# Strategy Review 2018

## Implementation

To implement the strategies a plan needs to be drawn up. The plan should identify the actions required to implement each part of the strategy and an estimation of cost and time required for implementation. A to-do list needs to be created to bring all of the actions together.

**Energy Goal:** Our energy requirements will be, captured, developed or generated on the property.

## Our Energy Strategy to deliver the goal

- Conduct energy audit

This is first on the list for good reason, it helped us determine our position regarding energy consumption – how much of what energy source we used – which then enabled informed decision making so we could tackle the greatest area of energy consumption first. We did it a few years ago and found it very enlightening! (**Completed**)

- Research ways to reduce energy consumption

Our greatest area of energy consumption (as I expected) was electricity, followed by gas, followed by wood. A lot of reducing energy consumption can be behavioural. No cost involved but habits can be challenging, especially the habits of other family members! There are other strategies we implemented, like building and using low energy/alternative energy appliances such as a stored heat cooker, solar oven or rocket stove which we have and use. (**Completed**)

- Replace grid supplied with renewable energy generated on site

This is an expensive one, and it took a while to get it working efficiently, but it all seems to be working well. There have been a number of unforeseen impacts, one of them being that some electrical appliances which we got rid of have been re-acquired, like a slow cooker and rice cooker. They can use excess electricity production and reduce our reliance on gas for cooking. (**Completed**)

- Provide electricity storage

This has been done in the form of two, 24 volt, nickel iron battery banks which will see us out and probably be still in use by our grandkids. **(Completed**)

- Investigate biomass energy options

During winter we heat and cook with a Nectre bakers oven slow combustion stove, some of the fuel we are able to source from local and more or less sustainable sources (trees being cleared, dropped limbs etc.) but the majority we have to buy in from a commercial seller. There is considerable work to be done to allow us to reduce our reliance on this type of firewood. (**Ongoing**)

- Find ways of ameliorating high summer temperatures

With the rear of our house facing west, the Western Sydney summer sun bakes us, and it is getting worse with temperatures in excess of 45°C last (2016/17) summer. By working out ways to combat this it will make our lives less frazzled in summer and reduce our reliance on air conditioning, which is NOT powered by the photovoltaic system, but powered directly from the grid. The last summer (2017/18) had temperatures up to 47°C but a combination of isolating the northern end of the house and installation of bamboo (outdoor) blinds and the deck on the western side of the house to form a cool refuge reduced our electricity usage from 5 kwHr/day (mostly aircon) down to 2 kWHr/day – a drop of over half! **(Completed)**

- Install solar hot water

This is another high expense investment, but it has the best payback period of the big energy stuff. We have had solar hot water in place for over 35 years, originally using a thermosiphon flat plate collector system, which has since been replaced with a more "intelligent" active solar evacuated tube system**. (Completed)**

- Introduce Low Energy Cooking

Various techniques have been developed and are used as required including, solar oven, rocket stove and stored heat cookers. With the development of the solar power focus on energy saving has changed from electricity to gas, resulting in the re-introduction of a rice cooker and several slow cookers to take advantage of extra solar electricity available**. (Completed)**

- Investigate options for active heating and cooling

Currently heating is biomass, with a small amount of passive solar heating, cooling is provided by pulling in cold air through the windows and, when it gets too much, air conditioning. Strategies to be investigated include a means of pulling cool air from under the house into selected rooms and heating by dragging air through a solar heater into the house. **(Ongoing)**

- Insulation

The ceiling is insulated with fibreglass batts, but there is currently no insulation in the walls of under the floor. After much research it turns out that to install insulation in the walls could only be done by removing the gypsum board making up the walls, with the insulation then being installed. It would also require at least some rewiring of the house because the current wiring is designed to lose heat into the open air and insulating it may result in a fire. Due to attendant costs, this idea has been shelved. It was considered that underfloor insulation in the lounge room would reduce heat lost to the underfloor area in summer and this was more important than keeping warm in a mild and short winter, so underfloor insulation will not be conducted. We have polystyrene boards which are inserted on the inside of the windows in the rear of the house which has proved to be very effective in keeping out the summer heat on the western side of the house. Bubble wrap is to be trialled on the front window next to the front door and evaluated for effectiveness. **(Ongoing)**

- Cooking with Solar electricity

With the installation of the solar electricity system, we have again gotten hold of some electric cooking appliances to make use of excess electricity, these have been specifically a rice cooker and slow cooker. A free-standing induction hotplate is yet to be obtained for summer cooking and to help with bottling of excess produce, reducing the requirements for the gas stove. **(Ongoing)**

- Build and install rocket oven

We have recently become aware of the possibility of retrofitting an unused oven to be heated by a rocket stove set up. I don't know much about it yet so I will need to research what is required, obtain a discarded stove (gas or electric) and other fittings, decide on a location for it, then put it tighter. I have obtained some documentation on building a rocket oven but that is it. **(Ongoing)**

**Water Goal:** All rainwater falling on the property will be captured, we will reduce our consumption of town water to as low a level as possible.

