

Sanctuary

MODERN GREEN HOMES

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RENOVATION &
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design for bushfire & climate resilience; keeping backyard chickens

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2021: The year of Passive House?

WORDS Anna Cumming



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Maxa Design's Earth House, a certified Passive House in Donvale, Victoria, won three awards at the 2020 Design Matters National Building Design Awards, including the gong for Best Environmentally Sustainable Design. Image: Chris Neylon

Passive House is gathering momentum down under. Late last year *Sanctuary's* editor Anna Cumming chatted with two expert practitioners about the benefits of the building standard and whether it's poised for a great leap forward in 2021.

I have a longstanding interest in sustainable, energy-efficient and comfortable homes that tread lightly on the earth – an interest I'm sure I share with many *Sanctuary* readers – and I'm on a mission to inspire and educate people about the design strategies, materials and systems available to achieve them. One of these approaches is the Passive House standard (also known as Certified Passivhaus), which essentially ensures an airtight envelope to create low energy, healthy and resilient buildings.

In recent times, I've observed Passive House really taking off in Australia, with growth doubling year on year and dozens of projects under construction. Late in 2020, I had the

opportunity to interview two award-winning Passive House practitioners, Talina Edwards and Sven Maxa, as part of Design Matters National's InspoExpo. Our wide-ranging discussion can be viewed as a webinar for free via the DMN website.

In the interview, I asked Talina and Sven if they thought 2021 will be the year of the Passive House, and why. The following is a truncated version of our conversation which explored this question, covering global (Covid-19) and local (bushfires) events and other game-changers that emerged last year and which underscore 2021 being, quite possibly, the year of the Passive House.

Talina Edwards is the founder and principal architect of Talina Edwards Architecture, an award-winning small practice located in Ballarat, Victoria. Her Owl Woods Passive House project featured in *Sanctuary 50* last year and won the Design Matters National Building Design Award for Residential New House (\$500k-\$1m). A certified Passive House designer, Talina joined the board of the Australian Passive House Association just a day before our interview.

Sven Maxa is also a certified Passive House designer and is actively involved in the building design community as the owner of Melbourne-based Maxa Design. He regularly presents to professionals and advocates for eco home design to the broader community, including as a contributor to *Sanctuary*. In 2020, Sven's Earth House design won three Design Matters National Building Design Awards: Building Design of the Year, Best Environmentally Sustainable Design, and Residential New House (\$1m-\$3m).

My opening question for Talina and Sven was the most obvious one: Why is there so much interest in Passive House at the moment?

ECONOMICS

Talina and Sven acknowledged that with the vicissitudes of 2020 giving many of us more reason to worry about our hip pockets, ongoing home running costs are more top-of-mind than usual. As a result, if customers are investing in building a new home, they want to get the very best value they can from it. Enter: Passive House design.

SUSTAINABILITY

Talina said that a lot of people are also worried about sustainability as a whole, and this feeling is only getting stronger in many parts of the community, perhaps leading to an increased uptake of Passive House design. She pointed out that while a Passive House doesn't necessarily have any explicit targets in place around broader goals of sustainability, "as a bigger picture objective, Passive House certainly addresses sustainability from a really effective standpoint – not just in terms of operational energy efficiency but also embodied energy, because the building fabric is designed to essentially last forever.

"It's a highly protected thermal envelope. You don't get gaps and air leakage and things like that, so it does create a really

high-performance building fabric," she continues. "Now I'm not saying that you can't do that without Passive House. What I'm saying is, by following the route of a certified Passive House design you are ensuring you get that, and I think people are becoming aware of those benefits."

Members of the construction industry are also becoming aware of the climate emergency, signing up to join the Construction Declares a Climate Emergency movement. The bottom line, according to Talina, is: don't stop building better. "Passive House is certainly one answer to the challenge of reducing our emissions. We talk about the construction industry as being 40 per cent of the problem, but really, we are over 40 per cent of the solution! We can all do better," she said.

FIRES

One factor that highlighted the importance of airtightness and indoor air quality was last year's fire season – specifically the catastrophic bushfires in south-eastern Australia in early 2020. Even away from the fire fronts, thick smoke lingered in the air for days on end in Melbourne, Sydney and particularly Canberra, bringing the idea of healthy homes to the fore like never before. Although prolonged periods of poor external air quality will be a problem for any home, the ability to close up a Passive House and control the air coming in via a mechanical ventilation system is a boon in such situations.

As Talina put it: "People are realising that if there are health warnings saying to stay indoors, the indoor air quality can actually be worse than outside. Studies showed buildings that have mechanical ventilation with filtration perform so much better and healthier. So, in terms of bushfire smoke, having a Passive House helps," she said.

