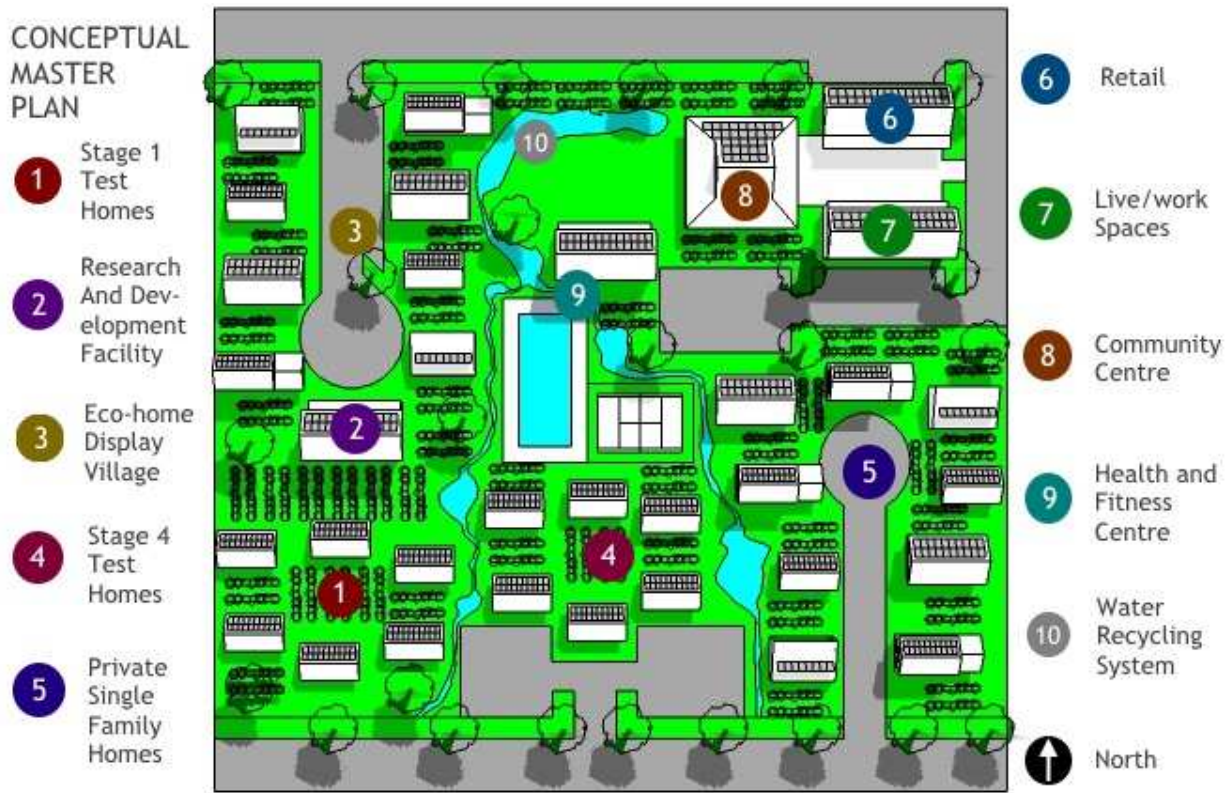


Proof of Concept - Off-grid Eco-home Research and Display Centre



Concept

To build a series of small, off-grid eco-neighbourhoods for the purpose of researching, testing, developing and displaying environmentally sustainable design and construction materials, techniques, and systems appropriate to Australia's various climate zones. The ideal being to have at least one of these centres near each of our capitol cities as well as Thredbo, Alice Springs and Cairns in order to cover all of our different climatic conditions and to make the display villages accessible to all our major population centres.

Scope of the Initial Project

The initial project is intended as a Proof of Concept to research, test, refine, develop, demonstrate and display affordable and effective techniques for improving the environmental performance of buildings and communities.

We envision a small, off-grid eco-neighbourhood (between 20 and 50 homes and community buildings) situated within easy reach of a major urban area and close to transportation in order to make it easy for people to come and experience a range of ecological building options. The entire project will be designed to be both energy and water self-sufficient using state-of-the-art systems to generate and store energy and to treat and recycle water. Energy efficiency and affordability will be of paramount importance in the design of the buildings with preference given to low-embodied-energy, recycled, renewable, durable, healthy and locally available materials.

