



***Paysages de permaculture  
Eco-village, eco-burbia or eco-bullshit ?  
Atamai village, new zealand. an intentional  
community based on permaculture design principles***

***By Paul Smith***

***(Eco village, éco banlieues ou éco non-sens ? Atamai village en Nouvelle-Zélande. Une communauté fondée sur les principes de la Permaculture)***

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On a small sub-tropical Pacific island an isolated group are digging in, awaiting the energy descent and prophesized apocalypse that will unfold once peak oil is reached. Food security and self sufficiency are of the utmost priority.

Diggers are diverting water courses to create reservoirs, cut and fill, in excess of 10,000m<sup>3</sup> is underway as existing vegetation is scraped away to make way for building platforms, access roads and cycleways. Privately owned land is subdivided and sold for property development and a dense Village centre is proposed with the community's population anticipated to be between 200-500 people in 3-4 years

This does not sound like your stereotypical eco village. But then what is an eco village?

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## **Permaculture design and village context**

In Atamai Village, on New Zealand's South Island in Tasman Bay, 5 km west of the settlement of Motueka, on rising land some meters above the current sea level, a small but growing group are creating a new settlement based of permaculture principles. This intentional community has, for the last 3 years, been developing organic community orchards, organic food gardens, a village plant nursery, tends a goat herd, collects eggs from free range chickens and have recently begun to build passive solar dwellings off the grid, with composting toilets and rainwater harvesting facilities.

This diverse and international group, with a relatively shared vision, currently live in temporary structures or existing houses, whilst they develop permaculture designs for their properties and engage architects. (Fig 1).

Atamai Village currently owns 30 ha and is looking to buy a further 69 ha of adjacent land. The Village's land is surrounded by scattered houses, sheep and cow pastures, extensive apple, pear and kiwi fruit orchards. This intensively and chemically produced fruit is picked, refrigerated and transported to European markets while New Zealand lamb appears roasted on English plates. The export of raw nitrates to European markets might prove more fruitful, while such transport of foodstuffs is in contradiction to many government mandates to re-localize food production and create sustainable settlements. This is what Atamai aims to do.



Fig. 1: Temporary dwelling in bottom left and overlooking properties on ridgeline

This notion of sustainability and localization is at the core of permaculture. The term, an amalgamation of **permanent** and **agriculture**, was coined by Tasmanian academic Bill Mollison and his then PhD student David Holmgren (1978). Holmgren acted as a consultant in the early stages of the Village's development. Permaculture has been defined as : *"Consciously designed landscapes which mimic the patterns and relationships found in nature, while yielding an abundance of food, fibre and energy for provision of local needs.* (Holmgren, 2002).

Permaculture aims to restore and protect resources (ecological or otherwise) on site whilst maximising existing energies (wind, water, sun, organic matter and social movement) passing through the site. Permaculture's goal is to enhance natural productivity over time and maximise outputs beneficial to humans. "Wild" areas are retained for reasons of biodiversity and to be observed to precipitate a greater understanding of natural processes.

These goals are achieved by numerous methods including:

1. Mimicking layering systems that that occur naturally in forests and plant communities: Herb layer, shrub layer and canopy layer etc. (eg Robert Hart's food forest garden in Wenlock forest, Shropshire)<sup>1</sup>.
2. Manipulating pathways of plant succession and 'Guilding' plants into communities that are mutually supportive and beneficial to each other. (Eg nitrogen fixing species, planted with productive food or timber species, sheltered by fast growing native pioneer species that grow in soil mulched by dynamic accumulators, which extract trace minerals and chemicals.)

"Permaculture is not modelled on the outward forms of ecosystems, but on the underlying systems that make them work." (Whitefield, 2000, p. XVI)

<sup>1</sup> Robert Hart's food forest garden: <http://www.youtube.com/watch?v=O7f8NCh3s8c>

Permaculture sites are zoned outwardly (Fig 2) from the dwelling according to frequency of visits required to maintain and harvest plants and tend animals. Elements are then spatially organised, sometimes mimicking naturally occurring patterns such as fractals, to make efficient use of space, available energies and human time that aim to create closed, self-regulating systems producing no waste.

