Designing Your More Sustainable Lifestyle

2nd Edition

By Nev Sweeney

INDEX

0.0 Introduction

The greenhouse effect is the process whereby energy from the sun is trapped within the earth's atmosphere by gases which act as a blanket, preventing all of the energy being re-radiated back to space. Some greenhouse warming is good and prevents the earth from being a frozen block of ice spinning through space. The problem is that through the burning of fossil fuels and other interventions, greenhouse gas concentrations in the earth's atmosphere have been steadily increasing since 1750 –

- Carbon dioxide has increased from 280 – 412.5ppm (45%)
- Nitrous oxides have increased 270 – 331ppb (20%), and
- Methane has increased 700ppb – 1875ppb (250%)

This causes more solar energy being trapped within the earth's atmosphere which results in average rise in the earth's temperature, radically affecting the climate and producing more extreme weather events.

In September 2008 the Garnaut report into the effects of climate change on Australia was released. The report is an extensive review of what Australia can expect if human induced climate change is allowed to continue on its present course and in the final chapter, entitled "Fateful Decisions" he leaves us with some hope –

"There are times in history of humanity when fateful decisions are made. The decision this year and next on whether to enter a comprehensive global agreement for strong action is one of them."

But also with a chilling prediction –

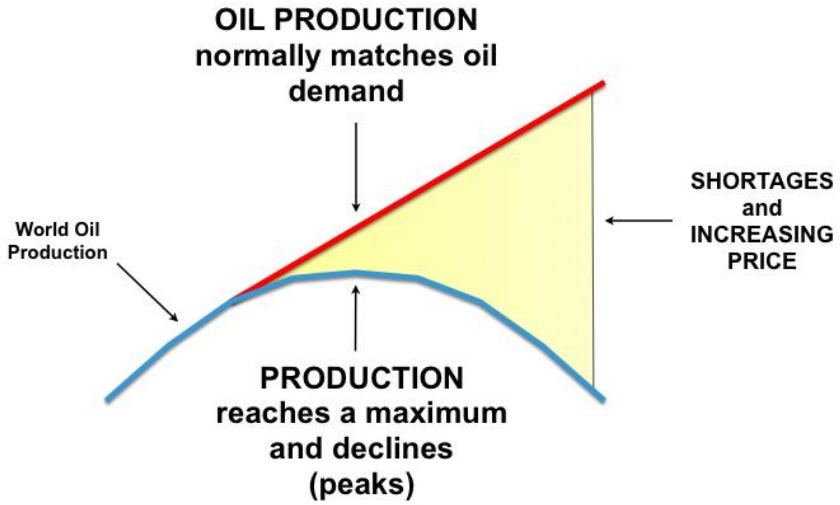
"On a balance of probabilities, the failure of our generation on climate change mitigation would lead to consequences that would haunt humanity until the end of time."

Professor Garnaut in his report, is speaking in terms of decision making at a government level, but the decisions that we as consumers make also can also support the increase or reduction in greenhouse gases. Dr Mark Diesendorf in his book "Greenhouse Solutions with Renewable Energy" states that a combination of efficient energy use, solar hot water and other already existing

renewable energy technologies can halve Australia's greenhouse gas emissions within a few decades.

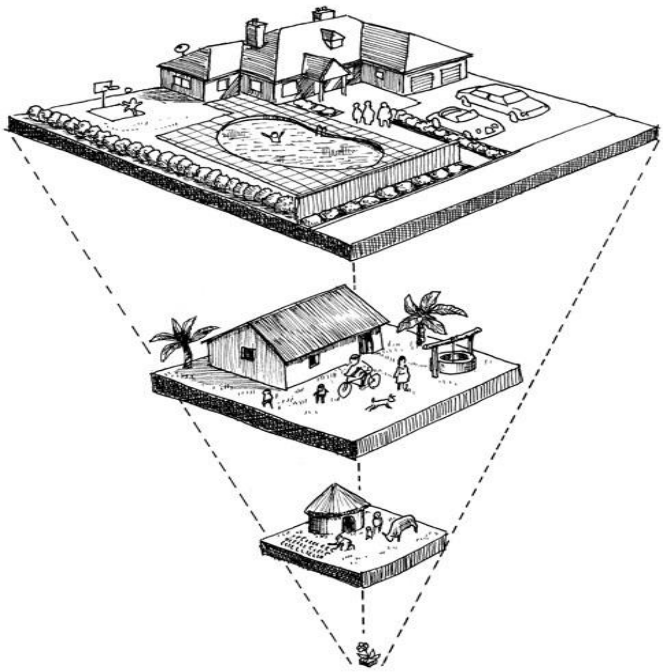
The problem is complicated however in that we not only consume energy but we consume "things" and produce waste, turning resources, through a series of industrial and consumption steps into rubbish. To combat climate change there needs to be a holistic approach that individuals can also use to reduce the negative impact of their activities on climate change.

Unfortunately there is another looming crisis that must be factored into the mix – the so called "Peak Oil". In 1956, the American Geologist M. King Hubbert developed a graph showing that the US oil production would peak in 1970. He was ridiculed at the time but his prediction was proved to be correct. He also predicted a world peak in 2000, but this did not take into account the 1973 oil embargo and the reduction in production and consumption that it caused.



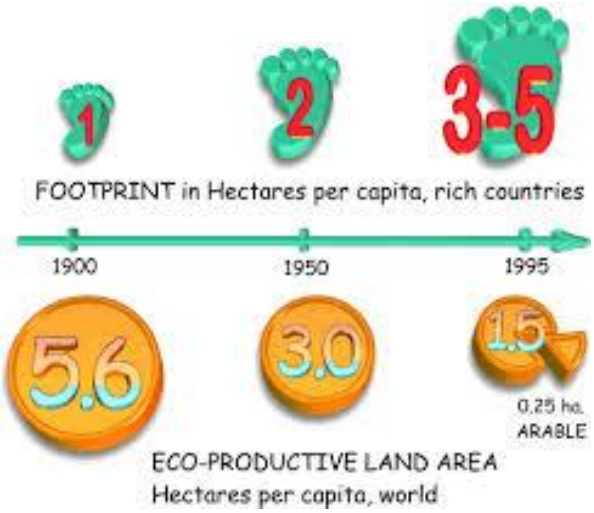
Ongoing work suggests that the peak occurred somewhere around 2010. This peaking of the Hubbert curve does not mean that all the oil is gone, merely half gone. With the demand continually increasing (particularly as the huge economies of India and China attempt western-style development) and supply decreasing, prices are due to skyrocket with unpredictable but what would be seen as negative impacts on Western lifestyles. This includes Australia and as David Holmgren (the co-inventor of the permaculture process) puts it, the end of the age of cheap energy (oil) could result in "an infinite array of pathways and local possibilities from the benign to the horrific".

Both peak oil and climate change are two aspects of the same problem and the effects of both of these crises need to be taken into account when working out our own personal response. The good news is that by increasing the level of sustainability of our lifestyle both our reliance on oil is reduced and our contribution to human induced climate change is too.



As Ted Trainer of the University of New South Wales puts it – "The present consumer way of life in rich countries is totally unsustainable". Australians are leading the charge in this race towards ever increasing consumption. The ecological footprint (ie the amount of the earth's surface each one of us requires to sustain our present lifestyle) of Australians at 9.3 hectares per capita which is now in front of the United States at 8.2 hectares per capita. If the amount of land available to produce our needs averages out at 1.8 hectares per person it can be seen that over 5 earths-worth of land would be required for everyone to have an Australian-esque lifestyle. However, even the current worldwide average of 2.75 hectares per person exceeds our earths' carrying capacity by 25%. From the preceding it can be seen that the current Australian lifestyle must become more sustainable.

This program is focussed on the sustainability of urban households in particular, because of the steady drift towards the cities, especially Australia where, according to the Australian Bureau of Statistics 2007 census, 68% of Australians now live in the major cities. While cities can be thought of as discrete identities themselves, they exist as "resource black holes" that consume the material resources of an area considerable larger than the physical dimensions of the city itself. Also consumption, or more specifically, household consumption is the real driving force in resource consumption and waste production which result in the environmental problems that are being dealt with today.



Economic chaos may add a touch of desperation to the mix and may reduce the preparations at a government level to combat both the climate change and peak oil emergencies and can take our focus from these issues as well. It is difficult to concentrate on the bigger picture when you are focussed on providing for your family, but becoming more sustainable by using the strategies outlined in this program can actually save you money. Learning to produce the necessities of life can be rewarding for you, your pocket and the environment, so good luck on your journey!

1.0 Designing the Plan

Planning is one of those funny things, it is possible to plan so minutely that you never get anything done and it is also possible to just forge ahead blindly wasting effort and missing opportunities due to total lack of planning. Somewhere in between is a good place to aim for!

If there has been one spill-over between my working and home life, it has been an increase in the planning that we do. In my work I am required to develop detailed yearly plans in consultation with a variety of different groups and while, for many years, I plugged on regardless and still got things done, I have found the planning exercise valuable in making my efforts more effective.

People differ in the level of planning that they are comfortable with, so I am going to show you a relatively simple technique which can then lead into a more involved and detailed process. Whichever technique you use, it pays to involve everyone in the planning process who will be affected by the things that you will be doing. By including the differing perspectives of your household the resulting plan will be more rounded and effective as well as ensuring buy-in to the plan from the people involved. They will have some ownership of the resulting plan and will be more likely to assist you in carrying it out (or at least less likely to hinder you!). Even kids can add their unique viewpoint and once committed they will add considerable enthusiasm, and even fun, to the project.

1.1 The Simple Process – Using the Sustainable Lifestyle Assessment Matrix or SLAM

Value	Sub-value	0 White	1 Pastel Green	2 Light green	3 Mid green
1. We make the most of the water we have	1.1 Water use	No effort at water saving or re-use, it just comes out of the tap and goes down the drain	We have fitted a low volume shower nozzle and make sure we fix leeks quickly	We have made some gains on reducing water usage like shorter showers and using a broom instead of the hose to clean the path; grey water is re-used on the garden	We save and re-use water where we can - shorter showers, use buckets to hold water until it comes through hot then use on the garden; we buy low water use appliances such as front loading washing machine
	1.2 Sewage	The toilet is single flush and we flush every time the toilet is used flush	The toilet is dual flush and we use the appropriate flush cycle every time the toilet is used	The toilet is dual flush but we generally don't flush at night and during the day we practice "if it's yellow let it mellow if it's brown flush it down".	Urine is recycled/used on site, Faeces is flushed
2. We don't waste energy	2.1 Energy Use	No thought is given to energy uses	We have changed the lightbulbs to fluorescent, turn off appliances when we can, checked seals on fridge and freezer, we have sealed drafts where we could	Energy consumption is considered when buying large appliances; we use some low energy consumption techniques such as low energy cooking using stored heat, steaming etc	We buy the lowest energy consuming large appliances we can afford. We put on clothing rather than the heater and wash in cold water.
	2.2 Energy Generation: Electricity Gas etc.	All energy sourced from non-renewable sources	Energy is all obtained from off site, a mix of renewable and non renewable sources	All energy is derived from off site but renewable resources	Some energy is generated on site (wind/photovoltaics or direct solar heat) the rest is a mix of renewable and non-renewable resources from off site.
	2.3 Energy Conservation	House is uninsulated	Roof insulation is in place	Roof walls and where appropriate, floor insulation	Roof walls and floor (where appropriate) are insulated, windows are double glazed, shuttered or otherwise insulated
3. We are mindful of where our food comes from		All food is bought in and no thought is given to the source	We grow a few herbs and a small amount of vegies, using commercial seedlings, the rest is sourced from a supermarket	We are growing a percentage of our food from our own seedlings and some is sourced from organic sources but most we buy in the supermarket.	Some food is homegrown, some is sourced from local growers/organic or farmers markets, some is bought in without to much worry about the source
4. We use ecofrendly transport		A car is the transport of choice and it's a V8!, usually with one person per trip. We fly whenever we can.	We occasionally try and walk or bicycle on short trips to save fuel, but primary transport eg to and from work is by car, we are looking at getting or have a smaller more fuel efficient car. We do still fly sometimes on holiday or business trips	We car pool to reduce car usage to and from work, bicycle or walk where possible, but use the car on other occasions.	Public transport, walking and bicycle are the transport of choice with some use of a car when needed. Fuel consumption is the main consideration when buying a new car. We limit flying to unavoidable trips.

The SLAM is a tool to help you work out the level of sustainability of your current lifestyle and then, based on the information developed, put together a plan to achieve a greater level of sustainability.

The matrix contains a series of seven environmental sustainability values (some with sub-values) down the left had side of the page with six degrees (level 0 to 5) of compliance or actions across the top. For the intersection of each value and action level, there is a paragraph stating what it would look like. Also up the top is a colour coding from white to deep green, this is a qualitative rating on your level of sustainability.

Neither numbers nor colours are something to get worked up about, just tools to help you measure your progress as your sustainability level increases. You could use them to develop an objective if you want to go that way eg "our household will be fully 'mid green' by the end of the year" etc. It can also be a bit of fun, if anybody questions your green credentials you can whip out the completed SLAM, wave it in front of their face and show them the process to back up your conclusions. That'll learn 'em!

To use the matrix:

1. Get the people you want involved in the planning process together and give them each a copy of the matrix.
2. Discuss each value (eg We Make the Most of the Water We Have) and/or sub-value (eg water use) and decide as a group where on the scale most accurately reflects your current household situation.
3. Circle or otherwise mark each paragraph which you decide describes where you are currently for that value/sub-value then repeat the process until you have "current situation" mark for each value on the sheet.
4. Once you have completed this first part, you can average the numbers for each value to give you a number less than 5
5. Then, using a different colour pen, mark the paragraph for each value which reflects where you want to be. This then becomes the basis for your plan.
6. While you need go no further if you feel this is sufficient, it is worthwhile developing up a series of steps or actions which you agree with your people will take you from where you are now, to where you want to be.
7. You can then put down a time-frame for achieving each action and who will be involved. You should regularly review your plan with your "team" to ensure that you are meeting the targets that you have set yourself.

For example

Value	Sub-value	0 White	1 Pastel Green	2 Light green
1. We make the most of the water we have	1.1 Water use	No effort at water saving or re-use, it just comes out of the tap and goes down the drain	We have fitted a low volume shower nozzle and make sure we fix leeks quickly	We have made some gains on reducing water usage like shorter showers and using a broom instead of the hose to clean the path; grey water is re-used on the garden
	1.2 Sewage	The toilet is single flush and we flush every time the toilet is used flush	The toilet is dual flush and we use the appropriate flush cycle every time the toilet is used	The toilet is dual flush but we generally don't flushs at night and during the day we practice "if it's yellow let it mellow if it's brown flush it down".
2. We don't waste energy	2.1 Energy Use	No thought is given to energy uses	We have changed the lighbulbs to fluorescent, turn off appliances when we can, checked seals on fridge and freezer, we have sealed drafts where we could	Energy consumption is considered when buying large appliances; we use some low energy consumption techniques such as low energy cooking using stored heat, steaming etc
	2.2 Energy Generation: Electricity Gas etc.	All energy sourced from non-renerwable sources	Energy is all obtained from off site, a mix of renewable and non renewabel sources	All energy is derived from off site but renewable resources
	2.3 Energy Conservation	House is uninsulated	Roof insultation is in place	Roof walls and where appropriate, floor insulation

To help you gather good data before you start your planning you might want to carry out one or more of the following more detailed audits in the areas which you have identified as the areas where you most want to improve, or where you want to improve first:

- water audit
- waste audit
- energy audit
- Food Sustainability Audit
- Sustainable Consumption Audit
- Sustainable Household Transport Audit
- Sustainable Community Participation Audit
- Sustainable Clothing Audit

All will give you good information to help you plan and measure your success and the results for each can be incorporated in your master plan. The specific requirements for each audit are covered later sections and blank forms are available at the rear of this publication.

1.2 The Detailed Process – Conducting a SWOT Analysis

Conducting a SWOT (Strengths; Weaknesses; Opportunities and Threats) analysis enables a more comprehensive and detailed plan to be drawn up by analysing the factors working for and against achieving the objective and how they may be maximised or mitigated against.

The Objective

If you haven't done so already, now is the time to develop your objective and for the purposes of this exercise it is assumed that it will revolve around improving the level of sustainability of your lifestyle, although it may have other aspects such as saving money, increasing self-reliance or living more simply which you wish to include. Whatever the case the objective should be concise and reflect the desired state you wish to attain and have input from all of the people who will be involved in achieving it.

