

Woking Local Action 21

Community handbook

A compilation of all LA21's fact and tip sheets
published online

Updated March 2009



Woking LA21 (Woking Action for the 21st Century) has been the force behind many of the successful projects you will be familiar with such as Gardening for Life, Woking Green Pages and the Greener Homes Guide, and has run many public meetings and events to help Woking residents live more sustainably.

Paper copies of this can be obtained from Tim Lowe, tel. 01483 743413
Also available online at: <http://sites.google.com/site/wokingla21/information-centre>

Index

Article	Page
Why bother going green? New Scientist article	3
What are other communities doing?	10
Motivating communities to take action	12
Book list - selected by group members for a wide readership	13
Computers and sustainability	17
Tips for small businesses	19
Making an insulated storage platform in the loft	21
Food top tips	26
Water saving top tips	27
Transport top tips	28
Gardens top tips	29
Energy saving top tips	31
Plants tolerant of dry conditions in Woking	33
Rainwater and grey water harvesting	39
How to conserve water in an organic garden	43
Watering vegetables	44
5 quick actions to save CO ₂ and save money	46

WHY BOTHER GOING GREEN?

17 November 2007

(From New Scientist Print Edition.)

by Fred Pearce

PLENTY of people say it, and the rest of us probably think it as we browse the energy-efficient light bulbs, unplug our TV or leave the car and walk to the shops instead. What's the point in cutting our personal carbon footprint when more than a billion Chinese and most of the rest of the planet are jacking up their emissions as if there were no tomorrow?

It's a fair question. After all, the atmosphere doesn't distinguish between a tonne of Chinese carbon dioxide and a tonne emitted by the west. As the rest of the world carries on regardless, are the paltry savings from recycling your beer cans or insulating your roof anything more than a drop in the ocean? If you just stopped trying, would the planet notice? In this special investigation, we crunch the numbers to find out whether going green is worth all the bother.

First though, the big picture. Every year human activities add about 30 billion tonnes of CO₂ to the atmosphere, largely through burning fossil fuels but also through destroying natural carbon sinks, such as forests. Half of this CO₂ is absorbed by the remaining forests, soils and oceans, but the rest accumulates in the atmosphere.

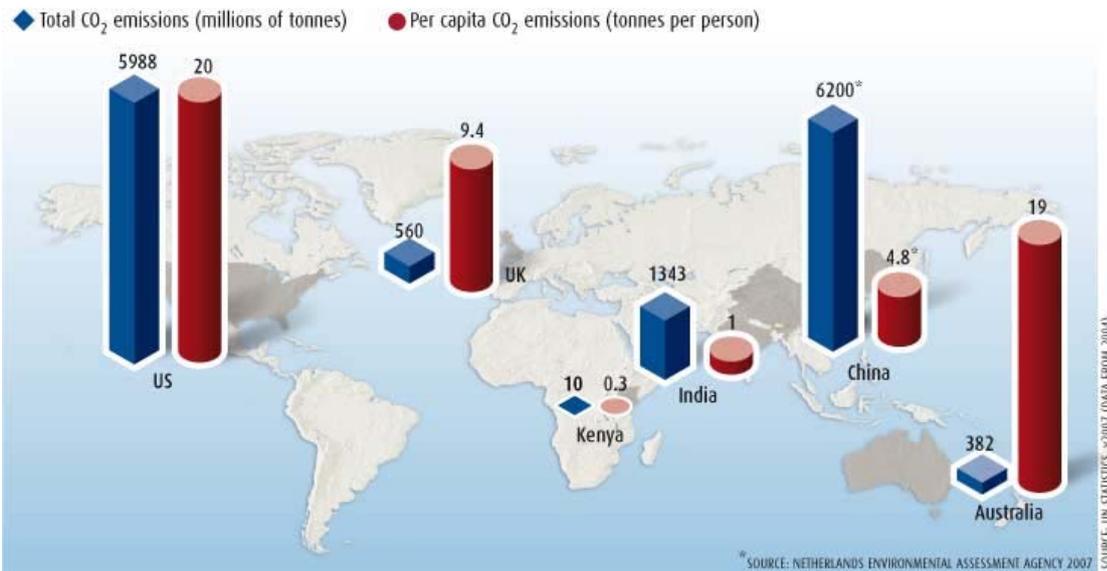
Since pre-industrial times, the concentration of CO₂ in the air has risen by a little over one-third, from 270 parts per million to 380 ppm - or from 2.2 trillion tonnes to almost 3 trillion. Most scientists think it would be unsafe to let CO₂ concentrations rise beyond 450 ppm - an additional 500 billion tonnes. That level would be reached by around 2040 if emissions continue at today's rates. But as developing countries industrialise, global emissions are unlikely to stay the same. Last year, China hiked its emissions by 8 per cent, or around 450 million tonnes - an increase almost as great as the UK's entire annual carbon footprint. Emissions of other large developing countries like India, Brazil and Mexico are increasing at a similar pace.

Against this remorseless rise of CO₂ from the developing world, can the individual actions of a few concerned westerners really make any difference? To answer this we first need to work out what our personal emissions are. That means including items omitted from the UN statistics - particularly international air travel - and the carbon footprint of goods made in foreign countries but imported for our use. When these are taken into account, the CO₂ footprint of the average western European amounts to some 12 tonnes. For Americans and Australians, the figure is almost twice that, mainly because they drive more, in cars with bigger engines.

In general, just under half of the emissions for which each of us is responsible come from things over which we have personal control, such as how much we drive and fly and how we heat and power our homes. Of the rest, about 25 per cent of the total arises indirectly through powering our workplaces, about 10 per cent comes from maintaining public infrastructure and government, and about 20 per cent is emitted during the production of the things we buy, including food. We can still influence some of these indirect emissions through what we buy - or we could if we had access to the right kind of information - but by and large it makes sense to concentrate on the emissions we can control directly. So how much can we realistically save and, more to the point, will it be worth it in terms of global emissions? Chris Goodall, author of *How to Live a Low Carbon Life*, believes so. He reckons it is possible to cut individual emissions by around 75 per cent without seriously altering our lifestyles. For a western European, that means slashing personal emissions from about 12 tonnes of CO₂ to just 3 tonnes.

WHO'S TO BLAME

It is profligate individuals who need to cut their emissions, irrespective of their country's overall carbon footprint



Cutting down

So how do we do it? Like charity, reducing your emissions begins at home (see Diagram). Of course, individual emissions will vary a fair bit, depending on the size of your house, how many people live in it, and how carbon-conscious you are. But a typical western home, with a total power throughput of about 20,000 kilowatt-hours per year, might generate emissions of around 5 tonnes. For each individual in the typical household this would average 2.3 tonnes, of which 1.2 tonnes is from heating the house, 0.4 tonnes from heating water and cooking, and 0.7 tonnes from general use of electricity for lighting and appliances.

Many people are surprised at the importance of heating to most homes' carbon footprint, and clearly there are big hits to be made here. You can cut heating-related emissions by 40 per cent or more by replacing an inefficient old-style boiler with a condensing model, by improving house insulation, and by turning down the thermostat by 2 °C in winter. But the biggest gain here can be from installing a wood-burning stove in your living room. These are attractive features and heat the house using a renewable fuel. Such a stove could cut household emissions by 2 tonnes of CO₂ per year or 0.9 tonnes per inhabitant, on average.

You can halve the emissions for heating water and cooking by cutting out baths, taking short showers (no power-showers please - they are as bad as baths) and by using a microwave or pressure cooker. You can also halve electricity bills. The big four energy guzzlers in most households are refrigerators, tumble dryers, computers and lighting. Of these, the tumble dryer is the worst offender. Using it for 1 hour less per week could cut a household's annual emissions by 0.07 tonnes, and cutting it out entirely will double that saving. A computer left switched on through waking hours but turned off at night will be responsible for up to 0.4 tonnes of CO₂ in a year. Switching to a laptop, which is more energy-efficient, could save you 0.2 tonnes.

Switching to energy-efficient light bulbs is another smart move, saving 0.25 tonnes for a household with 25 bulbs. A digital TV set-top box on standby uses enough energy to emit 0.06 tonnes of CO₂ in a year (roughly the total emissions of an average citizen of Burundi), so you can save most of that by unplugging every time you switch off the TV, and maybe half if you switch off only at night. And think about all the other kit you leave on standby. Get rigorous about unplugging every time and a typical household can save another 0.1 tonnes. It is small compared to some other savings, but significant nonetheless.

A final option is to buy into green electricity tariffs. Read the small print, though, because some companies are simply asking you to subsidise what they are already obliged to do by law. In the best schemes, however, you will be helping to ensure that more wind turbines and other green sources of

electricity are built. The annual carbon savings from these greener energy sources could be as much as 0.8 tonnes of CO₂ per person.

In the UK, road transport accounts for nearly one-sixth of a typical citizen's emissions, or about 1.8 tonnes per head. In the US, at 5.6 tonnes per head, it makes up more than one-quarter of a rather larger total. The average car there, carrying an average of 1.2 people, emits 556 grams of CO₂ for every person-kilometre. A typical British car, also carrying 1.2 people, emits less than half this, at 180 grams of CO₂ for every person-kilometre travelled. There are numerous ways of getting these figures down. The average American driver could save a whopping 2.5 tonnes per year by changing to a gasoline-electric hybrid car. In the UK the gains would be lower, but still significant, at 0.8 tonnes. Buying a smaller, more efficient car running on diesel or liquified petroleum gas could cut emissions by 0.4 tonnes per car per year. Turning off car air conditioning can save 0.1 tonnes, while driving moderately and at the most fuel-efficient speeds will enable some drivers to cut emissions by 0.2 tonnes a year.

Another idea is to delay buying a new car. A typical car takes between 3 and 5 tonnes of CO₂ to manufacture. That is twice what it typically emits in a year. So even if the new model would be more fuel-efficient, it is probably better to put off buying it.

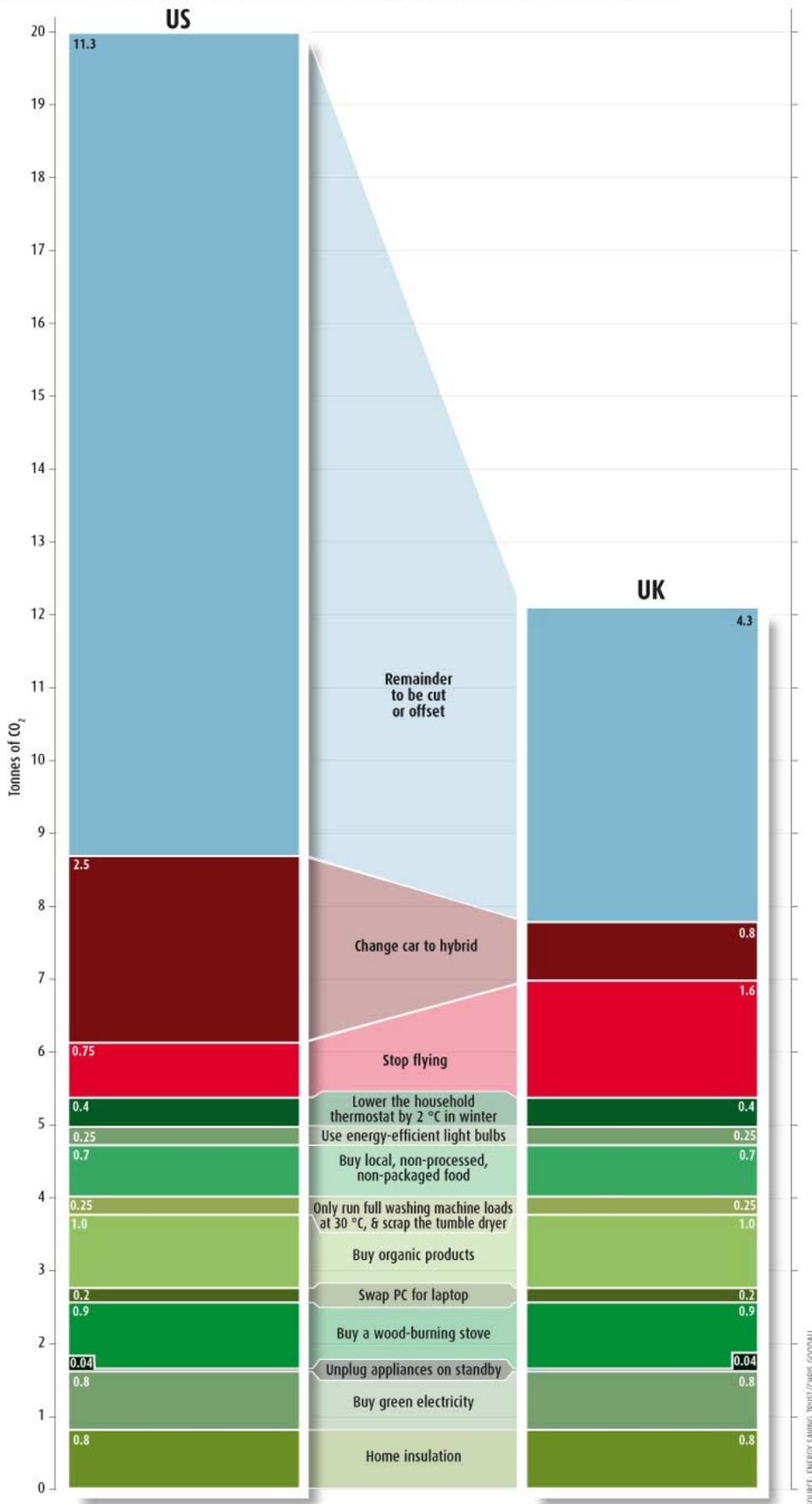
The bottom line, of course, is that we should all drive less. Getting rid of the car would be best, but is rarely practical. Sadly, cutting out short journeys to the shops does little to cut emissions. For most people it will be less than 0.1 tonnes, though cutting out a daily short journey might double that saving. Taking public transport to work makes a much more useful contribution. With every 1500 kilometres of commuting, you save 0.5 tonnes of CO₂. Public transport is generally a greener option, but there are exceptions.

