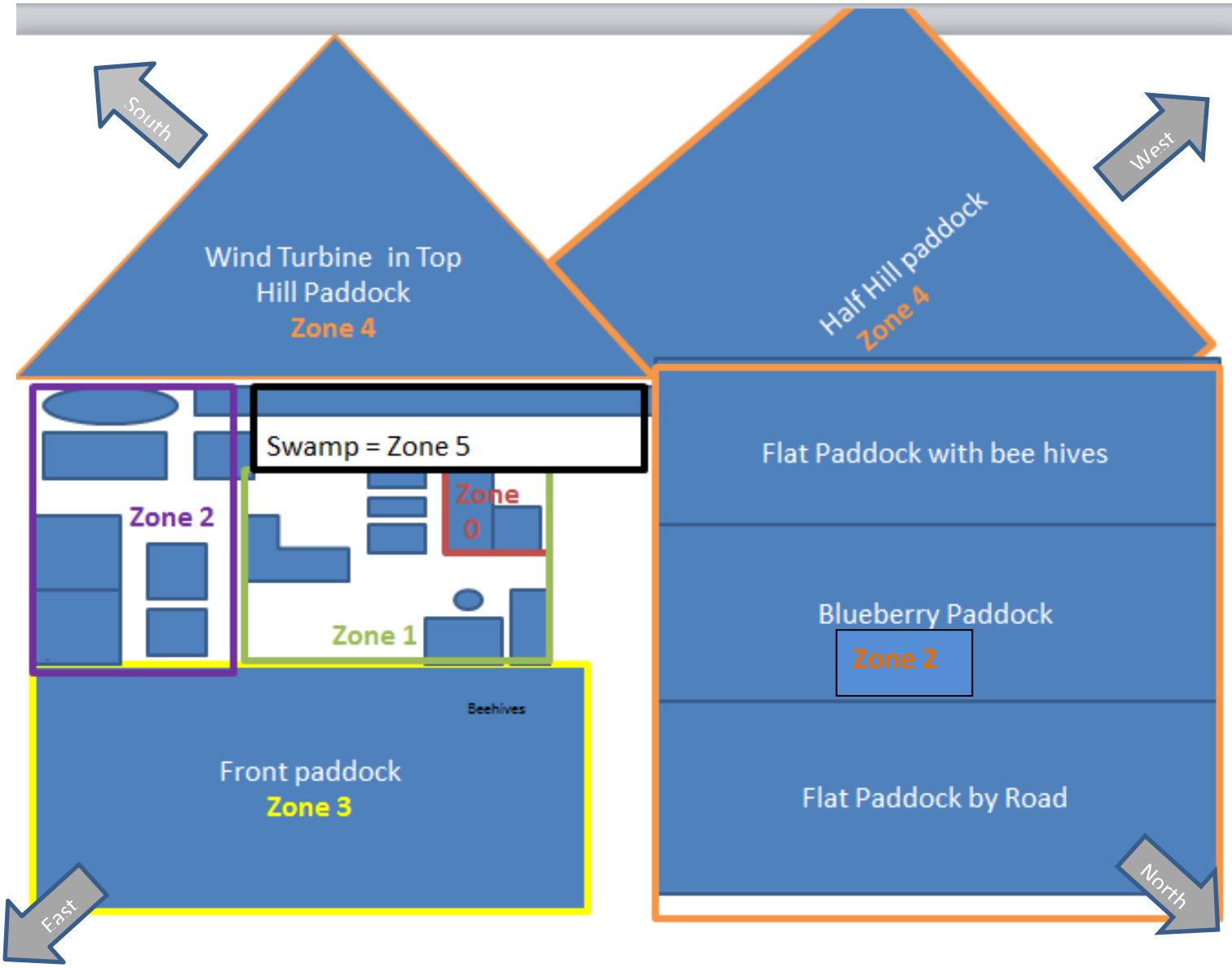
Permaculture Property Plan

Property Description and Zones

The property is located in Whitemans Valley, Upper Hutt, Wellington and is north east facing. It is 10 acres 4.2 hectares of a mix of flat and hilly land with varying soil types of peat soil, clay loam and a swamp. The land has historically been used for grazing and was established as a dwelling in 1985. I have lived here for the past 22yrs (1995) and all of the buildings were in place when I moved here and from a permaculture design point of view it is a nightmare with only one north facing building on the property. The buildings consist of the main dwelling, a cottage, separate garage, stable block and sheep shed plus a random train carriage in the back yard. Finances dictated that shifting the buildings to sensible places wasn't on the agenda anytime soon so I was going to have to make do with the ill positioned buildings. There were