**Our Water Strategy to Deliver the Goal**

- Conduct a water audit

In the same way that the energy audit let us work out and address the energy hogs in our home, a water audit let us know the big water consumption areas so we could address them first. We had already done quite a bit of water demand reduction when we did our first water audit but it showed fairly conclusively that the productive garden areas (back and front yard) were the big water users. This needs to be redone to confirm any new findings (**Ongoing**)

- Install water efficient irrigation for fruit and vegetables

This was a big action coming out of the water audit, so that we installed various types of water efficient irrigation (ollas, buried capsules, buried pipe and) in all veggie patches and deep tube, buried pipe and a little bit of porous pipe for the perennials (herbs and fruits etc). Construct wicking beds and deep reservoir self-watering containers. (**Completed**)

- Install water tanks

Our first water tanks were installed over 35 years ago. Another 5,000 litre has been installed recently giving a total of 16,000 litres rainwater storage. A connection between the downpipe on the southern side of the house has been made with the roof of the carport so that water can be channelled from the stormwater drains to the new tank and there are plans to install a new 3000l tanks beside the garage. (**Ongoing**)

- Install rain chimneys, swales, permeable paths to store rainwater in the soil

In heavy rain we get some runoff into adjoining properties in the backyard and towards the road in the front yard. With a goal of keeping stormwater on the property, as well as using water tanks we are implementing some measures to store water in the soil. One experimental drain chimney has been completed and more will be installed. **(Ongoing)**

- Rain garden

The concept has been developed but there is still design work to be done and a location to be determined, plants have not yet been worked out. **(Ongoing)**

- Introduce behavioural changes to reduce consumption

The usual behaviours (short showers, filling up the dishwasher, washing full loads etc.) are in place but a review of effectiveness would be valuable. **(Completed)**

**Food Goal:** Our food will be produced organically sufficient to contribute to two meals a day for the two of us.

**Food Strategy to Deliver this Goal**

**Sub – Strategy 1: Grow Edible Plants Year 'Round**

- Rotating annual vegetable beds

The basic vegetable production using 14 vegetable beds planted and harvested serially has been developed and implemented. **(Completed)**

- Perennial vegetable beds

Perennial beds for chokoes, Jerusalem artichoke, rhubarb and asparagus beds are completed and in production. A review of the possibility of other perennial vegetable crops would be valuable. **(Ongoing)**

- Herb spiral

The herb spiral (wedding cake) is in place and yielding well **(Completed)**

- Fruit trees (including fruit tree circle, banana circle)

Fruit tree circle, banana circle and other fruit trees are in place and yielding, but a fruit harvest calendar needs to be revised to ensure coverage for the year **(Ongoing)**

- Water Gardens

Two water gardens are in place, yielding arrow leaf and water chestnuts, pickerel rush and acting as water sources for wildlife. **(Completed)**

- Edible "Weeds"

Edible weeds growing in the area have been identified and integrated into recipes regularly in use. **(Completed)**

- Fungi

Commercial mushroom boxes have been used with variable success. Mushroom box home made with commercial spawn got to the "pinhead" stage and then stopped growing. More research and trials required. **(Ongoing)**

- Develop and Utilise Pollination & Predator Services

Self-watering bird bath and insect waterer are in place and the bug hotel is in place and in use. The insectary bed in the front yard has been replanted and a waterer installed in the front yard. Vegetables allowed to go to seed in vegetable patch to attract pollinators/predators. Native garden is in place and growing slowly. Native bee hive to be installed, one microbat roost in place, one more to be sourced. **(Ongoing)**

- Grow food off site

We are nearing saturation levels for food growing on the site, and there are some crops such as oil and grain crops which require more land than we can commit to, to get a meaningful yield. While some initial work has been done, this s some way away from realisation. **(Ongoing)**

- Grow food indoors

Growing food indoors does overlap with some other strategies (mushrooms, sprouts, and insects) but a review needs to be carried out to identify other potential food growing areas using the zone tool. It is likely that only areas requiring supplemental lighting will be identified so research needs to be carried out to identify and design a system to grow food under lights which suits our house **(Ongoing)**

- Grow food vertically

Some food is grown vertically already on trellises near some of the veggie patches (snow peas, Malabar spinach, cucumbers), in cylindrical trellises in veggie patches (tomatoes, cucumber, peas) and against the house (passionfruit, grape). New systems to be developed to allow growing in hanging baskets and to grow fence pumpkins and loofas. Relocate and refurbish strawberry tower. **(Ongoing)**