The landscaping around the buildings will be designed to be food producing using Permaculture principles as well as cutting-edge sustainable farming practices and technologies. With intelligent design the gardens around and between the buildings will be both productive and beautiful (along the lines of “Village Homes” in Davis, California, see images below).



“Village Homes” in Davis, California. A wonderful example of a fully-functioning eco-neighbourhood where the homes are small and energy efficient and the landscaping is beautiful, restful, productive and edible.

Once the overall project master planning, funding, and permitting process is complete, construction will occur in stages envisioned as follows (refer to Conceptual Master Plan above).

Stage 1

- Build 6-12 small, similar homes with variations designed to allow direct comparison of the construction cost, embodied energy and construction time as well as operational performance, comfort, energy use and operating costs of a number of different ecological building materials, techniques, and systems.

Stage 2

- Build a small (easily expandable) research and development facility to house researchers and monitoring equipment for testing the Stage 1 homes. The intention behind the monitoring and testing being to clarify which ecological building techniques and materials are most effective and affordable for creating sustainable buildings.

- Begin construction of edible landscaping and food gardens to support the neighbourhood.

Stage 3

- While initial testing is being carried out on Stage 1 homes begin development of an eco-home display village.
- Make lots available for companies that build sustainably to erect display homes subject to certain criteria: 1) all homes must meet stringent sustainability standards including producing more energy than they use; 2) all homes must be able to be tested and monitored so that interested people can clearly and directly compare their options in terms of construction cost, embodied energy, build time, comfort levels, and operating costs; 3) all homes must be available for the public to view and experience.

Stage 4

- Following the first year of testing and monitoring the performance of the Stage 1 homes a second round of test homes will be built using the lessons learned from Stage 1 to refine and improve the designs, techniques and testing criteria.
- Stage 1 homes will now be made available as accommodation for people to come, stay, and “test drive” different options.
- Research centre will be expanded to include community educational facilities allowing people to stay for a week or a weekend and take classes relating to ecological building or other sustainable and/or community oriented learning, or volunteer to help with building further homes and food gardens.

Stage 5

- Commence the ongoing “feedback loop” process of further testing and refining designs, techniques, and systems to improve the sustainability and affordability of the test homes.
- Continue to increase and improve food growing systems on the land around the homes.
- Continue to build and monitor display homes for public viewing.
- If, at this stage, public interest is encouraging, funding is secure, and land is available, the project can expand into a fully-functioning eco-neighbourhood with homes, apartments, offices, health and recreation services, farmer’s markets, child-care and community facilities (e.g. park, playground, community centre, swimming pool, tennis courts, sports fields, etc.)
- If the original site is not large enough to support a complete neighbourhood then the lessons learned from testing and public feedback can be taken and applied to sustainable neighbourhood developments in other places.

Process

1. Define the scope of the initial project (see above)
2. Connect with potential partners, organisations, institutions, and individuals

3. Define management and ownership structures
4. Identify potential funding sources
5. Refine all of the above and secure funding
6. Find the perfect site (see below)
7. Master planning and permitting (staged as required)
8. Begin construction (staged as above)
9. Testing and recording results
10. Feedback loop (refine designs, systems and techniques for further trials based on test results)
11. Education and demonstration (teaching, sharing, showing)
12. Feedback loop (refine designs, systems and techniques for further trials based on public response)
13. Apply lessons and expand project into a fully-functioning neighbourhood
14. Apply lessons to future projects on other sites

Potential Partners

- Local Council
- State and Federal Government agencies
- Universities, TAFE colleges, other educational institutions
- Sustainably-minded developers
- Ecologically-oriented architects, designers and builders
- Sustainable building manufacturing companies
- Sustainable materials suppliers and manufacturers
- Sustainable farming and agriculture researchers and developers
- Waste treatment and reduction system researchers and developers
- Renewable energy and storage system researchers and developers
- Holistic health service providers

Ideal Site Requirements

- Excellent solar access
- North slope
- Local council fully supportive of the concept
- 1-10 hectares of under-utilised infill land within an already developed area (not untouched agricultural land or natural habitat) preferably brownfield site, i.e. disused industrial land
- Close to major transportation (e.g. Sydney/Melbourne Freeway, train station, bus route)
- Close to existing services (shops, jobs, schools, recreation, etc)