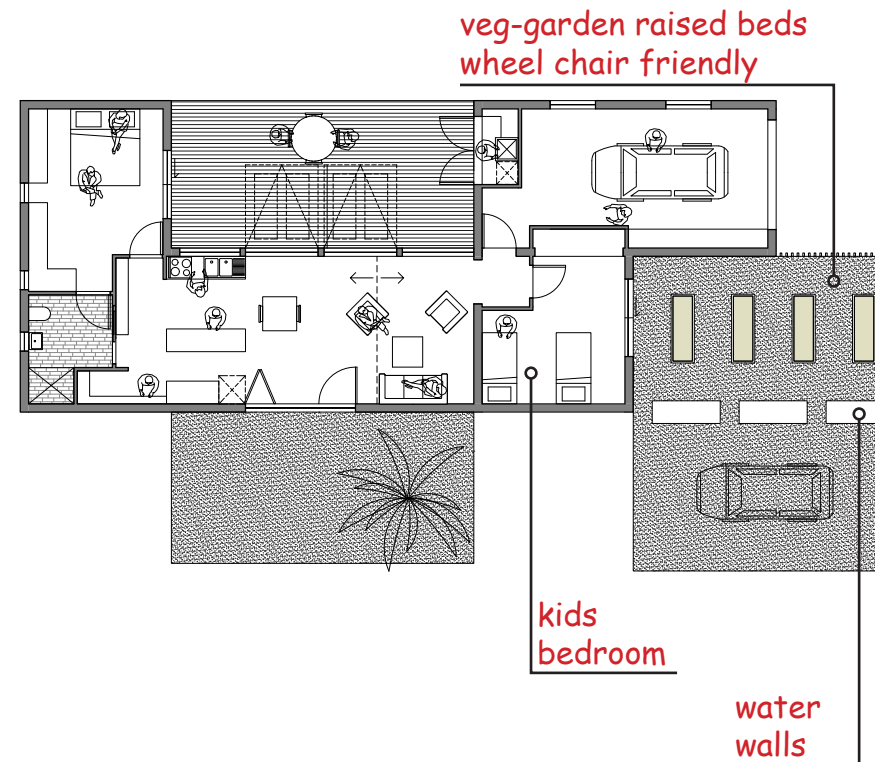
First Home Buyers

What do first home buyers (single, couple or newly married) actually need?

PLAN A

- No more than 1.5 bedrooms
- Sofa bed for guests
- Bathroom/utilities combined
- Functional kitchen/living/dining room

What do they NOT need...
3 spare bedrooms, parent's retreat, family room, games room, extensive storage, large garden, study, home theatre

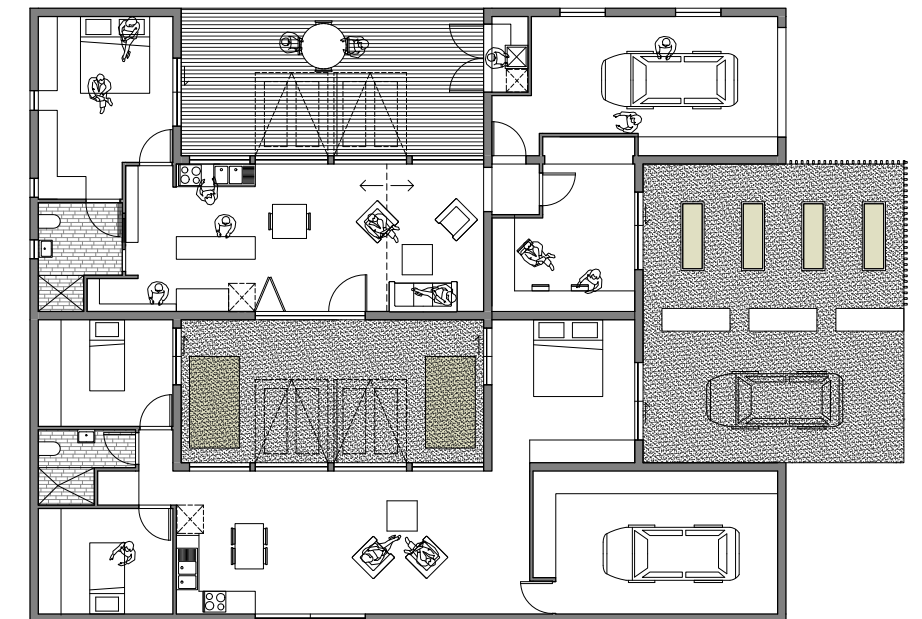


Late 20s to Early 30s

As time goes by and a baby or two comes along...