1.3 The SWOT Analysis

The **SWOT** analysis helps to identify and summarise the positive influences and aspects of your internal and external environment that help you work towards achieving your goal as well as the negative influences and aspects, both external and internal that work against you achieving you goal. This may be illustrated by the diagram below –

	HELPFUL	**HARMFUL**
INTERNAL	**S**trengths	**W**eaknesses
EXTERNAL	**O**pportunities	Threats

The analysis should always be related back to the objective that you have chosen and involve all of the people who will be affected by the work you will be doing.

Terms used

Internal – Something which is under your control or the control of your group or family such as a skill which a member has or an action which you could be carrying out to make your group or family more sustainable but are currently not.

External – External to your group or family, something which may be imposed from outside such as government regulation or change in climate. It is something which you do not have control over but can respond to.

Strengths – These are the abilities of you and your people and the attributes of your lifestyle/house/yard/car or stuff that supports the achieving of your objective of living more simply and sustainably.

Weaknesses – These are the attributes of your people and lifestyle that work against achieving your objective of living more simply and sustainably.

Opportunities – these are the conditions external to your lifestyle such as government regulations, neighbours or the economy that favours improving the sustainability of your lifestyle.

Threats – these are the conditions external to your lifestyle that work against improving the sustainability of your lifestyle.

Use this process to look at what you have, and don't neglect the front yard!

To illustrate matters, here are the results of a SWOT analysis that I conducted with my family recently –

	Helpful	Harmful
Internal	· 10,000l water storage · We grow our own food · Alternative electricity system · Location (walking distance to services) · We can bake our bread · We have an extensive library · Fruit trees are producing · Solar hot water system is in place · Make our own soap · Have bikes · The chooks · Solar cookers	· Don't use the stored water as well as we could · Sewing skills need to be improved · House needs repair (eg kitchen, bathroom and gutters) · Don't make/use own washing powder, soap and other cleaning products · Not buying products in bulk · Don't use bikes · Excess produce is wasted · Don't use solar cooker as much as we could · Composting toilet not in place
External	· Rebate on solar electricity · Other government rebates on sustainability improvements\ · New public transport link	· Loosing job · Knock-backs from council · Economic downturn · Reduction in interest rate · Stock market downturn · Kids not doing well · Getting sick · Lack of support system · Vet bills

When writing down elements in your SWOT analysis, stick to things that you can have an influence over. An asteroid striking the earth is certainly a threat, but not necessarily something that you would take into account for your everyday plans (unless perhaps your objective is "Survive asteroid strike"!). When you are using the SLAM, any values that come out a "0" should be written in the "Weaknesses" square and any values that you score a number for should be written in the "strengths" square.

In each box, pick the three (or pick one or five – pick a number that makes sense to you and you will have the resources to address, you can see I like odd numbers here….) highest priorities. Don't get too hung up about working out your highest priorities, it is better to get started rather than get hung up in involved conversations about what to do first and not do anything.

Having selected your priority items it is time to phrase actions around them to achieve them, the idea is –

For Strengths – how can you maximise them, capitalise on them use them to get the most out of them?
For Weaknesses – how can you work on them to improve them so they are no longer weaknesses?
For Opportunities – how can you make the most of them to gain the outcome that you want?
For Threats – what can you put in place to mitigate their effects if they should happen?

Taking examples of this from our SWOT analysis –

If the strength is that **we grow our own food**, what do we have to put in place so that we can make sure we get the most out of it? The action may be a commitment to eat out less and cook at home more or to review our planting plan to make sure we are planting enough of what we like to eat with less emphasis on marginal or experimental foods.

Growing your own food is a great way to live more sustainably

If the weakness is **not making and using our cleaning products** the actions might be –

- Review our cupboards to find out what cleaners we actually use;
- Get the formulations, information, containers and ingredients to make ones to replace what we already use,
- Set aside the time to go through and make the replacements, then
- Use them!

If the opportunity is the **government rebate on solar panels** the actions may be to investigate what we need to do to qualify, then to save up the money for a grid connected solar system.

If the threat is **losing a job** then the actions may be around stocking up, reducing our outgo, getting out of debt and saving up a nest egg or sucking up to the boss – the usual stuff.

1.4 The Action Plan

So now you have decided on your priority items and what you are going to do about it, it is time to put together your action plan. This may be as simple or as complicated as you like but generally will have the elements what, who and when.

In the "What" column you record the actions that you wish to carry out to achieve you objective, this may be a single action or there may be a number of sub-actions required to complete the main action. Again the main thing is to include as much detail as you are comfortable with and remember that crossing off a number of sub-actions each time you review the plan can be very satisfying and motivate you to achieve more.

The "Who" column is where the names or initials of the people involved are recorded. If the plan is just for you then this part will be very straightforward! If you are lucky enough to have a number of people involved in your project then it is important to spread the love around and give everyone a chance to participate. Usually some will be more enthusiastic than others, but try to get everyone involved in at least one action.

The "When" column is used to record the date when you would like to have a particular action completed by. If it is completed early that is fine, but the when date represents the last point at which the action should be done. There is a bit of an art to spreading out the actions so you don't get everything coming due on one date, and setting it up so that actions are completed in the correct order so the flow is right. Generally you can set your highest priorities to be achieved first but if you have longer term goals which require money or approval of some type (from the council or other government body or even higher authority – the spouse!) it may be better to also set up some shorter term actions so that you can feel that you are achieving something.

Below is an example extracted from our action plan –

What	Who	When
Review our cupboards to find out what cleaners we actually use	Linda	May 13
Get the formulations, information, containers and ingredients to make ones to replace what we already use,	Nev	June 13
Set aside the time to go through and make the replacements	Linda & Nev	August 13
Use them	Linda & Nev	Sept 13

You may also want to include a "How Much" column when you are planning for a number of actions that will require specific amounts of cash to achieve.

1.5 Reviewing Your Design

Now that the action plan is in place it is time to implement it, or basically run around

doing what you said you were going to do in the plan! One of the problems with action plans is that sometimes we think the work is done when it is in place and forget to actually go out and achieve anything. That is why it is important to set up a regular review of the plan to make sure we are moving forward.

Reviews should include all participants who were present for the development of the plan or at the very least everyone who was allocated an action during the period since the plan was developed or last reviewed. How often you review is up to you – long enough between reviews so that actions can be completed but short enough so that if they are not, it can be picked up in time to do something about it. If you are developing your plan for the next 12 months, as a guide you should hold quarterly reviews.

Then it all starts again!

Once all the actions in the plan have been completed, or at least the actions we can complete have been completed, remember that circumstances change some parts of the plan may become obsolete or impossible before they are completed, it is back to square one.

Review the SLAM to chart how you have improved and then review the SWOT analysis to take note of things that have changed. Take the time to celebrate your wins with your group and then also take some time to analyse any failures… that have those failures taught you?

Then the process begins again by picking your priority items and developing a new action plan.

Home grown organic produce should always be part of the plan!

2.0 Individual Audits

2.1 Water Audit

I thought that I had a handle on how much water we used and where it went as well as the opportunities for improvement, but there is nothing to make you get your head out of your backside like a load of hard data. If you want to get your head out of your bum regarding water use then read on, and once you have read follow the process. I actually found it fun.

2.1.1 What is a Water Audit?

A water audit is a tool that allows you to work out how much water you use and where it all goes and if you do it right, it doesn't allow you much squirming room but that is the point. The water audit itself has a number of stages –

- Identify the areas where your household uses water and work out the typical amount for each use
- Conduct the audit by recording over a week the amount of water you use
- Validate your workings against the records from your water supplier
- Identify any leaks that will introduce inaccuracies to your figures
- Work out how much water you have coming onto the property through rain and can be stored
- Work out how much greywater you have available for re-use.
- Work out how much tank capacity you need for water security

The blank water audit form is included in the back of this publication. It will help you work through the process and record all of this information.

2.1.2 Identifying and Quantifying Sources of Water Use

There are a whole stack of ways we can use water in our houses so here is a list the water uses we have and some of the things you might want to think about as you identify them. You will also need to know how much water is consumed by each use so that you can calculate your water consumption –

Toilet – this is a pretty obvious one. If you have a dual flush system you will need to give some thought as to how often each one is used. If you don't know how much water is used in each flush then have a look at any documentation you have when the toilet was installed, otherwise consult the internet like I did.

Shower and bath – these can be a bit difficult because the number and length will not only vary from person to person but may also vary with the time of year, more in summer and less in winter. Also when you wash your hair the showering time will be longer and the water use increased, so we divided the shower readings into hair washing and non-hair washing so we could get a more accurate reading. Otherwise you just might want to work out an average and use that.

If you get hold of a calibrated bucket (ie it has litre markings on the side) you can run the shower into the bucket for a minute and see how much water comes out. After that you just have to time the showers to know how much water is used on average. You can pull the same stunt for the bath or use the internet again to find out the volume of your make and model, then make a judgement on how full the bath is and so how much water is consumed.

Installing a shower interrupter valve allows you to shut off the water and then restart at the same mix of hot and cold water, rather than wasting water trying to get the mix right again

Dish washing – water use will depend on the size of your family, who eats at home and when and whether you use a dishwasher or do the dishes by hand. If you use a dishwasher then the water consumption should be on the paperwork under specifications or consult the internet again. For hand washing we ran as much water into the sink as we would normally use then dipped it back out of the sink and into the calibrated bucket (see shower and bath above!) to give us a measure of how much we used.

Clothes washing – this will depend on the type of machine you have, although if you still go for the beat-the-clothes-against-the-rock style of clothes washing estimating water usage will be difficult, otherwise look up your user's manual or use the internet to find out.

Teeth brushing and hand washing – this is probably a minor thing unless you leave the tap running while you brush your teeth! We set each of them at 1 litre per wash/brush but if you want to get more detailed than that it is up to you. It was interesting to note just how many times a day we washed our hands, a legacy of watching too many hand cleaner commercials I think.

Drinking and cooking – this is likely to be variable depending on the size of your household, what and how you like to cook, what and how much everybody drinks etc.

After some to and fro we settled on 7 litres per day as a reasonable compromise but you may wish to do your own research on this one.

In the garden – This will depend on what time of year you conduct your audit and how long it has been since your last rain. If all else fails some kind of estimate may work but you should measure the output of every tap you use to water your yard, lawn, garden, veggies etc by running them into a calibrated bucket to identify how many litres per minute of water is delivered by the hose. Then you will need to measure, or estimate, how many minutes you spend watering the garden to give you an idea of how many litres of water are used each time.

2.1.3 Conducting the Audit

This is the simple bit, although it will require you to remember to record each water use at the time that you use it, but after a while you will get in the swing. Estimates are possible but there is nothing quite so educative and reviewing the tallies at the end of the week, you may well discover something that you wouldn't have thought credible, if you hadn't done the recording.

First off, get hold of the blank Water Audit Form from the rear of this publication. Then record all of your estimates for each use after the "@" in each of the sections of the right hand "Water Use" column.

Put the printed sheet up somewhere that you can get to it easily to enter your tallies, the kitchen or bathroom would probably be best, then each day mark of with tally marks in the appropriate square each time you wash, flush water or whatever or add in the number of minutes used where it is a consumption figure.

There is no saying that you only have to do this for only one week and you may want to do this several times over the year, say once each season, and the more times you do it, the more accurate your water usage figures will be.

Once your measuring period is complete, add the figure totals up along the bottom and down the right hand side and then calculate your total litres for the week, then multiply by 52 and you will have some idea of how much water you use in a year.

2.1.4 Validating Your Results

As a cross check, get hold of your last four (quarterly) water bills and then add them up to give a yearly total, just to see how close it is to your calculated total. If you don't have your last four water bills (who does?) you can ring up your provider and they will usually be able to give you a litre consumption figure over the phone. If your figure is wayyyyyy out, re-check the things you are measuring to see if you have missed something or if you have cut back water consumption just because you are measuring it. If you can't find a reason for the discrepancy you may (and assuming the consumption on your bill is larger than on your measured tally) have a leaking pipe somewhere and that is something worth pursuing.

2.1.5 Checking For Leaks

If you do think you have a leak, turn off all water in the house and write down the figure on you water meter. Leave everything off for as long as you can manage but at least two hours and then re-check the figure on your water meter, if it has changed you have a leak and need to obtain the services of a plumber, unless you are capable of tracking such things down yourself.

2.1.6 Next on the list – Measuring your Greywater

Grey water is on the "plus" side of the equation because although it has already been used once, to clean clothes or to clean you or whatever, it can still be pressed into service to carry out other functions, like watering the garden or flushing toilets. The figures for shower, bath and washing machine can just be transferred from where you calculated them in the usage part of the audit but the laundry sink may have hand washing water or other things as well so either estimate or put the plug in for twenty four hours and then use a calibrated jug to empty it and record the amount.

2.1.7 Calculating your Potential Rainwater Harvest

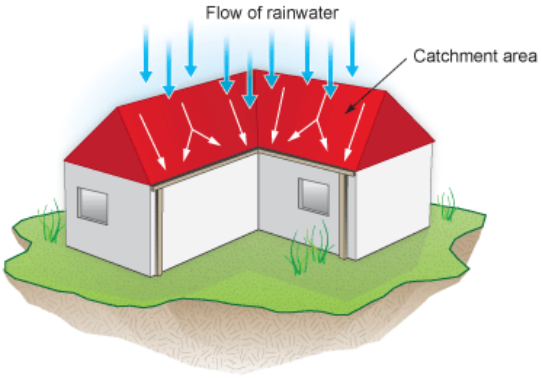
In the suburban backyard it is highly unlikely that you will be able to put in a dam or a well to use as water sources but you can hold and store the water coming off your roof, but how much could that be? Now we will work it out.

If you have a rain gauge and are pedantic about keeping your records, the first entry in this section will be easy, but if not (and I have to put my hand up here!) go to the Bureau of Meteorology (BOM) website and find the rainfall monitoring station closest to where you live. Check the records for as far back as you can and at this stage we are only interested in the yearly total. Collect as many yearly totals as you can and then average them and record them in the "annual rainfall" box. It pays to be a little circumspect with the data from the BOM, especially the older data because if it seems that your yearly rainfall is decreasing it might be worth only averaging more recent data so that you get a bit more conservative (or perhaps realistic) figure.

Rainwater storage of some description should be included in your plan

Calculating Catchment Area

It is quite likely at the moment that all rain falling on your property makes its way to the water table or to the sea with not much happening in between, but what we want to do is to capture it and make it do some work on the way. In that way we can replace some of the water your draw from the town water system, which has been filtered, disinfected and pumped to your house at considerable energy cost with water harvested on site and little or no energy cost.



So how much could you harvest? The first thing is to work out the area of every roof surface that you have which is capable of shedding water, which means your house, being most probably the largest structure on your land, garage, covered decks, sheds, greenhouses or whatever. It helps if you have a plan view of your block that includes all structures on the block. Take a measuring tape and a friend (believe me this is much easier with a friend!), and measure the sides of each of the structures on your block, recording the measurements on the plan in metres. You can now work out the area of each structure, length multiplied by breadth. If any of your structures are not regular you may need to divide them up into squares or rectangles, multiply them out and then add them together to give total area. We had to do that with our house because one of the bedrooms just forward and, let's face it, few houses these days are a nice, neat square or rectangle.

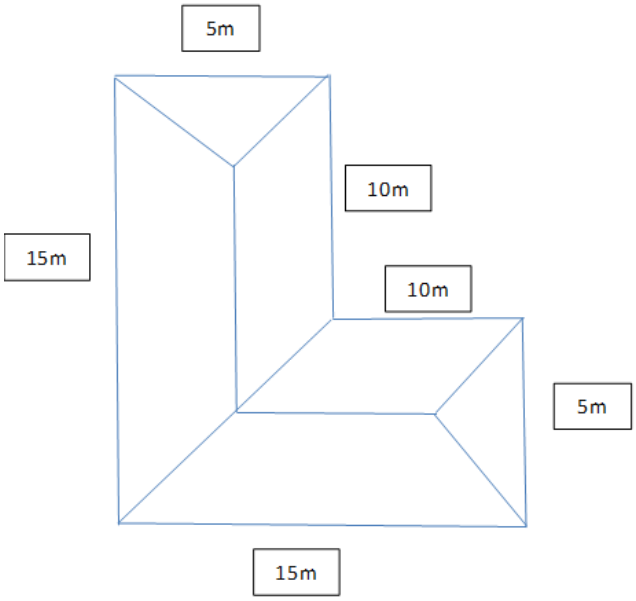


Figure 1 Sample house diagram with dimensions

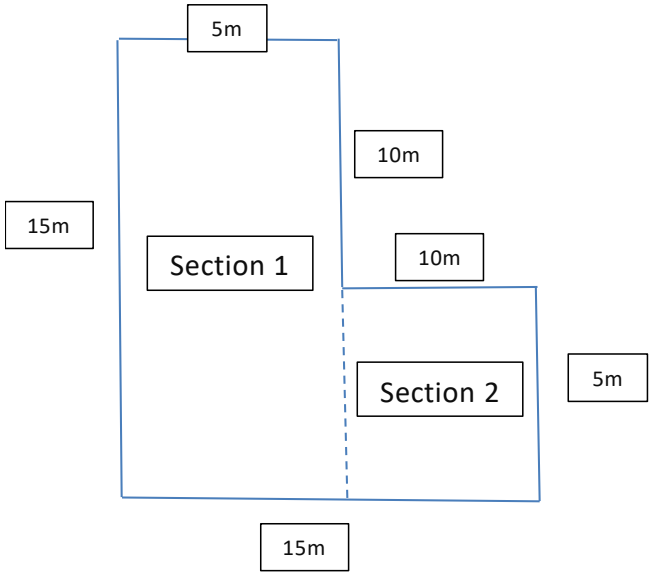


Figure 2 Sample house converted into 2 sections for ease of area calculation

Calculating Roof Area

Area of Section 1 = 15m x 5m =75m^2
Area of Section 2 = 5m x 10m = 50m^2
Total area or house roof = 75m^2 + 50m^2 = 125m^2

Calculating the Potential Rain Water Harvest and Storage Requirements

Once all of your areas are calculated, put them on the form and then add them up to give the total area on your block that can be used to harvest rain water. You can then calculate the total possible amount of rainwater you can harvest in a year by multiplying the catchment area by the yearly rainfall figure from the BOM in mm, which will give you an answer in litres. Now take 15% of that figure to allow for incomplete collection (for whatever reason) of the rainwater falling on your site, then record that on the audit form.

