

Ecoliv

www.ecoliv.com.au

Location: The Gurdies, VIC

Area serviced: Australia-wide

Type: Pre- and custom-designed homes built in modules for urban, remote, off-grid and accommodation sites.

Ecoliv is Climate Active and B Corp certified, demonstrating the team's commitment to conducting business responsibly, making meaningful contributions to communities, and creating sustainable outcomes. The controlled environment at Ecoliv's off-grid factory near Phillip Island enables zero emissions throughout construction, and a Design for Manufacture and Assembly (DfMA) methodology streamlines the process and reduces building time and overall production costs.

Ecoliv's homes are built in modules, transported to site and connected to services, with a range of pre-designed floor plans available. Customers can also combine modules from different homes or opt for a custom design, in consultation with designers for site-specific advice. Their off-grid Riverland project, pictured, is sited for northern orientation, and like all Ecoliv projects it features passive solar design principles, double-glazed windows, insulation and effective sealing. The energy-efficient modular home produces its own power, with a 10.14-kilowatt solar PV system and battery storage. Eco-friendly features such as solar systems, 10,000-litre rainwater tanks and energy-efficient hot water systems are standard in Ecoliv's homes, with upgrades available.



ARKit

www.arkit.com.au

Location: Melbourne, VIC

Area serviced: VIC

Type: Architecturally designed, handcrafted prefabricated builds and additions using modular, panelised and hybrid systems.

Prefab isn't just about off-the-shelf homes, with the connection between architecture and prefabricated construction growing stronger. ARKit takes a flexible but streamlined approach, using both modules and panels along with easy assembly systems to create their architecturally designed homes. Performance-wise, the homes are designed to maximise passive heating and cooling and natural light, with the team experienced in design and construction to the rigorous Passive House standard.

ARKit's designs are made from a mix of materials including plantation timber, a deliberate choice by the company to help lower the embodied energy of their projects. The lightweight constructions are created using a Design for Manufacture and Assembly (DfMA) approach that streamlines the process, ensuring the efficient use of timber and other building materials while minimising waste. Their two-dwelling project in Glen Iris, Victoria, pictured during installation, is a five-level design to address the site's extreme gradient, and was delivered as 16 modules.

Image: Willem-Dirk du Toit



Eclipse Passive House

www.eclipsepassivehouse.com.au

Location: Sydney, NSW

Area serviced: NSW and ACT

Type: Passive House-certified panelised and modular prefabricated building envelopes.

The precise nature of prefabricated building systems and Passive House design go hand in hand, especially when it comes to high-quality insulation and airtightness. Eclipse's projects are focused on achieving Passive House certification for the Australian environment, and include the Greenwich Park House by Gaea Architects, pictured, a certified Passive House in the Central Tablelands of New South Wales. The largely off-grid house is designed and built to withstand the extreme weather at the bushfire-prone site, including temperatures ranging from -10 to 46 degrees Celsius.

Eclipse's building system allows flexibility for designers and homeowners to design for the exacting Passive House standard on a particular block. The airtight wall and roof panels include timber stud framing, cellulose insulation and a service cavity for electrical and plumbing systems. The team supplies and installs the homes, all the way through to blower door testing to confirm airtightness. Eclipse says that the high speed and precision of prefabrication also suits energy-efficient homes and renovations on tight city sites.

Image: Evan Maclean



Form Homes

www.formhomes.com.au

Location: Malaga, WA

Area serviced: Perth metro

Type: Panelised system using SIPs for urban and off-grid new builds.

Committed to creating a net-zero carbon future, Form Homes is bringing technologically advanced, energy-efficient modular homes to the Perth market. The homes are constructed from structurally insulated panels (SIPs), with the practice using a 3D modelling system that accurately represents the design and specifications of their homes before printing the panels in their SipForm factory. The panels are made by bonding the external cladding and internal linings to an insulating core, and once installed, form a fully insulated envelope that significantly reduces heating and cooling needs. Durable cladding options such as fibre cement and Weathertex resist weather, mould, rot and pests, including termites, providing structural resilience and longevity.