Trains, for example, are quite variable. In the UK, the average emissions are 40 grams per passenger-kilometre (g/p-km) but, depending on the engine, the source of power and the journey, the figure varies from more than 70 g/p-km down to 27 g/p-km. So going by train is usually better, but a small, fuel-efficient car with four passengers may be more carbon-efficient than taking one of the less efficient trains. Be warned, too, that taking a sleeper train from, say, London to Edinburgh or Paris to Venice may not always be greener than flying. Sleeper cars carry fewer passengers than regular carriages, and that could push the carbon footprint of the typical sleeper passenger above that of someone flying the same route at a typical CO₂ emission rate for short-haul flights of 150 g/p-km.

For longer journeys, coaches such as Greyhound in the US or National Express in the UK could be just the ticket. In the UK, this would save about 140 grams per kilometre for each passenger who would otherwise have made the journey by car - the difference between the 180 g/p-km from driving a typically laden car and the 40 g/p-km on a typical coach ride - while in the US you could save 516 g/p-km. Over a 200-km drive that amounts to nearly 30 kg per trip in the UK and over 100 kg in the US.

HOW MUCH YOU CAN SAVE

Here are the simplest changes to cut your carbon footprint. Transport is the key difference between the US and UK



SOURCE: ENERGY SAVING TRUST/CHRIS GOODALL

Truth about flying

If you fly more than once a year, cutting back on those journeys will be the best single thing you could do to cut your emissions. Cut out that long return flight from Europe to Miami, or the US to Rome, and you have saved 2.5 tonnes of CO₂ - which is probably more than you emit from your car all year. The simple truth is that frequent fliers have carbon footprints tens of times bigger than the rest of us.

Thanks to abundant cheap flights, Britons are the world's worst offenders on this score, with average emissions equivalent to 1.6 tonnes of CO₂ per person - more than double the rate for the average American. Cheap flights are booming in China and India too, but the annual carbon footprint for travel for average citizens in those two countries is still only around one-tenth of those in Europe and North America.

Of the things we buy, food makes up about another 2 tonnes of CO₂ per head. Concerned consumers often make an effort to cut their carbon footprint from food by buying locally, which reduces their "food miles". This makes some sense. A quarter of the trucks on our roads are carrying food and raw materials for the food industry. Yet many of the biggest energy inputs (and hence carbon outputs) of our food come from growing and processing food, rather than transporting it. Manufacturing fertiliser, heating greenhouses and food processing are major energy guzzlers, so buying locally is by no means automatically the greenest option. Trucking in tomatoes from sunny Spain often uses less energy than heating a greenhouse in the UK, for instance.

As a rule of thumb, meat and dairy products have high carbon footprints because of the energy needed to grow the feed for the animals. Going vegetarian could halve your carbon footprint from food to 1 tonne per year, but only if you cut back on dairy products too. If you can't go without meat and milk, you could instead halve your food footprint by going organic, largely because of the saving in fertiliser. A diet made up exclusively of locally grown, non-processed and non-packaged food can strip another 0.7 tonnes from your food-based carbon footprint, bringing an impressive total saving of 1.7 tonnes per person.

Drinks packaging matters too. Smelting aluminium is one of the most energy-intensive industries in the world, and making one beer or soda can emits 170 grams of CO₂. That's the same as running your TV for 3 hours. The average person gets through 120 cans in a year, which adds up to 0.02 tonnes of CO₂. So always recycle your cans and, for preference, buy draught beer or bottles instead. Glass's carbon footprint is rather less than aluminium's.

By making these small changes, the average western European can cut nearly 8 tonnes from their personal carbon footprint, taking their personal emissions down to around 2 tonnes. Multiply that by enough people and the impact could be significant. Take the UK, for example. If just one-third of the UK population did the same it would save 160 million tonnes of CO₂, or more than a quarter of the nation's emissions.

Yet again, given the scale of the increases in China, India and South America, is all this effort really worth it? The answer is an unequivocal yes. Emissions reductions are a bit like taxes: you may not like them, and your individual contribution may seem too measly to matter, but multiply that by several million and you can start to move mountains.

"Your contribution might not seem to matter, but multiply that by millions and you can move mountains" Scaled up to global level, these cuts become highly significant. If 100 million people in richer nations cut their CO₂ emissions by 10 tonnes per year, on average, that would save a billion tonnes of CO₂ emissions a year, or around 5 per cent of the current global total. That won't solve the problem on its own, but it would create space for China and India to grow their economies and their carbon emissions for another year. Then we would need to add another 100 million people for the next year. And so on and so on, until new low-carbon technologies become cheap enough for developing countries like China and India to adopt them without undermining their economic development.

The global community would prefer not to allow the developing world to continue increasing their emissions indefinitely. Next month, diplomats and politicians will gather in Bali, Indonesia, to discuss what to do when the Kyoto protocol expires in 2012. Many will demand limits on the growing emissions of developing countries, including China and Indonesia, which was recently revealed to have the

world's third-highest emissions - when the carbon sinks it has lost to the logging of rainforests and the draining of tropical peat swamps is taken into account.

Negotiating limits for China will not be easy. It may be about even with the US as the top emitter of CO₂, but divide its output by its total population and the figures look rather different. The typical Chinese citizen is responsible for less than one-quarter of the emissions of the typical American: 4.8 tonnes compared to 20 tonnes. Individual Indians and Africans have emissions averaging 1 tonne or less (see Diagram).

With this in mind, a growing number of politicians are suggesting a fairer approach to cutting carbon, based not on national emissions but on setting tradeable individual carbon quotas ([see "What's your quota?"](#)).

Ultimately, we will need to bring global emissions down low enough to match nature's ability to absorb them, which may be as low as 10 to 20 per cent of today's global emissions. But if a significant number of people change their ways and demand greener products, that will send a big signal to the market, encouraging the supply of green energy, low-carbon products, organic food and so on.

So while it may be tempting to think that only governments can act on the scale necessary to make real change by rationing carbon and setting tax regimes to provide the necessary carrots and sticks for development, there is no escaping the fact that individuals can make a difference by acting just a little bit greener. The big picture seems daunting but it can be done. And we have to start somewhere. So don't give up.

Climate Change - *Want to know more about global warming: the science, impacts and political debate? Visit our continually updated [special report](#).*

From issue 2630 of New Scientist magazine, 17 November 2007, page 34-41

What's your quota?

Much of the carbon dioxide that is warming us today has been in the atmosphere for decades, even centuries. While developed countries only contribute about 50 per cent of emissions today, they are responsible for 80 per cent of the human-made CO₂ that is already there.

Cutting emissions needs to be done in as fair a way as possible, and since Earth has a limited capacity to absorb CO₂, one equitable solution would be to divide the remaining capacity among the world's population. Many see an idea known as "contraction and convergence" as the best way forward. This idea has been kicking around for more than a decade, but is currently most associated with a British NGO called the Global Commons Institute. If implemented, it will mean that global emissions have to contract overall, while converging on a single per-capita figure. Current emissions for a global citizen are about 4 tonnes of CO₂ per year, on average. This figure will ultimately have to drop to below 1 tonne.

The formula was initially dismissed as hopelessly idealistic, but it is now gaining new credibility. Most recently, the German chancellor Angela Merkel backed the idea of national targets based on per-capita emissions. Earlier this year, the UK's then environment secretary, David Miliband, took the debate one step further. He said that within a decade we could all carry a card that recorded our annual carbon-emissions entitlement. Every time we filled up our cars with fuel, booked a flight or made an energy-intensive purchase, our card would be debited.

Sure, the rich would be able to buy their way out of the limits. But they would have to buy the extra carbon credits they needed for that flight to the Maldives or to light their 20 bedroom mansions. The more energy-efficient among us could make money by selling spare credits to them. At the end of the day, there would only be a certain volume of emissions allowed. And the smaller that volume, the better for all of us.

What are other communities doing?

Areas other communities are working on in the area of sustainability and climate change

- Building.
- Energy.
- Healthcare.
- Food.
- The Arts.
- Heart and Soul - the psychology of change.
- Local Government.
- Economics and Livelihoods.
- Transport.
- Youth and Community.
- Education.
- Waste.
- Skills Learning Groups.
- The Future of Medicine and Health.
- Arts and culture - the fun bit!

Individual projects other communities have set up

- Garden share project
- The Local Food Directory
- Seed Saving / Seed Swap
- Planting Fruit and Nut Trees in Communal Spaces
- Access to Allotments
- Reskilling –learning lost skills
- Bulk buying Solar Water Heaters
- Community owned car-share club
- Skill-sharing
- Tool sharing/central store
- Business swap shop - sharing of waste and resources between local businesses.
- Sustainable Living stall – for regular rotation around church/mosque events
- Future story of Woking- what would you like to see Woking become?
- Sustainability Swap –plants, books or tool swap.
- Home Groups – mutually supportive small groups of people wishing to discuss further, identify actions and support each other in executing these actions.
- Fruit scrumping – gathering and using excess fruit from local orchards/fruit trees.
- Eat Local
- Carbon accounting for local businesses based on gas and electricity usage and fuel.
- Home insulation group? – like barn-raising.
- Green bike scheme?
- Toy Reuse Program
- Open house event for houses showing good practice in low impact living
- Garden buddies scheme
- Book recycling scheme – book crossing

Films

- An Inconvenient Truth
- Crude Impact
- The Power of Community - how Cuba survived peak oil
- A Crude Awakening – the Oil Crash
- End of Suburbia
- 11th Hour
- Age of Stupid

We already have copies of some of these films, and are intending to acquire others for lending to community groups. For more information about films that discuss the impacts of climate change and post-fossil fuel life please contact clare.palgrave@hotmail.co.uk

Books

- The Transition Handbook, Rob Hopkins £9.00
- Carbon Detox, George Marshall £5.99
- Shades of Green, Paul Waddington £8.24
- How to live a low carbon life, Chris Goodall £14.99
- Heat, George Monbiot (£6.99)
- The Rough Guide to Ethical living, Duncan Clark £6.49
- Do Good lives have to cost the earth? ed Andrew Simms and Joe Smith £5.99
- Timeless Simplicity: Creative Living in a Consumer Society £6.99
- The Natural House: A Complete Guide to Healthy, Energy Efficient, Environmental Homes £17.50
- Bioregional Solutions: For Living on One Planet, Pooran Desai and Sue Riddlestone £5.60
- The organic garden, Allan Shepherd £13.49
- 21st Century Smallholder, Paul Waddington £6.39

There is a more comprehensive book list on page 13.

