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GUILDFORD ENVIRONMENTAL FORUM *newsletter*

MARCH – MAY 2016

SWIFTS IN THE ROOF

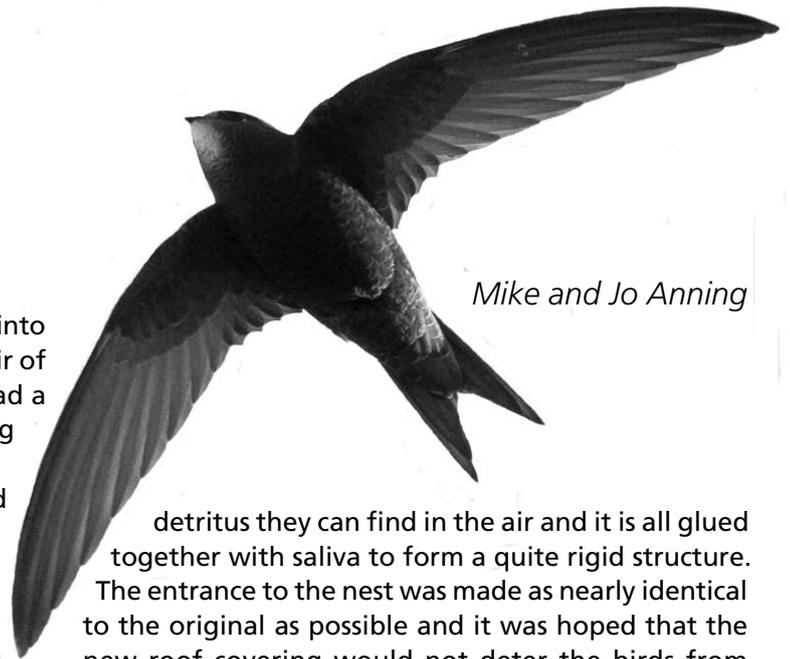
SWIFTS FIRST CAME to our notice when we moved into central Guildford and discovered that we had a pair of swifts nesting in the eaves of our house. As we had a major roof project in mind involving the reshaping of a 1970s loft conversion, necessitating the removal of the existing roof structure, we decided that we would find out a little more about their migration pattern.

We learned that it is the common or European swift which comes to our shores and stays for approximately three months, arriving at the end of April/beginning of May and generally departing by late July, although some birds do leave after this. The swifts spend the rest of the year in Africa living entirely on the wing and, in fact, only come to rest at the nest site.

Like many other species their numbers are severely in decline, partly due to the reduction in suitable nesting sites as older buildings are refurbished and roof areas are sealed up. Modern buildings are not a friendly environment for these birds although nest boxes at eaves level could be provided.

Circumstances dictated that our roof project would start in November 2007 and we were concerned to complete it by the beginning of the following April well before our swifts would, hopefully return. (See overleaf illustrations of the nest area before the main work began.) The immediate nest area was left untouched although its extent was confined to prevent the birds straying into other areas covered with mineral wool insulation. The nest itself is approximately 120mm in diameter.

The swifts make their nests from any suitable organic



Mike and Jo Anning

detritus they can find in the air and it is all glued together with saliva to form a quite rigid structure. The entrance to the nest was made as nearly identical to the original as possible and it was hoped that the new roof covering would not deter the birds from returning. On completion a small video camera linked to a monitor downstairs was fixed in the rear of the nest area. All works were complete and all scaffolding removed in early April 2008.

The nest was monitored on a daily basis from the last week of April and it was with great excitement that during the evening of 4th May two swifts were observed on the nest, swifts having been seen circling overhead earlier in the day. It is interesting to note that in subsequent years both birds have again arrived on the same day or within a day or two of each other. This seems quite incredible after such a long migratory flight and suggests that the birds remain in the same flock throughout their time during and on the way to and from Africa. It is also said that the same birds return to the same nest but we had no way of confirming this.

