



Work in progress

This Hawke's Bay couple has just started out on a new adventure: aiming to live a completely self-sufficient and sustainable rural life

Aaron and Jo Duff are on a mission. They are determined to live their sustainable living dream on 6.6ha in the lovely Poukawa valley, a few minutes south of Hastings in Hawke's Bay.

Their little farm is called Kahikatea Farm after the trees that once grew there,



"and because they grow in stands with intertwining roots which support each other – like our philosophy".

Their dream is very much a work in progress. They have only been on their bare land for a few months and say they need to be there for at least all four seasons before they make any final decisions.

Jo is English and a teacher, and Aaron is a Kiwi boy and computer engineer from Pakipaki, a few kilometres toward Hastings from Poukawa. They met in Africa about 14 years ago on their travels.

They have devoted their lives ever since to the sustainable living message and their latest project will be the culmination of that.

Their overall plan is quite clear, and their commitment to no-waste is total. The caravan that is their temporary home was renovated by them from scratch. Next they plan to build a straw bale home independent of the national electricity grid with photovoltaic power.

And they aim to create an education and accommodation centre to share their dream of small-scale sustainable farming with visitors who will be able to live in a cottage, a teepee or perhaps even a Mongolian yurt. The accommodation will also be independent of the national grid as well as self-sustaining in vegetarian food at least.

The pair would also like to establish a food co-op in the Poukawa valley, which is home to a mixture of lifestyle blocks and long-established farms.

Interim measures

At present Jo and Aaron are living in a caravan and practising sustainable living on a small scale.

They collect their water off the roof of their shelter. They did dig a well for water, but things did not go to plan and they have to dig another one. In the meantime their water is either rainwater or supplied.

They have a composting toilet and a grey water disposal system. They use worms in their toilet, which, at the moment, is a 200-litre drum with a loo seat on top. The drum contains untreated sawdust and some grass. The worms quickly dispose of everything, and what is left is a rich compost for their trees which also receive the grey water from

Energy on tap

Ross Berry of Energy Source, who installed the Dufts' system, describes it as follows:

Two 160W BP photovoltaic panels of 3.2 sq metres which are typically 10 to 15 percent efficient; a Morningstar charge controller; an Outback 2kW pure sine wave inverter; four 220 amp-hour six-volt deep cycle batteries connected at 24v DC.

The 160w panels should generate about 1.5 – 2kWh a day, whereas the average dwelling uses about 20kWh a day.

This energy passes through the charge controller en route to the batteries. The charge controller ensures that maximum energy is drawn from the photovoltaic panels and also takes care of the battery-charging process.

If the batteries are fully charged the charge controller turns off the PV panel supply to prevent overcharging. Most also have a three-stage charger built into them to maximise the life of the batteries.

Many charge controllers and inverters can be directly connected to computers for monitoring and data logging processes. The sinewave inverter provides a 230v, 50Hz, electricity supply as clean as, and probably better than, that available from the local network connection.

All modern electronics are able to be powered from these inverters. Care needs to be taken with the older style modified sinewave inverters,

as these devices can cause some electronic equipment to fail. They should more correctly be called a modified square wave inverter.

The batteries are capable of being deeply discharged without damage, unlike many other batteries.

All off-grid systems are able to be easily expanded and modified as the owner's requirements change. Additional PV panels and other accessories can be added to provide and expanded energy production capacity.

Before any system is installed, a needs-analysis should be undertaken to ensure that the proposed design matches the energy requirements.