Sample Calculation 1

Roof area (m^2) x Rainfall (millimetres) – 15% for incomplete collection = Yearly rain catchment (litres)

The calculation for potential roof harvesting for the house in figure 1 and 2 above, assuming a rainfall of 900mm per year would be –

125 x 900 = 112,500 litres – 16875 litres = 95625 litres per year

Now enter the figures for daily and yearly water consumption into the form and then go back to be BOM website and look through the rainfall records for your area and identify the longest number of rainless days that you can find. Then multiply the number of rainless days by the daily consumption and this will give you an idea of how much water

you will need to store to make it through a drought. Adding an allowance of 20% extra storage will provide extra water storage in case of reduced rainfall or increased consumption.

Sample Calculation 2

Daily water consumption (litres) x No of Rainless Days + 20% contingency = Amount of Tank Storage Capacity Required (litres)

Assuming a daily water consumption of 297 litres (average for Sydney). A household of 4 people and a likely maximum of 60 rainless days from the BOM data.

(4 x 297) x 60 = 71,280 litres + 20% = 85,536 litres of tank capacity required

From the above calculations it can be seen that reducing your water consumption means that there is less rainwater storage required to get you through the dry times.

In the second last line of the form add in the volume of any existing water tanks on your site and by taking that figure away from the one above it you will get an idea of how much rainwater storage you will need to install.

2.1.8 Using the Information

OK, now that you have gone through all of this rigmarole, what do we do with the information? The most obvious thing is to use it to put plans in place to install water tanks to cover at least as much as the figure on the bottom line of the form. Having said that, there are two sides to the water "debate", storage is one side but the other is consumption and you can use the information turned up by this audit to help you reduce your water consumption and thereby reduce the amount of water your need to store. (How much water you want to store is another matter!)

The audit will help you to identify what the big water consumption items for you are; maybe you have a huge top loading washing machine and can reduce your consumption by replacing it with a front loader or maybe it will show up a whole lot of smaller areas where you can reduce consumption.

For us it was watering the fruit trees etc in the front yard. We have a large tank in the front yard and it is plumbed into the back through a 12 volt pump so we can water the veggies easily, but we did not use the tank to water things in the front yard. After some quiet thought and discussion with my partner in the sustainable life we identified a couple of problems –

- While I had put a tap in the plumbing from the tank there was no attached hose, which meant removing the existing one from the front (mains water) tap and putting it onto the tank tap. The fix was to get another hose and nozzle that could remain fitted to the tank tap.
- The switch for the pump is in the garage so it means that you have to turn on the valve on the tank, walk to the garage and turn on the pump, then walk back to the tank to use the hose. The easier you make things to use, the more they will be used so the next fix is to install a switch next to the tank.
- Lastly, to make things more efficient, I need to install a drip watering system in the front yard.

So you can see that by carrying out a water audit you can get a handle on not only on how much water storage you need, but also where your water consumption is highest, so that you can know where to target to get the best reduction. It worked for me!

2.2 Waste Audit

Every day half a tonne of municipal solid waste is deposited into land fill for every single Australian. This is a problem not only because we are running out of landfill sites and it is a shocking waste of finite resources but also as it degrades the waste releases large amounts of greenhouse gases. To begin to reduce this waste and live more sustainably each of us must take responsibility for the waste we generate. To be able do that we need to have an appreciation for types and amounts of waste we generate, hence the idea of a waste audit. A waste audit is a close look at the type and amount of waste produced by your household on a weekly, monthly or yearly basis.

To conduct your waste audit, every fortnight for a month, before you put your waste out for collection (recyclable and non-recyclable), get hold of a large plastic groundsheet or shower curtain and spread it out on your lawn or other open area where you have a bit of space. Put on a pair of thick rubber gloves and separate the solid waste into categories, below are some suggested categories you may wish to use –

2.2.1 Recyclables

- Paper e.g. Newspapers, magazines, corrugated cardboard cartons, cardboard food boxes, paper bags, catalogues, papier-mâché packaging, office paper, egg cartons; paper plates (non-coated)
- Glass e.g. Glass food and drink jars and bottles, green brown and clear glass
- Metals e.g. Steel food tins, aerosol cans; Aluminium drink cans
- Compostable Food Waste e.g. Fruit and veggie peelings; citrus skins; other kitchen waste; bread, cereal
- Non-Compostable Food Waste e.g. Fish, meat, bones, cooking oil; fatty wastes
- Other Compostables e.g. Tissues and paper towel; lawn clippings; leaves, tree shreddings; shredded clothing (natural fibre), sisal bags; tea leaves/bags;
- Plastics (Category 1 & 2) Soft drink and water bottles; milk bottles, detergent bottles, juice bottles, butter tubs, and shampoo and toiletry bottles

2.2.2 Non- Recyclables

- Plastic (other Categories) e.g. Polystyrene foam; uncategorised plastic food packaging, plastic grocery bags; disposable nappies; poison bottles; syringes; plastic plates; bread bags
- Paper/Cardboard e.g. Waxed cardboard; foil or plastic coated paper or cardboard; frozen food boxes
- Glass e.g. Mirrors, window glass, ceramics; poison bottles; light bulbs; cookware
- Clothing with Synthetic fibres;
- Big stuff e.g. Carpeting, underfelt, treated or contaminated timber; insulation
- Metals e.g. Aluminium foil; aluminium trays; cookware
- E-Waste e.g. TVs, computer, monitors, printers (unless at a specialised E-waste collection/drop off point)
- Hazardous Waste eg Pesticides, weedicides, paints, fuels and oils, battery acid, caustic soda, fertiliser; chemical cleaners (unless at a specialised chemical waste collection/drop off point)

Using kitchen scales for the smaller amounts and bathroom scales for any large amount weigh each category and enter the weight into the “week 1” column on the waste audit form. Repeat this process as often as you are game, but try giving it a go for a month then add up the weekly lines to give you a monthly total. If you are of a mind, you can also multiply the monthly total by 12 to understand how much solid waste you family contributes to the environment in a year.

Obviously if you have kerbside collection of recycling and/or green waste you are ahead of the game, but even these services come at an environmental cost with the resource depletion and greenhouse gas emission due to the fuel and electricity consumed to collect and process this recyclable waste.

In any case you will be in a better position now to understand your impact on the environment.

However, this is not the end of the story, because the goal of all of this work is to get you to modify you behaviours and reduce the amount of waste which you and your family produce. One way to help you do that is to use the hierarchy of waste i.e. the action at the top is the most desired, but if you can do that you move to the one below and so on.

2.2.3 The Hierarchy of waste (The 5 R's)

1. Refuse – refuse to buy shoddy products that break easily and opt for better quality products, refuse to buy food and other products that are over packaged and/or packaged in non-recyclable materials. Refuse plastic carrier bags.
2. Reduce – reduce packaging waste by buying items in larger packages or bulk, or where possible provide you own recycled packaging, buy the product with the least amount of packaging, home produce your own food, cleaning products and other materials to reduce waste.
3. Reuse – donate superfluous items to charity; use empty glass food jars to hold homemade preserves; turn two empty 5 litre washing detergent buckets into a self-watering plant pot. Think about reusing waste (grey) water in this space too.
4. Recycle (including composting) this is the removal of your recyclable waste at the kerbside which is then treated off site. The most important blow you can strike for recycling where you live is to start composting, a worm farm, a bokashi bin, or all three!
5. Remove – When you have worked through the hierarchy of waste with all of you waste materials, this is the residual waste you have left over where there is no option (currently) but to send it to landfill.

2.2.4 Action Planning

Now that you know what sort of waste you are generating and the amounts, you can make a judgement on what sort of waste you will make a priority to reduce. A good start might be the category with the largest weight or the one you would find easiest to reduce. It is probably best to start out working towards reducing your families' waste output in only one or two categories, three at the most. You don't want to take on too much then get overworked, start out slow and build on your successes; this is a long term project.

Write down the category at the top of the action chart and then use the waste hierarchy to work out what strategies you wish to use to reduce the amount of your target category(ies) then write them down in the space next to the appropriate part of the hierarchy. You could allocate family members to one or more of the projects and even a completion date if you want to be that organised.

Once your waste reduction project is in full swing, wait for 6 to 12 months then conduct another waste audit and see how much you've improved.

2.3 Energy Audit

A bit over a quarter of Australia's net energy usage is by families, and those families can spend 25% or more of their income to provide the energy that fuels their lifestyle, which is a fair old whack to the hip pocket! There is also the environmental cost of greenhouse gas emissions associated with generation, transmission and consumption of energy to be taken into account. In any case it seems worthwhile to me to know where your energy dollars are going and how that expenditure can be reduced. As the quality guru, Edwards Demming once said "what you don't measure, you don't control" so that is where the idea of an energy audit or review comes in, to help you get a handle on and control those costs.

I suppose the first thing we need to talk about when we talk about a home energy audit, is what type of energy is it we intend to audit, because a household can consume energy (and generate greenhouse gases) directly or indirectly, a number of different ways. Energy is consumed directly by a household every time anyone turns on a power switch, but there is also an energy cost (called "embodied energy") in the products that we purchase. For the purposes of this article we will only be talking about direct energy use.

Also, while there are a number of different types of energy that a household can consume – electricity, town gas, LPG, wood, petrol, diesel etc. in this article will only be concentrating on electricity. I am doing this for a number of reasons –

- In general terms, households consumer greater than 50% of their energy in the form of electricity (the next closest is natural gas at around 33%).
- Electricity costs here in Aus have gone up anywhere between 60% and 80% in the last 5 years and are likely to continue rise in the future.
- Like water through a sieve, electricity can leak out of your household, costing your money for no real benefit.

So assuming you want to save money as well as saving the planet, let's continue on and get you the information you need to make informed choices about what you do next.

2.3.1 Bills, Bills, Bills!

Step 1

The first part of our journey consists of you confirming what the big ticket items in your energy budget are (don't just take my word for it, I certainly wouldn't!) and you do this by downloading a copy of the household energy audit form and then getting your bills together. Get hold of a year's worth of bills so you can get your consumption picture for an entire year.

Your usage fluctuates with the seasons and you may get an inaccurately optimistic or gloomy picture of your energy consumption depending on what quarter(s) you look at, so you need a full years' worth of bills. If you can't find a years' worth of bills, a quick

phone call to your energy supplier will usually get the data you want. Petrol or Diesel may be a bit more difficult but they also tend to be somewhat more independent of the time of year so monitoring your consumption for a month or three, and then extrapolating the data to 12 months should be OK.

Bills can be a great source of current and historical data

Step 2

Once you have the figures for your energy consumption, in their various units, convert them all to megajoules so you can compare apples with apples. Needless to say, the biggest number is the one you need to start working with first and It makes sense to start looking at your biggest area of consumption first, but I am still betting it will be electricity.

Electricity

Step 3

The next part of the audit is designed to help you work out where all that electricity goes. Part of the deal will be looking at the power consumption of your electrical stuff, either the nominal consumption you can read of the compliance plate, paperwork that came with the appliance or off the net or as measured. The measured figure is likely to be the most accurate, our microwave oven is rated at 1000 watts but when it is running it consumes 1500 watts (I suspect due to the consumption of the light and turntable motor which might not been taken into account in the rating figure.) The power consumption is only half the story however, no matter how much power an appliance is

rated to consume, the actual consumption will depend on how often it is used and how long it runs.

Our microwave oven, as previously stated, consumes 1500 watts but we would run it for only minutes a day, whereas if we leave our TV on at the wall even when it is turned off at the TV itself, it still consumes 20 watts. That 20 watt consumption translates into 130 killowatt hours over the course of a year (or just over $30 in our area) because it is on 24/7, so even a small "phantom" load can translate into real power consumption quite quickly.

Nominal Vs Measured Load

The nominal load is the number of watts that the manufacturer says an item of electrical equipment consumes. It can be recorded in the customer handbook that comes with most bits of electrical equipment these days or failing that it should be listed on the compliance plate somewhere on the appliance. If both of these information sources are unavailable a quick check on the internet or a call to the manufacturer will get you the information.

Lighting is a bit trickier, and the power consumption recorded on the bulb is a good start. If, however, you run halogen down lights through a transformer, a trip into the loft can be avoided by talking to someone in a lighting store to give you an idea of what the transformer itself consumes.

The form has a whole lot of suggested loads and appliances that you might have but this part of the form is suggested only and you will need to alter it to fit your circumstances (hence it is in Word format rather than .PDF). If you have a TV in every room, the form as supplied does not cater for that. Rather than setting up the form, then taking the measurements it would probably be easier to customise the form on the run, as you take and enter your energy measurements on the form.

Step 4

As you get the figures, record them on the energy audit form. If you are interested (and for me this is fascinating stuff) you can measure the consumption of your electrical bits and pieces directly, and that can be quite illuminating. It will also let you know directly how the appliances are performing in your house and if the measured figure is massively larger than the rated figure it might be prudent to check a bit deeper.
There are a number of ways of getting the numbers directly and I've tried two, the first one is a direct read meter (A Multifunction Power Meter MS 6115) which you plug in between the appliance and the wall socket. I found it less than optimal in a number of ways –

- While I'm no Luddite (OK maybe I am but that's not my fault) I found it to be very complicated to use, you needed to have the book of instructions next to you all the time.

- For each appliance to be checked, having to turn it off, pull out the plug, plug it into the meter, plug the whole assembly back into the wall, then turn it all back on again was somewhat of a pain.
- Any stuff not cord connected like the hot water, air conditioner and the lights could not be read.

Our Experience

We bought an "Elite Classic" wireless electricity monitor from Efergy, it has a remote sensor that connects to the feed in from the energy supplier to your house, it requires an electrician to set it up but it reads ALL of the electrical loads in your house in one go – no plugging in and out. To find out what a particular appliance or load consumes, just turn it on and note the change in the reading – it reads in kilowatt hours. It is easy to use and can calculate your costs and carbon production over time as well.

There has had one unforseen effect for us; it has really focussed us on our electricity consumption. Before we might be lazy and leave the computer going overnight, or not turn off things like the TV, microwave or CD player at the wall, but now we look at the total number and see how far we can get it down. If the freezer hasn't cut in, we can get our consumption overnight or when we are out down to 35-40 watts which equates to a yearly base load of 310 kWh, which is not bad! The change in behaviour has meant that our latest bill shows a drop of almost 2 kilowatt hours per day, of about 50c, a saving of $180 per year. This meter paid for itself in four months just in these savings alone.

OK, so now that you have used part one to conduct the audit, part two will help you use the information you have discovered to reduce your electricity consumption and start saving money!

So now that you have got your information together, the next section will help you use the information you have discovered to reduce your electricity consumption and start saving money!

Step 5 - Simple First Changes

As far as reducing your greenhouse gas emissions, the first and biggest thing you can do is to talk to your electricity provider and, where it is possible, change your supply to "green" power, sourced from renewable energy suppliers. This won't save you much money (in fact it may cost you a bit more) but if reducing your carbon emission is your aim this will be a great first step!