During our years of observation it has been found that when the birds first arrive they immediately huddle together on the small nest constantly preening themselves and each other and are hardly ever still. Eggs, usually 2 or 3, appear after approximately 2 weeks and incubation takes approximately 20 days,



Fig 1 shows the nest area when the roof tiling was removed and Fig 2 the same area just prior to the new roof covering being commenced.

each bird dutifully taking its turn on the nest, although on occasion the sitting bird has been reluctant to move and has had to be pushed off by its mate.

The early growth of the tiny chicks is quite incredible and they soon overflow the nest. They are fully fledged after about 5 - 6 weeks and exercise by spreading their long primaries, fluttering them and pressing down almost lifting their bodies from the nest floor. The whole nest area is quite crowded when they are fully grown and the parent birds are present.

After the young have flown the parent birds return at night "cuddling" up to each other and they stay on for about another 4 or 5 days presumably gaining strength and weight after their hard labours, before they too depart. The empty nest and lack of birds screaming as they circle the house is quite a sense of loss and it is

so uplifting when they return at the beginning of the following season.

The table below gives a brief summary of the records taken during 8 years of observations.

It will be noted that some years were less successful, partly due to poor weather and desertion or loss of one of the parent birds. It is also salutary to note that the maximum number of swifts circling in the sky during the day has fallen from over 20 in 2008 to just 7 birds during the last season of 2015.

Further information about swifts and how to help their preservation can be found at www.swift-conservation.org. There is also an excellent booklet entitled The Museum Swifts by Andrew Lack & Roy Overall available from the Oxford University Museum of Natural History, where swifts have been observed and monitored for many years.

YEAR	ARRIVAL DATE	NO OF EGGS	DATE EGGS LAID	DATE CHICKS HATCHED	NOTES	DATE PARENTS DEPARTED
2008	4 May	3	by 30 May	4 June	3 fledged, flew by 17 July	22 July
2009	09 May	3	By 25 May	09 June	2 fledged, flew by 19 July	25 July
2010	29 Apr and 05 May	2	by 21 May	11 June	2 fledged, flew by 22 July	26 July
2011	07 May	3	By 27 May	All 3 hatched, date unknown	1 parent deserted, poor weather, all 3 chicks died	27 July
2012	03 May	2	By 26 May	Did not hatch	Eggs out of nest. No chicks. Adults in and out	??
2013	06 May and 08 May	3	By 31 May	22 June	1 fledged, 1 egg pushed out 16 June	27 July
2014	05 May and 06 May	3	1st 17 May 2nd 19 May 3rd 20 May	1st 06 June 2nd 08 June 3rd 09 June	1st chick pushed out of nest but replaced by us. 3 fledged, flew on unknown date before end of July	25 July
2015	04 May	3	1st 15 May 2nd 16 May 3rd 18 May	1st 05 June 2nd 05 June 3rd 06 June	3 fledged, flew 17, 18 and 19 July, a very good year	23 July