Mini courses/activities

- Sock Darning for Beginners
- Edible Container Gardening – plants, design, know-how
- Building a Small Urban Garden in a Day
- A series of hands-on cooking skills workshops
- Bread making – from basics, to enriched doughs, rolled doughs and sourdoughs
- Renewable Energy for All - Solar Hot Water, Ground Source Heat Pumps, Wood Fuel, Microhydro & Small Scale Wind.
- A Hands-On Introduction to YouTube Video Activism – world changing with a digital camera and a laptop – a great way to start engaging the younger generation and the public.
- Seasonal Delights - from the garden to the table
- Group games for discussing and learning about climate change and living lightly available from <http://sites.google.com/site/wokingla21/information-centre>

For further inspiration

Transition towns

<http://transitiontowns.org/Main/HomePage>

<http://transitionculture.org/> (How might our response to peak oil and climate change look more like a party than a protest march? This site explores the emerging transition model in its many manifestations)

Happy Planet Index

<http://www.happyplanetindex.org/> (how does the world fare in the happiness stakes?)

<http://www.itint.co.uk/hpisurvey/> (calculate your own happy planet index)

Footprint Calculator

LA21 supports the use of the WWF calculator as a first stop calculator. Woking Borough Council also supports this decision. This calculator looks at your lifestyle, buying decisions, food consumption etc, as well as energy use. There is now an established Woking group on the calculator. To join the group go to: <http://footprint.wwf.org.uk/group/members/49>. For more detailed instructions on how to join see: <http://wokingla21.wordpress.com/about/woking-on-wwf-footprint-calculator/>.

MOTIVATING COMMUNITIES TO TAKE ACTION

Various quick and easy activities to get groups thinking.

Chocolate Activity

Buy a large bar of chocolate and break it up into 24 pieces
Tell everyone that the bar of chocolate represents our planet Earth
Tell everyone that three quarters of our Earth is our sea and give out 18 pieces of chocolate for people to eat leaving 6 pieces
Then tell everyone that 3 pieces represent our mountains – give out 3 pieces leaving 3
Then tell everyone that 2 pieces represent our deserts – give out 2 pieces leaving 1
Finish by telling everyone we therefore have only one piece of chocolate to work, play and live on – therefore we need to treasure it and care for it by taking responsible action

Good or Bad for the Environment

You will find the cards for this at: <http://www.upd8.org.uk/activity/208/Climate-control.html> - it is worth signing in as, although this website is looking at science education for primary and secondary schools, some of the activities I have found (like this one) are excellent for adults too. Cut up the cards and give a selection out to the group. Ask them to put them into piles representing those actions which they think are good for the environment and those that they think are bad for the environment. This activity will stimulate discussion as not all cards are straightforward as one or the other!

Blowing up Your World

You will need a balloon to give out to someone in the group. Tell the group that the balloon represents our World. Ask the person with the balloon to blow into it to get it slightly inflated. Read out this list of wasteful actions:

Do you or someone you know always leave the light on when leaving the room?

Do you or someone you know use a hairdryer to dry hair?

Do you or someone you know leave the computer on screensave when not using it?

Do you or someone you know travel short distances by car when could walk or use public transport?

Do you or someone you know never measure how much water to boil to make a hot drink?

Do you or someone you know leave the TV on standby?

Do you or someone you know keep a mobile phone charger switched on all the time?

If there are people in the group who do these actions or know someone that does then the person with the balloon has to blow into it. At the end the balloon will be bigger.

Burst the balloon and then say that all these actions waste energy and if we carry on doing this then our World like this balloon will not be able to go back to its original state - therefore we need to save energy.

Global Steps Cards

A game for exploring your personal environmental impacts. This uses a set of 10 cards with subject headings such as electricity and food. One side shows the impact of a high level of resource use and the other, a lower level. Points are accrued according to impact on the planet. A good tool for identifying what are the most important areas to address at a personal level, and also useful for triggering discussions. They can be purchased from www.bestfootforward.com or they can be borrowed from LA21. Contact clare.palgrave@hotmail.co.uk for loan details.

Book List

Where books are stocked by the library, they are indicated as follows:

(W) In Woking library

(S) Available through Woking library from Surrey County libraries

(*) Available on loan from me with stamped jiffy bag and stamped return label

Contact me at clare.palgrave@hotmail.co.uk

Books (All prices from Amazon)

Heat – how to stop the planet burning, George Monbiot (W *)

Climate Change – how it's happened, what action is needed. Monbiot goes through all aspects of modern life to assess where carbon savings can be made. Some very innovative ideas. Aims for 90% reduction by 2030! He doesn't pull his punches on failings of politics or business to engage seriously.

ISBN 0-713-99923-3

Approx price £6.99

An Inconvenient Truth, Al Gore (S *)

"The Planetary Emergency of Global Warming and what we can do about it". The book of the film – lots of pictures and graphics, mostly focusing on causes of climate change rather than solutions.

ISBN 0-7475-8906-2

Approx price £10.49

How to live a low-carbon life, Chris Goodall (W*)

"The individual's guide to stopping climate change". Dense with facts and figures, mostly on UK situation. Author believes individual altruistic actions will be sufficient and government intervention is not needed.

ISBN 978-1-84407-426-6

Approx price £14.99

How We Can Save the Planet, Mayer Hillman (*)

Advocating radical changes to western lifestyles to improve the chances for future generations. Thinks government intervention is essential, one of the leading supporters of personal carbon rationing.

ISBN 0-141-01692-2

Approx price £6.99

Ecological Debt -The Health of the Planet and the Wealth of Nations, Andrew Simms (*)

A devastating account of the debts – ecological, carbon etc owed by the West to developing nations. Simms shows what must be done to avoid planetary environmental bankruptcy.

ISBN 0-7453-2404-5

Approx price £13.99

The Rough Guide to Ethical Living, Duncan Clark (W*)

Low carbon living and responsible shopping. Sound advice on economizing and greening home energy, water use, shopping.

ISBN 1-84353-792-3
Approx price £6.49

Pocket Issue 'The Energy Crisis'

“Exactly what any busy person needs - the facts at your fingertips! Never get caught out again when a conversation starts on the big issues of our time.”- Jeremy Vine.

ISBN 978-0-9554415-0-9
Approx price £4.99

Funny Weather, Kate Evans (S)

Donach McDonach – “This is cool- perfect present for your idealistic teenager.”
George Monbiot's comments: “Brilliant - shocking and apt and beautifully drawn. Kate Evans has told the story of climate change in a way that is accessible, funny and moving.”

ISBN 0-9549309-3-2
Approx price £5.49

The Rough Guide to Climate Change (S)

Concise, lucid and well researched.

ISBN 978-1-84353-711-3
Approx price £7.49

The Road, Cormac McCarthy (W)

A gripping and nightmarish novel of the potential impact of global society breakdown after climate catastrophe. You will not be unmoved!

ISBN 978-0-330-44754-6
Approx price £4.69

The Transition Handbook - From Oil Dependency to Local Resilience, Rob Hopkins (S*)

The Transition concept is one of the big ideas of our time. Peak oil and climate change can so often leave one feeling depressed and disempowered. What I love about the Transition approach is that it is inspirational, harnessing hope instead of guilt, and optimism instead of fear. The Transition Handbook will come to be seen as one of the seminal books which emerged at the end of the Oil Age and which offered a gentle helping hand in the transition to a more local, more human and ultimately more nourishing future. --Patrick Holden, director of the Soil Association

ISBN 978-1900322188
Approx price £9.00

Carbon Detox, George Marshall (S*)

This practical, inspiring guide to smart and achievable low carbon living explains how to:

- * Deal with your inner sceptic
- * Carbon audit your lifestyle
- * Create a low carb action plan that works for you
- * Quit the carbon habit once and for all.

ISBN 978-1856752886
Approx price £5.99

Shades of Green, Paul Waddington (S*)

It is written in a punchy, wry and humorous style and pokes gentle fun at both the people in suits and the people in sandals. Reading this book will inform and amuse: it lays out the facts and practicalities on everything from carrots to cars and avoids the po-faced apocalyptic preachiness of many 'green' books. This is essential and often surprising reading - because being green has never been black or white.

ISBN 978-1905811007
Approx price £8.24

Do Good lives have to cost the earth? Ed Andrew Simms and Joe Smith (S*)

This book brings together household names who share a conviction that living well needn't cost the earth - and will tell you why and how. Their collective vision, covering areas from architecture and politics to food and happiness, will completely reframe the way you think about climate change and what you're willing to do about it. Far from the usual doom and gloom, many here argue that climate change presents a once-in-a-century opportunity to address a whole basket of problems with energy and imagination.

ISBN 978-1845296438
Approx price £5.99

Timeless Simplicity: Creative Living in a Consumer Society

This is a book about simplicity, not destitution, not parsimoniousness, not self-denial, but the restoration of wealth in the midst of an affluence in which we are starving the spirit.

ISBN 978-1903998007
Approx price £6.99

Bioregional Solutions: For Living on One Planet, Pooran Desai and Sue Riddlestone

In this Schumacher Briefing the authors show how we can meet more of our needs for wood products, paper, textiles, food and housing from local renewable and waste resources. They outline the theoretical framework of bioregional development and the award-winning practical solutions that BioRegional have developed with industry partners. They quantify how we can significantly reduce CO2 emissions and recycle waste, and so greatly reduce our ecological footprint.

ISBN 978-1903998076
Approx price £5.60

The organic garden, Allan Shepherd (*)

'should inspire the novice gardener to become thoroughly green. It practices what it preaches, too: the book is printed on paper made using wood from forests that have been certified by the Forestry Stewardship Council'.

ISBN 978-0007241422
Approx price £13.49

21st Century Smallholder, Paul Waddington (*)

This book is a great summary of the many different things you can do to become more self-sufficient. About how you can produce more of the stuff you need to live on, such as food and energy, instead of buying it all in.

ISBN 978-1905811168

Approx price £5.59

How can I stop climate change? Helen Burley and Chris Haslam (S)

Explains what climate change is and what you can do to stop it. Written by experts at Friends of the Earth, it gives you facts and figures, and offers practical advice and simple solutions. Jonathon Ross says " At last! A friendly read that can help save you money while saving the planet. Becoming a domestic eco-warrior has never been so easy - or so cool!"

ISBN 978- 0007261635

Approx price £14.99

Magazines

Green Futures The magazine for sustainable futures. "We bring you the latest news and debate - from the sparkiest, best informed writers around. Saving the planet for fun and profit starts here."

Paper or available online:

<http://www.forumforthefuture.org.uk/greenfutures/>

The Ecologist Online version of the paper magazine:

<http://www.theecologist.org/>

Resurgence "Resurgence is the leading international forum for ecological and spiritual thinking, where you can explore the ideas of the great writers and thinkers of our time, both in print and on-line. This site features both Resurgence Magazine and also the 'Family' of organisations which surround it."

<http://www.resurgence.org/>

Computers and sustainability

If you use a computer at home, it makes a contribution to your carbon (and ecological) footprint. How can you minimise the impact?

Purchasing - the environmental cost of creating a new PC is quite high. Making your existing one last as long as possible is generally the best policy. But modern PCs can be much more energy efficient and the carbon savings from lower electricity use may quickly offset the impact of materials. Particularly if you can pass the old PC on for re-use or recycling.

If you are buying a new PC, a laptop is more energy efficient than a desktop and uses less material in its manufacture, but it may not be as reliable and long-lasting. A flat screen monitor consumes much less power than the older cathode ray tube screens.