PANDEMIC

Within months of the terrible bushfires, we were thinking about the air we breathe for an entirely different, life-threatening reason: Covid-19. The pandemic threw into sharp focus the dangers of being indoors and under threat from airborne viruses.

Victoria was the epicentre of Australia's second coronavirus wave, and when Melbourne went into lockdown for 112 days from July to October, home confinement and working from home were enforced for the majority of residents.

"I've noticed anecdotally that the lockdown had a huge impact, with many more people just thinking more deeply about their home environment," Talina offered. "Perhaps similar to the way that retirees suddenly spending a lot more time at home would say 'Let's do that renovation we've been planning for years because we want a place that's joyful, as opposed to somewhere that we just come home after work and sleep in'. This year, I think that that kind of mentality has extended to a much larger chunk of the population because so many of us are spending so much more time at home. It's probably not going to be that way forever but personally I don't think we're going to go back to the way it was before."

Talina also believes the huge jump in the number of people working from home must have had a big impact on the number of people looking to move out of the city to the regions for treechanges or seachanges – perhaps with the dream of building their high-performing ‘forever home’ in their sights, and making it a Passive House?

LONGEVITY

How long should a ‘forever home’ actually last? At least 50 years, according to Sven, putting another tick beside Passive House, for those in the know. “One major advantage that Passive House has is that it is a post-build-tested standard,” he said. “It is amazing because it removes the potential for variation between what’s designed and put in writing and what actually gets built. For me, it’s not just about the blower door test for airtightness. The builder has to keep photographic evidence of everything they do along the way and provide documentation to prove the supply and installation of the correct materials and products. That is, for me, the real big plus of Passive House. It’s pushing the responsibility to where it should be going – to everyone in the chain.

“What we’re building needs to be around for 50 or even 100 years. That’s where I think the resilience comes into it, because with the changing climate, what we want in 50 years’ time is that the house will be comfortable and still perform well and not have to go through a retrofit, because that’s costly,” he added.

PAYBACK

Talina and Sven realise there’s a perception in the market that Passive Houses cost a lot more than standard houses, but they make the point that if you take a high-quality architecturally designed home ranging from \$4,000 to \$6,000 per square metre, this could also easily get you a certified Passive House at no additional cost.

“I’ve seen Passive House projects executed with an entry-level price point of about \$3,300 per square metre, and up from there,” Sven said. “I have even heard stories of people doing it for \$2,700 per square metre.” He describes a Maxa Design project in Jan Juc, coastal Victoria, which came in at the bottom end of this price range: “It was a three-bedroom home with two bathrooms and a double garage, not highly detailed and fussy, but a simple, beautiful building. It was designed as a 7.5-Star home and then we did an analysis on getting that to a certified Passive House. We had the thermal modelling done for both approaches, and had the builder work out the cost difference. It was about a five per cent cost increase on the whole project,” he said.

The two designers also explain that they’d expect a Passive House to use considerably less heating and cooling energy than a standard house, meaning owners reap big savings on running costs.

“The Passive House standard has a tighter comfort threshold than the Star rating system – an interior temperature of between 20 and 25 degrees Celsius – so for energy load



↑ Talina Edwards designed the award-winning Owl Woods Passive House in Trentham, Victoria, to resemble a series of cottages. Read more in *Sanctuary 50*. Image: Tatjana Plitt

calculations the software assumes you’re using heating and cooling when it’s below and above that range. So your actual energy use for heating and cooling may be even lower if you’re comfortable with a wider temperature range in your home,” Sven says. “At the end of the day, building a Passive House might cost a small percentage more, but will probably pay for itself in bill savings pretty quickly.”

CONVERSION

Within the construction industry, too, there’s starting to be a lot more interest in and knowledge of the Passive House standard, according to our experts.

“We talk to so many builders that go and do the Passive House course and then ring us and say, ‘We want to work on your projects. We want to build a Passive House! We can’t believe we haven’t been building like this.’ They come away with a whole new paradigm on construction,” Sven says.

MEDIA

Sven and Talina agreed that there’s certainly a lot more about Passive House in the Australian media now than there was a few years ago, when the initial exposure came from television programs like *Grand Designs* featuring people building Passive House projects. I know that in this magazine, we’ve gone from an article about a Passive House project every few issues to at least one in every issue, so I can certainly attest to *Sanctuary* increasing readers’ exposure to the standard (and without any complaints from our readers, I might add!).

So, the bottom line? The final word goes to Talina: “I think it’ll be another great year for Passive House. I would like to think that 2021 right through to 2051 will be. It’s certainly a growing sector, with certifications pretty much doubling each year currently. And there are many more Passive Houses in the design and construction phases, which is incredibly exciting.”

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Watch the interview: bit.ly/DNM-PHwebinar