- Review veggie plan

The vegetable sowing plan was developed over 10 years ago and while there have been minor revisions over the years there needs to be a complete review to ensure we are getting the best out of our system. The increase in hot weather over summer has resulted in not getting much yield from brassicas planted to be productive over summer, where we used to get some yield. **(Ongoing)**

- Review Techniques of fertility Maintenance

The main process for maintaining fertility of the primary growing beds is the use of the chook tractor to provide chook manure to each of the grow beds in turn. In addition to this, several years back all beds received a dressing with rock dust and individual plants have been provided with liquid manure from the comfrey extracting tube. Perennials in the front yard are fertilised with the worm tower and application of fertiliser sausages made by rolling up hessian bags filled with manure. Most back yard grow beds have been pH tested and seem to be OK. An overall review of fertilising practices needs to be carried out to ensure nothing else is required. **(Ongoing)**

**Sub – Strategy 2: Develop Protein Sources**

- Chickens

Chook tractor has been implemented for many years and is on its 4$^{th}$ generation, it is functioning well providing eggs as well as fertilisation and cultivation of the annual veggie beds. Aging chickens are placed in the retirement village where they break down and manure straw ready for use as mulch. Some eggs are provided in spring and where there is a need they can be placed inside a moveable fence and used for cultivation as well. They're not used for meat. **(Completed)**

- Quail

Quail house has been completed. There is more study and construction required to bring the area into production. **(Ongoing)**

- Farming Non-traditional protein sources (snails/insects) for consumption

Initial study and gathering of materials has been completed but no real progress beyond that point. Black soldier fly larvae setup (biopod) is not currently in use. The biopod is to be set up to allow self-harvesting of insect protein by the chickens. **(Ongoing)**

- Aquaponics

This idea was discarded after initial work (construction of fish area and grow beds) due to high (I calculated an increase of 46% on the electricity requirements at the time) energy requirements. With the new energy system being implemented this needs to be revisited. **(Ongoing)**

- Move towards vegetarian diet

Out of a theoretical 21 meals per week we do an average of 2 to 3 which contain meat. We have no real desire to become complete vegetarians or vegans (especially as we produce our own eggs) but reducing our meat consumption has impacts in our waste and food spheres of influence particularly. It has a dramatic impact on the sphere of producing our own protein. At the moment there is no intention of reducing our meat consumption further than this. **(Completed)**

**Sub-Strategy 3: Food Preserving**

- Drying

I have built two solar food driers, one small, cheap direct drier and one larger and more complex offset drier. The offset drier saw considerable use when we used to grow bumper crops primarily in spring and summer. Now this drier is only used for special drying projects and the odd bumper crop. **(Completed)**

- Bottling

We regularly bottle yearly supplies of tomato sauce and diced tomatoes, sourced from a mixture of our own produce, local growers and more distant organic growers. We use a combination of new jars bought about 5 years ago and repurposed jars accumulated over the years. We do buy in some new lids as older ones become unserviceable. Our previous power source has been gas but we have recently obtained an induction cooker to enable us to make use of abundant summer solar electricity to sterilise the empty bottle and lids and to process the full jars. **(Completed)**

**Waste Goal: No waste shall leave the property. (New goal: We shall aspire towards zero waste)**

**Waste Strategy to Deliver the Waste Goal**

- Conduct waste audit

A waste audit was originally conducted years ago but needs to revisited in the light of new behaviours to determine if any opportunities have been missed. This has been conducted and work done to cover new issues discovered. **(Completed)**

**Sub- Strategy 1: Organic Waste**

- Composters

Two Aerobins in place to accept organic waste and are working but breakdown of organic matter is slow and cockroach infestation is a problem. Review required. **(Ongoing)**

- Worm farms/towers

The worm bath (worm farm), worm tower in the centre of the fruit tree circle and chooks (tractor and retirement village) can accept organic waste not placed in the Aerobins. Both in place and working. **(Completed)**

- Tree trimmings

Tree trimmings and some other organic waste is sent off site via green bin. This needs to be reviewed to see if they can be treated (eg by electric shredding with current or new shredder) and used on site. **(Ongoing)**

**Sub-Strategy 2: Waste Water**

- Composting toilet

The toilet has been constructed and sited and a material sourced to be added to assist in composting, but the system is not used at the moment. A design for a solar toilet has also been sourced and this needs to be reviewed for feasibility. **(Ongoing)**

- Banana circle

Banana circle is in place and currently used to treat greywater, compost organic matter and produce bananas, in place and working well **(Completed)**

- Constructed wetland

The constructed wetland is used to treat greywater for the washing machine and provide water for two trees, also papyrus has been removed and added to rot down in the banana circle. **(Completed)**