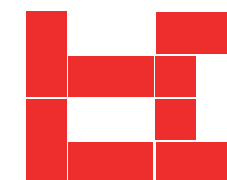
PLAN B

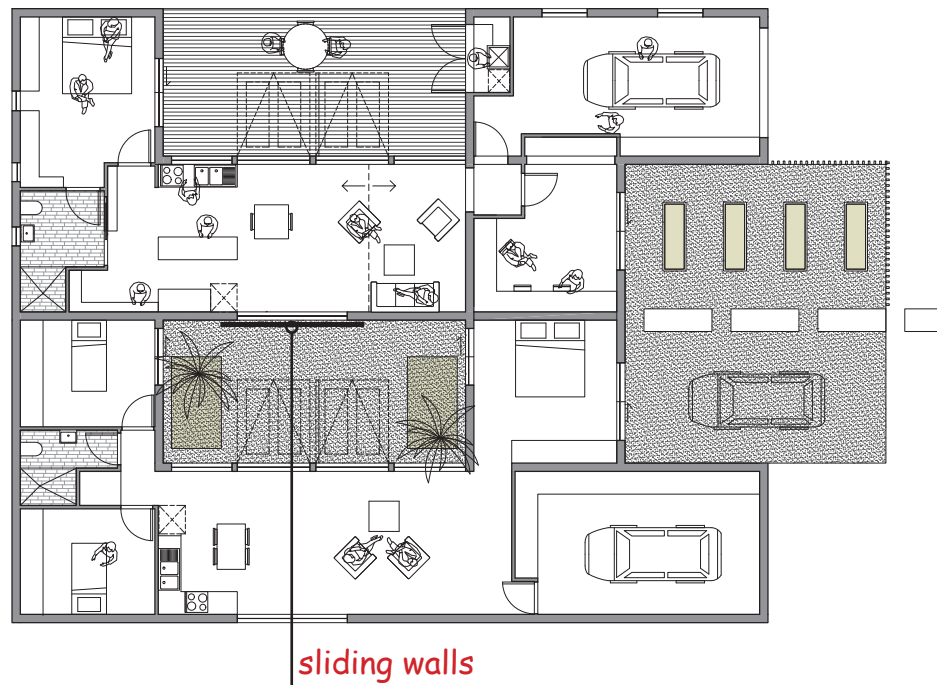
- Add one bedroom for the kids
- Stuff accumulates, storage is an issue, add the garage
- Start the vegie garden? Fence it off from the road
- Not a gardener? Invest in a pool in the front garden area



Late 30s to Early 40s

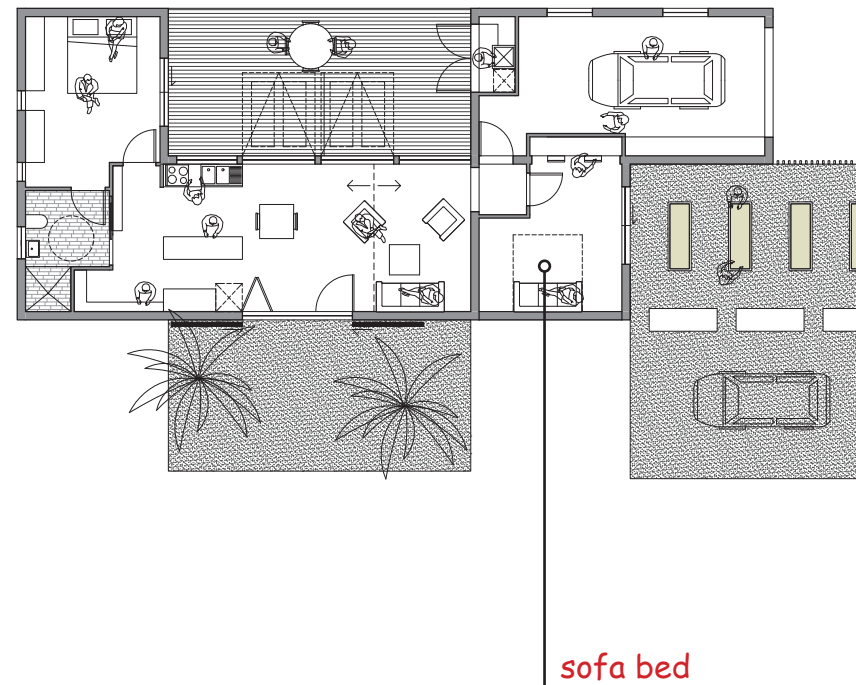
- The inevitable happens and children inexplicably morph into teenagers...
- Add a 'guest wing' to isolate their noise and bad habits (or you may have sensibly built this on day one and let it out to pay the mortgage - if so evict the tenants for the time being!)
- Think about a parent's retreat?
- Build an office or mancave (the second garage?) to escape to...
- Start gardening in earnest - as stress therapy