Many PCs now are extremely powerful, consuming as much as 600W – such power may be required from time to time, for state of the art gaming or computer-aided-design, but for general home and office use these ultra powerful PCs are probably wasteful. PC manufacturers are keen to present their products as 'green' but as usual, some claims are more worthy than others - research their statements carefully. One manufacturer worth considering is Tranquil PC, which makes very low power consumption machines that don't need a ventilation fan. See:

www.tranquilpc.co.uk/green_computing.htm

Recycling - a large number of organisations throughout the UK will take computer equipment and re-furbish it where possible for reuse or alternatively recycling components. Find one from Waste Watch's list at www.wasteonline.org.uk/

Or use the Donate a PC website at www.itforcharities.co.uk/pcs.htm to find a charity who will take your old PC.

Or give it a new local home through Woking or Guildford Freecycle networks.

<http://groups.yahoo.com/group/wokingfreecycle>

<http://groups.yahoo.com/group/guildfordfreecycle>

To dispose of a PC that is really of no further use, take it to one of the 15 Community Recycling Centres in Surrey (<http://www.surreywaste.info/householders/recycling>) or use Woking BC's bulky collection service if you cannot physically manage to get the item to the site. Disposal of computers is covered by the new WEEE legislation – see www.weeeman.org

Energy use

Businesses now recognise that running a PC over its typical three-year life costs more in electricity than the purchase price. It's worth understanding how to minimise energy use and therefore running costs, even for a home computer, which may be used much less.

With a typical home computer using the Microsoft Windows or Vista system, there are several features worth exploring to help conserve energy. **The most important thing to understand though is that the typical home computer continues to use power from the mains even when 'turned off' if it is still plugged in to the wall socket.** The biggest saving you can make is to always switch the computer off at the wall after you have turned it off using the mouse / keyboard. If you don't, your computer can be consuming electricity day and night, and the costs quickly escalate. The next good habit to get into is to switch the computer off between sessions. Only leave it on standby for very short periods. If you go out to the shops, stop for a meal etc, it's wasteful to leave the computer on standby.

Don't worry that your computer will take too long to start-up if you switch it off. Use the **Hibernate** facility to speed up re-starting. Hibernate means you can restart where you left off, with all previously open programs and documents ready for immediate use. If you are using Vista, it's possible that the Hibernate facility has been disabled to conserve disc space. You can re-enable it by following the instructions here: <http://support.microsoft.com/kb/920730> .

Follow these tips to reduce your computer's electricity bill by as much as £50 per year.

Tips

1. Set the power options for your computer as follows (Windows):

- Right click on your desktop, select 'properties', then 'screensaver'.
- Set screensaver to 'blank' and 'wait' to 1 minute.
- Then click 'power' and set the following options
 - Turn off monitor after 1 min
 - Turn off hard disks after 10 mins
 - System standby after 5 mins
 - Hibernate after 10 mins
 - Then click the 'hibernate' tag and ensure that hibernate is enabled.

Don't forget to click the final OK.

2. Turn off your screen whenever you leave your desk

3. When you are leaving the computer for more than a few minutes, go into HIBERNATE and then switch off at the wall. *You do not need to close down any applications you are working in.*

- From the Start menu, take the normal 'turn off computer' option
- On the next screen, hold down the 'shift' key and press the yellow standby/hibernate button.
- When the computer has powered down (normally a few seconds), switch off the power on the screen and at the wall on the supply to the computer itself*.

The work you have been doing will be saved in a special place, and will be available when you start up again.

*If it's difficult to get to the wall socket to switch off the power to the PC, maybe it's worth investing in an extension lead with a power switch that you can position in a more accessible place. This could be used to supply power to the computer, its monitor and other devices like a printer and scanner – in this way you can easily switch them all off.

Useful sites

Woking Freecycle <http://groups.yahoo.com/group/WokingFreecycle/>

Guildford Freecycle <http://groups.yahoo.com/group/GuildfordFreecycle/>

Community recycling centres www.surreywaste.info/householders/recycling

Vista hibernate re-enable <http://support.microsoft.com/kb/920730>

Woking LA21 <http://wokingla21.wordpress.com/>

Tips for small businesses

Audits

An absolutely excellent audit for small businesses is available at <http://www.green-office.org.uk/audit.php> FOE Scotland's own audit. Their Online Audit is designed to answer questions about environmentally friendly products: whether it is really worth recycling and how to go about greening the office. It is aimed at those putting green office policy into practice, and those who want to protect the environment but may not have the time or the money to immediately overhaul the workplace.

Kettles

A quick tip to engage people in offices to become less profligate is to mark the levels on the side of a kettle with indelible marker as follows: Take a standard mug and fill it with water and pour into an empty kettle. Mark the level and number it. Repeat the process until the max mark is reached. Now people have no excuse to say they don't know how much water to boil!

Computers (also see page 16 for more details)

Always switch off at the wall at the end of the day, or if leaving the computer for an appointment or lunch.

If it is still switched on at the wall your computer will guzzle energy, even when you have turned it off from Windows. Leaving a computer "turned-off" but not switched off at the wall can consume as much electricity in a day as leaving a 60 watt ordinary light bulb on for 4 hours. You wouldn't do that, would you?

Worried your computer will takes too long to start-up if you switch it off? Hibernate is the answer! Follow the instructions alongside and you'll find your computer starts up much more quickly, with all previously open programs and documents ready for immediate use.

These tips will help make your computer a lean, mean machine.

Tips:

Set the power options for your computer as follows;

Right click on your desktop, select 'properties', then 'screensaver'.
Set screensaver to 'blank' and 'wait' to 1 minute.
Then click 'power' and set the following options
Turn off monitor after 1 min
Turn off hard disks after 10 mins
System standby after 5 mins
Hibernate after 10 mins
Then click the 'hibernate' tag and ensure that hibernate is enabled.

(Don't forget to click the final OK.)

2. Turn off your screen whenever you leave your desk

When you are leaving the computer for more than a few minutes, go into HIBERNATE, and then switch off at the wall. You do not need to close down any applications you are working in.

From the Start menu, take the normal 'turn off computer' option. Then on the next screen, hold down the 'shift' key and press the yellow standby/hibernate button.

When the computer has powered down (normally a few seconds), switch off the power on the screen and at the wall on the supply to the computer itself. The work you have been doing will be saved in a special place, and will be available when you start up again.

And Voilà! - a supersaving office!

Making an Insulated Storage Platform in the Loft

Introduction

Many people living in conventional houses and bungalows with a pitched roof use the loft space for storage, especially if a loft ladder allows acceptably easy access. If, as in our case, they have been in the house for nearly 30 years, the temptation to accumulate junk in the roof is difficult to resist. What I want to keep my wife wants to dispose of, and vice versa, and the compromise is to put it in the roof!

Most houses have joists in the loft, horizontally above the upper floor ceilings, which are 4 inches (ca 100 mm) thick. In the bad old days the most loft insulation that a house would have would be to the depth of the joists, i.e. 100 mm, so that if a loft platform for storage was needed it could be provided without difficulty by a boarded area on top of the joists. The boards could be screwed down, or as in our case, the previous owner had simply laid old doors, or anything that was strong, large and flat that he could find, across the joists as a storage area.

Current 2008 insulation standards require that a loft be insulated with a thickness of 270 mm, or nearly 11 inches, of mineral wool, or such other insulation which achieves the same thermal objective. Where there is an un-boarded loft with nothing stored in it, mineral wool can be added relatively easily to achieve current standards. The mineral wool is unrolled above and at right angles to the joists, which will probably have had insulation filled between them at some time in the past, when oil and gas were cheap and the climate change worry was when the next ice age would start. So how do we achieve 270 mm insulation and still have a boarded storage area? One family we know simply removed the new insulation over their old boarded area so that they could store. You hear people say that their belongings act as insulation. This is unlikely, because convection currents will still be able to circulate in the gaps between the objects. It has been shown that a 5% uninsulated area can result in a 57.5% worsening of the thermal performance of an attic as a whole, (1).

Fortunately there are products on the market which allow the home owner to insulate the roof to current standards and still retain a storage area which is insulated effectively. However it has to be said that it is a significant little DIY project to achieve the objective required, although it is in no way difficult. What follows is a statement of what I did and how I did it. It is not intended as a recommendation to do it this way, but more to advise people of the steps that I went through and which others might need to consider on a similar project, even if they solve the problems differently.

Another Woking LA21 member has used an alternative method, which would only be suitable for storing lightweight items. Timbers were screwed between the roof rafters or braces and chipboard panels laid on top of these to create raised storage platforms. This reduces the area of the loft floor that needs to be boarded. The majority of the loft had mineral wool laid across the joists and a raised platform built, covering less than a quarter of the whole area, by installing additional joists on top of the existing ones. These new joists were filled to the top with mineral wool and then boarded over.

Safety

People must be responsible for their own safety. The clear hazards are:
falling through the hatch whilst in the roof,
putting a foot between the joists and going through the ceiling,
electrocution if electrical safety procedures are not followed.

This may not be an exhaustive list of dangers, and it is advisable not to do the job when alone in the house!

The Materials

There are suitable materials available for insulating above the joists and under a boarded floor. I used Space Board from *Knauf Insulation*: www.space-insulation.com, available from B&Q and Focus. It is shrink packed into packs of 4 boards, of which each board is 1200 mm long, 500 mm wide, and 52.5 mm deep. There are probably alternative products available, e.g. from the Celotex range. It is made of extruded polystyrene, which is much stronger than the expanded polystyrene used for packing, and with chipboard over it can be walked on. Each board is intended to be laid at right angles to the joists,

and to be supported by at least 3 joists. Chipboard flooring 18 mm thick should be laid on top of the Space Board, parallel to the space boards and so still at right angles to the joists below those. Just one thickness (52 mm) of space board can be put under the chipboard, but if two are used then the resulting thickness of 104 mm of extruded polystyrene plus chipboard is equivalent, together with the underlying between joist insulation, to a mineral wool depth of 270 mm, the current standard. I decided on the double thickness.

I used *Conti* Loft Panels, which are chipboard panels 1220 mm long, 325 mm wide and 18 mm thick. So the total thickness of material above joists was 122 mm, and 150 mm or 6 inch screws were needed to attach to the joists below. Such screws are not commonly available, but I sourced some 6"x #12 on-line from www.screwfix.com, and used about 250. Hammering nails into the joists as a fixing is not recommended because of vibration and the risk of ceiling cracks. Screws also facilitate removing panels if you need to gain access to the ceiling for repairs or alterations.

I found difficulty obtaining a drill bit which was long enough for the purpose of going through the *Conti* board and space boards and then drilling a hole for the screw into the joist. I made do with a 5 mm diameter 150 mm length masonry drill, at minimum depth in the drill chuck. Certainly an inelegant solution, but with some grease on the screws they would drive home satisfactorily with a #3 *Pozidrive* screwdriver. So the procedure was drill a 6 mm hole through the *Conti* board, then drill through the foam and into the joist with the long masonry drill, and finally countersink the hole before putting in the screw.

Where the existing mineral wool insulation below the platform is in poor condition, it may be worth replacing or repairing it, as it seems a false economy to overlook this opportunity before it is boarded over.

Electrical Considerations

The largest source of debate in this project related to electrical cables in the loft. Our loft had been rewired with modern PVC cable in the 1990s, and it already had loft lighting. However, there was an occasional need to turn off a lighting circuit trip switch in the consumer unit whenever it was necessary to re-route one of the cables. In these circumstances it was necessary to have a temporary alternative light from a 13 amp socket, since my loft light was on the same trip switch. A neon tester was used to check that any circuit being worked on was really switched off.

PVC covered cable must not be allowed to come in contact with extruded polystyrene foam, because phthalate-ester PVC plasticizers will migrate from the PVC and dissolve the polystyrene. The other consideration is that cables should not be covered by any type of insulation, because heat generated by current flow will not be dissipated. This is clearly of most importance where there are power cables carrying appreciable currents. In our case the cables were all for lighting, and the bulbs efficient ones. Whilst cables can fairly easily be brought out on top of a mineral wool blanket, they cannot be put on top of a flooring, so there may be no alternative to putting them below the boards. But having 13 amp power cables, or cables to high current users such as an immersion heater, below insulation must strictly be avoided.