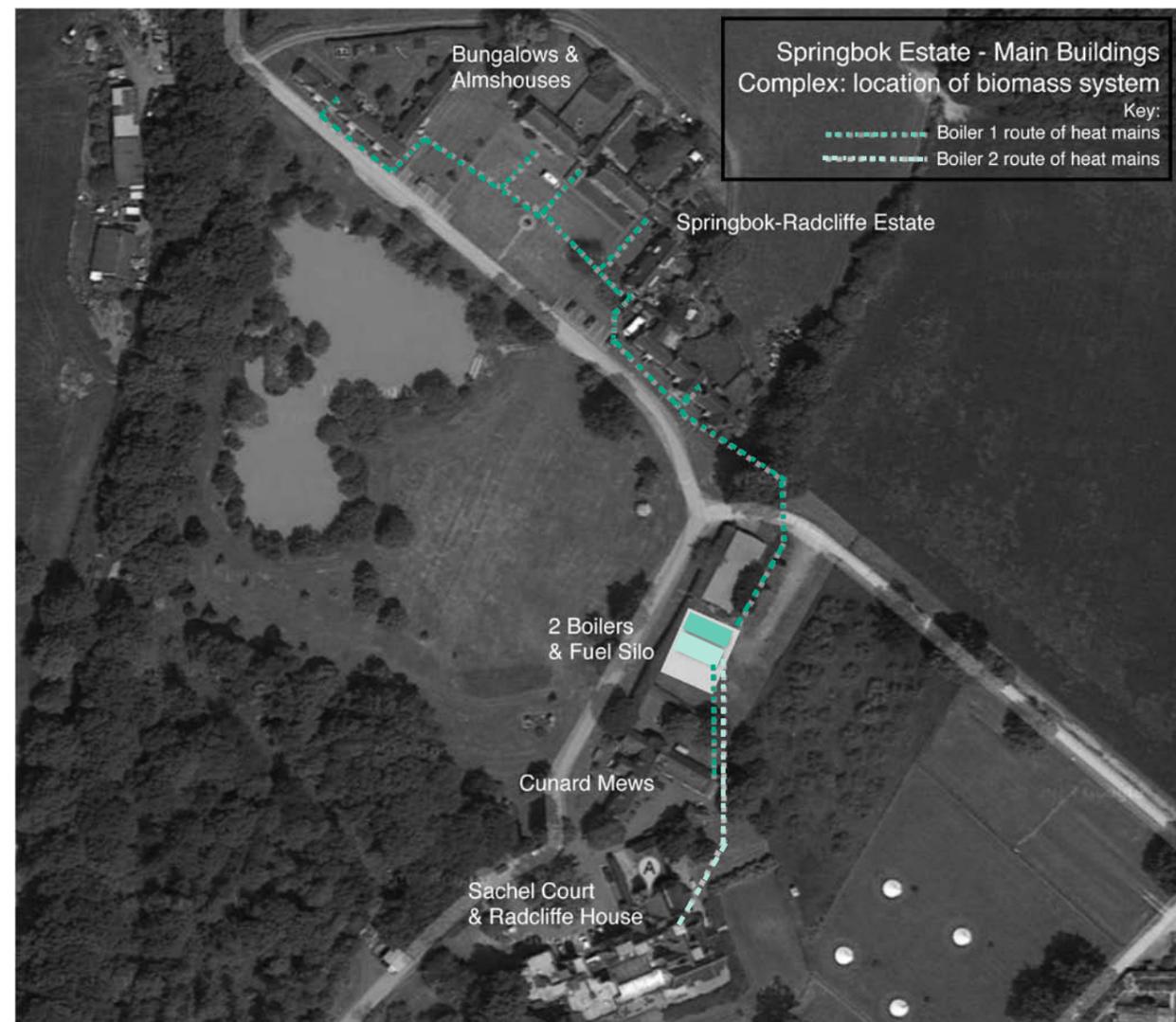
A SUSTAINABLE DISTRICT HEATING SYSTEM THAT'S COMMUNITY-OWNED

IN JUNE 2015 THE SPRINGBOK ESTATE near Alford in Surrey switched its heating system from oil to a wood-fuelled district heating system running on locally produced sustainable wood chip. The system is owned and run by a social enterprise called the Springbok Sustainable Wood Heat Co-operative and it is believed to be the only community-owned sustainable district heating system in the country.

The main occupant of the Springbok Estate is Care Ashore, a charity that provides accommodation with support and convalescent breaks for seafarers in need and their dependants, drawn from the merchant marine, the fishing industry and the Royal Navy. The buildings served by the new district heating system include a very large Victorian country house which has been significantly extended, its outbuildings and a collection of bungalows, maisonettes and houses. Previously these were heated by around 20 individual oil boilers but some of these were very old and expensive to maintain. The estate is not on the

gas grid, so the choice was between replacing the existing system with new oil boilers or switching to wood biomass. However, the capital costs of biomass boilers is considerable and the charity had looked into switching to wood biomass but decided it could not afford the substantial capital outlay.