The flat-pack approach provides an easier construction method in remote or hard-to-reach locations. The panels are manufactured, stacked and delivered by truck to site, where the home is rapidly assembled and finished with reduced reliance on trades. The architecturally designed range includes retreats and family homes, such as the house at Cottesloe, pictured; custom designs are also available.



Prebuilt

www.prebuilt.com.au

Location: Melbourne, VIC

Area serviced: VIC, NSW, ACT & SA

Type: Architecturally designed homes and commercial projects delivered in prefabricated modules to urban, rural and remote locations.

Prebuilt has been leading the architecturally designed modular market for over 20 years, offering pre-designed houses and custom designs in conjunction with architects Pleysier Perkins. The company's modular system consists of steel structural members with timber frame infill. Insulation, cladding, utilities and the entire internal fitout are completed in their Melbourne factory, meaning that most of the work is done before transportation, minimising time spent on site. Craning into position and finishing of joins takes around two weeks.

The Mod House, pictured, is designed to suit all environments including urban and rural settings, and has several three- and four-bedroom layouts to choose from. Decks and pergolas can be added to create outdoor rooms and a stronger connection with the natural environment. Prebuilt's designs use double-glazed windows, insulation and shading devices, including optional timber batten screens, to help control temperature naturally. An architectural team assesses the site and orientation for passive solar design and bushfire considerations, with homes able to be constructed to comply with bushfire ratings up to BAL-40.



Blok Modular

www.blokmodular.com.au

Location: Brisbane, QLD

Area serviced: Australia-wide

Type: Bespoke architecturally designed modular homes and commercial projects; factory-built modules delivered and installed Australia-wide.

An award-winning in-house architecture studio leads this modular operation, specialising in projects on difficult sites in New South Wales and Queensland. Modules are craned in and installed in a day, reducing time spent by builders accessing the site. Blok's homes are custom-designed using passive solar design principles along with high-performance insulation and efficient heating and cooling systems to reduce energy usage. The designs have large windows and open floor plans to maximise natural lighting and ventilation and create connection between indoor and outdoor spaces, making them more sustainable and comfortable to live in. The homes also have features such as built-in storage and furniture to make them functional and efficient, as well as multi-use spaces that can adapt to different needs over time.

Blok's homes are made from sustainably sourced timber, with low-VOC paints and finishes, and recycled and repurposed materials are used wherever possible. The award-winning house at Stafford Heights, pictured, is a design collaboration between Blok Modular and architects Vokes and Peters.

Image: Christopher Frederick Jones



Anchor Homes

www.anchorhomes.com.au

Location: Melbourne and regional VIC

Area serviced: VIC and southern NSW

Type: Family and holiday homes constructed from modules built in factory for delivery and installation onsite.

Energy efficiency is prioritised in Anchor Homes' modular dwellings, with standard features such as double-glazed sliding doors and awning windows, insulation in walls, floors, and ceilings, and heavy-duty roof sarking and wall wrap for draught proofing. Energy efficiency can be boosted with higher insulation levels or thermally broken aluminium window frames. The range of 35 designs consists of one to four modules of up to four bedrooms in size, and each module is built on a steel subfloor with additional bracing for transportation. Customers can also bring their own design to be adapted to Anchor's modular home building system.

Anchor's transparent pricing includes delivery fees to help homeowners make informed decisions about costs. The construction process is efficient, with an estimated 10-week build time, followed by six to ten weeks for onsite installation. Pictured is a modified version of Anchor's 162-square-metre Portsea 16 design, a bright and comfortable four-bedroom home on the Bellarine Peninsula.



FabPrefab

www.fabprefab.com.au

Location: Somersby, NSW

Area serviced: Australia-wide

Type: Architectural homes built and delivered in modules ready to 'plug' into the site.