To save money and reduce your carbon footprint with no outlay at all, all you need to do is modify your behaviour a bit – on the way out of a room, turn out the light and when not in use turn off all of your electrical equipment at the wall. When I was a teenager I was a real bugger for leaving the light on in my room, which caused my father to yell at me a lot (he was paying the bills!). Some 20 years later he took great

pleasure in making sarcastic comments when I was yelling at my kids to turn out the lights in their room! (Don't you DARE say anything about Karma!)

Step 6 - Then the Bigger Stuff

Anything that heats or cools is going to use larger amounts of electricity –

Heating water – it takes a bit of investment but if your current hot water system is electric, changing to solar will give you the biggest return on investment of just about any other single action you can make. Solar hot water with gas boost is the most efficient. It is worth doing some research into which solar hot water system fits your circumstances before you need to, so that you can hit the ground running as it were if your hot water service fails suddenly.

Our evacuated tube solar water heater

You can waste a lot of water waiting for the hot water to run hot after you turn on the hot tap and if you have a lot of small hot water requirements even more is wasted each time. For these small jobs heating water in a solar oven or other solar cooker then transferring the hot water to a vacuum flask with a spout (eg. Airpot) is a good thing to do. The water will keep hot and be available without needing to keep running the cold water out of the hot tap. In a similar way if you drink lots of hot beverages, boiling a full kettle or jug once, then transferring the boiled water to a vacuum flask will allow you to make hot drinks throughout the day without continually boiling the jug.

Some other ways of reducing the usage of hot water and the energy used to keep it hot includes keeping showers to 3 minutes, washing your hands & clothes in cold water and running your washing machine and dish washer only when full. If you have an electric hot water system and want to reduce your energy usage, turn down the thermostat to

60°C for storage heaters 50°C for instantaneous ones. The stored water needs to be kept at 60°C so bugs don't grow in it. If you are going away for any length of time you can also turn your thermostat down or turn the water heater completely off, but check your owner's manual first to ensure doing that won't cause a problem.

Cooking Range – There are a whole lot of different ways you can reduce the amount of energy to cook your food – the easiest ways are learning to cook with the lid on and using your current cooking gear more efficiently. If you cook with gas, a wok is a good investment and they are cheap and readily available, particularly the traditional one made from sheet mild steel readily available from Asian grocery supply shops.

Stored heat cooker, constructed in an ottoman

If you are a bit handy, making a stored heat cooker (also called fireless or haybox cookers) will give you a slow cooker that doesn't need electricity and a making a rocket stove will enable you to reduce your energy spend by cooking your food on twigs gathered for free. There are also solar cookers of varying degrees of complexity that you can build as well; we use our solar oven to bake bread all year around.

Our rocket stove, made from some steel tubing, an old steel 20 litre bucket and some wood ash.

Air Conditioner – We generally only use our air conditioner for those REALLY hot western Sydney summer days to prevent Linda becoming a puddle of goop on the floor (and me too). Insulation plays its part but we also use exterior "blinds" to keep the sun off the back and polystyrene inserts in the western windows to block the sun. Not going berserk and running your air conditioner all the time and 20°C above or below the outside temperature will also save you heaps of energy, and cash.

Space heater – We have a couple of wood heaters (slow combustion – one in the lounge, which we can also cook on and one in the bedroom) which we use to burn a percentage of wood which comes from trimmings from out trees, use found waste wood or bought in when we have to. They usually get used on the weekend but during the week we find it easier to use our body heat to heat just our immediate area by using our wearable blankets.

Insulation - With space heating and cooling the most important thing is insulate, insulate, insulate! The roof is a good place to start, and if you are up on piers underfloor insulation can be installed by placing batts between the bearers and then stapling chicken wire over the top to keep them in place. Technically this is an easy fix, but somewhat exhausting to carry out, which is why Sons-in-law were invented.

Insulating the walls, particularly on retrofit, is considerably more problematic. The most effective way to insulate you walls if your home is already built is to rip off the gyprock or plasterboard from your outside walls, put the batts in place and then replaster the walls – tiring or expensive, take your pick – which is why we haven't done it. If you have dark brick like we have an option is to render with a light coloured render to reflect the heat although this presumes you like the look of rendered houses – we don't.

One way I thought of was to block up the bottom of the outside walls and pour polystyrene beads down between the outer brick wall and the inner plasterboard one. Unfortunately, when I talked to the guys who know this stuff they said I would need to rewire the house first. It seems that the existing wiring in our houses is designed to be in the air so heat can escape and if you insulate them a fire could result. The only way is to upgrade your wiring to a size that is designed to be in an insulated environment first so bang went my "easy fix".

Even if the walls are insulated there are whacking great holes thought the walls called "windows" that let the heat in our out, depending on what it is that we don't want to happen. There are a whole stack of retrofit options for windows that range from bloody expensive like replacing all your windows with double glazed down to much more modest retrofit possibilities.

Refrigeration – In the old days (back BEFORE I was born) evaporating water was used to keep food cool, usually in the form of a Coolgardie safe, but there have been recent developments out of Africa that use one pot inside another, called a pot-in-pot cooler.

Two pot-in-pot coolers – keep the sand in between the two pots damp and evaporation does the rest

One of the more innovative ways that I have heard of keeping your food cool (which I admit I haven't tried) is if you maintain a separate fridge and freezer is to freeze ice bricks or ice cream containers full of water, freeze and place in the top of fridge. This works in a similar way to the old ice chests, where you bought ice and put it in the top of an insulated cupboard and the cold air from the ice flowed down over the food to keep it cold. In the modern version you would need to make sure the ice was sitting in a container to prevent the ice waterlogging everything as it melted; the original ice chests were provided with a drainage system.

If you want to go hard core, it has been said that refrigeration is mostly needed for meat and dairy (although the above mentioned pot-in-pot cooler helps keep the veggies fresher) so you just might be able to turn off your fridge entirely if you went vegan.

Appliances – As mentioned above, the first thing to do is get used to turning off your appliances at the wall when they are not in use, but your energy audit will help you identify the energy hogs in this regard and they will be the ones to pay most attention to. Turning off the appliances costs nothing to do and can save you lots of energy and money, you just need to keep at it until it becomes a habit.

While I don't recommend that you go out buy a whole stack of new energy efficient appliances, as things wear out, replace them with the most energy efficient appliance that you can (eg replacing your old, dud CRT TV a smaller LED TV rather than humungous plasma TV) Fortunately the government has made it easy for us by requiring manufacturers to put power consumption labels on the big stuff at least.

Also, instead of buying or replacing electrical gadgets with more electrical gadgets, consider using hand powered gadgets instead. This is especially true in the kitchen where a whisk or hand beater can replace the electrical kind and all sorts of food processing gadgets can be replaced by a knife. Using hand instead of power tools in the garage can also be very satisfying, even if it takes a bit longer.

The thing that has amazed me is the huge amount of stand-alone solar powered stuff coming onto the market – torches, radios, phone chargers, all sorts of stuff. When it comes time to replace an appliance have a look around to see if there is a solar equivalent. Camping places like Boating, Camping and Fishing (BCF), Rays Outdoors and Anaconda are good places to look but electronic suppliers like Jaycar are worth a look too as are specific eco shops.

Lighting – Also as mentioned above, getting into the habit of turning off all lights when leaving a room will go a long way to reducing your power consumption due to lighting, and replacing all incandescent & halogen with fluorescent bulbs or LEDs is such an obvious thing to do I won't even mention it.....oops! There are a few other things you can do, like buying a few solar lamps that you charge up during the day in the sun which you can use at night for effect spot lighting for reading, sewing or whatever. Beeswax candles are good, particularly for mood lighting, but as with any open flame you have to be careful and a few fires have been started around here this winter by unattended candles. It is also possible to make a lamp which burns waste vegetable oil and for much of human history this was one of the only forms of artificial lighting available, but I'd hate to try and read by the light of one.

Solar Shed lights can be adapted for use inside the house

Step 7 - Where to from here?

OK, for the sake of the argument let's say that you have read through this information and the audit form; where do you go from here?

Well, as an old mate of mine would say, seek to learn. Do the audit, collect your data and work out where the big, expensive items are and where the "low hanging fruit" are also, in other words where you can get some quick wins. Put a plan together that takes into account all that you have found out and what you want to do, you don't have to write the plan down but I find it helps me if I do. Change your behaviour where that will result in energy and money wins for you, it does require effort and can be difficult to remember at first but keep it up, it is a no cost strategy that can save you substantial amounts of money.

Once the behaviour modification has started pick a bigger, more expensive project that will give equally big returns (like solar hot water) and start saving, once you have enough cash go for it! At the same time pick a smaller, cheaper project like making window quilts, a fireless cooker or pot-in-pot cooler then make it a family project and get making. When you involve the family they will feel part of the energy reduction efforts and you will have lots of fun making stuff with them that can further reduce your energy consumption. What have you got to lose?

2.4 Conducting a Household Sustainable Food Audit

Whether we like it or not the fertilising, growing, watering, processing, packaging and transporting of our food adds significantly to the carbon load of the planet as well as being a significant consumer of non-renewable resources. Here in Australia, 15% of our greenhouse gas emissions are contributed by the agricultural sector but this could be closer to 30% when transport, food processing and waste are taken into account. It has also been calculated that conventional agriculture requires 10 KJ of fossil fuels to

produce 1 KJ of feed energy, which has pretty scary ramifications if you start factoring in peak oil.

OK, so we know that there is a problem, but what do we do about it? It seems reasonable to use our purchasing power and behaviour to reduce our environmental impact as much as we can but that presumes we know where to start. The premise of this article and the associated sustainable food audit form is that it gives us a way to review how sustainable our practices are at the moment and help us work through what we need to do to improve.

You may want to work through the Sustainable Lifestyle Assessment Matrix first to understand the bigger picture of sustainable living or if you just want to focus on food alone (and it is a great place to start, everyone has to eat!) give the food audit a go. It can be as simple or formal as you like, filling the form out as you go or just running through things in your head and working out where you go from there.

I recommend the more formal method so you have a record of where you are starting from which you can come back to later, re-do and get a feeling of how far you have come. I also suggest that you share this with your family, or the people you are living with, so improvement can be on a united front.

2.4.1 Instructions

Go through all of the questions one section at a time and mark the number most appropriate for your answer from “always” = 3 down to “never” = 0 by circling, crossing out or whatever. Some questions may appear to support a more yes/no answer so to reflect this it would be best to mark 3 for yes and 0 for no. If the question is not applicable to your situation, strike it out and when counting up the maximum possible number to work out score do not add 3 for that question.

To calculate your score add up all of the potential answers and multiply by 3 to give the maximum possible score, and then add up all of the scores from your answers. Divide your answer score number by the maximum possible score and multiply by 100, this will give you your sustainable food score as a percentage. The number itself does not mean much, but acts as a base upon which to improve.

Review the results with your family, focussing on some of the lower scores and this will help you focus on areas which you wish to improve. This may be as simple as buying organic veggies more often or making sure you buy free range eggs; or you may wish to write up a plan so that you can track your progress over time. Either way you may want to run the sustainable food audit again every year or two to check over all progress.

2.4.2 Organic Vs Local

While it would be best to be able to use fresh produce from our own back yards that we know to have been organically produced, this is rarely possible for this to always be the case and even the largest home producer usually has to buy some food in. This being

the case, you may find that you can buy organic tinned tomatoes from Europe or locally produced conventionally grown tomatoes, which is more sustainably responsible?

While there is no simple answer, it is generally recognised that the contribution of main stream agriculture to greenhouse gas production is much greater than the transport contribution. In other words, go organic rather than local if you have to make a choice. This obviously does not take into account the impact of sending money and jobs overseas by buying the overseas products and as always there is a trade-off that we all must consider when answering these questions for ourselves.

2.4.3 What is Local?

Another question implicit in the audit tool is "how local is local"? There are a number of ways that the word local may be defined, sometimes it is defined by drawing an arbitrary line around where we live at a given radius eg 100 miles or 100 kilometres. To me a better way is to regard anything produced in our bioregion as being local. The bioregion concept may be defined as follows –

"Bioregions are defined through physical and environmental features, including watershed boundaries and soil and terrain characteristics. Bioregionalism stresses that the determination of a bioregion is also a cultural phenomenon, and emphasizes local populations, knowledge, and solutions." – "Bioregionalism: The Need for a Firmer Theoretical Foundation", Don Alexander, Trumpeter v13.3, 1996.

In our case, our bioregion is the Sydney basin, so by definition anything that is produced within the Sydney basin is "local" to us.

2.4.4 Notes on Question Categories

Groceries – These are non perishable food items that includes things like biscuits, chutneys, jams, pasta, tinned foods, packet mixes etc,

Fresh Foods – Are perishable and bought generally as needed, being stored in a refrigerator or cool dark place where an extended life is desired. These questions help you work out the big questions like local vs. organic and how you can eat more seasonally.

Make Your Own – This is really around asking whether you buy mainly industrially produced, packaged and preserved food or do you have a go at making some of the products that you would normally buy. There are quite likely a large number of food products that could be made at home but the ones chosen will help you focus on whether you generally do or don't "make your own" where you can.

Growing Your Own – As mentioned earlier, the best and most environmentally friendly food is that which we grow in our own back yard using organic principles, but the amount each of us can grow and how organic it will be varies. This set of questions focuses on how much we currently produce (and therefore may want to increase in the

future) and how it is produced. While meat is more difficult in an urban or suburban area some small livestock is possible, but how the feed for the livestock is produced must also be taken into account.

Takeaway/Eating Out – It is recognised that eating lots of takeaway/restaurant food that is over processed as well as being full of fat and salt is bad for our health as well as the health of the planet, depending of course on the particular food supplier. It may be difficult to completely remove these food sources from our urban grazing list, but there are still some choices that can be made to increase the sustainability of where we eat.

Beverages – Unless you are drinking rainwater straight from your tank, all beverages will have some form of environmental impact in the way they are grown, processed, packaged and transported but these can be reduced by making your own beverages from local ingredients. Organic and local (as difficult as that may be) are the order of the day as with everything else. Fair trade is a social justice issue and it is worth the effort to use fair trade products where they are available.

Preparation/consumption – These questions are about cutting down meat consumption, avoiding food waste and reducing energy consumption.

Remember, the numbers themselves do not mean much, but provide a base upon which to improve and help you work out the direction you wish to improve in. The whole point of this exercise is to help you work out where the sustainability of your food lifestyle is at currently and then help you make decisions on how you wish to improve it. Hopefully, it could even be fun as well!

2.5 Conducting a Household Sustainable Consumption Audit

Sustainable Consumption – is that a contradiction in terms? Well whether it is or not, unless you live on a totally self-sufficient property, there will be no alternative to being a consumer to some degree. This is not a bad thing because it can keep others gainfully employed but you can still make the decision to consume in a more sustainable manner. Since we consume energy, water, food etc there will be some overlap between this audit and the others discussed elsewhere, but as far as possible I have tried to limit the scope of the audit to the “things” we consume, the other bits that we have to buy occasionally or regularly, to live or to have a life.

It seems reasonable to use our purchasing power and behaviour to reduce our environmental impact as much as we can but that presumes we know where to start. The premise of this publication and the associated sustainable consumption audit form is that it gives us a way to review how sustainable our practices are at the moment and help us work through what we need to do to improve.

You may want to work through the Sustainable Lifestyle Assessment Matrix first to understand the bigger picture of sustainable living or if you just want to focus on “stuff” alone give the audit a go. It can be as simple or formal as you like, filling the form out as you

go or just running through things in your head and working out where you go from there. I recommend the more formal method so you have a record of where you are starting from which you can come back to later, re-do and get a feeling of how far you have come.

I also suggest that you share this with your family, or the people you are living with, so improvement can be on a united front.

2.5.1 Instructions

Go through all of the questions one section at a time and mark the number most appropriate for your answer from “always” = 3 down to “never” = 0 by circling, crossing out or whatever. Some questions may appear to support a more yes/no answer so to reflect this it would be best to mark 3 for yes and 0 for no. If the question is not applicable to your situation, strike it out and when counting up the maximum possible number to work out score do not add 3 for that question.

To calculate your score add up all of the potential answers and multiply by 3 to give the maximum possible score, and then add up all of the scores from your answers. Divide your answer score number by the maximum possible score and multiply by 100, this will give you your sustainable consumption score as a percentage. The number itself does not mean much, but acts as a base upon which to improve.

Review the results with your family, focussing on some of the lower scores and this will help you focus on areas which you wish to improve. This may be as simple as buying clothing second hand more often or making sure you buy environmentally friendly cleaning products; or you may wish to write up a plan so that you can track your progress over time. Either way you may want to run the sustainable consumption audit again every year or two to check over all progress.

Some of this stuff is a bit hard core, I have been assured by my lovely partner in the sustainable life, so don’t get too bent out of shape if you don’t make your own toothpaste every single time. This is all about exploring your own interests in sustainable living so follow up the ideas that interest you and the family, and give it a go.