Then in 2011 Milford residents Mike and Kathy Smyth bought 40 acres of unmanaged woodland off Rosemary Lane in Alford and the Springbok Estate was one of their neighbours. Mike is already well known to some of you as a leading exponent of community-owned renewable energy through his role at Energy4All and also through the Wey Valley Solar Schools Co-op. The Smyths suggested to Care Ashore that the capital required for a new heating system at the Estate could be raised by a community-based social enterprise. Care Ashore agreed to consider this and feasibility studies were carried out by a heating consultant, who confirmed the suitability of the buildings for a biomass system. In 2014 Care Ashore



agreed to go down the social enterprise route. The Springbok Sustainable Wood Heat Co-operative was created to raise the share capital, construct and subsequently operate the biomass system at the estate for the next 20 years.

Getting started

The project was put out to tender by the Co-op on a 'design and build' basis which placed the responsibility for designing the system and delivering the heat load onto an appropriately qualified contractor. The tender was won by Douch Biomass, which is based at Nutley in the Ashford Forest. Douch has an excellent track record and had installed the system at Hever Castle. Planning permission for a stand-alone boiler house was granted in July 2014. A first share offer in 2014 by the Co-op raised £150,000 and in November 2014 the groundworks started. This was the beginning of a wet winter but unfortunately the amount of the Renewable Heat Incentive, which the project would be relying on for some of its income to be financially viable, was being reduced every three months. Therefore the Co-op had no choice but to start to build that winter if the project was to survive. A second share offer in early 2015 raised a further £278,000. Works were completed in June 2015 and the estate was then switched over to its new biomass district heating system and the old oil boilers removed.

The Co-op's income comes from the sale of heat, the RHI and a standing charge. From this it pays its expenses, primarily the purchase of wood chip, and interest on capital to its members. The return to its members is sufficient to raise and retain the capital required, which is anticipated to be around 6%. This is a higher rate than is currently being offered by some solar co-operatives, but there are more variables and a higher level of risk associated with a heating project than, for instance, with solar pv.

It gives you some idea of the scale of the project

that it took from mid-November 2014 to mid-June 2015 to complete. In that time there was installed: an underground fuel silo, a stand-alone boiler house containing 2 x 199kW Herz boilers, 2 x 5,000 litre buffer tanks together with back-up oil boilers and nearly half a kilometre of district heating pipe. The boilers are projected to generate approximately 850,000kWhth of renewable heat each year. Carbon savings are difficult to calculate, but applying the formula published by the Biomass Energy Centre they should be over 250 tonnes per year. Wood chip is currently being sourced from a depot near Horsham which specialises in local wood chip, but the Co-op hopes to introduce wood chip from the immediate locality which will increase the carbon savings still further. Nearly £15,000 has recently been spent on energy efficiency improvements on Care Ashore's buildings to reduce heating demand.

Wildlife benefits

Another benefit is that Springbok Estate is surrounded by unmanaged woodland, including some on its own estate. The project will also create a market for the wood which will help to bring these woodlands back into sustainable management, improving its biodiversity. Some management work has now started and in one area the focus is going to be on improving the habitat for the rare Wood White butterfly. In other areas there will be less emphasis on creating butterfly habitat and more on improving habitat for nightingales, which are already breeding in the Springbok woods.

These are the 'nuts and bolts' of the project but it is also about forging a strong partnership between an excellent local charity and the local community. It is early days in a long relationship which hopefully will last for another 20 years.

More information on the background and progress of the site is available on the Co-op's website at www.springbokwoodheat.co.uk where Kathy Smyth writes a blog charting the project's progress.

GEF SUBSCRIPTIONS and FINANCES

Subscriptions for 2016/7 are due on 11th April, 2016. The subscription rate is being maintained again at last year's rate of £10pa (£15pa for a household at one address). For all those who have completed standing order mandates and gift aid declarations, there is nothing more that you need do to renew your membership and we thank you very much indeed for completing both returns in the past.