Since only about half the loft was being boarded, an area was chosen which would give the least problems from cabling. Different solutions were used in different places. Figure 1 shows one solution to the problem, and arguably the best, which is to organise an air gap above the cable so that there is no insulation immediately above it. The horizontal piece of wood was put in to secure the cables to it and at the same time give support to the foam. It also allows cables to be brought to the junction boxes, if necessary in the future. The rectangular space above the junction boxes also has no insulation above it, but only a lid of floor quality chipboard



Figure 1

A second method of solving the problem is to put the lighting cable into generously sized conduit where it goes under the foam. I used 25mm polyethylene water pipe (remember it should not be PVC) as a conduit with 2 cables through it, which should have enough of an air gap in the inside of the pipe to allow some convection cooling. The end of the pipe can just be seen in Figure 2.



Figure 2

In our house whilst there were the usual 4 inch joists in the loft, there were also a few joists above and at right angles to these to tie in roof members. One such is visible in Figure 2 above the junction box. One of these upper joists had lighting cable attached to its side, and to avoid contact between the polystyrene foam and the cable, thick cardboard was used to ensure that the two remained separated.

Is it good practice to mark on the top of floor panels where electrical junction boxes are sited beneath so as to facilitate access if needed in the future. Consideration should be given to removing the tongues from the boards that are above junction boxes so that they can be easily removed.

Construction

The job should not be done in the winter because of heat loss through the open trap door, and in the middle of the summer it can be very hot in the roof, though even then early to mid morning was usually tolerable. Perhaps early summer and autumn are the best times.

Conti advise starting at the loft hatch, which has the advantage that you then have a floor in the hazardous area around the hatch to use for access beyond. Whilst good advice, around the hatch is the most difficult area to do, and there are merits in starting where the job is easy and experience can be built up. I elected to put temporary flooring down to give myself a secure route into an area beyond.

An existing loft ladder will probably be screwed into the upper side of a joist on the opposite side from the hatch cover hinges. The new floor area will need to be more than 100 mm above this, so that the loft ladder screwed fixing will need to be raised. The joists were built up around the hatch with some new wood to provide a secure fixing for the new upper floor level, see Figure 3 below. I also found that it was necessary to lengthen the roof ladder by 110 mm at the bottom end with some wood to retain the previous ladder angle.



Figure 3

I started on a reasonably large area which had few electrical problems, or where the cables could easily be re-routed around the area that was to be boarded. It seemed to be easiest to lay out over the joists a fair number of Space Boards, and then put the tongue and grooved floor panels over them, in such a way that the joins in alternate floor panels were staggered and opposite the centre of the intervening ones. The sizes of the foam boards were different from the floor boards, so joins in one did not coincide with the other. The extruded polystyrene foam was very easily cut with a saw, as was the chipboard flooring. The 6 inch screws were put in at about every 6-7 inches along the length of each joist. It was necessary to locate points on either side of the flooring, where the joist emerged from under the platform and above the middle of the joist to be screwed, and to make a pencil line between them with a long straight edge. By this method, and attention to keeping the drill vertical, no difficulty was experienced in locating a joist when drilling in the middle of the platform.

The finished platform is shown in Figure 4. When the photo was taken the surrounding loft area had still to be insulated with mineral wool.



Figure 4

The effective insulation of the remainder of the loft round the platform is of course very important to minimise heat loss. The opportunity should be taken, when adding additional mineral wool insulation, to insure that existing insulation which is about to be covered is not torn, or out of place revealing the ceiling beneath. If so, repair or replacement is necessary before adding another layer.

Good luck to others who embark on a similar project.

(1) Taylor B.E & Phillips A.J., 'Thermal Transmission and Conductance of Roof Constructions Incorporating Fibrous Insulation. ASTM STP 789.' From http://www.insulation.kingspan.com/uk/pdf/white_paper_lofts_missing.pdf. The home page of Kingspan contains useful advice about the risk of condensation and eventual damp problems from poorly ventilated cold lofts where the mineral wool is badly installed.

Trevor Stribley, and Woking LA21 members.

January 2008

Top Tips

Top tips for Food

Food production and transport consume natural resources and affect the environment to a surprising extent. It's been estimated that Food is responsible for 18% of the UK greenhouse gas emissions – that's more than flying. Over-consumption of fish is threatening to wipe out stocks of some species like cod.

Humans across the world are eating more meat, the food which is least efficient in land, water and energy use. Industrialised food production makes extensive use of fertilisers, pesticides and herbicides, and doesn't treat animal welfare as the highest priority.

Here are some tips to help reduce your food impact.

Eat less meat (particularly beef) and dairy. Livestock farming uses lots of energy and water, and produces methane in large volumes. Tropical rainforests in S. America are being cleared to grow soya beans to feed beef cattle. To produce 1 kilogram of beef requires 100,000 litres of water and 10 kilograms of feed.

Eat less fish, and try to buy wild fish only if sold with the Marine Stewardship Council logo. Wild fish stocks are dangerously depleted – cod has gone from Newfoundland for example. Some scientists now predict that all current commercial fisheries will have collapsed before 2050. 90% of large predatory fish like tuna, swordfish and cod are already fished out. The modern industrialised fishing methods introduced to improve efficiency are threatening to wipe out many species and have a massive impact on other marine life like dolphins and turtles. (<http://www.fishonline.org/advice/avoid/>) Sustainable wild sea fish and organic farmed fish are available – ask your shop where their fish comes from. If they don't know, buy elsewhere. (<http://www.fishonline.org/advice/eat/>)

Buy local / organic. Local food comes with fewer food-miles – within the UK, food transport accounts for a quarter of all heavy good traffic, and the average Briton travels 135 miles a year by car to shop for food. Increasingly our food is either grown in foreign countries or may be sourced in the UK but processed overseas and returned here – for example Kentish apples being sent to South Africa for waxing. Organic fruit and vegetables have lower pesticide residues – only 6 chemicals are allowed compared to nearly 400 for non-organic farming. Compared to normal milk, organic milk takes less than a third of the energy to produce, and has more omega 3, vitamin E and anti-oxidants. Organic fruit, vegetables and meat are available for home delivery in 'box schemes'.

Grow your own food. The most local food, with the opportunity to try fruit and vegetables not normally available in the shops. If garden space is tight, look for an allotment – there are several sites in Woking, see WBC's [website](http://www.woking.gov.uk/leisuretourism/allotments) (<http://www.woking.gov.uk/leisuretourism/allotments>) for details.

Buy free-range meat and eggs. Intensively reared factory farmed animals have an unpleasant existence and may produce less healthy human food than free-range. Compassion in World Farming campaigns to improve their lives. (<http://www.ciwf.org.uk/>)

Waste less food. In the UK we throw away about a third of all the food we buy, and most of the waste is food that could have been eaten – it's not just peelings and bones. The total is more than all the packaging we throw away. Most of the food waste goes to landfill where it produces methane, 20 times more active than carbon dioxide as a greenhouse gas. Energy, water and packaging have gone into making the discarded food, so that is wasted too. Save waste by better portion control; keeping track of use-by dates; buying special two for one offers only if the food will be used; and finding ways to turn left-overs into new meals, or freeze spare portions. Look at the Love Food Hate Waste website (for more ideas. <http://www.lovefoodhatewaste.com/>)

Cut back on ready-made food. Some processed food is excellent, but it can be difficult to find out how it's made, and to understand the impact of all the ingredients. Palm oil for example is used in many food and personal hygiene products, including margarine, chocolate, ready meals, crisps and baked good. Production of palm oil in south-east Asia is implicated in the destruction of tropical

rainforest and affects the habitat of threatened species like the Orang-utan.
(http://www.savetheorangutan.co.uk/?page_id=628)

Fairtrade. Woking is a Fairtrade town. Several of the town centre coffee shops sell Fairtrade coffee, tea and other produce. Supermarkets will typically have several lines of coffee and tea, but the Fairtrade range extends beyond that to fresh fruit, flowers, snacks, wines and beers, and cotton clothing. Fairtrade flowers are available at many large supermarkets. Buying Fairtrade products ensures that farmers and workers in the developing world get better prices and fair terms of trade, enjoy decent working conditions, and local sustainability is not harmed.
(<http://www.fairtrade.org.uk/index.htm>)

Compost food waste. Food waste put into the black (residual) waste bin or bag goes to landfill, where it decomposes and produces methane gas – a worse greenhouse gas than carbon dioxide. Cut down on food waste in the black bin by composting at home. The Green Cone can compost all types of food waste including meat, fish, fruit and vegetables.
(<http://www.greencone.com/home.asp?lang=1>) A normal compost bin or heap or a wormery is suitable for uncooked kitchen vegetable waste and is best mixed with garden waste, such as soft prunings grass clippings etc. Use a kitchen caddy to store kitchen waste and cut down on the number of trips to the outside bin or heap. Read up on composting in general
(http://www.recyclenow.com/home_composting/welcome.html), wormeries
(<http://www.originalorganics.co.uk/>) and composting in Woking (<http://www.originalorganics.co.uk/>). Subsidised Composters and Green Cones are available to Woking residents from **Recycle Now** - order hotline 0845 077 0757, and subsidised wormeries from **Straight Recycling** - order hotline 0845 130 6090.

Home deliveries. Many supermarkets offer a home delivery service. This can reduce your impact by reducing car journeys and cutting carbon emissions. Waitrose also offers a service where you go to the store, select your shopping in the normal way, and then leave it in store for them to deliver. Again this cuts down on car use, because you can go to the store on foot, by cycle or bus, knowing you don't have to carry a heavy load of shopping home. Some vegetable box schemes will deliver to work places, which may be helpful if you're away from home all day. Doorstep delivery by the milkman is also a more sustainable choice. Glass bottles are re-used up to 20 times rather than being recycled as scrap – far less energy is wasted compared with plastic bottles or cartons from the supermarket. Find out here (<http://www.findmeamilkman.net/default.aspx>) if a milk round could supply you at home. Other products are supplied. You could reduce the number of car journeys to the shops.

Cut back on bottled water. Half a billion bottles of mineral water are flown or shipped in to the UK from overseas with huge carbon footprint. Transporting bottled water in the UK is estimated to produce 33,000 tons of carbon emissions - equivalent to the annual energy consumption of 6,000 homes. Most mineral water is supplied in plastic bottles that have been made from oil, increasing the impact on the environment. Tap water is as safe to drink and in taste tests does just as well as bottled mineral water. If you need to take water with you on a journey, re-use plastic bottles and fill with tap water. Ask for tap water in restaurants instead of mineral water and spend the money on food instead!

Top Tips for Water Saving

Showers. Take a shower instead of a bath (not a power shower, this can use as much as a bath). Even better fit a low-flow shower head (finer jets) for less than £10 or an aerated showerhead to your shower (about £40) which feels like normal flow but because it adds air to the water flow reduces water consumption. www.aqualogic-wc.com

Efficient loos. Ensure your toilet is water efficient. Consider buying a water efficient dual-flush toilet. Alternatively put a 'Hippo' or other water displacement device in the cistern or convert your system with a variable flush device for as little as £12. www.waterwise.org.uk

Tooth brushing. Turn off the tap while brushing your teeth. That could save as much as 6 litres of water per brushing.

Dripping taps. Repair dripping taps. A new tap washer only costs a few pence and could save 5000 litres of water a year.

Washing vegetables. Clean vegetables in a bowl and not under a running tap. You could save as much as 45 litres per day.

Rainwater butts. Install rainwater collection butts and don't water your lawn in dry weather. It will recover with later rainfall.

Clothes and dishwashing. Only use full loads in your washing machine and dishwasher. If you are thinking of buying a new machine make sure you opt for a water and energy efficient (A+) model. <http://www.waterwise.org.uk/> and www.energysavingtrust.org.uk.

Drinking water. For drinking tap water don't run water until it is cold. Keep a jug of cold water in the fridge.