advantages in that there are a number of springs on the property, a few established fruit trees, protection from the cold southerly wind by the hill at the back of the property and established boundary shelter belts and I was lucky to inherit a convolvulus carpeted vegetable garden. The property has been bio dynamically run since I moved here.



Water

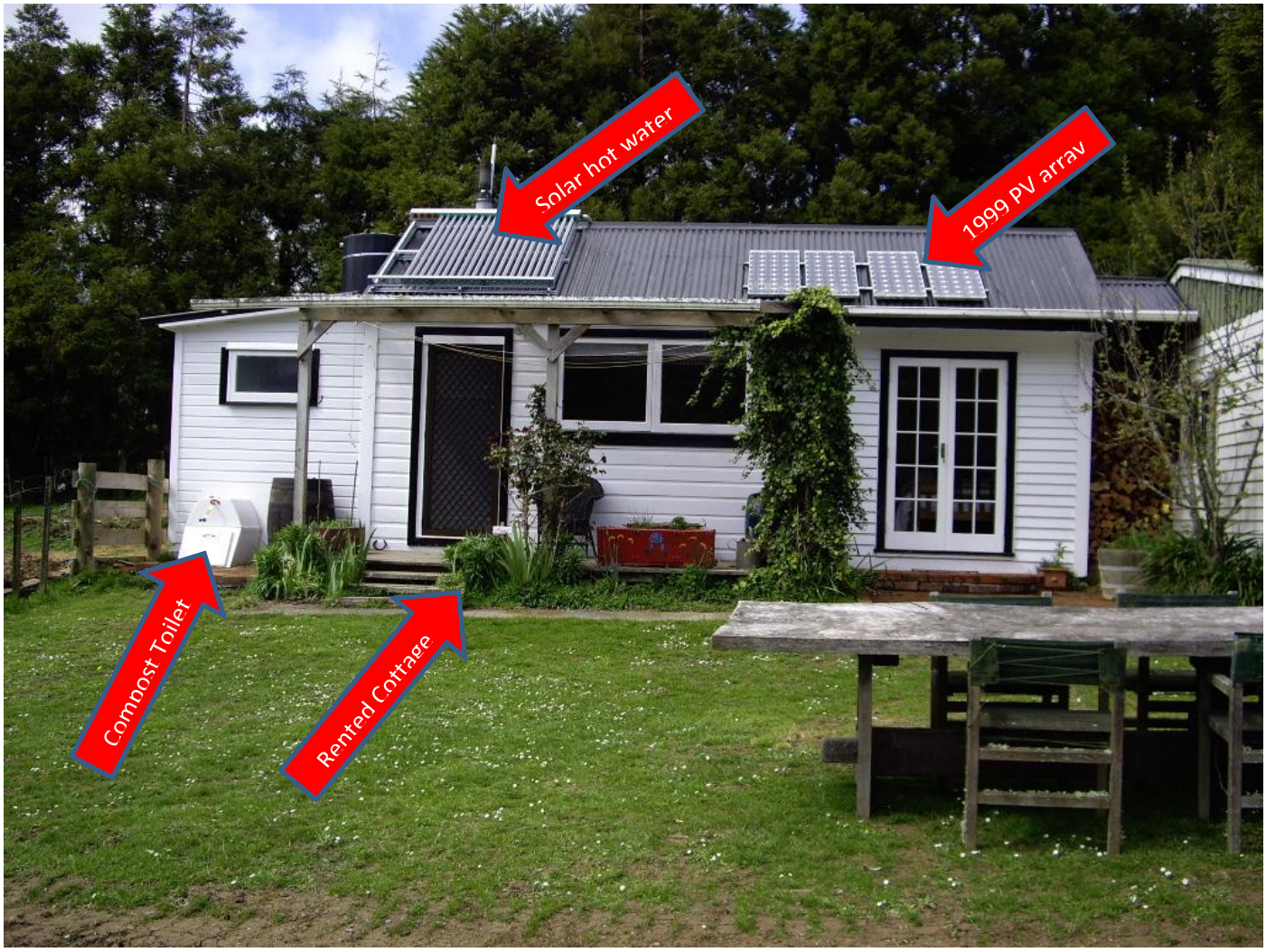
There is no town water supply and when I arrived there was one 44,000 gallon underground concrete water tank that was both spring gravity fed and roof collection. There are now five more 25,000 Litre plastic water tanks on the property three of which are for the blueberry irrigation and the other three for house and garden supply. One more is to go in March 2018. My preference is not to use the electric water pump unless there is excess power from the alternative electricity so I have installed a hydraulic water ram up the back hill paddock.

