**The Power of Two** - **You do have choices!**

**50 Simple Steps to Sustainability**. Prepared 2008. Updated April 2016

What one retired couple has done in the last 12 years, when they moved to Newcastle, while continuing to lead active and engaged lives.

Firstly, get a compass: Good orientation for your house is very important. Then read Michael Mobbs ‘Sustainable House’, and his other publications. You can also Google his projects and books.

They have updated and modernised services in two 90 year old houses since arriving in Newcastle in 2004; while retaining the original Charm, and many of the original features of the houses. They also did a few old houses in Sydney, before they retired.

The first, a 90 year old Weatherboard house with Iron Roof, was in Islington. They lived there from 2004 to 2010. And then a similar aged and constructed house in Mayfield, living there from 2010 to current.

1. Sold the second car.

2. Use outside clothes line for all washing. – rarely use electric dryer.

3. Installed energy efficient light bulbs. Mostly individual light switches, so we can control how many go on.

4. Turn off unneeded lights and appliances.

5. Turn off the 2nd Fridge – only now use it about 2 or 3 weeks a year in total.

6. Replaced very old and small Electric Off Peak Hot Water system with instant Gas system (no storage tank). Can dial up or dial down temperature, so no need to add cold water at shower or basin.

7. Signed up for 100% Green Power – about an extra $1.50 pw or so – Electricity Greenhouse gas emissions then became NIL; & Consumption halved in Islington house.

8. Then installed 1.5 kW PV solar array, further offsetting net Electricity Usage.

9. Installed water efficient shower heads; and sink and basin spouts.

10. When adding to House, installed insulation on new walls, under new floors, and under the whole roof.

11. Installed v efficient skylight in dark back hall. Minimized need for electric light in daylight hours.

12. Designed addition to pick up North sun, and shading from West sun; and to protect living areas from the cold South Winter winds. Maintained high ceilings and installed ceiling fans in most rooms.

13. All new windows can be locked semi open, and most existing windows modified to be locked semi open; to allow in summer breezes, so no air conditioner was needed or installed.

14. Breeze Curtain and doorway can divide the house, so only one main room needs heating in winter. No heating in bedrooms, or other areas – use extra clothes and blankets.

15. Reduced solid concrete driveway to car tracks, to enable much green planting to moderate weather & temperature.

16. Removed most grass / lawn – including nature strip; and replanted with trees, shrubs & plants, creating many shaded areas.

17. Undersoil drip watering hoses, and plenty of mulching. Started growing some veggies.

18. Save laundry water for toilet flushing and some on the garden.

19. Save water at the sink & basin and shower, while waiting for hot to come through; usually about 2 L each time - varies because of distance from H W tank. Use on garden.

20. Food and other suitable organic scraps in 3 worm farms & compost bin – eventually use on garden.

21. Water consumption halved.

22. Careful and thorough recyclers. Garbage to landfill more than halved.

23. Joined some Conservation and Climate groups, and signed up for some email lists to be kept well informed on Environmental & Climate issues.

24. More Public Transport. Regular return trips to Sydney – 20 to 30 times a year – now mostly on the train;

25. Walk - don’t drive everywhere locally – lots of walking to local shops etc – Kms in the car much reduced. **WARNING:** Sometimes not good for car battery.

In 2010 they sold in Islington, and moved to 90 year old house in Mayfield.

This house was set up as three flats in the 1970’s; so many services to remove, doorways to reinstate, and many internal walls to move; to turn it back to one family home.

AND, separately constructed in the back yard a free standing, fully self-contained Studio for letting. It has its own entrance on separate back street, overlooking a park.

There were no trees or shrubs, or anything else in the grounds – just buffalo lawns from front grass verge to back fence. The house was very exposed to the hot Western Sun, and the hot Summer sun on the North and East. It was also poorly orientated to receive Eastern and Northern Winter sun; so was very hot in summer and very cold in winter.