“Each element should be capable of more than one function and each function served by more than one element.” (Moorcroft, 1978).

Atamai is beginning to attract urban dwellers fleeing New Zealand’s cities as well as Europeans and North Americans. Many of these migrants have little horticultural knowledge or agricultural expertise, yet seek a home-grown eco-utopia away from the choked cities in a country containing more sheep than people. How can this work?

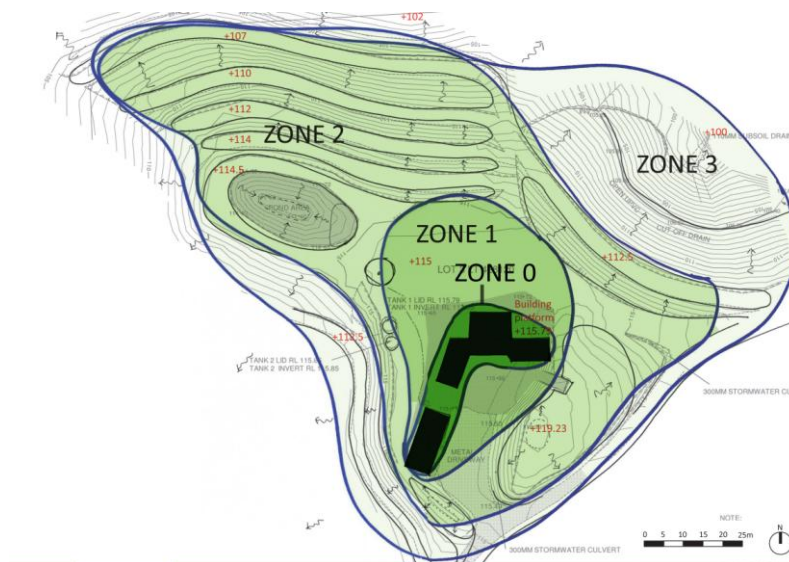


Fig. 2: Permaculture zoning round proposed dwelling

## Village structure and social organization

Atamai means ‘common sense’ in Maori, yet legally, financially and socially the Village’s structure is far from simple to understand. This is in part because they are working it out as the project evolves. Put simply Atamai Village is an incorporated society run by a Village Council.

The land was initially bought privately by a small number of individuals and is now held by the Atamai Village Council. The Council will retain the ownership of a proposed Village centre (last of 3 phases, with phase 1 underway and phase 2 awaiting planning permission) leasing commercial and domestic properties. Larger, more scattered, out lying properties are owned privately. Village members have rights to communally owned lands such as vegetable gardens, fruit orchards, pine plantations and grazing land. The intention is that Village members will labour on the common land or provide money or services in lieu to pay the salary of a gardener. Two gardeners are currently employed with transient WOOFers (Worldwide Opportunities on Organic Farms) providing unskilled labour in return for food and board.

Existing and expected Village businesses include a garage with mechanics, a saw mill, terra preta soil<sup>2</sup> production, furniture makers and a plant nursery which anticipate to earn 60% of their revenue from within the village. Grand idea of businesses spawned within the village structure to serve the village. However the current disparity between Village supply and demand means that plants are bought from local nurseries, vegetables from local shops, the terra preta soil production is still awaiting a willing manager and pine plantations on Village land remaining uncut.

Atamai contains an unusual combination of international and local individuals and their families from diverse professions with wide ranging skills, who are involved in the project as members of the Village or employed as external consultants. With such a diverse skills set the anything seems possible, but Atamai is in its infancy and still finding its feet and is not without growing pains...

## Techniques and issues

### Food production systems

The Village's aim to produce its own organic vegetables and fruit is provided in number of ways : Private gardens ; a communal terraced orchard that includes citrus trees, soft fruit trees, olives and figs ; a large terraced 'Med' garden; a flat area of row crops and a number of small demonstration gardens, including a French intensive garden.