Low flow taps. Install low flow taps or fit flow restricting inserts in to your taps to save water when hand washing etc. www.tapmagic.co.uk

Water meter. Get a water meter installed. It will probably save you money anyway but will also encourage to be more careful with this vital resource www.3valleys.co.uk

Top tips for Transport

Apart from walking and cycling, travel today almost always involves using a machine powered by fossil fuel energy. Consequently, if you travel a lot, your eco-footprint and carbon emissions will be high. In the UK, greenhouse gas emissions from cars and from flying have both increased significantly since 1990, and there is little sign of them starting to decline. A typical Briton's personal flying and driving makes up a quarter of their annual carbon emissions.

There is plenty of scope to make reductions. Here are some tips to help lessen the impact of your travel.

Drive less. Use a bike, public transport or walk for short journeys – also use park & ride and park & stride to keep the car-miles down.

Fly less. Look at using the train (and boat) instead of flying to UK and European destinations. The Man in Seat Sixty-One website (<http://www.seat61.com/>) has compiled masses of information to help plan journeys without using air-flights.

Drive economically. Read the road to anticipate traffic flows and try to avoid braking as much as possible; accelerate and brake smoothly; change up at 2500 rpm, 2000 rpm in a diesel. Keep speed down; use air-conditioning sparingly, and switch off rather than idling for long periods (e.g. more than a minute).

Buy a more economical car. Small cars are generally better. Diesel gives a higher mileage than petrol, but has a slightly worse impact on air quality. A small diesel with manual transmission can produce just half the emissions of a 2-litre petrol car with automatic gearbox. Use the VED database (<http://www.vcacarfueldata.org.uk/search/>) to compare economy of new cars

Switch to LPG. Over 120,000 cars in the UK run on Liquefied Petroleum Gas, which is available at about 1300 filling stations. Converting a petrol car to LPG costs around £2000, for example see Greenfuel (<http://www.greenfuel.org.uk/>). The pay back is in lower fuel costs, and reduced emissions of carbon dioxide (about 15%), other greenhouse gases and particulates (90% less than diesel). A modern diesel car probably has slightly lower CO₂ emissions than the same model running on LPG, but this will depend on driving patterns (e.g. urban vs. motorway driving). Drivers of LPG cars may also benefit from avoiding the London congestion charge.

Car share. Some car-miles on journeys to work, the school run, and journeys around town on business, could be avoided by car sharing. As well as making your own arrangements directly with

friends and colleagues, you could sign up to a car sharing scheme like surreycarshare.com (<https://surrey.liftshare.com/default.asp>).

Keep your car in good shape. Under-inflated tyres can worsen your fuel economy by 3%; carrying around an un-needed roof rack and weighty items in the boot will have a similar impact. Check your fuel consumption when you fill up – an increase could indicate a fault. Keep your car running efficiently by having it serviced according to the schedule.

Find alternatives to business travel. Look at options to cut back on business travel using technologies like telephone-conferencing, video-conferencing or Internet conferencing. You don't need to buy your own equipment, there are bureau services, for example Eyenetwork (<http://www.eyenetwork.com/>).

Top tips for gardens

Reduce water use in the garden

Water is a limited resource and the processing and distribution needs energy adding CO2 emissions. Over abstraction damages wildlife habitats. As the climate warms summers will be drier and hotter.

Collect rainwater in a butt.

Apply a mulch of compost, bark chips, gravel etc.

Recycle kitchen water.

Water only in cooler parts of the day.

Avoid sprinklers and excess watering.

Grow drought tolerant plants. See page 29 for a list of plants known to be happy in Woking without watering.

Avoid watering lawns, allow grass to grow longer. To keep it looking tidy, mow a strip two mowers width around the edge of the lawn, so that the long grass looks intentional.

When mowing do not collect the grass cuttings, but leave them on the grass to re-fertilise the lawn. It saves on composting and fertiliser. One Woking resident has been doing this for 15 years and has found her lawn has improved in condition as a result.

Use water-retaining crystals in baskets and pots, (easily available from any garden centre).

Group containers together and use saucers so that overflowing water is not wasted.

For more about water use in the garden see elsewhere in this handbook.

Cut down on use of pesticides and inorganic fertilisers

Pesticides interrupt natural cycles by killing pollinators and natural predators so that pests return in greater numbers. Residues can persist on food crops. Excess chemicals affect purity of water supplies and harm wildlife.

Improve soil fertility with organic material, e.g. compost, leaf mould, manure, spent mushroom compost.

Choose plants appropriate to soil and location. See page 33 for plants that thrive on Woking's sandy soil.

Choose disease resistant varieties of plants. See p 33 for a list of plants that grow in Woking that need no pesticides.

It is best to plant from autumn through to mid spring to minimise the need for watering plants while they establish.

Don't grow plants that require an acid soil if you have a neutral/alkaline soil - they will never be happy and you will be tempted to water them, although it will do no good.

When planting ensure that a large planting hole is made with organic matter added at the bottom, to hold water in the soil, thus ensuring the plant establishes with less need for water.

Rotovation should be avoided as it destroys the soil structure, and reduces the microbial action of the soil which ensures a plant's health.

Vegetable crops should be rotated on a minimum of 3 years if they are grown in large quantities.

Slugs and snails can be inhibited with irritants like sand or protect seedlings with cloches. Slugs can also be attracted to comfrey leaves as a 'honeytrap'. See here

(http://www.cat.org.uk/catpubs/pubs_content.tpl?subdir=catpubs&sku=PUBS_50/05&key=art28) for a very useful article on slug control.

Use appropriate biological control agent for the pest. Don't tidy up during winter as debris left on the ground acts as over-wintering sites for many beneficial insects such as ladybirds, which will then be around when aphids start multiplying.

Suppress weeds with mulches or polythene.

Use alternatives to peat

Over 94% of lowland peat bogs have been damaged or destroyed threatening rare wildlife species. With the warming climate drying peat is breaking down to release ancient CO₂.

Understand the different peat-free composts and choose according to the required purpose. Nowadays there are good multipurpose composts that are peat free readily available and suitable for everything except specialist plant growing. Home made compost can also act as a basis for potting compost. See here for more.

Peat-free composts or manure are better soil improvers than peat, which has a low nutrient content. Peat is poor mulch as it dries and blows away. Various renewable products are better for moisture and weed control.

When growing plants in containers etc choose compost, which is free draining but retains water.

Water thoroughly but check beneath the surface as to when to re-water.

Seek out plants grown in peat-free compost.

English Nature has produced a very informative leaflet on peat free and its alternatives here

(<http://www.english-nature.org.uk/pubs/publication/PDF/Composting1>).

Compost garden and kitchen waste

Don't waste valuable nutrients. Bonfires cause pollution and landfill space is declining. Furthermore organic waste in landfill produces the highly active greenhouse gas methane.

Make your own heap or use a ready-made compost bin or wormery.

Mix garden waste with uncooked kitchen vegetable waste - not meat etc as it attracts vermin.

Avoid diseased plants, persistent weeds and seed heads.

Dig in compost to improve soil fertility and water retention or use as mulch.

If you cannot compost all your green waste use the Council kerbside collection scheme.

Take large pieces of plant material to green waste skips at Civic amenity sites.

Cooked food cannot be composted at home as it attracts rats, but it can be put into a green cone, which will process it and return the residue into the soil beneath it. Green cones are available from Woking Borough Council. More here

(<http://www.woking.gov.uk/environment/homecomposting/greencone>). Using a green cone avoids food residues being sent to landfill, and producing methane.

Avoid having to compost grass cuttings, which can consume an inordinate amount of compost space, and consequently be difficult to rot down, by not collecting them from the lawn, but leaving them on the surface to return fertility to the grass. Saves fertiliser and effort carting them around.

English Nature has produced a very informative leaflet on composting here (<http://www.english-nature.org.uk/pubs/publication/PDF/Composting1.pdf>).

Attract wildlife and create habitats

Wildlife is continually under threat but environmentally friendly gardens are an important refuge. With climate change gardens could form part of a vital network to allow species to migrate as conditions become unsuitable.

For more information about gardening with wildlife in mind see www.wildaboutgardens.org.uk

Berry plants like holly and cotoneaster attract birds, as do seed plants like teasels and sunflowers.

Plants like buddleia, lavender, hebe and sedums provide nectar and pollen for butterflies, hover flies and bees.

Include native species like birch and scabious.

Hedges and plants like ivy give shelter and nesting sites for birds and insects.

Creating a pond is an excellent way to increase wildlife interest from dragonflies to newts.

Put up bird and bat boxes.

Make log piles for wildlife to shelter in and to slow down the return of carbon to the atmosphere.

Put out food and water for birds; the RSPB recommends feeding year round. For more about helping birds see here (<http://www.rspb.org.uk/advice/helpingbirds/>).

Top Tips for energy saving

Heating If you have a gas central heating boiler over 10 years old, consider replacing it with a condensing type gas boiler. Depending on the age of your current boiler you could save 30% of your gas bill.

For information on condensing boilers consult your gas supplier or go to

www.energysavingtrust.org.uk. If you intend delaying upgrading your boiler you may also wish to consider installing programmable heating controls, which could save 10% of your gas consumption.

Loft insulation If you have loft insulation less than 10cm thick consider increasing the thickness to 30cm or more. You could save over £100 a year in heating costs. You can install it yourself or get it professionally installed. Grants are available through major energy suppliers. If you are over 70 you could get it installed free. (See www.energysavingtrust.org.uk). Environmentally friendly products made from recycled paper and sheep's wool are available (www.greenbuildingstore.co.uk) If you want to use your loft for storage you can use special insulation boards which can be laid across the joists. Your loft hatch will need to be big enough to get the boards through. A list of recommended loft insulation materials is available here:

http://www.energysavingtrust.org.uk/compare_and_buy_products/insulation/loft_insulation

Temperature Turn down your central heating room thermostat by 1 degree C and you could save 10% on your heating bill. Fitting thermostats to your radiators could double that saving – they allow you to set different temperatures in different rooms, for example keeping bedrooms cooler than living areas.

Cavity wall insulation Most houses built later than 1920 have cavity walls. Cavity wall insulation should cost no more than £200 to install and will probably pay for itself in less than two years in reduced heating costs and faster if you heat your home with electricity or oil. For information about grants see www.energysavingtrust.org.uk

Electrical devices Not only consumer electronics (TV's, DVD's, PC's etc) waste money when left on standby. A lot of other equipment when left plugged in is also consuming energy (washing machines, microwaves, table lamps, phone chargers etc) even though they are not being used. Consider using an energy meter (available from Robert Dyas or from www.westfalia.net for less than £10) or sign up for the free loan of an energy meter supplied by Woking LA21- further details on this website. Some householders have saved £100 per annum by switching equipment off at the wall socket. To make this easier use a Standby Buster or similar available for as little as £10 (see http://www.windowonwoking.org.uk/sites/localagenda21/Information_bank/Where_to_buy for details).

Fridge/freezers Think about replacing old fridges and freezers with new ultra energy efficient models (A++ rated). Combined fridge/freezers are usually more efficient than separate units. If you still want to retain your old equipment fit a Savaplug (from £10 – see http://www.windowonwoking.org.uk/sites/localagenda21/Information_bank/Where_to_buy for information) which will pay for itself in reduced energy consumption in less than a year. Don't buy large American style fridge/freezers - they generally consume twice as much energy as normal fridge/freezers. Where possible site your fridge and freezer in the coldest room in the house (this could reduce their consumption by 30%). Ensure the rear of a fridge or freezer is ventilated and not close up against a wall to allow heat to escape from the condenser coils, and vacuum-clean the coils at least annually.

Dishwashers/washing machines When buying a dishwasher choose energy efficient A rated equipment and for washing machines A++rated (for energy efficiency, wash quality, spin efficiency)

See www.energysavingtrust.org.uk for details. For washing machines choose machines with a high spin speed, which will get clothes drier and virtually eliminate the need for a tumble dryer. If you have a tumble dryer use it sparingly for large loads only. Consider drying clothes outside (or under cover outside during the cooler months).