Mid to Late 40s

- The inexplicable happens and they all renounce
- parents and what they stand for, and head off
- You heave a sigh of relief but hate the maintenance and housework in the
- monster you have created...
- To cap it all, the kids keep coming back to live with you (wouldn't it be better if you didn't have all that space to offer rent free?)



50s and 60s

More time passes and it is finally, belatedly, time to downsize - to retire maybe...

Back to PLAN A

(where we began with a modest dwelling.....)

- Rent out the secondary unit to supplement the pension, or;
- Maybe sell off the teenager's retreat modules and use the cash to upgrade the core house to age-friendly standards



So...

All of this suggests we should start simple and add to it in a way that is:-
adaptable + flexible + liveable + reversible
 and, of course,
sustainable.

QUOTES

"All of us need to consider where we live, and how we will use our homes in the future, and architects need to be mindful of these same criteria when designing our housing."

Sally Stewart

"Design for an ageing population does not mean specific and isolated facilities, or initiatives tacked onto existing designs, but rather integrated quality and inclusive design into daily life and the urban fabric that will last over time."

Terri Peters

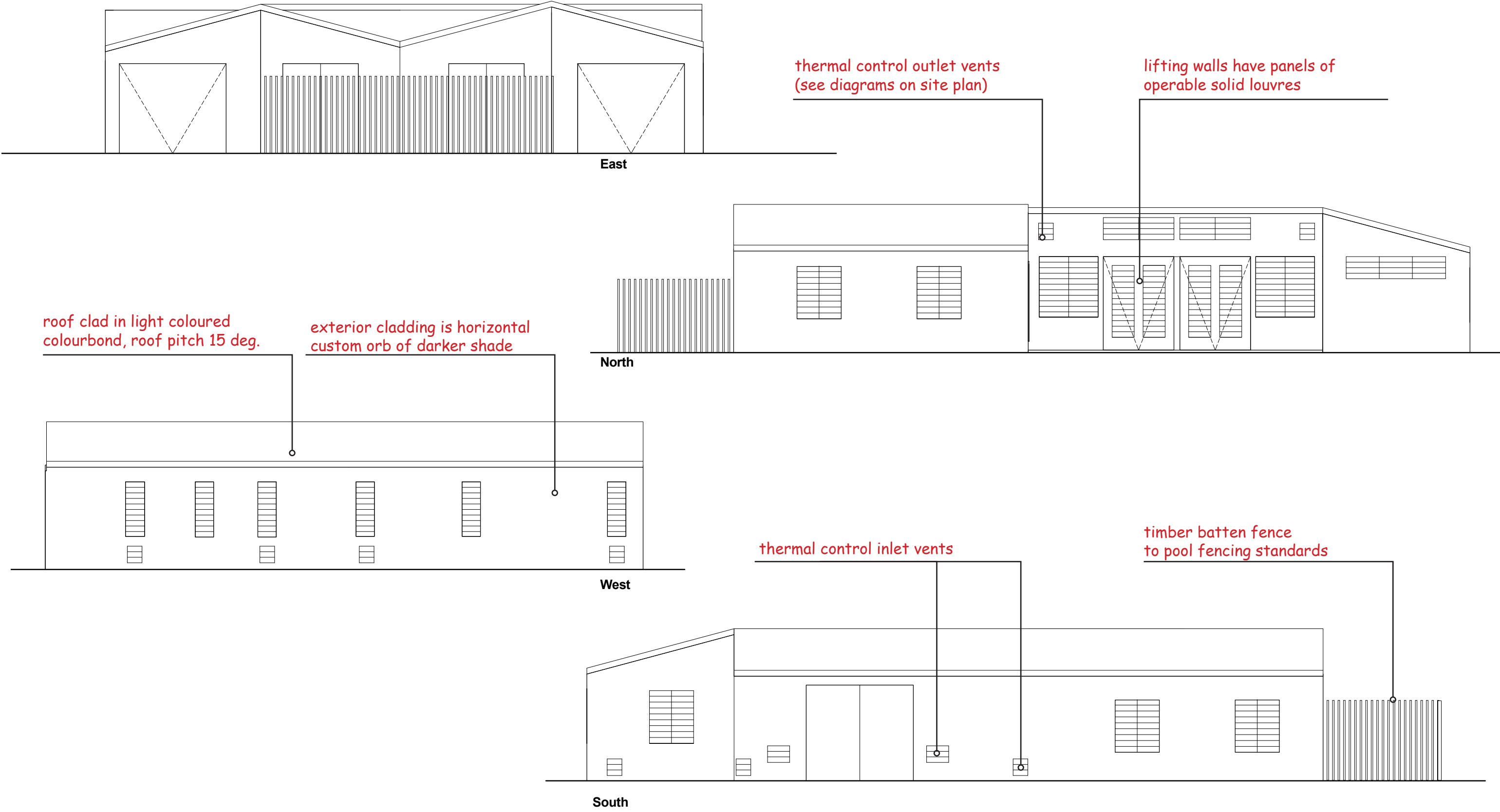
"Flexible homes suitable for living, working and multi-generational occupation may be the answer to many of these 'new' housing dilemmas."