The terraced 'Med' garden (Fig 3) was developed by a French agronomist and is based on garden systems that originated north of the Fertile Crescent among sedentary mountain tribes and was further refined by Berber tribes in Morocco's Middle Atlas Mountains. The 'Med' style garden was developed in a Mediterranean climate and in response to scarce water resources and thin soils on steep slopes. The Village's steep sloping land and Motueka's climate of long dry summers followed by stormy winters lend itself to this style of garden.



*Fig. 3: Goat pastures and neighbouring intensive fruit orchards in the distance*

<sup>2</sup> La **terre noire** (**terra preta** en portugais) est un terreau d'origine humaine d'une grande fertilité en raison de concentrations particulièrement élevées en charbon de bois, en matière organique et en éléments minéraux.

Berms or levees (Fig 4) stabilized by the roots of perennial fruit trees, shrubs and herbs (eg Raspberries, Elderflowers, Feijoas, Figs, Artichokes and Thyme) provide areas for water to collect and infiltrate in to the soil. In the wet winter months the berms channel excess water away from saturated planting beds, thus preventing large scale soil erosion. These berms, and surrounding shelter belt planting (leguminous Tree Lucerne and Black Acacia) provide wind breaks and produce microclimates with adventitious growing conditions. In between the berms are smaller terraces of irrigated winter and summer annuals such as Onions, Maize, Cucumber, Tomatoes, Pumpkins and Squashes.



*Fig.4: Med garden\_Berms with elderflowers and strawberries and terraces with basil and onions*

The diversity of plant species, crop rotation, use of companion planting (Rosemary protects against cabbage moth and carrot fly), scattered herbs and aromatic plants that attract beneficial insects combine to create a diverse organic garden. Soil fertility is improved with nitrogen fixing crops such as beans and lupin (Fig 5) as well as a rotational system of compost terraces which accumulate organic matter over the year and are then planted in subsequent years.



*Fig.5: Leguminous lupin interplanted with salad grow in Terra preta*

However despite the glowing organic theory, crops were left to rot on the plants due to a lack of communication about harvesting between growers and intended consumers. Subsequently a food cooperative was set up to harvest and distribute produce but still carrots dried out and tomatoes rotted in boxes as methods of distributing to local markets were sought and individual's food tastes ascertained. In addition to this Pukekos (a local ground nesting bird) pecked away at ripening maize pulling out the plants. Bullets were the organic solution offered in face of the suggested biodynamic technique, that burns the carcass of a caught Pukeko and scatters the ashes round the periphery of the garden to deter the rest of the pecking fraternity?

### **Plant nursery, terra preta soil matrix and water management**

A plant nursery exists that supplies plants for community gardens, villagers, personal gardens, seedlings for the food gardens and natives to reforest and stabilize steep slopes, previously degraded by overgrazing. Problems of synchronizing demand for seedlings from the nursery to the vegetable gardens, exacerbated by insufficient labour resulted in onion and leek seeds being sowed directly and planting areas left bare in productive months.

Terra Preta or BioChar (see further reading) is used as a potting mix in the nursery and to ameliorate and improve the soil throughout the village where planting occurs. Terra Preta (first documented by Dutch soil scientist Wim Sombroek during archaeological digs in Amazonian) is a charcoal based soil matrix produced specifically for the site, which contains rock power, organic matter and a variety of other trace elements that were found to be deficient in the local soil during soil tests. This soil matrix is intended to be mixed with the existing soil and break down, over a number of years, to produce carbon rich soil that grows well balanced plants. However the initial mix was wrong and additional ash, blood and bone and phosphorus has to be added to the Terra Preta that seems to grow well balanced and healthy plants for the most part.

Problems arose in the summer months as the well, supplying water to the plant nursery and a number of dwellings, temporarily dried out after five months of no rain. A reservoir that was built had burst the winter before necessitating the construction of a temporary dam on a stream passing though the site. A solution of dubious legality due to water rights in this agricultural area.