Lightbulbs Replacing all your conventional light bulbs with low energy compact fluorescent (CFL's) ones could save over 80% on your lighting bill. That could amount to a saving of over £600 (including the cost of the bulbs) over the lifetime of the CFL bulbs for an average house. CFL bulbs are now available in a full range of fittings. See www.bltdirect.com or www.lightbulbs-direct.com. Light emitting diode (LED) bulbs are beginning to become available and may even offer greater savings than CFL bulbs.

Hot water Hot water does not need to be hotter than 60 degrees C. Check your tank thermostat and turn it down if necessary.

Solar water heating can provide up to 60% of a household's annual hot water requirement. Solar panels can be fitted easily to the roof and systems are virtually maintenance free and should cost between £3200 and £5000 fully installed. Currently a £400 grant is available towards the cost of installation from the Government (www.lowcarbonbuildings.org.uk)

All that is required is an un-shaded, preferably pitched roof facing between SE and SW. Ensure you use an installer who is approved by the Solar Trade Association. (www.solartradeassociation.org.uk). Woking Borough Council's "Woking Solar Frontier" initiative can help you decide if solar water heating would be effective for your home – see www.wokingsolar.org.uk.

Windows Double-glazing reduces the heat loss through windows by about two thirds. To convert all windows for an average house would cost over £5000. However they don't all need to be replaced in one go. Rooms which are heated most should be done first. Alternatively consider fitting high quality secondary glazing, which is nearly as effective and could be a quarter of the price of double glazing and can be easily fitted by a handyman (www.secondaryglazing.com). Don't forget to pull the curtains at night!

Plants Tolerant of Dry Conditions In Woking



Grass allowed to grow long in the summer of 2006 in a Woking garden.

This list is a compilation of top common and more unusual drought tolerant plants that thrive in local Woking gardens with sandy soil without watering. The list has been produced by a number of local gardening enthusiasts, with consideration paid to water conservation and the likely effects of climate change. All of their gardens are on very sandy soil. Once established these plants all survive drought stress well.

Some of the plants are natural to the UK but take on a quite unusual quality when grown in a garden setting, whilst not needing any special care.

Particularly unusual plants are marked by * and will need searching for from specialist nurseries. RHS Plantfinder is useful for this: <http://www.rhs.org.uk/rhsplantfinder/plantfinder.asp>
The remainder can all be sourced from local nurseries/garden centres. Failing local availability an alternative is to source them through Crocus, <http://www.crocus.co.uk/>, which reportedly despatches plants from the closest supplier.

Note that the more highly bred the plant is, on the whole, the less likely it is to be drought tolerant. Thus if a very fine form of a grass gives larger panicles and longer stems, it may look prettier in the garden, but may be neither so vigorous or so forgiving of cultural vagaries. Species are normally more robust than cultivars, although perhaps not quite so elegant. (However, as in all things gardening, this is not the case all the time.) (A species is a naturally occurring form of a plant family: e.g. *Malus hupehensis* is a species, but *Malus* 'John Downie' is a cultivar, which does not occur naturally in the wild.)



The same garden the following spring before the grass is allowed to grow long

Lawns

A good way to reduce the 'scorched earth' effect of close mown lawns under drought conditions is to leave the majority of it unmown, and to mow a 'path' two mowers width around the edge between the long grass and borders or paved areas. This demonstrates a 'cared for' approach, prevents creeping grasses encroaching on the flower borders, and allows access paths to weed and to walk further down the garden. If some lawn area is needed for children play it still makes sense to allow some areas to grow long. Additional benefits of long grass are increased insect activity, for birds and bats to feast on.

Where grass is mown it should be mown with the blades set as high as possible, and the clippings left on the surface to replenish the soil. (One member has treated her lawn like this for 10 years and has observed an overall improvement in the lawn condition.)

Trees

**Malus hupehensis* (species crab apple - much loved by birds)

Pyrus salicifolia 'Pendula' (weeping ornamental pear)

Robinia pseudoacacia 'Frisia' (golden mock acacia) take care not to cut roots as can sucker

Sorbus 'Joseph Rock' (small slow growing tree with bird attracting fruits)

Shrubs

Artemisia

**Ballota pseudodictamnus* (perfectly hardy here)

Brachyglottis greyi (*Senecio greyi*)

Buddleia (all garden centre varieties)

Cistus (all varieties)

Eleagnus (all varieties, but some of the variegated forms may revert)

Euonymus alatus, europaeus (deciduous forms, good autumn colour)

Euonymus fortunei (various variegated forms, good ground cover or wall shrub)

Euphorbia characias wulfenii (very striking, but can exude an irritant sap - keep away from children's play areas)

Gaura lindheimeri (un-named form taller and hardier, named forms more compact)
 Hebe (the smaller the leaf the hardier and more drought tolerant they are)
 Lavandula (Lavender in all forms, though some are still slightly tender)
 Lonicera nitida, pileata (small to medium evergreen shrubs)
 Perovskia atriplicifolia or 'Blue Spire'
 Pyracantha (all garden centre varieties)
 Ribes (flowering currant – all garden centre varieties)
 Rosmarinus (Rosemary in all its forms – the more unusual varieties are less vigorous/bordering on needing cossetting)
 Salvia officinalis (Ordinary culinary sage-very handsome flowers, and purple form are hardier the gold and yellow/green forms are less hardy)
 *Teucrium fruticans (purportedly slightly tender, but survives happily here)

Herbaceous perennials

Artemisia (all types except lactiflora)
 Campanula carpatica) (All these three campanulas in un-named forms seed
 Campanula persicifolia) (themselves around and lend themselves
 Campanula poscharskyana) (to a more relaxed gardening style)
 *Corydalis lutea (yellow indigenous form, the blue varieties imported from abroad originally are much harder to cultivate. Seeds itself to where it is happy, often between paving or in the shade where its roots do not dry out. Lovely maidenhair fern type leaves) ridiculously, not commonly available, considering its origins
 Eryngium alpinum, (other commonly available species should also be drought resistant)
 Euphorbia amygdaloides robbiae (avoid the purple forms of any Euphorbia - they succumb easily to drought)
 Geranium macrorhizum 'Ingwerson's Variety' (a sturdy semi evergreen groundcover which acts as a superb living mulch and roots from bits broken off with no apparent root, providing transplanted before end March)
 Geranium cinereum 'Ballerina', endressii, himalayense, pratense and 'Mrs Kendall Clark', sanguineum, (Avoid geranium phaeum as it tends to mildew)
 Hellebore argutifolius, foetidus (thrive in dry shade)
 Hyssopus officinalis (bees love this – stick to the blue version)
 Knautia arvensis (field scabious- much loved by bees and butterflies. Seeds freely so plant in a naturalised area)
 Knautia macedonica (closely related to indigenous scabious with burgundy pincushion flowers held 60 cm high)
 Luzula sylvatica 'Marginata' (evergreen woodrush, thrives in dry shade and also more sunny situations)
 Nepeta (common forms available at garden centres)
 Primula vulgaris (common primrose – may be unhappy when planted out, but subsequent seedlings adapt to local conditions)
 Sedums (all are naturally drought tolerant)
 Viola riviniana (wood violet seeds gently around but never a nuisance)
 Viola odorata (sweet violet – wonderful ground cover under taller plants)

Biennials/annuals/herbaceous that self-establish easily, mainly by self-seeding gently

Digitalis purpurea (foxglove – grow from seed and allow seedlings to revert to more natural forms)
 Chelidonium majus 'Flore Pleno' (double form of indigenous celandine, seeds true to form)
 Linaria purpurea (purple toadflax: seeds itself around happily and is well suited to a naturalistic style.)
 Lunaria annua (honesty – actually a biennial despite its name)
 Malva moschata (pink and white forms, indigenous)
 Meconopsis cambrica (welsh poppy – keep dead-heading to prolong flowering)
 Oenothera biennis (indigenous evening primrose, seeds itself happily but not excessively, and looks quite magnificent in the garden at dusk)

Grasses

**Poa labillardierei* (a clump-forming grey leaved evergreen grass about 40 cm tall with very neat tussock habit if cut back in spring)
Stipa arundinacea (pheasant's tail grass- bronze in winter and lovely long panicles. Short lived but produces seedlings easily)
Stipa gigantea (Golden oats- a tall airy grass, shines wonderfully in evening sun- needs room)
Stipa tenuissima (the grass everyone asks the name of- feathery tufts about 30 cm tall which dance in the wind. Again not long lasting, but self propagates)

Annuals

Eschscholzia (Californian poppy- will self seed easily in the right conditions)
Nigella (love in a mist – if left to self seed will establish itself well in a mixed planting)

Herbs used as ornament (all these can be used in cooking as well)

Foeniculum vulgare (green and purple versions. Green is more vigorous; purple seeds itself more assiduously)
Origanum vulgare (all forms, but golden forms tend to scorching in the sun)
Rosmarinus (Rosemary in all its forms – the more unusual varieties are less vigorous/bordering on needing cossetting)
Salvia officinalis (Ordinary culinary sage-very handsome flowers, and purple form are hardier the gold and yellow/green forms are less hardy)
Thymes (all forms)

Plants for dry shade

Aucuba japonica 'Crotonifolia' (often slow to get going and occasionally fails, but 'lifts' dark places)
Euonymus fortunei 'Emerald Gaiety' (again a light coloured evergreen low shrub for dark areas)
Euphorbia characias wulfenii (un-named forms are more tolerant of shade. They often choose to self-seed right under conifers!)
Euphorbia amygdaloides robbiae (a native species- avoid the purple form as susceptible to mildew and not very vigorous)
Ferns – *Polystichum setiferum* does very well. (Others can often succeed if planted when young -or if you have the time - grow them from spores, when they will adapt happily)
Hedera (Ivy) Most hardy forms grow happily in shade
Hellebore foetidus, argutifolia (evergreen forms of the hellebore family)
Iris foetidissima (insignificant flowers but seed heads last through the winter with bright orange seeds visible)
Lunaria annua (honesty)
Luzula sylvatica 'Aureomarginata' (a quiet and unassuming evergreen groundcover for dry shady corners)
Mahonia aquifolium (great for early nectar flowers for bees, and seeds act as wildlife food too. Choose an un-named cultivar for best drought tolerance)
Stipa arundinacea (Seedlings of this transplant well to dry shade and grow on well if slightly slower than in the sun. Valuable as evergreen.
Symphytum 'Hidcote Blue' (very vigorous creeping comfrey with attractive flowers, will thrive where nothing else will)
Tellima grandiflora (un-named cultivars have more vigour)
Vinca (all varieties)
Viola odorata (excellent plant to colonise dry shade whilst slower growing plants get established)

Watering vegetables

How much to water depends on a number of variables:

- soil (clay, silt, sand),
- effect of wind,
- amount of organic material in the soil,
- whether a mulch has been applied
- and when it last rained!

A good guide is to try to imagine your plant above ground mirrored by the root system below ground. Seedlings will require more watering than a tall plant that has an extensive root system. Alternatively, dig down a spades depth – the soil should not be dry.

Commercially, irrigation is used to maximise production – but most vegetables will crop adequately without much additional watering.

Water requirements

Requirements for watering vegetables varies depending on the crop, and growth stage. Leafy crops need more water than those grown for their fruits or roots. Seedlings will not recover if they dry out because of their small root system; water regularly in dry weather until established.

Drought tolerant once established

Onions, leeks, carrots, beetroot, sprouting broccoli, Brussels sprouts, winter cabbage, spring cabbage, winter cauliflower, parsnips, marrows, spinach beet, Jerusalem artichoke, parsnip, radishes, swede, turnips, chicory and endive.

Regular watering (only in dry weather)

Leafy crops may need regular watering in dry weather, particularly on light soils to encourage leaf growth.

Water after flowering (only in dry weather, if needed)

Peas

Beans (Runner beans need a lot more water than French beans)

Tomatoes

Squashes, Pumpkins and marrows (many will survive without much extra watering unless you are trying to grow huge fruits)

Courgettes

Watering these crops before they start to flower will only encourage leafy growth, without improving the crop.