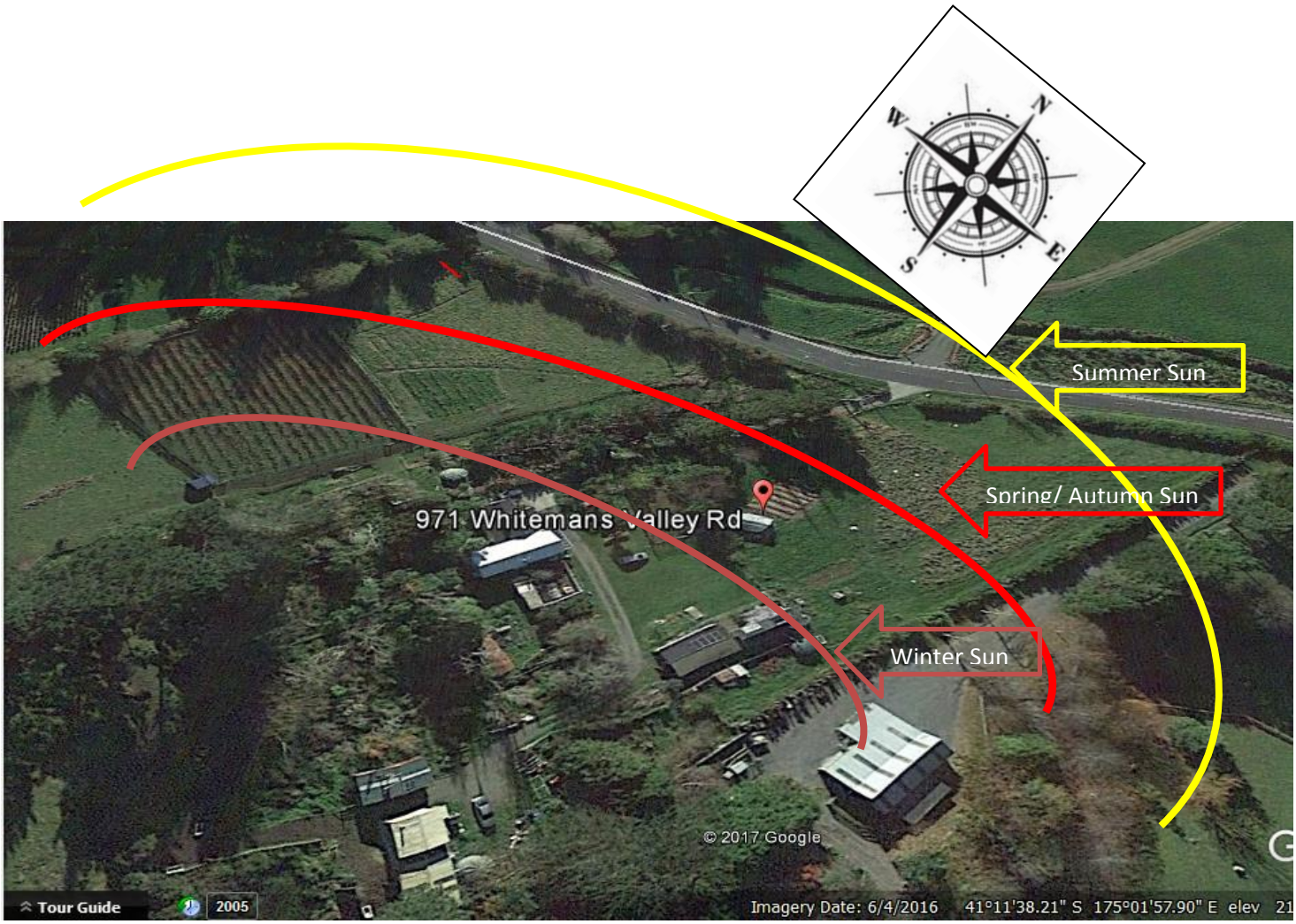
There is another spring there but it isn't high enough to provide adequate pressure for the house so the water ram pumps the water up the hill 8 metres to 2 x 25,000 L water tanks which then gravity feed the water down to the house providing adequate pressure for the house but not for watering the gardens so the electric water pumps needs to be turned on for this. I have also installed an ancient cast iron water pump that can move water from any tank to any tank on the property. Primarily this is for when the spring feeding the water ram slows down in summer I can pump water from other tanks up the hill to the 2 x 25,000 L tanks there for irrigating the blueberries in late summer as this is their critical time for watering. The domestic electric water pump is not powerful enough to pump up the hill for hours on end. In short there is a mix of water collection and delivery systems.