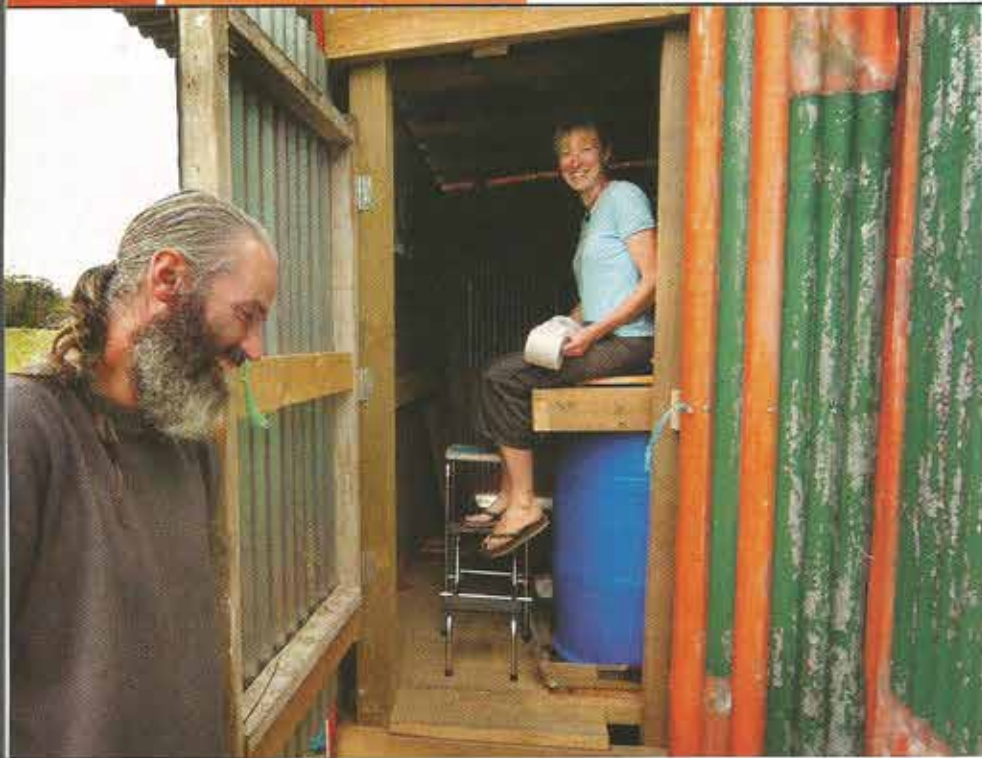
All electrical loads need to be reviewed with the appropriate wattages and operating hours analysed.

It is normally recommended that any owner of an off-grid system should be prepared to take an interest in the technology that they are using. Batteries will probably need to be topped up and otherwise maintained. PV panels require occasional cleaning and hydro/wind systems need mechanical maintenance every so often.

It is likely that occasionally the lights will go out, so the system owner should be familiar with the equipment that he/she has spent a considerable sum on.

"Anything from \$5000 to \$50,000." ■





the shower – solar-heated, naturally – and the toilet. Any excess liquid from the toilet drains into a half-barrel full of straw.

“It takes two months to break down into wonderful soil.”

Grey water is filtered through a series of drums containing bark, sand and pea metal and then river stones. It comes out in a reed bed some distance from the house smelling just fine.

They have planted vegetable beds to succession planting principles of using one crop to restore the soil from the crop before.

“It’s a bit like rotational grazing of stock on pasture.”

They might perhaps grow beans and then vetch as a conditioner before they plant another crop there.

Permaculture

Even before they met in Africa, Jo and Aaron were both conservation-minded, but it was not until they came across the *Permaculture* magazine they were able to give a name to their beliefs.

Back in the UK after their travels Jo worked on an organic farm to get some experience. Once they had set their course for their lives together they did it totally. They did various courses in permaculture at the Crystal Waters centre near Brisbane.

“It was huge; there were 60 or 80 homes on it.”

They then moved to Melbourne where Aaron trained as a kung fu teacher and Jo

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learned more about biodynamic culture. They are now funding their venture by part-time jobs in town. Jo works in a garden shop and Aaron teaches kung fu.

Jo loves nothing better than to teach the principles of their sustainable lifestyle. She has been taking night classes in permaculture at Havelock North High School and both are involved with the Hastings Environment Centre.

"We are committed to this way of life and education. We would like to show people that it can be done differently."

They happily admit to knowing little about conventional agriculture, "but we know what we don't like about it".

They do plan to have cows on their property for milk and perhaps some sheep for grass control, but "not for eating." The boundaries will be planted with native shelter belts to encourage the birds and orchard trees for food.

Until they are more established they depend on Aaron's family for the use of a washing machine and a computer. They are already using appliances chosen for their



energy efficiency such as low-energy light bulbs and the transistor is solar powered.

Their home, when it is built, will be the same. As well as being designed to make the most of the sun's warmth and energy it will have a wood-burner stove and wetback water heater – they are already planting trees to provide fuel.

"We want to show people how to

reconnect with nature and this project is crystallising something we have had in our heads for a long time."

The Duffs' website, www.kahikateafarm.org.nz, outlines their vision for their land. ■

Words by Rose Harding

Photos by Tim Whittaker

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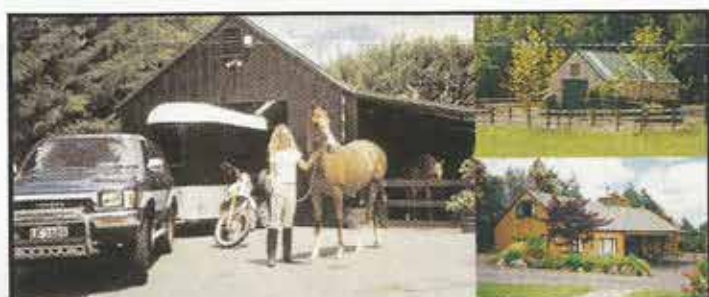
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