Watering vegetables in containers

Do not allow container vegetables to go short of water. In hot, dry weather a tomato plant may need watering twice a day for instance. Rain can bounce off leaves and doesn't always get into the roots, so you might need to water, even on rainy days.

Remember, the container grown vegetable (or any other plant) relies on you completely to supply all its needs. Never let the plants dry out.

When to water

Apply directly to the soil either in early morning or evening, when the air and soil are cool (reduces loss to evaporation). Slug susceptible plants (leafy crops etc) should only be watered in the morning though, as slugs are not only nocturnal but will be more active if you wet the soil, thus creating ideal conditions.

Ways to conserve water:

- Mulch the soil surface. Materials like leafmould, grass clippings, newspaper, straw and composted bark chippings, will all help to reduce moisture loss and suppress weeds. Apply when the soil is moist and has warmed up and the plants are established. Water well if soil is dry before laying down the mulch.
- Remove weeds; they will be in competition for water resources with the plants/vegetables you want to grow.
- Windbreaks are good for sheltering plants from drying winds.
- Shade seedlings in hot weather.
- Water loss is increased by evaporation when digging in dry hot weather.
- Increase the water-holding capacity of the soil by digging in organic matter. Alternatively use organic matter as a mulch, reducing water run-off.
- Watering early morning and late afternoon will reduce evaporation rates.
- Apply water to the soil, not plants.
- Collect as much rainwater as possible by using water butts.
- Overwatering has more of a detrimental affect on plants. It will also encourage the roots to search in the top few centimetres of the soil, thus discouraging roots from searching deeper into the soil. Grow runner beans over a well-prepared bean trench.

Extracted from Garden Organic: http://www.gardenorganic.org.uk/todo_now/watering_vegetables.php

Rainwater and Grey Water Harvesting

Woking LA 21 does not endorse any of these suppliers. List is for information only.

When grey water is recycled it should not be kept for more than 24 hours before discharging on the garden, unless it has been filtered/treated.

Please note uncovered water-butts can be dangerous for pets and wild animals.

Rainwater harvesting

Rainwater harvesting can mean anything from:

- collecting water in butts and using it to water garden plants (if filtered, also for car washing) to
- collecting rainwater in an underground tank and using it in the house for toilet flushing, clothes washing etc

Most arrangements just collect rainwater from the roof, but it is possible to collect water from driveways or other hard landscaping. Collecting water from the ground is more difficult and expensive, and the water will almost certainly have to be treated to deal with contamination.

The Environment Agency has a short document on rainwater systems at:

www.environment-agency.gov.uk/subjects/waterres/511050/?version=1&lang=e

and a more detailed report at:

www.environment-agency.gov.uk/commondata/acrobat/rainharvest_june04_809069.pdf

The Centre for Alternative Technology's fact sheet about rainwater use is at:

www.cat.org.uk/information/catinfo.tmpl?command=search&db=catinfo.db&eqSKUdatareq=20020925160005

and they have a magazine article on the subject at:

www.cat.org.uk/catpubs/article.tmpl?sku=art9

"The Water Book – find it, move it, store it, clean it... use it" By Judith Thornton.

Centre For Alternative Technology (CAT)

ISBN 978-1-902175-49-2 Retail Price £12.00

www.cat.org.uk/catpubs/pubs_content.tmpl?subdir=catpubs&sku=PUBS_25&key=wb

Local residents' experience

A large scale rainwater harvesting system:

*"Supplier/installer: Water Support Services, Dorchester
Rainwater Harvesting System. 7,000-litre underground storage tank, takes rainwater from downpipes, filters it and pumps it back into the domestic water supply. Fully automatic system, with mains top up if necessary. Completely trouble-free so far.*

Water used to flush toilets, clothes washing machine, garden pond top-up, general garden use, car washing etc.

Reduces our mains water usage by at least one third, possibly up to a half (recently installed, first mains water bill not yet received).

A major and expensive installation - looking to the future. Only possible if you are re-landscaping your garden or have a very large garden. Installation works quite disruptive."

An alternative approach taken by another Woking resident:

"I have not so far installed water butts, as I try to garden in such a way that plants do not need watering, primarily because this saves me time. I plant out in the autumn or early spring, use appropriate plants and mulching techniques, and if a plant dies because of drought I replace it with something more tolerant of drought. The only plants I water are salad crops – I use left-over rinsing water from the kitchen, or water run into a bucket while the shower water gets warm enough."

DIY suggestions

- To deal with overflow from butts - add a hosepipe fitted near the top of one butt to link to another one, or to a drain.
- Check out local builders merchant who may sell old jam vats which are like large water-butts, for about £6-£10.
- Check out Ebay for various alternatives to Garden Centre rainwater butts, e.g. IBC tanks

Suppliers of butts etc for harvesting rainwater

The Water Butt shop

www.thewaterbuttshop.co.uk

The Tank Exchange

63 Tower Street. Barnsley, South Yorkshire. S70 1QS Tel: 08704 670706

www.thetankexchange.com/home.htm

Smiths of the Forest of Dean Ltd

www.smithsofthedean.co.uk/ Tel 01594 833308

Low cost systems for rainwater harvesting in the garden:

www.rainharvesting.co.uk/pages/systems/systs_grdn.html

For a comprehensive list of rainwater harvesting suppliers:

www.renewableenergycentre.co.uk/rainwater-harvesting/rainwater-harvesting-equipment-suppliers/

Gardena rainwater tank pump for about £70 available at garden centres. Described on website

www.gardena.com:

For running a watering nozzle or gun, or a Micro-Drip-System using stored water from a rainwater tank or water butt. Can also be used to fill watering cans. Suitable for pumping mains water and clean rainwater. The quiet electric pump is suspended in the water and has an integrated dirt filter.

Greywater reuse

Greywater is water from personal washing that can be used for garden watering, or with suitable treatment can be stored and used for toilet flushing. The waste water from kitchen sinks and dishwashers is not usually collected as it is too heavily contaminated. Discuss grey water use in the house with Building Control (Woking BC) before going ahead with any installation.

Don't use it for watering leafy vegetables and be careful to only water roots of fruit bushes.

The Environment Agency has a leaflet on grey water use in the home at:

www.environment-agency.gov.uk/commodata/105385/greywater_880769.pdf

and a list of system suppliers / installers at:

www.environment-agency.gov.uk/commodata/105385/cwb3_suppliers_876139.pdf

The Horticultural Trades Association has a leaflet on the use of grey water for watering outside, including the use of softened water

http://www.the-hta.org.uk/uploaded_files/1828/downloads/Greywater%20-%20consumer%20information.pdf

Simple syphons and pumps to move water from a bath to the garden

Greywater Diverter Kit

A simple kit that uses gravity to move water from baths, sinks and showers to the garden or water storage butt. Includes: a high quality robust pump with non-return valve; 1.7m hose; a standard Hozelock connector, a filter and full instructions.

www.cat.org.uk/shopping/searchx.tmp/

Droughtbuster 'Grey Water' Syphon Pump

www.greenandeasy.co.uk/product_single.php?product_id_sent=706&cat_id_sent=44

WaterGreen syphon pump

www.droughtbuster.co.uk/index.htm

Complete garden watering system including filtering

Aquastore Water Recycling System for Gardens

www.rsankey.com/Sankey-News/Aquastore/2/1

Aquastore is a recycling system that turns bath, shower and sink grey water back to a form that is safe for use on the garden.

Filter fits on top of a standard Sankey 210 litre rainwater butt. No power required. Costs £200, filter lasts 12 months, replacement filters cost £39.99.

Ten Top Tips on how to conserve water in the organic garden



- Mulching helps to reduce moisture loss
- Mulch the soil surface with materials such as leafmould, grass clippings, sheets of newspaper, straw, composted bark chippings, which will all help to reduce moisture loss and suppress weeds. Apply when the soil is moist and has warmed up and the plants are established. Water if soil is dry before laying down the mulch.
- Remove weeds; they will be in competition for water resources with the plants/vegetables you want to grow.
- Windbreaks are good for sheltering plants from drying winds.
- Shade seedlings in hot weather.
- Digging increases water loss from the soil, particularly in dry hot weather.
- Increase the water-holding capacity of the soil, by digging in organic matter such as compost or leafmould. Organic matter as a mulch will reduce water run-off.
- Watering early morning and late afternoon will reduce loss of water through evaporation.
- Apply water directly to the soil, not plants.
- Collect as much rainwater as possible by using water butts.
- Soak plants well if you are watering. Check that the water has penetrated down into the soil, not just the surface layers.

<http://www.gardenorganic.org.uk>



Watering vegetables

How much to water depends on a number of variables:

- soil (clay, silt, sand),
- effect of wind,
- amount of organic material in the soil,
- whether a mulch has been applied
- and when it last rained!

A good guide is to try to imagine your plant above ground mirrored by the root system below ground. Seedlings will require more watering than a tall plant that has an extensive root system. Alternatively, dig down a spades depth – the soil should not be dry.

Commercially, irrigation is used to maximise production – but most vegetables will crop adequately without much additional watering.

Water requirements

Requirements for watering vegetables varies, depending on the crop, and growth stage. Leafy crops need more water than those grown for their fruits or roots. Seedlings will not recover if they dry out because of their small root system; water regularly in dry weather until established.

Drought tolerant once established

Onions, leeks, carrots, beetroot, sprouting broccoli, Brussels sprouts, winter cabbage, spring cabbage, winter cauliflower, parsnips, marrows, spinach beet, Jerusalem artichoke, parsnip, radishes, swede, turnips, chicory and endive.

Regular watering (only in dry weather)

Leafy crops may need regular watering in dry weather, particularly on light soils to encourage leaf growth.

Water after flowering (only in dry weather, if needed)

Peas

Beans (Runner beans need a lot more water than French beans)

Tomatoes

Squashes, Pumpkins and marrows (many will survive without much extra watering unless you are trying to grow huge fruits)

Courgettes

Watering these crops before they start to flower will only encourage leafy growth, without improving the crop.

Watering vegetables in containers

Do not allow container vegetables to go short of water. In hot, dry weather a tomato plant may need watering twice a day for instance. Rain can bounce off leaves and doesn't always get into the roots, so you might need to water, even on rainy days.

Remember, the container grown vegetable (or any other plant) relies on you completely to supply all its needs. Never let the plants dry out.

When to water

Apply directly to the soil either in early morning or evening, when the air and soil are cool (reduces loss to evaporation). Slug susceptible plants (leafy crops etc) should only be watered in the morning though, as slugs are not only nocturnal but will be more active if you wet the soil, thus creating ideal conditions.

Ways to conserve water:

- Mulch the soil surface. Materials like leafmould, grass clippings, newspaper, straw and composted bark chippings, will all help to reduce moisture loss and suppress weeds. Apply when the soil is moist and has warmed up and the plants are established. Water well if soil is dry before laying down the mulch.
- Remove weeds; they will be in competition for water resources with the plants/vegetables you want to grow.
- Windbreaks are good for sheltering plants from drying winds.
- Shade seedlings in hot weather.
- Water loss is increased by evaporation when digging in dry hot weather.
- Increase the water-holding capacity of the soil by digging in organic matter. Alternatively use organic matter as a mulch, reducing water run-off.
- Watering early morning and late afternoon will reduce evaporation rates.
- Apply water to the soil, not plants.
- Collect as much rainwater as possible by using water butts.
- Overwatering has more of a detrimental affect on plants. It will also encourage the roots to search in the top few centimetres of the soil, thus discouraging roots from searching deeper into the soil. Grow runner beans over a well-prepared bean trench.

Extracted from Garden Organic: http://www.gardenorganic.org.uk/todo_now/watering_vegetables.php

Save money

Save CO₂

Five quick actions

Week 1

Turn down room thermostat by 1 degree

Save £50 p.a.

Hot water should be 60 degrees max.

Week 2

Curtains and switch off

- All lights
- All unused equipment
- Pull curtains at dusk

Week 3

Travel smarter

- Car share
- Drive economically
- Use bike more

Week 4

Food

- Buy local
- Buy in season
- Less meat, more veg

Week 5

Insulate

- Loft
- Hot water
- Walls
- Yourself!