Remember, the numbers themselves do not mean much, but provide a base upon which to improve and help you work out the direction you wish to improve in. The whole point of this exercise is to help you work out where the sustainability of your lifestyle is at currently and then help you make decisions on how you wish to improve it. Hopefully, it could even be fun as well!

2.6 Conducting a Household Sustainable Transport Audit

Transport in all its forms is a major consumer of energy and so is also a major contributor to Australia's greenhouse gas emissions. In fact transport contributes 83.2 Mt CO^2-e per year which equates to 15% of Australia's total greenhouse gas emissions. Household passenger car use is the major contributor at 56% followed a long way back by commercial road transport at 34% with air transport (6%), domestic water transport (2%) and railways (2%) bringing up the rear. It is interesting that household car use is the biggest single contributor because it is the one source of transport emissions we are well placed to do something about.

OK, so we know that there is a problem, but what do we do about it? It seems reasonable to use our purchasing power and behaviour to reduce our environmental impact as much as we can but that presumes we know where to start. The premise of this publication and the associated sustainable Transport audit form is that it gives us a way to review how sustainable our practices are at the moment and help us work through what we need to do to improve.

You may want to work through the Sustainable Lifestyle Assessment Matrix first to understand the bigger picture of sustainable living or if you just want to focus on transport alone and give the transport audit a go. It can be as simple or formal as you like, filling the form out as you go or just running through things in your head and working out where you go from there. I recommend the more formal method so you have a record of where you are starting from which you can come back to later, re-do and get a feeling of how far you have come.

I also suggest that you share this with your family, or the people you are living with, so improvement can be on a united front.

2.6.1 Instructions

Go through all of the questions one section at a time and mark the number most appropriate for your answer from "always" = 3 down to "never" = 0 by circling, crossing out or whatever. Some questions may appear to support a more yes/no answer so to reflect this it would be best to mark 3 for yes and 0 for no. If the question is not applicable to your situation, strike it out and when counting up the maximum possible number to work out score do not add 3 for that question.

To calculate your score add up all of the potential answers and multiply by 3 to give the maximum possible score, and then add up all of the scores from your answers. Divide your answer score number by the maximum possible score and multiply by 100, this will give you your sustainable transport score as a percentage. The number itself does not mean much, but provides a base number upon which you can improve over time.

Review the results with your family, focussing on some of the lower scores and this will help you focus on areas which you wish to improve. This may be as simple as buying E10 petrol more often or making sure you walk rather than drive for short journeys; or you may wish to write up a plan so that you can track your progress over time. Either way you may want to run the sustainable transport audit again every year or two to check over all progress.

2.6.2 Public transport – Most of us in the urban/suburban landscape can get where we need to go with public transport. Seeing as public transport is already in place and running, using it does not add greatly to the environmental degradation due to transport. It also reduces our cost because we no longer need to –

- Buy a car
- Pay to register a car
- Pay to maintain a car
- Pay to use motorways
- Pay to park a car
- Pay to fuel a car

And it means one less car on the road. If enough of us take this option then the roads will be less cluttered and the air will be less polluted. There are some things, like picking up bulky materials which would be easier with a car (or more specifically a ute) and in this case it is easy to rent one for a specific job. For this purpose alone it is worth maintaining your driver's licence.

2.6.3 Bikes – "When man invented the bicycle he reached the peak of his attainments. Here was a machine of precision and balance for the convenience of man. And (unlike subsequent inventions for man's convenience) the more he used it, the fitter his body became. Here, for once, was a product of man's brain that was entirely beneficial to those who used it, and of no harm or irritation to others. Progress should have stopped when man invented the bicycle" So says Elizabeth west in her book about living the simple life called "Hovel in the Hills".

A tricycle allows you to carry a bigger load and does not require balancing

That covers things pretty well really! Bikes are comparatively cheap to by (the usual ones anyway) and for a few hundred dollars more you can get an electrically boosted bike to help with those pesky hills. While I love bikes and biking, you do need to think about where you are and if you can get safe bike access to where you want to go. I rode to work a few times many years ago and then walked rather than biked because it was safer. If you live in a more enlightened and bike friendly city than Sydney, it is worth a go!

2.6.4 Cars – Cars have a whole lot of regulations and costs associated with them and they would be about the least environmentally friendly of all the transport options. At each step of the car ownership journey buying, driving and maintaining there are things you can do to reduce the impact of your car ownership. If you can't get away from owning a car because of your personal circumstances (and it is worth asking the question, not having car ownership the default transport answer). Carpooling is always an option and these days car sharing organisations such as GoGet and Drive My Car Rentals exist to help out those who have decided against car ownership. Check out the things you can do and start reducing your impact today!

2.6.5 Walking – This would be my favourite low impact transport method. It is healthy, requires a minimum of equipment and almost anyone can do it. It is, however, quite slow and not well regarded in this fast-paced western civilisation which we live in. That aside from the point of view of savings, environmental benefits and positive health effects walking has got to be the transport mode of choice, at least for short distances

2.6.6 Air Travel – While it is only a comparatively small contributor to our greenhouse gas production at 6% of the total, they pump them out at high altitude, which can enhance their effects. Certainly when calculating your ecological footprint, air travel seems to have an effect more than its share. It suffices to say that if you can get there another way, don't fly!

2.7 Conducting a Household Sustainable Community Audit

One of the things that seems to have been reduced (if not entirely eliminated) by our increasingly isolated urban and suburban lifestyle is a sense of community. The benefits for your sustainability, health and psychological wellbeing, of being connected to the wider community outside our door are well documented. But how do you start?

By answering the questions in this audit it will give you an opportunity to assess degree of connectedness or otherwise your current lifestyle supports. It may also give you some ideas to increase that level of connectedness which you can build into your overall plan.

You may want to work through the Sustainable Lifestyle Assessment Matrix first to understand the bigger picture of sustainable living or if you just want to focus on "Community" alone give the audit a go. It can be as simple or formal as you like, filling the form out as you go or just running through things in your head and working out where you go from there. I recommend the more formal method so you have a record

of where you are starting from which you can come back to later, re-do and get a feeling of how far you have come.

I also suggest that you share this with your family, or the people you are living with, so improvement can be on a united front, after all the “community” who lives in your house is important too.

2.7.1 Instructions

Go through all of the questions one section at a time and mark the number most appropriate for your answer from “always” = 3 down to “never” = 0 by circling, crossing out or whatever. Some questions may appear to support a more yes/no answer so to reflect this it would be best to mark 3 for yes and 0 for no. If the question is not applicable to your situation, strike it out and when counting up the maximum possible number to work out score do not add 3 for that question.

To calculate your score add up all of the potential answers and multiply by 3 to give the maximum possible score, and then add up all of the scores from your answers. Divide your answer score number by the maximum possible score and multiply by 100, this will give you your sustainable consumption score as a percentage. The number itself does not mean much, but acts as a base upon which to improve.

Review the results with your family, focussing on some of the lower scores and this will help you focus on areas which you wish to improve. This may be as simple as buying clothing second hand more often or making sure you buy environmentally friendly cleaning products; or you may wish to write up a plan so that you can track your progress over time. Either way you may want to run the sustainable consumption audit again every year or two to check over all progress.

The audit is set out in four sections, starting with ourselves and moving outwards into the world.

The first section examines some of the personal daily choices we make to support a more sustainable community, the second part looks at how we interface with our neighbours and while doing that whether we support the ideals of sustainable community. The third part looks at community-building opportunities in our local area and the fourth part looks at how we participate in the government process to support sustainable outcomes.

Remember, the numbers themselves do not mean much, but provide a base upon which to improve and help you work out the direction you wish to improve in. The whole point of this exercise is to help you work out where the sustainability of your lifestyle is at currently and then help you make decisions on how you wish to improve it. Hopefully, it could even be fun as well!

2.8 Conducting a Household Sustainable Clothing Audit

The clothing we wear can have a negative environmental impact before we buy it, while we own it and after we dispose of it.

'Fast Fashion' results in clothing that is made for the absolute lowest price possible ensuring the clothing is made in unethical sweat shops which exploit workers, that huge amounts of resources are consumed to make them and ending in large amounts of unsold clothing that have to be disposed of by burning or in land fill.

The raw materials to make and dye the cloth have their own negative consequences, whether it is consuming fossil fuels to make synthetic fabrics or consuming water, taking up agricultural land and requiring large amounts of fertilisers and pesticides for 'natural' fibres like cotton. The dyes used to colour the cloth are also toxic and once their job is done, the excess finds its way into local (usually third world) waterways.

Unfortunately the damage does not stop once we have bought a garment. Over-washing, with harsh detergents in washing machines which are rough on the clothes results in microplastics/microfibers being released into the environment along with the detergents we use to clean our clothes. These practices also result in reduced clothing life so we need to buy more clothes sooner. Of course, when clothing does reach the end of its life, it is highly likely that it will end up in landfill, which generates its own set of environmental problems.

OK, so we know that there is a problem, but what do we do about it? It seems reasonable to use our purchasing power and behaviour to reduce our environmental impact as much as we can but that presumes we know where to start. The premise of this article and the associated sustainable clothing audit form is that it gives us a way to review how sustainable our practices are at the moment and help us work through what we need to do to improve.

You may want to work through the **Sustainable Lifestyle Assessment Matrix 2021** first to understand the bigger picture of sustainable living or if you just want to focus on clothing alone (and it is a great place to start, everyone wears clothing of some description, unless you want to get arrested!) give the clothing audit a go. It can be as simple or formal as you like, filling the form out as you go or just running through things in your head and working out where you go from there. I recommend the more formal method so you have a record of where you are starting from which you can come back to later, re-do and get a feeling of how far you have come.

I also suggest that you share this with your family, or the people you are living with, so improvement can be on a united front.

Instructions

Go through all of the questions one section at a time and mark the number most appropriate for your answer from "always" = 3 down to "never" = 0 by circling, crossing

out or whatever. Some questions may appear to support a more yes/no answer so to reflect this it would be best to mark 3 for yes and 0 for no. If the question is not applicable to your situation, strike it out and when counting up the maximum possible number to work out score do not add 3 for that question.

To calculate your score add up all of the potential answers and multiply by 3 to give the maximum possible score, and then add up all of the scores from your answers. Divide your answer score number by the maximum possible score and multiply by 100, this will give you your sustainable clothing score as a percentage. The number itself does not mean much, but acts as a base upon which to improve.

3.0 Afterword

Living in a sustainable household is a journey not a destination. The tools and techniques in this ebook are meant to assist you along your journey. It really doesn't matter where you start, but by using the information presented here you will be able to gauge where you are on the journey very accurately. You can then use the information you uncover to develop a plan to move forward, at a pace that you are comfortable with.

Don't forget to involve your family or whoever it is you live with and take them on the journey as well, if they are involved from the start then they are more likely to be favourably disposed towards your efforts. Good luck!

4.0 References & Resources

4.1 Introduction

4.1.1 Books

The Transition Handbook (Aus & NZ Edition) – Rob Hopkins – Finch publishing (AUS) 2008 ISBN 978 1 9214 6200 9
The Transition Companion – Rob Hopkins – Transition Books (UK) 2011 ISBN 978 1900 522973
An inconvenient Truth – Al Gore – Bloomsbury (US) 2006 ISBN 978 0 7475 8906 8
Fight
Carbon Detox – George Marshall – Octopus Publishing Group (UK) 2007 ISBN 9 781856 752886
Time to Eat the Dog? (The Real Guide to Sustainable Living) – Robert and Brenda Vale – Thames & Hudson (UK) 2009 ISBN 978 0 500 28790 3
Climate Change (What You can do About it) – Paul Holper & Simon Torok – Pan Macmillan Australia & CSIRO Publishing (AUS) 2008 ISBN978 1 405 03878 2
The Last Hours of Ancient Sunlight – Thom Hartmann – Bantam Books (US) ISBN 978 1863 252133
Cooler Smarter – The Union of Concerned Scientists – Island Press (US) 2012 ISBN 978 1 61091 192 4
Future Scenarios (How Communities can Adapt to Peak Oil and Climate Change) – David Holmgren – Chelsea Green Publishing (AUS) 2009 ISBN 978 1603 580 892
Depletion and Abundance – Sharon Astyk – New Society Publishers (CAN) 2008 ISBN 978 0 86571 614 8
A better World is Possible – Bruce Nixon – Winchester Books (UK) 2010 ISBN 978 1 84694 514 4

4.1.2 Websites

The Garnaut Review - http://www.garnautreview.org.au/update-2011/garnaut-review-2011.html
The Post Carbon Institute - http://www.postcarbon.org/
Under the Choko tree - http://www.underthechokotree.com/
Global Warming Effects Map – http://www.climatehotmap.org/
350.org - http://350.org/
Ecological Footprint Calculator
http://www.wwf.org.au/our_work/people_and_the_environment/human_footprint/footprint_calculator/

4.2 Planning

4.2.1 Books

Time to Eat the Dog? (The Real Guide to Sustainable Living) – Robert and Brenda Vale – Thames & Hudson (UK) 2009 ISBN 978 0 500 28790 3
Earth Users' Guide to Permaculture – Rosemary Morrow – Kangaroo Press (AUS) 2006 ISBN 978 0 7318 1271 4
Permaculture Design – Aranya – Permanent Publications (UK) 2012 ISBN 978 1856 23091 9
Sustainable House – Michael Mobbs – University of NSW Press Ltd (AUS) 2010 ISBN 978 1920 705527
How Good Are You? (Clean Living in a Dirty world) – Julian Lee – William Heinemann (AUS) 2008 ISBN 978 1 74166 712 7

4.2.2 Websites

Under the Choko tree - http://www.underthechokotree.com/
Sustainable Earth Technologies - http://www.sustainable.com.au/
Your Home – Australian guide to environmentally Sustainable Homes - http://www.yourhome.gov.au/
Michael Mobbs' Sustainable house in Sydney - http://sustainablehouse.com.au/
Conducting a Personal SWOT Analysis - http://www.mindtools.com/pages/article/newTMC_05_1.htm

4.3 Water

4.3.1 Books

Every Last Drop – Craig Madden and Amy Carmichael – Random House (AUS) 2007 ISBN 978 1 74166 888 9
Waterwise Gardening – Kevin Walsh – Reed New Holland (AUS) 2004 ISBN 187706901 9
Water – Not Down the Drain – Stuart McQuire – Alternative Technology Association (AUS) 2008 ISBN 978 0 9578895 6 9
The Water Efficient Garden – John Archer, Jeffrey Hodges and Bob LeHunt – Random House (AUS) 1993 ISBN 0 09 182569 5
Waterwise House and Garden – Alan Windust – Landlinks Press (AUS) 2003 ISBN 0 643 06800 7 –
The Earth Garden Water Book – Alan T. Gray (Ed.) – Earth Garden Books (AUS) 2004 ISBN 0 9586397 2 8
Drip Irrigation – For Every Landscape and All Climates – Robert Kourik – Metamorphic Press (US) 1992 ISBN 0 9615848 2 3 l.
Rainwater Harvesting Volume 1 and 2 – Brad Lancaster – Rainsource Press (US) 2013 ISBN 978 0 9772464 3 4
Sustainable House – Michael Mobbs – University of NSW Press Ltd (AUS) 2010 ISBN 978 1920 705527

The Humanure Handbook – Joseph Jenkins – Chelsea Green Publishing (US) 2005 ISBN 978 0 9644258 3 5
Goodbye to the Flush Toilet - Carol Hupping Stoner (ed) – Rodale Press (US) 1977 – ISBN 0 87857 192 2
The Toilet Papers – Sim Van Der Ryn – Capra Press (US) 1980 ISBN 0 88496 121 4
The Water Footprint of Modern Consumer Society – Arjen Hoekstra – Earthscan (UK) 2013 ISBN 978 1 84971 427 3

4.3.2 Websites

Green Plumbers - http://www.1300plumber.net.au/green-sustainable-plumbing#.VRNm5ekcRjo
Sydney Water - http://www.sydneywater.com.au/SW/index.htm
Michael Mobbs' Sustainable house in Sydney - http://sustainablehouse.com.au/
The Alternative Technology Association - http://www.ata.org.au/
Parramatta Council water information - http://www.parracity.nsw.gov.au/live/my_environment/water_and_waterways
Under the choko tree – water - http://www.underthechokotree.com/index.php?option=com_content&view=section&id=10&Itemid=56
Calculating your water footprint - http://www.waterfootprint.org/?page=cal/waterfootprintcalculator_indv