This problem highlights the challenges of water supply that face the Village as it grows and irrigates. Each new house in the Village will be equipped with two 25m<sup>3</sup> rainwater collection tanks that use solar pumps to provide gravity fed water to houses. Village land is being surveyed to locate potential springs and discussions are underway with the geotechnical engineer to construct a number of small ridgeline reservoirs using Yeoman's Keyline technique of water capture<sup>3</sup>. This technique minimizes the chance of reservoir's retaining walls being breached during storm events, which can occur when reservoirs are located in gullies or in water pathways, as was the case with the destroyed nursery reservoir. Hay bail sediment traps are being used during the construction period to great effect.

### **Bricks and hay**

Hay is also used to stabilize steep slopes with new planting and is being trialed to control gorse: after initial scrub cutting of gorse a thick mat of hay first smothers the new gorse shoots, then the grass seed in the hay grows and out competes subsequent gorse growth.

A brick making machine (Fig 6) imported from South Africa is using material quarried on site to mass produce building bricks with a high insulating value at low cost. Neighbors opposing the Village temporarily put

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<sup>3</sup> [www.keyline.com.au](http://www.keyline.com.au)

Yeoman's Keyline Water Plan

a stop to brick production claiming that material excavated was in excess of that legally permitted and that the machine exceeded noise regulations. Material was subsequently excavated in a part of the site under a different legal deed and the machine was moved to an area out of the objector's earshot.

Not everyone wants Atamai to succeed, especially those dwelling in prestigious hill top properties that overlook the site.



*Fig. 6: Brick making machine*

### Neo-feudal utopia or a growing community?

Though society may not immediately revert to a warring tribal system following the predicted energy descent by aiming to produce the majority of their own food organically, these individuals become free of anxiety over genetically modified crops, food scares and price increases that occur in a global capitalist economy, which markets food as a commodity. Atamai is putting into practice what many simply write about...!

Financial resources, not available to all, have allowed this group of international migrants to settle in a country where land is cheap and population densities low. It could be said that Atamai is the domain of the rich wanting to create a bucolic rural utopia and pay (or not pay in the case of WOOFers come serfs) someone else to maintain their land and produce their food. A sort of neo-feudalism.

However, Atamai Village may be one option for a growing number of disillusioned urbanites, who, having outgrown their allotments, seek to create communities which grow their own organic food. The success of the Village depends as much on developing social structures as the environmental resilience of food production systems. Atamai is a strange mix of property development initiated by individuals who live and seek to establish an intentional community for themselves. Atamai provides a useful example for other spawning eco-villages.

Permaculture design offers Landscape Architects useful sustainable techniques to manipulate and manage ecological systems for humanity's present and future benefit. Permaculture's aims to produce closed systems that recycle energies and produce no waste provide good examples, which may prove hard to implement in landscapes maintained and managed municipally.

Global and local community's perception of, and relation to, an environment that sustains them, will have to change whether or not 'peak oil' is reached, as pressure on land increases while climates change. Maybe we have to regard : "... ourselves as part of the natural world and act[ing] in accordance with that vision.....Now is the time to restore ourselves to the ecosystem, and thereby to restore the ecosystem itself." (Jacke and Toensmeir. 2005, p. 52)

A noble statement that requires action, and despite the challenges and ideological objections that Atamai Village faces, at least they are doing something....

## REFERENCES

Colin Moorcroft, «Quoted», in *Permaculture One*, 1978.

Holmgren, David, *Permaculture: Principles and pathways beyond sustainability*, Holmgren design services, 2002.

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Whitfield, Patrick. *How to make a forest garden*, Permanent Publications, (1996) 3<sup>rd</sup> Ed. 2000, p. xvi.

## WEB LINKS

Atamai Village website : [www.atamai.co.nz/](http://www.atamai.co.nz/)

Permaculture: [www.permaculture.org.uk](http://www.permaculture.org.uk)

Yeoman's Keyline Water Plan: [www.keyline.com.au](http://www.keyline.com.au)

Biodynamic farming: [www.biodynamics.com/](http://www.biodynamics.com/)

Terra preta / Biochar: [www.energybulletin.net/node/46569](http://www.energybulletin.net/node/46569)

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