There is enough water on the property to run a micro hydro system but none of it is in the right place though I am considering inline micro hydro.

Sun Angles

The first PV array was installed in 1999 and is still functioning. In 1012 another 4 x panels were added to the system. The energy from these is stored in a battery bank. It is in my plan to install more panels but the current problem is too much generation of power in the summer months and not enough in winter. I am currently exploring options of installing a tesla powerwall or possibly feeding excess energy back to the grid via a new hybrid inverter.

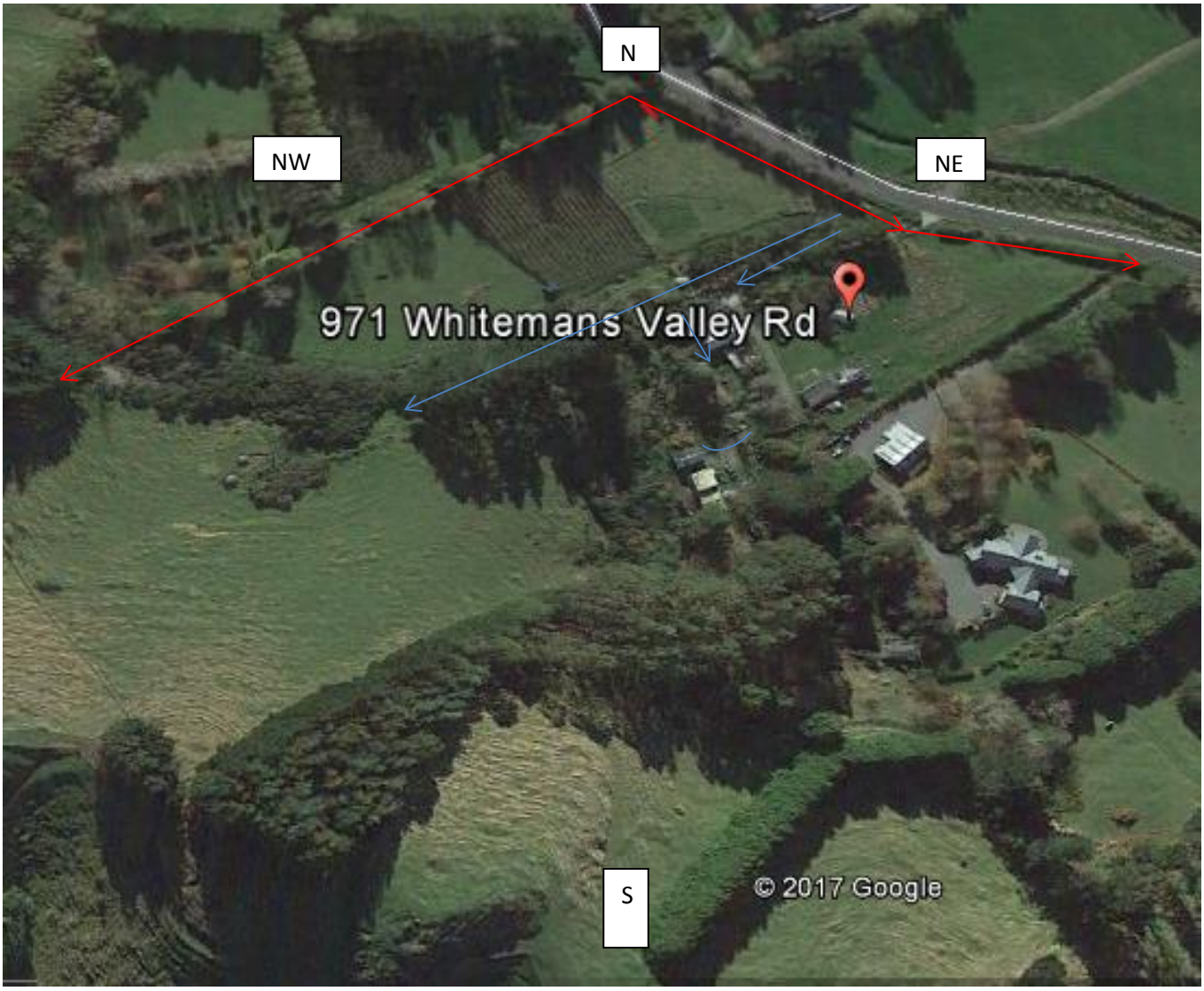




Shelter belts and Wind

The property was planted out in 1985 by over enthusiastic tree croppers. The shelter belts on the boundary lines are practical and well laid out and was done by the neighbours whereas whoever planted out my place planted a row of forty pine trees down the driveway with a row of natives closest to the driveway hence thirty years on all the sun both summer and winter is blocked from both my house and a good portion of the garden. The row of natives hasn't seen any sun for over twenty years. Totara's were planted on the other side of the driveway under the power and phone lines. Poplars were planted in the swamp behind the house so in a good wind which the Wellington area is known for they could have easily fallen on the house, consequently fifteen of those were chopped down in the first year. A Kauri, Totara and Rimu were planted one meter apart in a corner by the train that blocked all the sun from that area. In short I have spent thousands and thousands of dollars having those all chopped down. The shelterbelts on the boundaries are perfectly adequate as in the Wellington the sun and the prevailing wind come from the same direction so you can have one or the other not both wind shelter that lets the sun in unless deciduous trees are planted. With the Wellington area being so windy one learns that there isn't much that can be done about shelter that doesn't block the sun. The prevailing wind is either northerly or nor westerly.