Most other members will receive a reminder by e-mail to pay their subscription and/or to complete a gift aid mandate. If we do not have an e-mail address for you, there will be a reminder form with your posted newsletter and we would be most grateful if these could be

returned to me by 31st March, 2016. We encourage members to pay by standing order as it reduces our administration hugely, but if this is not your preference, then please send me a cheque and the gift aid certificate and I will confirm receipt.

CURRENT FINANCES. We have been able to maintain subscriptions at the level set in 2011 because gift aid recoveries have totalled over £1,600 in recent years and we have reduced our overheads. Guildford Borough Council also continues to provide facilities for lectures at no cost to ourselves. The budget for 2016/7 is that GEF will incur an ongoing deficit of £400 next year, which we will finance from existing reserves. Happily our membership is growing again after a small decline.

If we could increase our membership by just 40 members (some 25%), we would break even. We are therefore sending you, with this newsletter, an additional copy of our newsletter and a new membership application form. If you know of anyone in the Guildford area who would like to become a member of GEF for £10pa, then please encourage them to apply for membership. This is the very best way in which you could help GEF to grow in the future.

We hope you are getting very good value for your membership of GEF. If you feel your GEF membership is worthwhile, income from additional donations is, of course, most welcome.

Adrian Thompson, Hon Treasurer

What a clean-up!

Otters have returned to the River Don in Sheffield. In the 1980s it was regarded as the most polluted river in Europe, running yellow in some parts of the city due to pollution from heavy industry. (Source: I, 14 Jan '16)

Colourful topping to V&A

A living roof was installed by the charity Buglife at the V&A in June last year. It contains both wet and dry gardens and several beehives, and boasts a vibrant display of native flora including red and white clover, purple loosestrife, buttercups and ox-eye daisies. On the launch evening, dragonflies and pond snails were present, and bumblebees, a cuckoo bee and a solitary wasp were visiting the flowers. (Source: Bug Bites, Aug '15)

FACTS & FIGURES

Bumblebee food

During the past 80 years, 76% of the 97 foodplants preferred by bumblebees have declined. (Source: BBC Wildlife, Apr '14)

Green(ish) belt

The number of new homes being approved on Green Belt land in England has increased fivefold over five years: in 2009-10 planning permission was granted for 2,258 homes, and in 2014-15 for 11,977. (Source: bbc.co.uk, 2 Jul '15)



NOWER WOOD

An update on Surrey Wildlife Trust's flagship education centre

by Claire Alderton



Our ideas for the new centre at Nower Wood have come a long way since we first wrote in Guildford Environmental Forum's newsletter about them back in 2012.

The existing buildings, which were secondhand when we purchased them some 40 years ago, are now infested and rotten, and if they are not replaced shortly we would have to close the centre permanently as it would become unsafe to teach there. The new building is designed with three classrooms rather than our existing two, meaning that we can welcome many more visitors, and has a wide range of disability-friendly adaptations so that we will be able to extend our offering to those who could not previously access the facilities.

The total cost of the new building, and revisions to the site around it, is now estimated to be around £1.1 million. This does however include the cost of staff time in developing and delivering the project. We have currently raised £589,000 and have just submitted a second stage Heritage Lottery Fund application for £360,000. We will receive notification in March whether our application has been successful, and if so mitigation works will start immediately, with the actual build beginning in May.

Our initial plans had to be revised from a double height building to a single storey structure, and we were delighted when planning permission was granted to enable us to begin construction in 2016. In developing the design for the new Education Centre the Trust has given high priority to making the building as sustainable as possible including

the sourcing of materials, the construction method and the energy efficiency. The key elements will be:

- The new building will use natural ventilation. All classrooms have bifold glass doors which can be opened up in summer to improve air flow. Heating will be via a biomass boiler situated close to the centre of the building to maximise the heating effect and will use recycled wood pellets, from a local sustainable source.
- The orientation of the pitched roof elements has been optimised for solar thermal panels which will provide hot water and will also allow for photovoltaic panels to be integrated. The design ensures good levels of natural light allowing low energy lighting to be installed throughout.
- The new building design incorporates a super-insulated timber framed/panel construction with a thermal performance in excess of the current Building Regulations.
- Foundations of the buildings will be based on screw piling, or helical piling as it's also known. This has been chosen rather than concrete foundations to ensure both minimal environmental impact ground disturbance – to both the important ancient woodland habitat and its associated species.