4.4 Waste

4.4.1 Books

Time to Eat the Dog? (The Real Guide to Sustainable Living) – Robert and Brenda Vale – Thames & Hudson (UK) 2009 ISBN 978 0 500 28790 3
Sustainable House – Michael Mobbs – University of NSW Press Ltd (AUS) 2010 ISBN 978 1920 705527
Greeniology – Tanya Ha – Allen & Unwin (AUS) 2003 ISBN 1 86508 929 X
Reclaim, Recycle, Reuse – Alan B. Hayes – Sally Milner Publishing (AUS) 1992 ISBN 1 86351 065 6
The Zero Waste Home – Bea Johnson – Penguin Books (UK) 2013 ISBN 978 184614745 6
The Reverse Garbage Garden – Sandra Clayton – Hyland House (AUS) 1993 ISBN 1 875657 12 6
Don't Throw it Away! – Ian McHarry – Simon & Schuster (AUS) 1993 ISBN 0 7318
Recycle Your Garden – Tim Marshall – ABC Books (AUS)2008 ISBN 978 073330984 7
The Compost Book – David & Yvonne Taylor – New Holland Publishers (AUS) 1993 ISBN 1 87633 428 2
Resurrection in a Bucket – Margaret Simons – Allen & Unwin (AUS) 2004 ISBN 1 86508 588X
The Compost Powered Water Heater – Gaelan Brown – The Countryman Press (US) 2014 ISBN 978 1 58157 194 3
Toolbox for Sustainable City Living – Scott Kellog & Stacy Pettigrew – South End Press (US) 2008 ISBN 978 0 89608 780 4

4.4.2 Websites

Planet Ark - http://planetark.org/
Waste and Recycling NSW - http://www.epa.nsw.gov.au/waste/
Reverse Garbage - http://reversegarbage.org.au/
The Bower Reuse and Repair Centre - http://bower.org.au/
Kimbriki Resource Recovery Centre - http://www.kimbriki.com.au/
Salvation Army Shops - http://www.salvosstores.com.au/
St Vincent de Paul Shops - https://www.vinnies.org.au/shops

4.5 Energy

4.5.1 Books

The CSIRO Energy Saving Handbook – John Wright, Peter Osman & Peta Ashworth – Pan Mcmillan/CSIRO (AUS) 2009 ISBN 978 1405 039611
Sustainable House – Michael Mobbs – University of NSW Press Ltd (AUS) 2010 ISBN 978 1920 705527
Greeniology – Tanya Ha – Allen & Unwin (AUS) 2003 ISBN 1 86508 929 X
The Compost Powered Water Heater – Gaelan Brown – The Countryman Press (US) 2014 ISBN 978 1 58157 194 3
Build Your Own Earth Oven – Kiko Denzer – Hand Print Press (US) 2004 ISBN 0 9679846 0 2
Rocket Mass Heaters – Ianto Evans & Leslie Jackson – Cob cottage Company (US) 2014 ISBN 978 0 9663738 4 7
Build Your Own Barrel Oven – Max and Eva Edleson – Hand Print Press (US) 2012 ISBN 978 0 9679846 9 8
Greenhouse Solutions with Sustainable Energy – Mark Diesendorf – University of NSW Press (AUS) 2007 ISBN 978 0 868409 733
The Carbon Buster's Home Energy Handbook – Godo Stoyke – New Society Publishers (CAN) 2007 ISBN 978 0 86571 569 1
Switch! (A home based power, water and sewerage system for the 21st century) - Jackie French & Bryan Sullivan – Aird Books (AUS) 1994 ISBN 0 947 214 30 5
The Earth Garden Book of Alternative Energy – Alan T. Gray – Lothian Books (AUS) 1996 ISBN 0 85091 701 8
Warm House Cool House – Nick Hollo – Choice Books (AUS) 1997 ISBN 0 947277 22 6

4.5.2 Websites

Appliance energy rating system - http://www.energyrating.gov.au/
Green power accredited renewable energy providers - http://www.greenpower.gov.au/
Renewable Energy Certificate (REC) System - http://www.epa.gov/greenpower/gpmarket/rec.htm
Improving your homes' energy efficiency - http://www.yourhome.gov.au/energy
Energy saving at home and at work - http://yourenergysavings.gov.au/

Sustainable Living Guide – Insulation -
http://www.sustainablelivingguide.com.au/house/insulate-shade-weatherproof-your-house
Under the choko tree – Energy -
http://www.underthechokotree.com/index.php?option=com_content&view=section&id=9&Itemid=54

4.6 Sustainable Food

4.6.1 Books

Sustainable Food – Michael Mobbs – University of New South Wales Press (AUS) 2012 ISBN 978 192070 554 1
The Locavore Way – Amy Cotler – Storey Publishing (US) 2009 ISBN 978 1 60342 453 0
Local Food (how to make it happen in your community) – Tamzin Pinkerton & Rob Hopkins – Transition Books (UK) 2009 ISBN 978 1 900322 43 0
Lawns into Lunch (Growing Food in the City) – Jill Finnane – New Holland Publishers (AUS) 2005 ISBN 174110209 X
Food Not Lawns – H.C. Flores – Chelsea Green (US) 2006 ISBN 978 1933 392073
The Permaculture Home Garden – Linda Woodrow – Penguin Books Australia (AUS) 1996 ISBN 0 670 86599 0
How to grow more Vegetables – John Jeavons – Ten Speed Press (US) 2006 ISBN 978 1 58008 796 4
The Edible Front Yard – Ivette Soler – Timber Press (US) 2011 ISBN 978 1 60469 199 3
One Magic Square (Grow your own food on one square metre) – Lolo Houbein – Wakefeild Press (AUS) 2008 ISBN 978 1 86254 764 3
Backyard Self-sufficiency – Jackie French – Aird Books (AUS) 2009 ISBN 978 09472 14586
The Conscious Kitchen – Alexandra Zissu – Clarkson/Potter Publishers (US) 2010 ISBN 978 0 307 46140 7
The Green Kitchen – Richard Ehrlich – Kyle Cathie Ltd (UK) 2009 ISBN 978 1 85626 804 2
The Conscious Cook (Sustainable Cooking and Living) Giselle Wilkinson – Brolga Publishing (AUS) 2008 ISBN 978 1 921221 38 5
Diet for a Small Planet – France Moore Lappe – Ballantine Books (US) 1975 ISBN 0 345 27429 6
Frugavore – Arabella Forge – Black Inc. (AUS) 2010 ISBN 978 1 86395 4891

4.6.2 Websites

Michael Mobbs' Sustainable house in Sydney - http://sustainablehouse.com.au/
Under the Choko tree - http://www.underthechokotree.com/
Sustainable Table - http://www.sustainabletable.org.au/About/tabid/57/Default.aspx
About sustainable food & what you can do -
http://www.sustainweb.org/sustainablefood/
The Sustainable Food Trust - http://sustainablefoodtrust.org/
True Food Network (against Monsanto and GMOs) http://www.truefood.org.au/

4.7 Sustainable Consumption

4.7.1 Books

Affluenza (when too much is never enough) – Clive Hamilton & Richard Denniss – Allen & Unwin (AUS) 2005 ISBN 1 74114 671 2
Simple Prosperity (finding real wealth in a sustainable lifestyle) - Davin Wahn – St Martins Griffin (US) 2007 ISBN 978 0 312 36141 6
Less is More – Cecile Andrews & Wanda Urbanska – New Society Publishers (CAN) 2009 ISBN 978 0 86571 650 6
Voluntary Simplicity – Duane Elgin – Quill (US) 1993 ISBN 0 688 12119 5
Small is Beautiful (a study of economics as if people mattered) – E. F. Schumacher – Abacus (UK) 1973 ISBN 978-0099225614
Your Money or Your Life – Joe Dominguez & Vicki Robin – Penguin Books (US) 1999 ISBN 0 14 028678 0
It's All Too Much (Decluttering) Peter Walsh – Simon & Schuster (AUS) 2007 ISBN 978 0731814299
Tiny House living – Ryan Mitchell – Betterway Books (US) 2014 ISBN 978 1 4403 3316 3

4.7.2 Websites

Thoreau's "Walden" http://www.gutenberg.org/files/205/205-h/205-h.htm
We the Tiny House People https://www.youtube.com/watch?v=lDcVrVA4bSQ
The Simplicity Collective – What is voluntary Simplicity? http://simplicitycollective.com/start-here/what-is-voluntary-simplicity-2
Choosing Voluntary Simplicity - http://www.choosingvoluntarysimplicity.com/

4.8 Sustainable Transport

4.8.1 Books

Making Your Own Motor Fuel – Fred Stetson –Methanol and Other Ways Around the Gas Pump – John Ware Lincoln – Garden Way Publishing (US) 1976 ISBN 088266 051 9 –
Pumped – 101 Ways to Beat Petrol Prices – Roz Hopkins – Hardie Grant Books (AUS) 2008 ISBN 978 1 74066 713 5
Cutting your Car Use – Randall Ghent with Anna Semlyen – New Society Publishers (US) 2006 ISBN 0 86571 558 0
From the Fryer to the Fuel Tank – Joshua Tickell – Tickell Energy Consulting (US) 2000 ISBN 1 74018 149 2
Build Your Own Electric Vehicle – Bob Brant – TAB Books (US) 1994 ISBN 978 0 8306 4231 1
547 Ways to be Fuel Smart – Roger Albright – Storey Books (US) 2000 ISBN 1 58017 369 1
Time to Eat the Dog – Robert and Brenda Vale – Thames and Hudson Ltd (UK) 2009 ISBN 978 0 500 28790 3

CSIRO Home Energy Saving Handbook – John Wright, Peter Osman, Peta Ashworth – Pan Macmillan Aust (AUS) 2009 ISBN 978 1405 039611
Greeniology – Tanya Ha – Allen & Unwin P/L (AUS) 2003 ISBN 1 86508 929 X
Car Free Cities – J. H. Crawford – Utrecht International Books (NETH) 2002 ISBN 90 5727 042 0
Bike Repair Manual – Chris Sidwells – Dorling Kindersley (UK) 2004 ISBN 1 4053 0252 4
The Urban Biking Handbook – Charles Haine – Quarry Books (US) 2011 ISBN 978 1 59253 695 5
Green Guides: Cycling – David North – Flame Tree Publishing (UK) 2011 ISBN 978 0 85775 096 9
Bicycling, A Reintroduction – Karen Ruth – Creative Publishing International (US) 2011 ISBN 978 1 58923 605 2

4.8.2 Websites

Car borrowing/renting site
http://www.carnextdoor.com.au/?gclid=CJio3_W3xcQCFUlvvAodLy0AGg
Car Sharing Site - http://www.goget.com.au/
Bike hire site - http://bikesydney.org/new10/cycling-in-sydney/cargo-bike-library/
Efficient Driving -
http://www.environment.gov.au/settlements/transport/fuelguide/tips.html
Green Vehicle Guide http://www.greenvehicleguide.gov.au/GVGPublicUI/home.aspx
Carbon Offset Company - http://carbonneutral.com.au/carbon-offsets/
Biofuel Association - http://www.biofuelsassociation.com.au/

4.9 Sustainable Community

4.9.1 Books

Superbia! – 31 Ways to Create Sustainable Neighbourhoods – Dan Chiras and Dave Wann – New Society Publishers (US) 2006 ISBN 0 86571 490 8
Going Local – Creating Self Reliant Communities in a Global Age – Michael H. Shuman – The Free Press (US) 1998 ISBN 0 684 83012 4
Community Gardens – Penny Woodward and Pam Vardy – Hyland House (AUS) 2005 ISBN 1 864 47096 8
A Handbook of Community Gardening – Susan Naimark Ed. – Charles Scribners' Sons (US) 1982 ISBN 0 684 17466 9
Local Food – How to Make it Happen in Your Community – Tamzin Pinkerton and Rob Hopkins – Green Books (UK) 2009 ISBN 978 1 900322 43 0
How to Save Your Neighbourhood, City or Town – Martiza Pick – Sierra Club Books (US) 1993 ISBN 0 87156 522 6
The Locavore Way – Discover and Enjoy the Pleasures of Locally Grown Food – Amy Cotler – Storey Publishing (US) 2009 ISBN 978 1 60342 453 0
The Transition Handbook – From Oil Dependency to Local Resilience – Rob Hopkins – Green Books (UK) 2008
Living Room Revolution (A handbook for conversation, community and the common good) - Cecile Andrews – New society Publishers (CAN) 2013 ISBN 978 0 86571 733 6

4.9.2 Websites

Sydney's Community Gardens http://theurbangardener.com.au/community-gardens-near-you/#west
Farmer's Markets Association http://farmersmarkets.org.au/markets
Sustainable communities online http://www.sustainable.org/
Online Learning circles
https://sites.google.com/site/onlinelearningcircles/Home/learning-circles-defined
Under the choko tree – community
http://www.underthechokotree.com/index.php?option=com_content&view=category&id=82:community&Itemid=64&layout=default
Transition streets initiative http://www.transitionstreets.org.uk/
Sustainability Street Initiative http://www.sustainabilitystreet.org.au/
Green Street Initiative http://www.greenstreet.net.au/index.php
Sustainable Chippendale http://sustainablechippendale.com/

4.10 Sustainable Clothing

4.10.1 Books

Modern Mending – Erin Lewis-Fitzgerald – Affirm Press (AUS) 2020 ISBN 978 1 925927 29 0
Mend it Better – Kristin M. Roach – Storey Publishing (US) 2012 ISBN 978 1 60342 56 3
Clothing Care and Repair – Singer Sewing Reference Library (US) 1985 ISBN 0 394 73417 3
Remake it: clothes – Henrietta Thompson – Thames & Hudson(UK) 2012 ISBN 978 0 500 53632 4
Mend It! – Maureen Goldsworthy - Mills & Boon Ltd (UK) 1979 ISBN 978 0 8128 2695 1
Fabulous Fit! – Patricia Perry (Ed.) – Butterick Fashion Marketing Company (US) 1977 ISBN 978 0 88421 055 9
Sewing Green – Betz White – Stewart, Tabori & Chang (US) 2009 ISBN 978 1 58479 758 6
Second Skin – India Flint – Murdoch Books (AUS) 2011 ISBN 978 1 74196 721 0
Making Simple clothes –Ida Hamre & Hanne Meedom – Adam & Charles Black (UK) 1980 ISBN 0 7136 2051 X
The Illustrated Hassle-Free Make Your Own Clothes Book – Sharon Rosenberg & Joan Weiner – Studio Vista (UK) 1971 ISBN 0 289 70348
Loved Clothing Lasts – Orsola de Castro – Penguin Random House (UK) 2021 ISBN 978 0 241 46115 0
Overdressed, The Shockingly High Cost of Cheap Fashion – Elizabeth L. Cline – Portfolio/Penguin (US) 2012 ISBN 978 1 59184 461 7
The Conscientious Closet – Elizabeth L. Cline – Plume (US) 2019 ISBN 978 1 524 74430 4

4.10.2 Websites

Fashion Revolution https://www.fashionrevolution.org/
Clean clothes campaign https://cleanclothes.org/
Dead White Man's Clothes https://deadwhitemansclothes.org/
The Sustainable Apparel Coalition https://apparelcoalition.org/the-sac/
Save your wardrobe https://www.saveyourwardrobe.com/
Sustain your Style: Eco Fibre Review https://www.sustainyourstyle.org/en/fiber-ecoreview?gclid=CjwKCAjw2bmLBhBREiwAZ6ugo_qmD1zST8_sZwj4KCaojHRuxh2_20PXbK0z80fqxD9tyd-1ol59xBoCy-MQAvD_BwE
Ocean Clean Wash (Microfibres and their impact) https://www.oceancleanwash.org/

Appendix 1 – Sustainable Lifestyle Assessment Matrix

Value	Sub-value	0 White	1 Pastel Green	2 Light green
1. We make the most of the water we have	1.1 Water use	No effort at water saving or re-use, it just comes out of the tap and goes down the drain	We have fitted a low volume shower nozzle and make sure we fix leeks quickly	We have made some gains on reducing water usage like shorter showers and using a broom instead of the hose to clean the path; grey water is re-used on the garden
	1.2 Sewage	The toilet is single flush and we flush every time the toilet is used	The toilet is dual flush and we use the appropriate flush cycle every time the toilet is used	The toilet is dual flush but we generally don't flush at night and during the day we practice "if it's yellow let it mellow if it's brown flush it down".
2. We don't waste energy	2.1 Energy Use	No thought is given to energy uses	We have changed the lightbulbs to fluorescent, turn off appliances when we can, checked seals on fridge and freezer, we have sealed drafts where we could	Energy consumption is considered when buying large appliances; we use some low energy consumption techniques such as low energy cooking using stored heat, steaming etc
	2.2 Energy Generation: Electricity Gas etc.	All energy sourced from non-renewable sources	Energy is all obtained from off site, a mix of renewable and non renewable sources	All energy is derived from off site but renewable resources
	2.3 Energy Conservation	House is uninsulated	Roof insulation is in place	Roof walls and where appropriate, floor insulation
3. We are mindful of where our food comes from		All food is bought in and no thought is given to the source	We grow a few herbs and a small amount of vegies, using commercial seedlings, the rest is sourced from a supermarket	We are growing a percentage of our food from our own seedlings and some is sourced from organic sources but most we buy in the supermarket.
4. We use eco-friendly transport		A car is the transport of choice and it's a V8!, usually with one person per trip. We fly whenever we can.	We occasionally try and walk or bicycle on short trips to save fuel, but primary transport e.g. to and from work is by car, we are looking at getting or have a smaller more fuel efficient car. We do still fly sometimes on holiday or business trips	We car pool to reduce car usage to and from work, bicycle or walk where possible, but use the car on other occasions.
5. We limit our waste		There is no thought given to packaging when items are bought, we don't compost or recycle; our waste goes in the bin, out of sight out of mind.	We recycle using the council system but haven't reduced our waste at all and still don't compost	We are starting to think about waste reduction, and are recycling as much as we can. A composter or worm farm is on the horizon.
6. We are conscientious consumers		Stuff, gotta have lots of stuff, even if we don't use it. Retail therapy and lots of it. We don't consider where the stuff comes from or how it is produced.	We have thought about reducing the amount of stuff we buy, but keeping up with fashion and the Jones's makes it difficult.	We think about our purchases before we buy and try and get the best quality we can
7. We are committed to making our community sustainable		We keep to ourselves and that's the way we like it	We do occasional talk to our neighbours about environmental subjects	We talk to our neighbours about what we are doing to increase our level of sustainability.
8. We buy, value and care for our clothes sustainably		We buy cheaply and discard easily, we really don't give much thought to where our clothing comes from or who makes it, so long as it's cheap.	We do occasionally consider the environmental impact when buying new clothes and machine wash after each use.	We buy new clothing from ethical/sustainable brands where we can. We do some mending.