In 2004 a 4 KW Westwind turbine was erected at the top of the back hill paddock. It whirred away for ten years without any problems at all until one of the metal hinges at the base rusted and it fell over damaging two of the three blades. The system is still functional but needs new blades though I have no intention of re-erecting it.



The Red lines are the shelter belts that protect from the north, north/west and the north/east winds. They are appropriate trees in an appropriate place.

The blue lines are or were inappropriate trees in inappropriate places.

Some Added Permaculture Principles

Wind turbine, PV array, extra water tanks, food forest as well as a home orchard, harvest kitchen, income from the property as in pyo blueberries, plus going to a farmers market,

Blueberry Leaf Tea

31 times the amount of antioxidants than the berries

two rentals on the property one a stables conversion the other a renovated cottage, wwoofer accommodation in the converted sheep shed with the train soon to be completed renovation into a B and B. Income is also generated from a web based business of the manufacture and international sale of soap shakers. Beekeeping for honey and pollination.

As there was no water available by one of the chook sheds a tank stand was added with a roof collection tank put in place. Fruit trees and berry bushes have been planted in the chook paddock solely for the chooks. They also have a chook shed in the blueberries where they move to in the winter months to clean up any pests. The netting is also partially removed to allow the birds in over winter to also help clean up any pests that there might be higher on the bushes.

Two wood burning stoves with radiators and wetbacks heat the house and provide hot water as well as cooking.

Solar hot water

There are four composting toilets on the property.

