



Getting to know Witchcliffe Ecovillage

Jo Thierfelder introduces us to a world-class sustainable ecovillage in the hinterlands of south-west Australia.

Witchcliffe is a blink-and-you'll-miss-it sized town, only 10 minutes south of its much-vaunted big sister, Margaret River, in WA's spectacular South West. But times they are a-changin'. This sleepy, semi-rural hamlet is now home to a burgeoning community of diverse, eco-minded folk who are putting down roots in the Witchcliffe Ecovillage.

And I'm one of them.

The vision of co-founders Mike Hulme and Michelle Sheridan is ambitious to say the least: to create a highly sustainable, carbon-negative, resilient community of like-minded residents that is self-sufficient in renewable energy, rainwater and fresh food produce. More incredible still is their tenacity to slog through 11 years of bureaucracy and spend tens of millions of dollars (with the support

of their JV partner, the Perron Group) before bringing a single lot to market. Now 13 years in and their Ecovillage dream is coming to life.

We have about 41 resident households (and counting), 219 lots sold, a frenzy of building activity, and preparations underway to start selling the fifth and final stage in March 2023.

The Ecovillage will eventually be home to approximately 700 residents from all walks of life, from all over Australia.

We're thrilled to have a mix of ages, professions and socio-economic groups, which will make it a rich, vibrant and active community.

Let's take a look at three of the pillars that contribute to making the Ecovillage sustainable: energy efficient homes, renewable energy and water.

Energy efficient housing

It's quite amazing to walk into an Ecovillage home during a cold and stormy winter night to discover a difference in temperature of 6 to 7 degrees, with no heating. That's what correct orientation, thermal mass, insulation, double glazing and good design can do. It's simple, but it works.

Eleven residential strata clusters are spread across the bucolic 120 ha site, which flanks the Witchcliffe township. Each cluster contains 19-27 lots in a combination of three different sized lots, which are carefully arranged to ensure every house has unfettered access to winter sunlight. All homes are oriented north and thermal efficiency is guaranteed by meeting the requirements of the Ecovillage Building Design Guidelines. This ensures the buildings are comfortable year-round,



requiring little or no heating and cooling, thereby reducing running costs.

Low carbon building techniques

We didn't just want to save money and be comfortable, we wanted to reduce our carbon footprint as well. As part of our research when writing the design guidelines, we used life cycle analysis (LCA) to help determine the relative global warming impact of various construction and material choices. Essentially, every house must remove more carbon than it emits. (Read an in-depth article on this in issue 61 of *Sanctuary* magazine).



All houses are required to install a minimum 5 kW solar system (maximum 12.5 kW) with 3-phase inverters and connect into their cluster's private microgrid, which is supported by a shared 232 kWh Tesla Powerpack battery.



Our design guidelines also specify natural construction materials (predominantly FSC, plantation or recycled timber, straw bale and hempcrete, or Hardies fibre board to provide a more affordable option), double-glazed windows (maximum U value 3.0), and set high standards for wall (R2.8 minimum) and ceiling insulation (R5 minimum).

Renewable energy

Self-sufficiency in renewable energy is one of the cornerstones of the project. All houses are required to install a minimum 5kW solar system (maximum 12.5kW) with 3-phase inverters and connect into their cluster's private microgrid, which is supported by a shared 232kWh Tesla Powerpack battery (or household solar batteries in stages 4 and 5).

Each cluster has a single point connection to the Western Power grid, which initially provides 100% renewable power during construction of homes, as well as the ability to sell back excess renewable energy.

Using cloud-based SwitchDin droplet technology to monitor real time microgrid activity, residents will be able to trade energy with each other, store unused daytime energy for use at night/cloudy conditions, and charge their electric vehicles in their garage, all powered from the solar PV on their roofs.

The system also facilitates future income (by offsetting strata fees) to residents from a fast-charging Tritium EV station in each cluster from which tourists can fill up their EVs.

Very early energy consumption figures from one of our most built-out clusters shows that the houses are operating very efficiently, despite a cooler than average spring. Households without panels installed yet are using an average of 7.6 kWh per day (from grid and peer to peer), while solar powered houses are using an average of 1.75 kWh per day from the grid (Tesla Powerpacks are not yet commissioned), as well as creating an average excess of about 50 kWh per day.

100% water self-sufficiency

Plentiful water is one of the main reasons why this site was originally chosen.

- Dams

The Ecovillage's three dams are fed by a sophisticated system of landscaped stormwater swales that help clean the 190 megalitres of stormwater created annually by the impervious layers within the village, while maintaining pre-urbanisation flows to winter creeks.

The dams provide abundant, high-quality irrigation water for food production and amenity in the clusters' community gardens, public open spaces, productive street trees and agricultural lots. They're also used for recreation, wetland habitat/conservation, firefighting and future aquaculture. My family has spent many a sublime summer afternoon swimming and kayaking in the clear water of "stingray" dam.

- Rainwater tanks and greywater systems

While dam water is available for veggie patches within the community garden, it's up to residents to provide 100% of their potable household water by capturing and storing rainwater in Zinalume tanks. The design guidelines also stipulate all houses must be plumbed ready for greywater, which recycles household water onto waterwise gardens within their lot.


- Wastewater treatment

While not a sexy discussion topic, the construction of our community-scale wastewater treatment plant was a key element of the planning to enable the Ecovillage's residential density and extensive community infrastructure. It's a crucial piece of the puzzle as there is no deep sewerage available elsewhere in Witchcliffe, which restricts development to large unserviced lots with little community infrastructure.

Without this facility, we would not achieve the village scale necessary to make this development work. The treated water is part of a unique closed loop: with rainwater and stormwater created by the roofs and roads of the Ecovillage captured in tanks and dams to grow food in gardens and provide potable water in houses, and recycled wastewater cleaned and returned to a community avocado orchard and coppiced woodlots to provide mulch for gardens and compost making.

Another amazing perk of Ecovillage life is the shared ownership between all residents of Ecovillage Commons Limited. ECL is a not-for-profit company that owns 40ha of dams, conservation areas and wastewater irrigation zones. I feel incredibly lucky to think I part-own these beautiful, forested areas and immense water bodies. One day soon, I will be able to take my boys fishing for silver perch, rainbow trout and marron in our dams.

While water, renewable energy and housing are three very important elements of sustainability that we address at the Witchcliffe Ecovillage, by no means do they complete our triple bottom line.

If you'd like to know more about what we're doing, visit ecovillage.net.au 

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