3 Mid green	4 Dark Green	5 Deep green
We save and re-use water where we can - shorter showers, use buckets to hold water until it comes through hot then use on the garden; we buy low water use appliances such as front loading washing machine	We have implemented all water saving and re-use strategies we can and source some of our water from sustainable supplies.	All water comes from sustainable sources such as rainwater tanks and is treated and re-used on site.
Urine is recycled/used on site, Faeces is flushed	We have a composting toilet but the output is treated or buried off site	We have a composting toilet/seep away septic system/other sustainable toilet system and any output is treated or buried on our site
We buy the lowest energy consuming large appliances we can afford. We put on clothing rather than the heater and wash in cold water.	We mostly cook using solar appliances and low energy consuming methods (stored heat, woks, pressure cookers)	All energy used is obtained/harvested on our site for cooking and heating and efficiently used using low energy cooking techniques etc.
Some energy is generated on site (wind/photovoltaics or direct solar heat) the rest is a mix of renewable and non-renewable resources from off site.	Most energy is generated from on-site systems with the remainder of the off-site energy sourced from renewable resources	All energy is generated on site
Roof walls and floor (where appropriate) are insulated, windows are double glazed, shuttered or otherwise insulated	House is super insulated or constructed of low transmission materials such as straw bales or mud bricks	As well as insulation, passive solar design is included in the house.
Some food is home-grown, some is sourced from local growers/organic or farmers markets, some is bought in without to much worry about the source	As much food is grown/produced on site as possible, the remainder bought from local organic sources or farmers markets.	All food is produced on our home site using organic/permaculture principles; we barter or give away excess to neighbours
Public transport, walking and bicycle are the transport of choice with some use of a car when needed. Fuel consumption is the main consideration when buying a new car. We limit flying to unavoidable trips.	Sustainable travel is used almost exclusively, we have a car but it is mainly used to transport large items, many people or just to the train station etc.	We don't own a car, public transport, walking and bicycle are the only forms of transport used. We don't fly on principle
When making purchases we consider the waste materials involved, we don't use plastic shopping bags, we have a composter and/or worm farm	We recycle all recyclables and buy in bulk to reduce packaging. We compost or worm farm and grow food so that any waste putrescible is recycled. Waste generation/packaging materials are considered for all major purchases	We recycle all recyclables and buy in bulk to reduce packaging. We compost or worm farm and grow food so that any waste putrescible is recycled. Waste generation/packaging materials are considered for all purchases
We think about our purchases before we buy and try and get the best quality we can from local producers. We usually buy Australian made or second hand	We only buy the goods that we have to, usually Australian made or second hand where possible.	We produce as much as we can ourselves. What we don't produce ourselves we buy from local artisans and ethical local producers, barter or buy second hand.
We get involved with our neighbours on projects to enhance each others sustainability such as a vegie garden or tree planting	We give our time to projects that enhance our sustainability and our area such as a community garden or "Clean up Australia"	We haver started local initiatives to enhance our sustainability such as a community garden or relocalisation group
We buying clothing second hand or sustainable/ethical brands, we mend damage clothing and only wash when the clothes are dirty.	We share clothing with friends and relatives regularly, wash when necessary and use techniques to freshen clothes to extend times between washing. We mend and make some clothing ourselves.	We don't buy new clothes. We buy second hand or share with friends or family, we extend the life of our clothes by mending & using appropriate cleaning techniques. We wear what we have..

Appendix 2 – Water Audit Form (Part A)

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Average
Weekday/Date								
Washing up (*10 litres/ wash)*								
Shower (4 min av.) (*6 litres/ min)*								
Toilet (Main) (*8 litres/ flush)*								
Toilet (Ensuite) *(5 litres/ flush)*								
Washing Machine (*189 litres/ load)*								
Watering Garden (*15 litres/ min)*								
Cooking/Drinking (*7 litres/day)*								
Teeth Cleaning (*1 litre/clean)*								
Shaving (3 *litres/shave)*								
Hand Wash *(1 litre/wash)*								
Miscellaneous								
Totals								

Appendix 2 – Water Audit Form (Part B)

Amount of Grey Water Available

Source	**Daily Volume (litres)**	**Weekly Volume (litres)**	**Yearly Volume (litres)**
Shower			
Washing Machine			
Bath			
Laundry Tub			
Total			

Volume of Rainwater Available for Tanks

The Annual Rainfall	
The Longest Dry Period	
Roof Catchment (*House –) & (Carport & Garage –) & (other-)*	
Total Potential Roof Catchment per Year less 15% contingency for runoff/loss *(roof Catchment x annual average rainfall x .85)*	
Daily Water Use	
Total Use per Year	
Water needed for (The Longest Dry Period)	
Water Storage required for water security + 20% contingency	

Appendix 3 - Waste Audit Form

Our Family: _____ Date: _____

Your Priority (ies)	Category	Weight in Kilos					
		Week 1	Week 2	Week 3	Week 4	Monthly Total	Yearly Total
	Recyclables						
	Paper						
	Glass						
	Steel						
	Aluminium						
	Compostable Food Waste						
	Non compostable food waste						
	Other compostables						
	Plastic (Cat 1 & 2)						
	Non-Recyclables						
	Plastic(Other Categories)						
	Paper /Cardboard						
	Glass						
	Clothing						
	Big stuff						

Action Plan

Our Priority One Target Category:

Waste Hierarchy	Your Waste Control Ideas/Projects	Who will be involved	When do we want it by
Refuse	• •		
Reduce	• •		
Reuse	• •		
Recycle	• •		

Our Priority Two Target Category:

Waste Hierarchy	Your Waste Control Ideas/Projects	Who will be involved	When do we want it by
Refuse	• •		
Reduce	• •		
Reuse	• •		
Recycle	• •		

Appendix 4 Energy Audit Form

Household Name: Date of Audit:

Household Direct Energy Supply or how much energy was supplied to your house in the last 12 months (Energy In)

Energy Source	Unit	Annual Total	Multiply by (conversion Factor)	Mega Joules MJ	Comments
Electricity	KwH		3.6		
Natural Gas	MJ		1		
Liquefied Petroleum Gas (LPG)	Litres		26		
Wood	Cubic Metres		550		
Petrol	Litres		36		
Diesel	Litres		36		
Total Yearly Energy Supplied					

Appliance	Power consumption in Watts (information)	Power consumption in Watts (Measured)	Estimated hours use per year	Kilowatt hours per year (watts x hours/1000)	Actions
The Big (Expensive) Stuff					
Water heater					
Cooking Range					
Air Conditioner					
Space heater					
Kitchen					
Toaster					
Frypan					
Jaffle maker					
Electric jug					
Microwave oven					
Refrigerator					
Freezer					
Dish washer					
Entertainment					
TV 1					
TV 2					
Computer 1					
Computer 2					
CD player					
DVD Player					

Appliance	Power consumption in Watts (information)	Power consumption in Watts (Measured)	Estimated hours use per year	Kilowatt hours per year (watts x hours/1000)	Actions
Laundry					
Washing machine					
Clothes drier					
Iron					
Garage					
Drill					
Power saw					
Welder					
Sander					
Grinder					
Lighting					
Outside					
Lounge room					
Kitchen					
Dining room					
Hall					
Bedroom 1					
Bedroom 2					
Bedroom 3					
Bedroom 4					
Bedroom 5					
Garage					
Miscellaneous					
Clock					
Fan					
Mobile phone					
Digital picture frame					

Appendix 5 Sustainable Food Audit Form

Groceries					
No	Item	Always	Sometimes	Rarely	Never
1.1	Do you buy organic items where possible?	3	2	1	0
1.2	Do you buy local items where possible?	3	2	1	0
1.3	Do you make your own groceries where possible?	3	2	1	0
1.4	Do you buy fair trade groceries where possible?	3	2	1	0
1.5	Do you avoid highly processed foods?	3	2	1	0
1.6	Do you buy non-perishable items in bulk to reduce packaging?	3	2	1	0
1.7	Do you buy from small local producers/retailers rather than large supermarkets?	3	2	1	0
1.8	Do you refuse plastic shopping bags provided by the shop?	3	2	1	0

Fresh Foods					
No	Item	Always	Sometimes	Rarely	Never
2.1	Do you buy organically grown vegetables where possible?	3	2	1	0
2.2	Do you buy locally produced vegetables where possible?	3	2	1	0
2.3	Do you buy organically grown fruit where possible?	3	2	1	0
2.4	Do you buy locally produced fruit where possible?	3	2	1	0
2.5	Do you buy organic eggs?	3	2	1	0
2.6	Do you buy free range eggs?	3	2	1	0
2.7	Do you buy locally produced eggs?	3	2	1	0
2.8	Do you buy organic or free range chicken meat?	3	2	1	0
2.9	Do you buy meat which is grass fed/non feedlot?	3	2	1	0
2.10	Do you buy organic meat?	3	2	1	0
2.11	Do you buy locally produced meat?	3	2	1	0
2.12	Do you buy locally produced dairy products?	3	2	1	0
2.13	Do you buy organic dairy products?	3	2	1	0
2.14	Do you buy local/organic bread?	3	2	1	0
2.15	Do you shop at farmers markets?	3	2	1	0
2.16	Do you buy from small local producers/retainers rather than large supermarkets?	3	2	1	0
2.17	Do you buy in season?	3	2	1	0
2.18	Do you take reusable bags for fruit & veggies instead of throw away plastic provided by the shop?	3	2	1	0
2.19	Do you make use of a veg box/ community supported agriculture scheme?	3	2	1	0

Make your own					
No	Item	Always	Sometimes	Rarely	Never
3.1	Do you make your own meals from scratch?	3	2	1	0
3.2	Do you make your own bread?	3	2	1	0
3.3	Do you make your own preserves?	3	2	1	0
3.4	Do you make your own sauces?	3	2	1	0
3.5	Do you make your own pasta?	3	2	1	0
3.6	Do you make your own yoghurt?	3	2	1	0
3.7	Do you use organic ingredients when making your own?	3	2	1	0
3.8	Do you use local ingredients when making your own?	3	2	1	0
3.9	Do you use seasonally available ingredients when making your own?	3	2	1	0

Growing your own					
Production					
No	Item	100%	50%-99%	1%-49%	0%
4.1	What percentage of the vegetables you consume do you produce yourself?	3	2	1	0
4.2	What percentage of the fruit you consume do you produce yourself?	3	2	1	0
4.3	What percentage of the eggs you consume do you produce yourself?	3	2	1	0
4.4	What percentage of the dairy products you consume do you produce yourself?	3	2	1	0
4.5	What percentage of the herbs you consume do you produce yourself?	3	2	1	0
4.6	What percentage of the fish you consume do you produce yourself?	3	2	1	0
4.7	What percentage of the meat you consume do you produce yourself?	3	2	1	0
Fruit, veggies and Herbs					
		Always	Sometimes	Rarely	Never
4.8	Are your fruit, veggies and herbs produced pesticide free?	3	2	1	0
4.9	Are your fruit, veggies and herbs produced chemical fertilizer free?	3	2	1	0
4.10	Are your fruit, veggies and herbs produced weedicide free?	3	2	1	0
4.11	Do you produce your own compost? (compost bin, worms or bokashi bin)	3	2	1	0
4.12	Do you use your compost to fertilise your fruit, vegetable and/or herb plants?	3	2	1	0

Water					
4.13	Are all garden beds and pots are mulched?	3	2	1	0
4.14	Is watering done under the mulch by soaker or dripper hose etc?	3	2	1	0
4.15	Is rainwater is used to irrigate fruits, vegetables and herbs?	3	2	1	0
4.16	Are plants watered around the root zone with long infrequent watering?	3	2	1	0
4.17	Do you have 50% or less of your ground under lawn?	3	2	1	0
Livestock					
4.18	Is your livestock feed produced locally?	3	2	1	0
4.19	Is your Livestock feed produced organically?	3	2	1	0
4.20	Is your livestock feed produced at home?	3	2	1	0
Sprouts/Microgreens					
4.21	Do you produce your own sprouts?	3	2	1	0
4.22	Do you produce your own microgreens?	3	2	1	0
Takeaway/Eating Out					
No	Item	Always	Sometimes	Rarely	Never
5.1	Do you eat out once week or less?	3	2	1	0
5.2	Do you eat takeaway once week or less?	3	2	1	0
5.3	Do you take your own food when going out?	3	2	1	0
5.4	Do you take your own beverage/bottled water when going out?	3	2	1	0
5.5	Do you use a non disposable cup for takeaway coffee?	3	2	1	0
5.6	Do you bring your own container to take home any uneaten food when eating at a restaurant?	3	2	1	0
5.7	Do you eat at locally owned restaurants when eating out rather than national chains?	3	2	1	0

Beverages					
No	Item	Always	Sometimes	rarely	Never
6.1	Do you buy local and/organic beer and wine where possible?	3	2	1	0
6.2	Do you produce your own cordials?	3	2	1	0
6.3	Do you produce your own soft drinks?	3	2	1	0
6.4	Do you produce your own alcoholic beverages?	3	2	1	0
6.5	Do you buy organic tea and/or coffee?	3	2	1	0
6.6	Do you buy local tea and/or coffee	3	2	1	0
6.7	Do you buy fair trade tea and/or coffee	3	2	1	0

Preparation/ Consumption					
No	Item	Always	Sometimes	rarely	Never
7.1	Do you provide one or more vegetarian/vegan meals per week?	3	2	1	0
7.2	Do you ensure uneaten food is put away to be used later, frozen, composed or fed to animals?	3	2	1	0
7.3	Do you produce oversized meals so the spares can be frozen for later consumption?	3	2	1	0
7.4	Do you cook using low energy methods? (See energy Audit)	3	2	1	0
7.5	Do you avoid disposable crockery and cutlery?	3	2	1	0
7.6	Is there at least one home produced component of the main meal of the day?	3	2	1	0
7.7	Is there is at least one home produced component of a secondary meal during the day?	3	2	1	0

Total possible points (P) =

Total points achieved (A) =

Score % = A / P x 100

Date audit was completed:

Appendix 6 Sustainable Consumption Audit Form

Clothing					
No	Item	Always	Sometimes	Rarely	Never
1.1	Is clothing bought produced locally?	3	2	1	0
1.2	Is clothing produced from fair trade fibre?	3	2	1	0
1.3	Is clothing produced from locally produced fibre	3	2	1	0
	Is clothing produced from natural fibres				
1.4	Is clothing bought second hand?	3	2	1	0
1.5	Is excess, out of date or out of size clothing passed on to second hand shops etc.?	3	2	1	0
1.6	Are shoes bought from a local supplier?	3	2	1	0
1.7	Are shoes repaired/resoled rather than replaced where possible?	3	2	1	0
1.8	Is clothing repaired where possible?	3	2	1	0
1.9	Is use made of clothing exchanges?	3	2	1	0
1.10	Is clothing passed on or traded with friends & family?	3	2	1	0