Gravity fed water has been established via the hydraulic water ram. This also gravity feeds the irrigation for the blueberries. The blueberries are not fertilised, weeded or mulched as this is all taken care of by the appropriate soil type, chickens and comfrey planted between the bushes which provide fertiliser and living mulch.

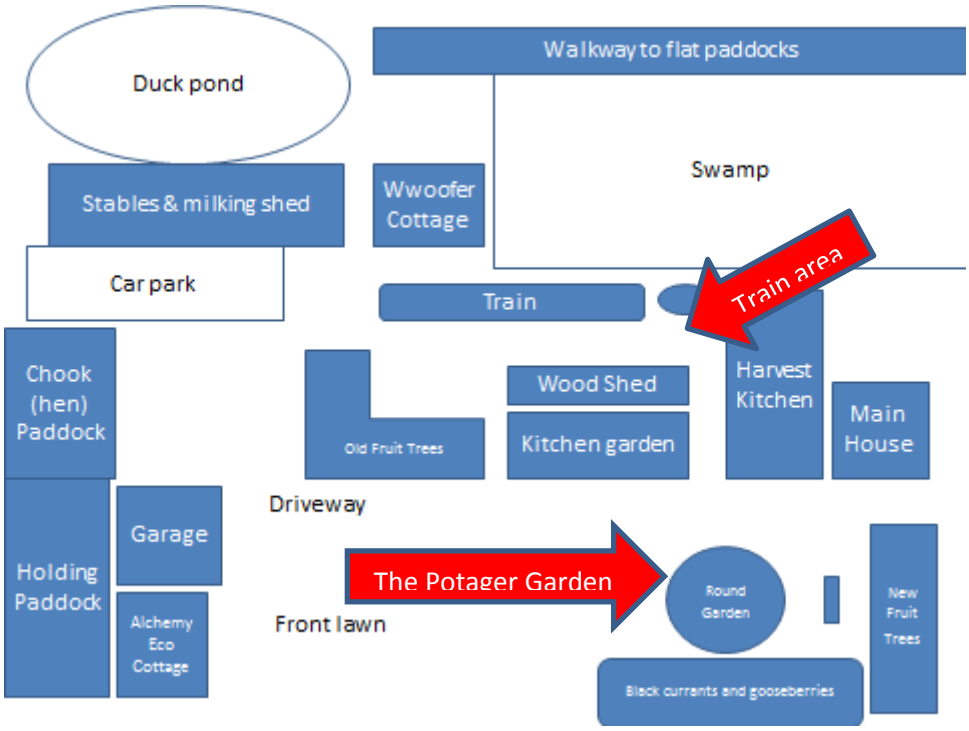
Most food is preserved for the winter months as there is only a four month growing season here.

Preserves and handmade soap are also sold at the farmers market during the blueberry season. Second grade apples are advertised via the neighbourly website for neighbours to come and get for free for their pigs and horses. Adhering to the biodynamic principles of living in a closed loop very little leaves the property (Blueberries aside) and very little is brought in thereby producing no waste. By having multiple income streams from the property not all my eggs are in one basket. I have Jersey cows for dairy products, meat and valuable manure,

chooks for eggs, meat, to sell and pest control, Marino sheep for meat, worm control in the paddocks and woolly jerseys.

Every few years the swamp area needs weeding so I get a few pigs in to do that and they then go in the freezer.

It is now time for me to consolidate and plan for getting older and less able for some tasks hence the cows will be replaced in time with the breeding of milking sheep who need less attention. There is a need to make the property more low maintenance re weeding hence the following project of designing in detail two problem areas of the property.



The potager garden in zone one outside the kitchen and the area by the train also in zone one, it had brick lined, gravel filled pathways and was a wood storage area. It now needs to be made low maintenance for the B and B and as the picnic area during PYO blueberry season.

The issues with the potager garden are weeding between the bricks on a very regular basis. The particularly difficult weed has been Weeping Rice Grass, Microlaena stipoides or Ehrharta stipoides. This grass is perfect for my area as it is both drought and frost tolerant but the area where the potager garden is used to be a paddock many years ago hence the grass. The grass would penetrate through mortar and pavelock requiring weekly weeding in spring and autumn. Often plants would need to be removed to extract the grass root system. The quadrants of the garden were too large and required standing on the soil for access.