**Sub-Strategy 3: Other Waste**

- Use re-usable carry bags

In most cases reusable bags are taken when buying materials not able to be produced, bags are left in the car for the same reason. Performance could be a bit better but is improving with time. **(Completed)**

- Use re-usable containers to replace other plastic bags

Re-usable bags for buying of produce and other things need to be sewn and used. Containers/reusable bags for buying meat etc which are usually provided in plastic bags need to be made/sourced and used. This system is now in place and working well. **(Completed)**

- Introduce bulk/ethical buying

Some materials are bought in bulk but there has been no comprehensive review or plan put in place to identify materials which suit bulk buying. Ethical buying of bulk meats still needs to be addressed. **(Completed)**

- Provide unwanted items to salvation army/PSW/ friends & neighbours

In place and working well. **(Completed)**

- Towards Zero Waste

So far we have identified opportunities for bulk buying and implemented those where they made sense. We take our own shopping bags, produce bags and containers when shopping for food so we can avoid plastic waste. We have put together a zero waste go kit to reduce plastic waste when we eat out. A more holistic plan to achieve zero waste needs to be completed. **(Ongoing)**

**Community Goal:** We will work within our community to help others live more sustainably.

**Community Strategy to Deliver the Community Goal**

- Permaculture Sydney West membership

We are both members and are on the committee for PSW, and are very active in providing information and instruction to members. **(Completed)**

- Open Days

We currently open for International Permaculture Day and Sustainable House day every year and have become skilled in preparing and running tours for these open days **(Completed)**

- Web presence

The website has be up and running for almost 10 years, an article is added every week along with freely downloadable resources where appropriate. There is also a Facebook page and YouTube channel dedicated to providing sustainable living information. **(Completed)**

- Start a monthly Street BBQ

No work done on this yet. **(Ongoing)**

- Establish a community newsletter

No work done on this yet. **(Ongoing)**

- St Clair sustainability group

The group has been active for 8 years, with varying attendance, some attendees being local but some drawn from greater western Sydney area. **(Completed)**

- Street library

The street library has been designed and built, and has been functioning for over 6 months. Usage has been weekly at least from locals and others. **(Completed)**

- Offer low cost sustainable living courses to the local community

Courses have been established for use and we have all the equipment to run them but more work needs to be done to develop a venue then publicise them. **(Ongoing)**

**Livelihood Goal:** We will generate our income ethically.

**Livelihood Strategy to Deliver the Livelihood Goal**

- Workshops for PSW

Currently programs are developed and run with 5 local councils through PSW to provide income as the councils require it. **(Completed)**

- Workshops at home

Courses have been established for use and we have all the equipment to run them but more work needs to be done to develop a venue then publicise them. **(Ongoing)**

- Sale of E-books on the Internet

One E-book is completed, several others in preparation, there has been no attempt to sell them on the net **(Ongoing)**

- Sale of Advertising on YouTube Channel

YouTube channel and been activated and videos are being added each week. Currently less than 60 subscribers. **(Ongoing)**

- Manufacture and sale of ethical products in-house

Work needed to identify products and determine their economic feasibility for sale. **(Ongoing)**

**Amenity Goal:** *We shall continue to develop the property to make it more liveable.*

**Amenity Strategies to Deliver the Amenity Goal**

- Back lawn

In a permaculture design, an area allowed to remain as lawn can be seen as unproductive, but is an ideal area for children (kids, grandkids etc) to play in safety. There may be some minor incursion into the current lawn area but the current intention is to allow it to remain as a play area and area for picnics etc for the adults. A cubby house is to be installed in this area also. **(Ongoing)**

- Front park area

The area in front of the house, under the mulberry tree, has been covered with wood chip and seats provided as well as a child's swing installed. This area has also had the strawberry tower and biopod but these are to be removed and the area set aside for recreational purposes. **(Ongoing)**

- New path in Front Yard

A path is needed to be installed between the front path and the front park area. As well as improving access it will allow rainwater to be absorbed and reduce the amount of grass in the front yard requiring mowing. This has not been commenced. **(Ongoing)**

- Declutter the House

Over the years we have accumulated a whole stack of stuff that we no longer use (or never did use) so we are now going to go through the house, garage and sheds one room at a time and remove excess materials which will be given away or recycled. Several sheds have been done but there is lots more to do. **(Ongoing)**

- Tiny house

In place of the original shed in the backyard a small tinyhouse is to be constructed from recycled materials. The area is currently covered in pallets and the first thing to be done is to set out the floor. **(Ongoing)**

- Set up blacksmithing forge in garage

The forge is currently located on a brick base in the garage, but another course of bricks needs to be installed, the materials for the shroud and flue have been obtained but these need to be installed and a 12 volt supply and foot switch need to be wired into the fan. **(Ongoing)**