Cleaning					
No	Item	Always	Sometimes	Rarely	Never
2.1	Are environmentally safe cleaning products bought?	3	2	1	0
2.2	Do you produce your own cleaning products?	3	2	1	0
2.3	Do you make your own soap?	3	2	1	0
2.4	Do you recycle toothbrushes to use as cleaners?				
2.5	Do you buy well-made brooms, mops and other cleaning tools and avoid disposable cleaning tools?	3	2	1	0
2.6	Do you use cleaning cloths recycled from old clothing?	3	2	1	0
2.7	Do you avoid aerosols and substitute pump packs where required?	3	2	1	0
2.8		3	2	1	0

Household Products					
No	Item	Always	Sometimes	Rarely	Never
3.1	Do you take mesh bags to buy fruit and veg rather than using provided plastic ones?	3	2	1	0
3.2	Do you recycle paper & buy only recycled paper products?	3	2	1	0
3.3	Do you buy re-usable products where possible?	3	2	1	0
3.4	Do you buy easily recyclable products where reusable are not available?	3	2	1	0
3.5	Do you use reusable shopping bags?	3	2	1	0
3.6	Do you buy ecofriendly toilet paper?	3	2	1	0
3.7	Do you use cloth “wee wipes”?	3	2	1	0
3.8	Do you use cloth handkerchiefs instead of tissues?	3	2	1	0
3.9	Do you use cloth nappies?	3	2	1	0
3.10	Do you buy locally produced toothpaste	3	2	1	0
3.11	Do you make your own toothpaste?	3	2	1	0
3.12	Do you buy from locally based retailers rather than chains where possible?	3	2	1	0

Appliances					
No	Item	Always	Sometimes	Rarely	Never
4.1	Do you repair rather than replace appliances?	3	2	1	0
4.2	Do you buy second hand replacement appliances when the original cannot be repaired?	3	2	1	0
4.3	Do you take energy consumption into account when buying new appliances?	3	2	1	0
4.4	Do you take water consumption into account when buying new appliances? (Where applicable)	3	2	1	0
4.5	Do you turn off extra fridges when they are not needed?	3	2	1	0
4.6	Do you use basic kitchen tools (eg knife, grater) than buying powered kitchen appliances?	3	2	1	0
4.7	Do you ensure appliances are the right size for our needs?	3	2	1	0
4.8	Do you research the environmental credentials of major appliances before purchase?	3	2	1	0

Home office					
No	Item	Always	Sometimes	Rarely	Never
5.1	Do use recycled copier paper?	3	2	1	0
5.2	Do you re-use envelopes?	3	2	1	0
5.3	Do you print double sided where possible?	3	2	1	0
5.4	Do you store documents electronically where possible?	3	2	1	0
5.5	Do use a notebook rather than desktop computer?	3	2	1	0
5.6	Do you use refilled toner cartridges where possible?	3	2	1	0

Building/renovating					
No	Item	Always	Sometimes	rarely	Never
6.1	Do you use second hand/reclaimed building materials when renovating?	3	2	1	0
6.2	Do you use second hand/reclaimed building materials home repairs or improvements?	3	2	1	0
6.3	Do you use contractors committed to recycling and using environmentally products when renovating?	3	2	1	0
6.4	Do you use low VOC paints and coatings?	3	2	1	0
6.5	Do you use natural fibre carpets, bedding, and upholstery where possible?	3	2	1	0
6.6	Do you buy plantation softwoods or recycled timber for wood projects?	3	2	1	0

Entertainment					
No	Item	Always	Sometimes	rarely	Never
7.1	Do you buy books second hand?	3	2	1	0
7.2	Do you use the library regularly?	3	2	1	0
7.3	Do you buy second hand sport equipment?	3	2	1	0
7.4	Do you buy locally produced toys where possible?	3	2	1	0
7.5	Do you avoid plastic toys where possible?	3	2	1	0
7.6	Do you obtain craft supplies from recycled or second hand materials?				

Total possible points (P) =

Total points achieved (A) =

Score % = A / P x 100

Date audit was completed:

Appendix 7 Sustainable Transport Audit Form

Date:					
Reducing transport requirements					
No	Item	Always	Sometimes	Rarely	Never
1.1	Live within walking distance to shops	3	2	1	0
1.2	Telecommute where possible	3	2	1	0
1.3	Mail/internet order rather than drive to shops	3	2	1	0
1.4	Get home delivery rather than drive to shops	3	2	1	0
1.5	Have at least one “car free” day per week	3	2	1	0

Public transport					
No	Item	Always	Sometimes	Rarely	Never
2.1	We use public transport to get to the shops where possible	3	2	1	0
2.2	We use public transport to get work where possible	3	2	1	0
2.3	We use public transport when we go to see friends &family where possible	3	2	1	0
2.4	We use public transport to get on other outings where possible	3	2	1	0
2.5	We trip plan and use public transport as part of our plan where possible	3	2	1	0

Walking					
No	Item	Always	Sometimes	rarely	Never
3.1	We walk to the shops where possible	3	2	1	0
3.2	We walk to work where possible	3	2	1	0
3.3	We walk to see friends &family where possible	3	2	1	0
3.4	We walk on other outings where possible	3	2	1	0

Bike					
No	Item	Always	Sometimes	Rarely	Never
4.1	We ride bikes to the shops where possible	3	2	1	0
4.2	We ride bikes to work where possible	3	2	1	0
4.3	We ride bikes to see friends &family where possible	3	2	1	0
4.4	We ride bikes on other outings where possible	3	2	1	0

Car - Purchase					
No	Item	Always	Sometimes	Rarely	Never
5.1	We keep our car for a number of years rather than buying a new one each year	3	2	1	0
5.2	We buy second hand rather than new cars	3	2	1	0
5.3	We buy only fuel efficient cars ie have a fuel consumption of <5 litres/ 100km for highway driving and <6.5 litres/ 100km for city driving	3	2	1	0
5.4	We rent or borrow a ute when we need one rather than owning a larger car	3	2	1	0

5.5	We buy vehicles which can use low emission fuels such as LPG	3	2	1	0

Car - Maintenance					
		Always	Sometimes	Rarely	Never
5.6	Our car is regularly maintained in accordance with the manufacturer's instructions	3	2	1	0
5.7	We ensure that the tyre air pressure is maintained to manufacturers specifications	3	2	1	0
5.8	We ensure that the lowest viscosity oil is used in the engine.	3	2	1	0
5.9	We regularly check and replace clogged air filters	3	2	1	0
5.10	We regularly check and replace worn spark plugs	3	2	1	0
5.11	We maintain the cooling system by checking the engine temperature regularly	3	2	1	0
5.12	We unsure the fuel filler cap is in good condition and seals well to prevent leakage	3	2	1	0
5.13	We have the vehicles air condition system checked yearly	3	2	1	0
5.14	We have the fuel filter checked and replaced at least every 2 years or 40,000km	3	2	1	0
5.15	We wash the car on the lawn using eco friendly cleaners	3	2	1	0

Car - Use					
5.16	We record our mileage and fuel so we can track our fuel consumption over time	3	2	1	0
5.17	Where possible, we use our car to transport more than one person at a time	3	2	1	0
5.18	We plan our trips so that we can use the car for a milk run rather than using a separate trip for each activity.	3	2	1	0
5.19	We car pool/car share where possible	3	2	1	0
5.20	We remove any unnecessary materials/weight from the car	3	2	1	0
5.21	We remove roof racks, external steps and brush guards when they are not required, to improve the cars aerodynamics	3	2	1	0
5.22	We practice sustainable driving technique eg accelerate smoothly, don't over brake etc.s	3	2	1	0

Car - Fuel					
5.22	We use environmentally friendly fuel (petrol containing ethanol; biodiesel etc.)	3	2	1	0
5.23	When filling up we only run until the fuel nozzle shuts off	3	2	1	0

Car - Driving					
No		Always	Sometimes	Rarely	Never
5.24	We drive steadily, at or below the speed limit (operating speed)	3	2	1	0
5.25	We use the cruise control where possible	3	2	1	0
5.26	We accelerate quickly and smoothly to operating speed	3	2	1	0
5.27	We avoid idling and turn the engine off where idling time is likely to exceed one minute.	3	2	1	0
5.28	We go slower up hills and faster down hills (within the speed limit)	3	2	1	0
5.29	We use the air conditioner rather than opening the windows when travelling at or above 80 kph	3	2	1	0
5.30	We keep the top up when driving a convertible	3	2	1	0
5.31	We park close to the carpark exit to minimise stop-and-go driving	3	2	1	0

Air Travel					
No		Always	Sometimes	rarely	Never
6.1	We use air travel only when no other options are available	3	2	1	0
6.2	We holiday locally	3	2	1	0
6.3	We fly less often and stay longer	3	2	1	0
6.4	We teleconference rather than fly to conferences or meetings where possible	3	2	1	0
6.5	Where flying is unavoidable, we offset our flights with a reputable/authorised carbon offset provider	3	2	1	0

Total possible points (P) =

Total points achieved (A) =

Score % = A / P x 100

Date audit was completed:

Appendix 8 Sustainable Community Audit Form

Ourselves (Personal)					
No	Item	Always	Sometimes	Rarely	Never
1.1	We patronise local retailers where possible	3	2	1	0
1.2	We are members of a local CSA (Community Supported Agriculture) initiative	3	2	1	0
1.3	We buy our food from local growers/farmers markets where possible.	3	2	1	0
1.4	We regularly educate ourselves on sustainability and/or environmental issues important to our community	3	2	1	0
1.5	We contribute to sustainability initiatives through our local schools (Stephanie Alexander program etc.)	3	2	1	0

Our Street or building (The Neighbours)					
No	Item	Always	Sometimes	Rarely	Never
2.1	We share our tools and other resources with our neighbours	3	2	1	0
2.2	We attend a sustainability group with our neighbours (eg Sustainability Street, Transition Street etc)	3	2	1	0
2.3	We support our neighbours with food, time or other assistance in times of need	3	2	1	0
2.4	We are on speaking terms with most of the families in our area of the street or building where we live	3	2	1	0
2.5	We get together with our neighbours for sustainability initiatives (eg group solar panel buying, street verge gardens, group composting etc.)	3	2	1	0
2.6	We organise/attend street parties	3	2	1	0
2.7	We welcome new neighbours to our street	3	2	1	0

Our Neighbourhood (Community Groups etc)					
No	Item	Always	Sometimes	Rarely	Never
3.1	We are a member of our local permaculture group	3	2	1	0
3.2	We are a member of our local seed savers group	3	2	1	0
3.3	We are members of our local church	3	2	1	0
3.4	Our children attend local youth groups (eg. scouts/ guides etc.)	3	2	1	0
3.5	We are members of our local sustainability group (eg transition, 350.org, food fairness alliance etc.	3	2	1	0
3.6	We attend a local community garden or community orchard	3	2	1	0
3.7	We are part of an organic food buying coop	3	2	1	0
3.8	We receive and/or contribute to a neighbourhood newsletter	3	2	1	0
3.9	We are part of neighbourhood watch program	3	2	1	0
3.10	We are part of a neighbourhood club (eg sports, investment, gardening etc.)	3	2	1	0

3.11	We contribute to a neighbourhood skill share program	3	2	1	0
3.12	We use our local library	3	2	1	0
3.13	We attend meetings or presentations at our local community cottage	3	2	1	0
3.14	We contribute to and/or draw from a local tool library	3	2	1	0

The Government (The world outside our neighbourhood)					
No	Item	Always	Sometimes	Rarely	Never
4.1	We attend local government meetings when sustainability issues are discussed	3	2	1	0
4.2	We are aware of our local councils' sustainability action plan	3	2	1	0
4.3	We contribute to our local council's sustainability initiatives	3	2	1	0
4.4	We attend state government meetings when sustainability issues are discussed	3	2	1	0
4.5	We attend federal government meetings when sustainability issues are discussed	3	2	1	0

Total possible points (P) =

Total points achieved (A) =

Score % = A / P x 100

Date audit was completed:

Appendix 9 – Household Sustainable Clothing Audit form

Sourcing					
No	Item	Always	Sometimes	Rarely	Never
1.1	We buy clothes through opportunity shops (Sallies, Vinnies etc.)	3	2	1	0
1.2	We 'think before we buy' new clothes	3	2	1	0
1.3	We share clothes (friends, family or using apps) rather than buying new.	3	2	1	0
1.4	We wear what we have rather than buying new	3	2	1	0
1,5	We avoid buying clothing on-line	3	2	1	0
1.6	We buy ethically / sustainable clothing brands when buying new clothes	3	2	1	0
1.7	We buy from small business/ artisanal clothing/ local manufacturers where possible	3	2	1	0
1.8	We sew/ make our own clothes	3	2	1	0
1.9	We consider the upcycling/recycling potential of a garment in the decision to buy	3	2	1	0
1.10	We buy clothes that are well made and will last	3	2	1	0
1.11	We rent clothes we will not wear for a long time (eg baby clothes, pregnancy clothes, party clothes)	3	2	1	0
1.12	We apply the '30 wears' test before buying a new garment (Ask, will I wear this garment 30 times?)	3	2	1	0
1.13	We refuse excess packaging and bring a reusable shopping bag when buying clothes	3	2	1	0
1.14	I have a capsule wardrobe	3	2	1	0

Fabrics					
No	Item	Always	Sometimes	Rarely	Never
2.1	We check the label to determine the fabric it is made from before buying new clothes	3	2	1	0
2.2	We consider the cleaning requirements for the fabric of new clothing before we buy it	3	2	1	0
2.3	We do not buy fur (natural or synthetic)	3	2	1	0
2.4	We buy clothing made from organic cotton	3	2	1	0
2.5	We buy clothing made from fabric composed of recycled material	3	2	1	0
	We know how to care for -				

2.6	Synthetics fabrics eg Polyester, nylon, acrylic.	3	2	1	0
2.7	Man-made fabrics eg rayon, viscose,	3	2	1	0
2.8	Natural Fabrics eg cotton, wool, linen, hemp, silk, leather	3	2	1	0
2.9	Blended fabrics eg polycotton	3	2	1	0

cleaning					
No	Item	Always	Sometimes	Rarely	Never
3.1	We only wash clothing when it is necessary	3	2	1	0
3.2	We make use of spot cleaning to freshen up clothes rather than full wash	3	2	1	0
3.3	We use steaming to freshen up clothes rather than a full wash	3	2	1	0
3.4	We use brushing to freshen up tightly woven fabrics like tweed or wool	3	2	1	0
3.5	We use freezing to freshen our jeans and other denim-wear rather than a full wash	3	2	1	0
3.6	We use hand washing to extend the life of delicate fabrics	3	2	1	0
3.7	We treat stains individually rather than in a full wash	3	2	1	0
3.8	We use commonly available materials such as salt, bicarb, vinegar and methylated spirits rather than harsh chemicals to treat stains	3	2	1	0
3.9	We line dry clothes rather than tumble dry	3	2	1	0
3.10	We wash in cold water	3	2	1	0
3.11	Was wash machine full loads of clothes	3	2	1	0

Mending					
No	Item	Always	sometimes	rarely	Never
4.1	We mend rather than discard clothing where possible	3	2	1	0
4.2	We have the tools we require for most mending jobs (needles, thimble, darning mushroom, sewing machine)	3	2	1	0
4.3	We have the consumables for most mending jobs (thread, buttons, patches, zippers, spare fabric)	3	2	1	0
4.4	We have a travel mending kit so we can carry out repairs if we are away from the house	3	2	1	0

	We can use the following techniques for clothes repair -				
4.5	Hand sewing	3	2	1	0
4.6	Machine sewing	3	2	1	0
4.7	Darning	3	2	1	0
4.8	Button replacement	3	2	1	0
4.9	Applique, sew on a patch	3	2	1	0
4.10	Needle felting	3	2	1	0

End of life					
No	Item	Always	Sometimes	rarely	Never
6.1	We send clothing to landfill as a last resort	3	2	1	0
6.2	We upcycle clothing where possible	3	2	1	0
6.3	We use fabric recovered from old clothes in crafts eg quilting	3	2	1	0
6.4	We use fabric recovered from old clothes for cleaning rags	3	2	1	0
6.5	We donate unwanted clothes in good condition to opportunity shops	3	2	1	0
6.6	We pass on unwanted clothes to friends or family	3	2	1	0
6.7	We unravel clothes to make new yarn/thread where this is possible	3	2	1	0

Total possible points (P) =

Total points achieved (A) =

Score % = A / P x 100

Date audit was completed:

Appendix 10 SWOT Form

	HELPFUL	HARMFUL
INTERNAL	Strengths	Weaknesses
EXTERNAL	Opportunities	Threats

Appendix 11 Action Plan Form

What	Who	When