The Potager

The Train area

The potager fully weeded for winter. You can see the gaps between the bricks.

The potager looking ok in summer

The potager in its more common state

The Plan is to make the potager more weed resistant and a showcase garden during the pyo blueberry season to encourage customers to grow vegetables and flowers together. The garden will be labelled with the 12 permaculture principals to educate. The intention of this garden is that along with perennials it will be self-seeding, self-fertilising and self-mulching with no weeding of brick work.

The central cabbage tree was removed for several reasons 1. It was blocking winter sun 2. It dropped leaves all over the lawn which then had to be picked up before mowing 3. Not being able to put a sprinkler in the centre made watering awkward and time consuming.

The 12 Permaculture Principles applied are;

1. Obtain a yield – self seeders, herbs, vegetables and perennials.
2. Observe and interact – birdbath in the centre
3. Produce no waste – in ground pottery worm farms with inverted terracotta saucers as lids plus compost area. Mulch pit for waste water from the outside sinks which will water existing nearby fruit trees.
4. Use and value diversity – flowers, herbs, vegetables, self seeders and perennials creates bio diversity.
5. Catch and store energy – small solar panel for a water pump as well as catching and storing heat in the bricks. Mulch pit and gravity feeding water to fruit trees nearby.
6. Use and value renewable resources and services – in ground worm farm and composting area next to the garden.
7. Integrate rather than segregate – entire garden plus birds feeding on seed heads and manuring the soil.
8. Use small and slow solutions – In ground worm farms for fertility, mulch pit for waste water.
9. Design from pattern to detail – spider's web design of bricks that is reflected in the round bird bath and round worm farms. Everything in the design is round and keeping with that theme. Round from nature.
10. Use the edges and value the marginal – plantings will reflect the differing micro climates of the main pottage. The entire edge will be in brick, other edges are for access so as not to be walking on the soil and maximising the growing space, the unused spaces now will be concreted to enable plants that prefer a shady area to be grown in shade as per propagating plants which makes them still productive.

11. Creatively use and respond to change – whole design currently not working and the design is changing towards old age so from a high maintenance area to a low maintenance area. As it is a zone 1 area it needs to be maximised more than it is currently.
12. Apply self-regulation and accept feedback – after initial design redesign was necessary to put in steps and levelling the area which resulted in more work but will create a better and more functional area.
13. Relative location; There is now a compost area close to garden, in ground worm farms are close to the kitchen, bird bath entices birds flying over the garden fertilising as they go to the bath.
    The central cabbage tree was removed and now enables a sprinkler on top of the bird bath to water the entire garden. Bricks are the main paths from the lawn, wash up area, kitchen and they form a pathway. Bird bath is a concrete structure so radiates heat as well as the water in it radiating heat.

    Multiple use; is that the bricks around the edge are now a mowing strip and a heat sink giving access to the middle of the beds without walking on the soil and low maintenance because of cement. Worm farms are self-fertilising, uses excess food scraps. Low maintenance in that I don't need to distribute vermicast and I could sell worms. The bird bath also holds the sprinkler. Collecting smoothie ingredients is now handy.

    Element analysis (needs and uses) the bricks provide a heat sink for the garden as well as providing an area to walk on. The central bird bath encourages birds who will bring diversity and help with insect control. It also provides a raised platform for the sprinkler. Four in ground terracotta worm farms are enabling ongoing fertilising of the area close to the kitchen but will only work if fed on a regular basis. A new compost area is being created for any garden waste there might be.
    Plantings; multiple plantings for multiple uses with the plants suitable for zone 1 kitchen garden. I would like to keep the integrity of the seed sources for identification. This garden will provide 12 months of the year food source. The flowers are to provide an attractive display for the mid-summer pyo blueberry customers as well as bringing biodiversity and predator insects.
    Wash up area uses; The cleaning of my milking equipment, watering seedlings as well as the main garden, storage of weeding buckets, washing salads for salad bags for the farmers market. Veg can be washed before going into the kitchen with the nutrients from this going to the mulch pit there by feeding the fruit trees.

Implementation of the plan to date October 2017.

