



This paper presents the results of two stand alone architectural projects, River House Mildura and Woodleigh Sustainability Centre, demonstrating an alternative process of design and construction. Each project comfortably satisfies both the pragmatic and aesthetic demands/requirements of the respective clients. Within their typology, these projects are considered leaders in their performance and resource utilisation. The inherent qualities of the unconventional approach to the design and realisation have been titled the Elastic Loop. The strength of the system draws from linkages and connections. Elasticity is the guiding force. The client is the pivotal point of the project and design works with empathy for them; they are central to the relationships formed between all the parties in the project as others are

brought in to bring knowledge, possibilities and energy. In all cases the elasticity of these relationships keeps the project from breaking. These relationships move with energy towards a maximum density of solutions, with all parties coming on the journey. The enquiry extends in many directions to achieve its potential. The exploration, whilst confronting, uncovers possibilities that would be impossible to preconceive; reducing the risk of pastiche or stylistic solutions with a catalogue of bolt on sustainability. With the gains from the learning the energy is fed back into the continuum in a loop. These principles were inherent in both case studies. From a theoretical point of view it may be difficult to conceive of how this differs from the rhetoric of contemporary design practice. These case studies demonstrate a working model that presents quantitative and qualitative gains empirically. **Mildura River Home** The use of local potentials like the need for heat and cold, shadow, the sun, ventilation and wind, shelter and material use, once they are mapped, are integrated in the design. If the sources and circumstances are integrated a net positive energy production is possible, thus deliverance to the grid.

Resources were defined on the site, and their potentials exploited.

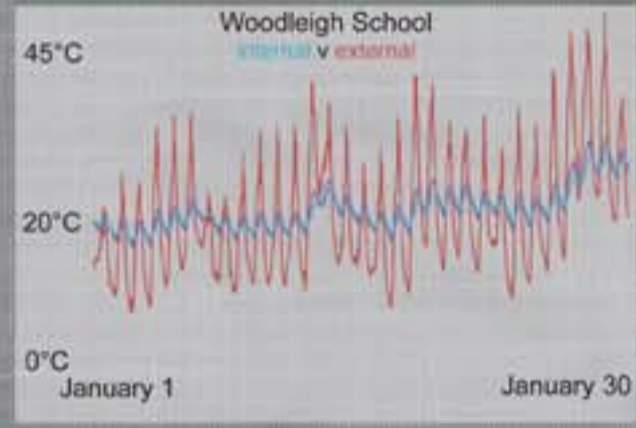
- Mapping of the semi arid climatic conditions enabled the design to capture and work with free potential resources.
- Local materials were integrated into the thermal mass earth walls.
- Mapping of the site and adjoining land revealed shading opportunities and informed the designs landscape design response
- Analysis of sight lines informed a more specific and sophisticated response to capturing views
- Re-viewing the brief and mapping the amenity requirements of the client discovered resource savings in terms of reduced built area

Mapping the functional requirements of the client (resources) enables a design evolution that reduces the overall area of building. In this case the second level was consolidated and the inserted into the ground level footprint. Mapping the solar path provides an understanding of the spatial relationship between the site and design options. The resource of sun requires seasonal control, the design utilises the existing trees to protect from the low morning summer sun. The architecture integrated a subterranean air labyrinth utilising the lower soil temperatures to provide cooling during summer.

Mildura River Home

The aim was to reduce the energy consumption with 50% over a similar home in a comparable area and exceeded this. This was achieved, and an even higher ambition of 64% reduction, by overlaying the responses to our resource mapping. These included mapping the sun's path, the sight lines, the subterranean temperature, materials and other potentials. The intended gains from every single system were improved upon when it operated in conjunction with another system. Data logging revealed that the building exceeded the simulated model's predicted performance. The interaction between the passive and active systems offers greater gains through the complexity with which each system operates.

By responding, finding windows of opportunity and ultimately producing an organic system that works reciprocally within other systems to produce an elastic loop, these gains were reached.



Woodleigh Sustainability Centre

Taking the opportunity to educate as a starting point, this student driven project encompassed the myriad of possibilities available to sustainable design and presented them as a cohesive statement. Straw bale walls with rustic reclaimed ironbark poles nestling into the southern aspect juxtapose against the linear rhythms of the timber on the northern façade. The result is an open textbook of ESD. This building has successfully operated since it's completion without the need for heating or cooling. During extreme summer heat the internal temperature remains 15 to 18 degrees cooler than the outside air temperature without the need for air conditioning.