FabPrefab's architect-designed homes are constructed with cross-laminated timber (CLT) for its strength, sustainability and compatibility with prefabrication techniques; FabPrefab is the first builder of full CLT homes in the modular market. Standard material sizing is used for low waste in production, and leftover materials are repurposed. Passive solar design strategies optimise energy efficiency and comfort within the homes, reducing their reliance on artificial heating and cooling systems. The homes incorporate off-grid and hybrid energy systems.

Customers can choose from 19 pre-designed homes, custom designs collaborating with architects, or a 'kit of parts' approach, which involves combining new and existing elements to create a home. The modules are typically 3.5 metres wide by 7 metres long for easy delivery into metropolitan areas, and are craned off the truck and placed in position. The pictured Courtyard House at Hawks Nest, New South Wales, includes two bedrooms and a flexible third room that can be used as a bedroom, study or sitting room. Retreats by FabPrefab start at just nine square metres in size.

Image: Clinton Weaver



Zen Haus Group

www.zenhaus.com.au

Location: Avoca Beach, NSW

Area serviced: Australia-wide

Type: Panelised walls with pre-installed double glazing, plus floor system and roof cassettes.

Prefab is starting to deliver affordable public housing, with Zen Haus Group recently selected by government agency Tasmanian Homes to deliver a new housing cluster. In addition to the disability accommodation, social housing and low-rise apartments that are their specialties, Zen Haus Group's systems also cater for residential builds such as duplexes and townhouse developments, and one-off designs by architects.

Their prefabricated modules have a non-combustible fibre cement facade and a lining made of gypsum, cellulose fibres and oriented strandboard (OSB), all made from recycled materials. Their building system includes membranes for airtightness and breathability and pre-installed double-glazed windows, creating thermally efficient and quiet homes that typically achieve an 8 Star energy rating.

Zen Haus Group says there are signs that prefabrication will increasingly be considered by government for affordable social housing, a topic that they are passionate about. Pictured is disability accommodation under construction in Gregory Hills, New South Wales.

Image: Jeremy Hudson Photography



MODE Homes

www.modehomes.com.au

Location: Sydney, NSW

Area serviced: NSW and ACT

Type: Combines modular and panelised construction with folding technology for new homes and additions.

One compact prefab system is the folding home, with architect-led practice MODE Homes patenting their approach in 2012. MODE's folding assembly method was used in the construction of the pictured four-bedroom, 150-square-metre house in Bundanoon, New South Wales; the home was constructed in MODE's Blacktown factory, folded together to save on transport costs, and then folded out again onsite after a crane lifted it into position. MODE's construction method depends on the site and design, with easy-access sites able to accommodate pre-built modules while panels are typically used for sites with poor access, and folding modules employed to save time and money in remote locations where trades are hard to source.

The one-off designs have double glazing as standard and high levels of insulation. Homes and additions are designed to suit the site, and materials include sustainably sourced hardwood timbers and Weathertex cladding for longevity.

Image: John Swainston



Our Fabhaus

www.ourfabhaus.com

Location: Melbourne, VIC

Area serviced: Australia-wide

Type: Architecturally designed homes with local component prefabrication, assembled and fitted onsite to individual requirements.

Our Fabhaus delivers Passive House standard builds for Australian conditions, with homes designed and manufactured offsite in standard module sizes and transported for easy assembly. The homes are especially suited to those seeking an all-electric, low-energy home. They incorporate an 'envelope-first' approach in the design and construction, meaning that they are heavily insulated and airtight, with high-performance windows and doors, and mechanical ventilation with heat recovery for fresh air. Triple-glazed windows are used in some climate zones, with windows and doors positioned to frame views and let natural light in.