Kathryn Firth and Manisha Patel

All from:-

Designing for the Third Age
 - Architecture Redefined
 for a generation of 'Active Agers'
 Architectural Design Profile 228 Mar/Apr 2014
 Ed Lorraine Farrelly. Wiley and sons London.)

Elevations 1:100



Adaptability

- Part of the house can be separated off as a separate, rentable unit by closing the gates which run down the midline (constructed from SIPS panelling - clad in colourbond).
- Bathrooms are designed to change with use from tight design, eg including storage and laundry, to spacious enough for wheelchair/aged use.
- Electrical outlets are high, light switches toggle, and kitchen benches cantilever, enhancing the experience of wheelchair bound and aged residents
- Doorways are a minimum 850mm wide to accommodate disabled circulation.
- Master bedrooms are large enough to allow full wheelchair circulation.
- Bathroom walls and bedrooms have built in fixing points for later handrail installation.
- NO baths in bathrooms, no ramps and no steps, as they are incompatible with aged/disabled residents.

Flexibility

- No built-in cupboards - all are demountable and relocatable.
- Each and every room (except bathrooms) can be readily changed from one use to another...
- Lifting walls (gas-strut assisted) provide instant inside/outside living, in this design doubling the available living space.
- These lifting walls also provide two things that bifolds (very popular currently) cannot. By incorporating panels of operable solid louvres, they control solar input when tilted up, and allow fly-wired ventilation when lowered at night.
- The double skin building system allows fast and cheap modifications to services, as all wiring and plumbing exists in the inter-skin void. Simply remove an outer colourbond panel to make changes.

Reversability

- Modules come to site as flat-packed kits, which bolt and screw together, and could be dismantled and sold on with minimal effort. Traditional construction methods by contrast only allow for material salvage.

Liveability

- Indoor outdoor living is taken as a given in our subtropical environment. The outdoors is easily accessed.
- Living areas are orientated north for maximum winter sun.
- The tracked gates' ability to give privacy is not only restricted to when the unit is rented out (they can be closed when parents or teenagers have friends around, or when office work requires a peaceful environment etc).
- Garages and spare bedrooms (and a possible pool) are oriented towards the road, optimising protection from noise.
- The central garden courtyard offers a peaceful retreat from the outside world.
- The interior of the building belies the fact it is built like a shed, since windows and doors have very large timber reveals spanning between the inner and outer skins. The perception is of a substantial thick-walled residence.



Section 1:50