Existing bricks removed

Area weeded

Cabbage tree removed and cuttings taken. Design laid out.

Concrete foundations in place

Bricks mortared on top of concrete

Propagating area prepared for concreting.

The concreted propagating area

Seeds growing for the garden

Oddly the garden won't look much different than before but will now be low maintenance.

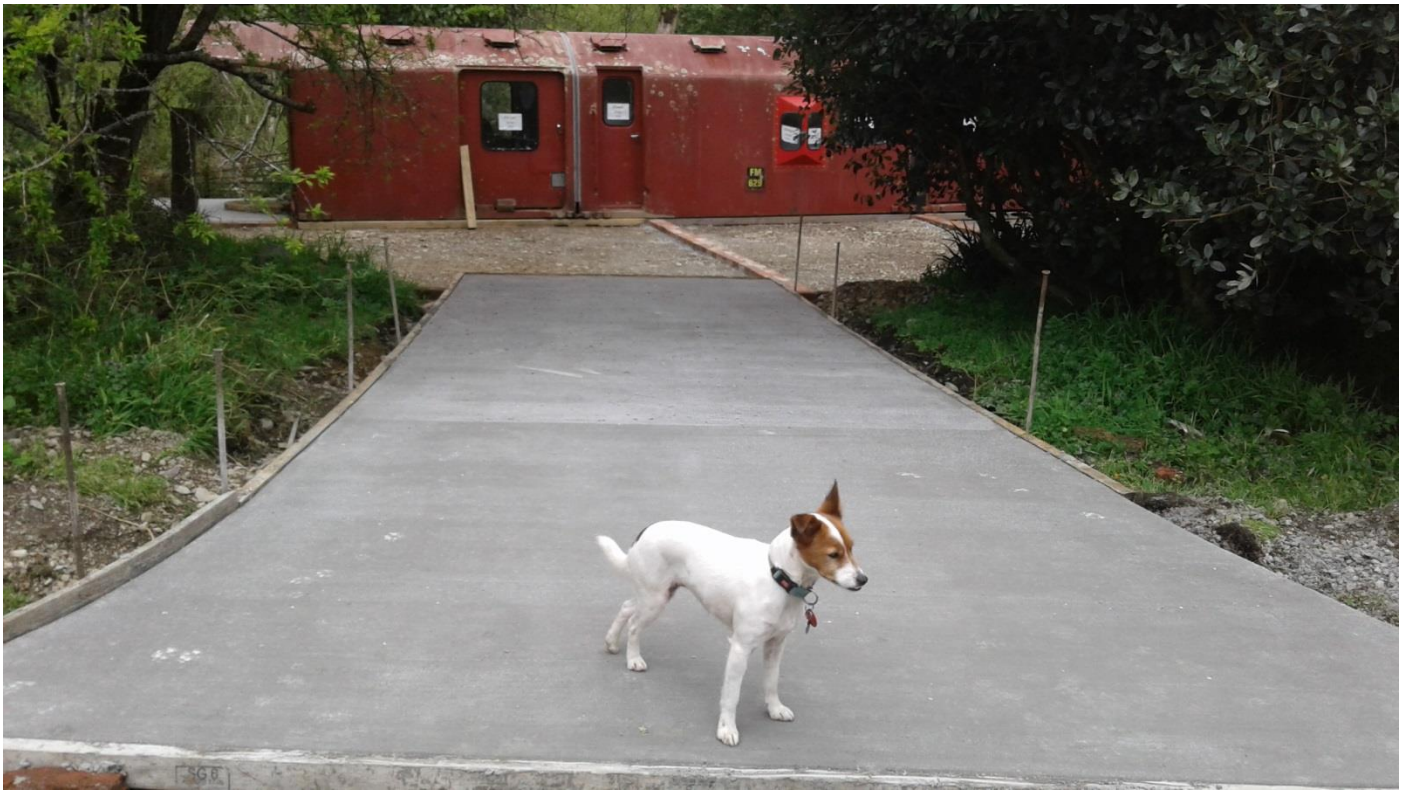
The Train Area

I feel that the pictures accurately depict from high maintenance to low maintenance.

Before


FM
625


Danger
MITRE




Danger