The range includes 12 sizes, from eco cabins starting at 34 square metres through to four-bedroom homes at around 200 square metres. Internal and external finishes can be customised, as well as cabinetry and room configurations. Living rooms include storage, window seats and built-in desks. The Fabhaus 1, pictured, is an off-grid four-bedroom home over two pavilions, with a 15-kilowatt solar PV system and spotted gum cladding (see p42 for the full story).

Image: Jaime Diaz-Berrio



CarbonLite

www.carbonlite.com.au

Location: Melbourne, VIC

Area serviced: Australia-wide

Type: Passive House construction using PanelLite wall, floor and roof system, installed onsite.

Prefabricated systems can make Passive Houses achievable for regular home builders and renovators. One such company bringing Passive House to the masses is CarbonLite, makers of the PanelLite construction system that's certified by the Passive House Institute in Germany. CarbonLite 3D models custom designs from architects and building designers, and prefabricates the building panels locally. The wall, floor and roof panels are fast to assemble, with lockup stage achievable in just one and a half days, when a blower door test is completed to guarantee the home performs at or below 0.6 air changes per hour at 50 pascals pressure (ACH50).

CarbonLite says their homes are able to perform year-round without the need for excessive heating or cooling, and are made energy-efficient through high levels of insulation, an airtight building envelope and high-performing windows and doors. Double- and triple-glazed windows are specified based on climate conditions. PanelLite is also being sold to volume home builders to achieve higher energy efficiency standards, again helping to make high-performing homes available to everyone.



Fairweather Homes

www.fairweatherhomes.com.au

Location: Melbourne, VIC

Area serviced: Australia-wide

Type: Panelised or modular; architectural design and fabrication for onsite installation.

Fairweather Homes works with Modus Architects to create customised, prefabricated designs. The process starts with a site assessment to optimise the home's orientation, taking advantage of natural heating and cooling techniques for maximum comfort and energy efficiency. High levels of insulation in the walls, ceilings and floors, along with double-glazed windows and external doors, retain winter warmth and provide protection against summer heat. Thermal mass options, such as concrete floors with tiles, further help to maintain stable indoor temperatures. Projects use renewable, locally sourced materials to reduce embodied carbon; the pictured house in Somers, Victoria, features plantation timber to reduce the home's environmental impact (see *Sanctuary* 53 for more).

The building components are manufactured by panel specialists Assemble Systems and delivered to site. This lean manufacturing process not only saves money and waste but also ensures economical transportation. Finishes, fitout and detailing can be standardised, or customised for local climate, bushfire areas and harsh coastal environments.

Image: Rhiannon Slatter



Modscape

www.modscape.com.au

Location: Melbourne, VIC; Brisbane, QLD; Sydney, NSW

Area serviced: Australia-wide

Type: Bespoke homes, built in modules and installed at remote, rural and urban sites.

Modscape's process is highly flexible, with an in-house team of architects able to design a home for a particular site and budget; alternatively, clients can bring their own architect to the project. There is no standard sized module, and a building might be made up of multiple modules of varying sizes and shapes. The maximum size of each module is determined by what can be transported on the road. Modscape uses their own robotic production line, Modbotics, to manufacture building components such as open and closed walls along with Passive House wall, floor and roof cassettes.

Since it was established in 2006, the practice has incorporated passive solar design elements such as site-specific orientation and layout, high levels of insulation and cross ventilation. The homes are clad in Colorbond steel or zinc (both readily recyclable materials) and plantation silvertop ash, with zero-formaldehyde and low- or no-VOC materials throughout. The custom-designed Bronte house in Sydney, pictured, features natural materials such as locally-sourced sandstone and timber cladding.

Image: Katherine Lu



Ecoshelta

www.ecoshelta.com

Location: Sydney, NSW; Tasmania

Area serviced: Australia-wide including offshore islands

Type: Flat-packed, lightweight building parts, suitable for shipping container delivery and sites with difficult access.