Most of the same above 25 items repeated, PLUS:

26. Many trees and shrubs planted – probably 30 trees and 20 shrubs. Much Summer shading.

27. Veggie patch and some fruit trees.

28. Eastern and Northern windows installed.

29. The worst and hottest room in the house was on the back North East corner. Stripped all cladding off N & E walls, installed fine insect wire, added bistro blinds. Now, a very good winter sunroom and very pleasant summer indoor verandah.

30. Pergolas installed for Summer shade and Winter sun, with deciduous grape vines and Wisteria planted.

31. Painted faded red corrugated iron roof to a new gloss WHITE Surf Mist; and replaced some sheets of iron with Colourbond, of the same colour. Painting it WHITE reduces surface temperature of the roof by many degrees C; leading to savings, due to reduced annual energy usage.

32. Replaced old leaky roof guttering to maximize rain collection.

33. Installed 5,000 L rainwater tank. Used for Toilet flushing, Washing Machine, and on Gardens. A second 2,000 L tank will be installed in 2016.

34. All energy efficient lights installed; with individual switching, so we can control how many go on.

35. 2.5 kW PV solar array installed, (12 Panels); so we now sell to the Electricity grid more power than we buy back.

36. Now looking very closely at cost and capacity of new Compact Battery Storage technology – about the size of a fridge for a normal house; (Google search Tesla and others). Maybe in 2016 we can install sufficient battery capacity, at a very affordable price, to allow good electricity storage from PV roof panels during the day, to give us enough reserves for our night-time electricity needs; PLUS sufficient to charge up a new generation electric car. Costs are a barrier now, but should come down dramatically with new technology, and mass production. Then, maybe go off the electricity grid completely.

37. Installed a vacuum evacuated - 30 tube, solar hot water service; with an electric booster in the tank. Booster switch is turned off, and only used 4 or 5 times a year, when we get a string of dull days or a housefull of people – so we get free hot water for more than 350 days of the year.

38.Inatalled Floor Vent under the fridge to draw up cool air from under the house. The Fridge is the hottest, and most energy draining appliance in your house. Plus installed two floor vents in the Pantry.

39. Full Carpets in 2 bedrooms and study to keep out underfloor draughts. Sanded and Polished Floorboards in the rest of the house, much of which is original 90 year old boards; fully sealed to keep out underfloor draughts.

40. Two Whirly birds in roof.

41. Attic Stairs to take advantage of Roof cavity to store non-perishable items.

42. Opening of Attic Stairs can sometimes assist in rapid cooling of a hot house, especially when the Southerly comes in.

43. Passive (non-powered) air ducts in ceiling from outside Southern wall; to allow cool southerly air to bypass bathroom - on the south of the house, and enter into Central living rooms. Vents can be closed off with a simple “Paddle”.

44. Changed computer printer for ability to print double sided.

45. All personal and confidential paperwork, when disposed of, previously shredded and into yellow bin; now boxed, and used as garden mulch.

46. Replaced 15 to 20 year old fridge. They are now much more energy efficient; and new fridge does not run nearly as often.

47. **We** **have switched energy providers**, to move away from the big, well known ones who are also the biggest polluters in Australia: 1 = AGL Energy; 2 = Energy Australia; 3 = GDF SUEZ Australian Energy; 5 = Origin Energy; Organisations like Get Up can recommend low polluting providers, like Power Shop. There are others.

48. **We have switched Banks**, to move away from all the Big Four banks, and their subsidiaries like St George etc, who are involved - directly or indirectly, in very large loans to the Coal Miners and other black Carbon Industries. You can find banks and Building Societies who are not involved in such loans.

49. **We have divested,** by selling all, or part of our shares, in the big four banks, and other companies that invest in polluting industries such as Miners of coal, oil and gas, etc.

50. We intend to install leaky pipes in our front Verge for roof water runoff, – deeply embedded to irrigate; so all stormwater doesn’t run wastefully down the street gutter. All passive. No pumps involved. Read Michael Mobbs for more info about this.