Reaching remote parts of Australia with builders and materials has long been a logistical headache, but Ecoshelta has been delivering prefabricated, flat-packed homes to isolated regions for several decades. Developed by Stephen Sainsbury Architects, the system provides adaptable and energy-efficient housing for off-grid locations or urban property owners with difficult site access. The designs feature passive solar design and cross ventilation for natural heating and cooling, and off-grid or hybrid solar electricity systems, rainwater harvesting and sewage treatment systems for efficient energy and water use.

The homes consist of pods with sturdy aluminium alloy structural frames and modular infill panels for insulated floors, walls and roofs. The marine-grade aluminium keeps the structure lightweight for delivery while providing strength and resilience, particularly in coastal environments. This modular approach is flexible and scalable, with the pods interconnecting to form two- and three-bedroom structures, or standing alone such as the pictured cabin at Villas Barossa, South Australia.



MAAP House

www.maaphouse.com

Location: Newcastle, NSW

Area serviced: NSW

Type: Hybrid modular and panelised construction system.

With MAAP's website spruiking the 'three-week studio' and the 'five-week house', it's easy to see how their construction system puts affordable, energy-efficient homes within quick and easy reach. MAAP uses a hybrid system of wall, floor and roof panels (branded as Modular Architectural Adaptable Panels) and volumetric modules to construct their homes. The modules typically house bathrooms, kitchens and laundries that are fitted out in the factory and delivered as pods, and the rest of the house is assembled onsite using the flat-packed panels. The panels come fully lined, insulated for thermal efficiency and fitted with electrical cabling, with structural insulated panels (SIPs) used for the roof.

The panels withstand all sorts of strength and durability tests including fire and hammering, and can be reused or reconfigured when alterations are needed. A great example of the MAAP approach, the secondary dwelling at Bulahdelah, New South Wales, pictured above and featured in *Sanctuary* 53, sits off the ground for flood resilience and features all-electric appliances.



MAKE Architects

www.makearchitects.co.nz

Location: Auckland, New Zealand

Area serviced: New Zealand-wide

Type: Prefab factory-built floor, wall and roof components transported to rural and suburban New Zealand

The flat-packed Karangahake House by MAKE Architects, pictured, was placed onsite within four days, allowing trades to move quickly on to cladding, finishes and installing services. The clients were able to move in two months later, much faster than with traditional onsite construction, which is so often slowed by weather and other factors. The 120-square-metre house (profiled in *Sanctuary* 53) demonstrates MAKE's commitment to producing efficient homes with a tight footprint rather than large, energy-hungry homes. The small practice produces a range of houses, from beach house designs using cross-laminated timber to townhouses and family homes.

The process starts with a site meeting to discuss how clients want to live on the site, which drives the design, including passive solar design elements. Energy efficiency is achieved through weathertight linings to reduce draughts, and ventilation systems to enhance airflow. Designs can be customised with different finishes and layouts, making prefab attractive to those with smaller budgets or challenging site conditions.

Image: David Straight



Troppo TropPods

www.troppods.com.au

Location: Troppo partners with regionally-based manufacturers

Area serviced: Australia-wide

Type: Hybrid system of flat-packed panels and prebuilt modules.

Pitched as 'portable architecture', TropPods are prefabricated small dwellings from architectural practice Troppo. Like some other systems, TropPods use a hybrid approach of volumetric modular construction for craned-in wet areas, and flat-packed panels assembled onsite, with parts such as eaves and verandah roof panels simply 'clipped on'. The pods are built with hardwearing and readily available materials such as fibre cement cladding, hardwood weatherboards, Zincalume roofing and plywood.

TropPods are constructed in regional areas and can be delivered to many parts of the country. As such, homes and studios are designed to respond to the local climate, and passive design principles such as insulation, orientation and cross ventilation are adapted during site planning. Pods can include wind protection in cyclone areas, as well as autonomous off-grid solar systems and rainwater systems. The tropical bungalow pictured was constructed as a portable structure and transported to site at the Anbinik resort in the Northern Territory. See p38 for another TropPods build.