- Flow-reducing valves will be installed to pipework that is not used for high volumes of water, and aerated taps and other water-saving fittings will also be installed. Rainwater harvesting was in the original plans for the building, but after advice from a sustainability consultant we removed this feature. It was determined that this was primarily used in much larger buildings and mostly to mitigate levels of water used in irrigation schemes. It was decided that its removal would not have a detrimental impact on the sustainability of the building, and that other water-saving features such as low-flush toilets and flow-reducing taps would have a similar impact.
- The main construction material will be FSC certified wood. The Trust intends to provide as much of the timber as possible from its reserves, and it will be milled at the Norbury Park Sawmill four miles away to reduce travel miles. In addition, when the old buildings are removed, we will be recycling as much from them as possible. You may be pleased to hear that no peat will be used in the construction works.
- The new building will use the existing power, water and waste water treatment systems, so that no extensive service ground works are required. However, improved broadband internet connection will be installed.
- Ecological surveys spanning seven years have ascertained the presence and abundance of species within the

- development area and wider reserve. EPS licences will be obtained for Great Crested Newt and Dormouse. Construction timing has been chosen to reduce ecological impact by taking place during the summer months when drier conditions should result in reduced soil disturbance and avoidance of hibernation periods.
- During the initial site clearance the top soil will be scraped back and retained. Once the build has been completed the top soil will be spread back around the immediate worksite to retain and safeguard the ancient woodland seed bank. An additional raised pond and mini-beast habitat will be created.
 - The green roof that will be installed at Nower Wood is a bio-diverse or wildlife roof. It will have small log piles incorporated to encourage a home for invertebrates and fungi. Commercial substrate can be used and can either be seeded with locally occurring native woodland/woodland edge plants or can have a selection of locally occurring native woodland/woodland edge plug plants added, such as foxglove, primrose, red campion and native ferns.
- If anyone would like to come and see the existing site and to talk through our plans, then please do not hesitate to contact claire.alderton@surreywt.org.uk**
- For information about Surrey Wildlife Trust and its work see its website www.surreywildlifetrust.org**

“Surrey Wildlife Trust’s work inspiring people to love nature has never been more important. If we are to protect nature in the future we have to put people at the heart of it. Nower Wood is therefore one of the most important places in Surrey and it is vital that the work there continues to inspire more people.” DAVID ATTENBOROUGH



Can Guildford Environmental Forum help build on the Paris Climate Change talks?

How did you react to the news of a significant agreement in Paris at the Climate Change Talks last December? Certainly, the participants were more elated than after the previous talks in Copenhagen in 2009. There was praise for the French chairmanship and management, but it was crucial that China and the USA (responsible for nearly half of the world’s CO₂ emissions) were fully engaged and keen to reach agreement.

The GEF Executive has been considering how the Forum should respond to the Paris agreement and would like to hear your views. Firstly, however, we should provide a bit of historical background about the role of GEF and our link to Climate Change. The Forum was established in January 1993 in response to the recommendations of the Climate Change talks in Rio in 1992. The purpose of GEF under our Constitution is “to create a partnership between business, the Boroughs, County and Parish Councils, education establishments . . . and to:

- Assess and monitor the environment in Guildford.**
- To recommend and seek implementation of measures beneficial to the environment in Guildford.**
- To stimulate interest and action in relation to environmental matters in all sections of the community in Guildford.**
- To define, develop and promote sustainable development in relation to Guildford.**
- To facilitate the exchange of knowledge, initiatives, experience and skills relating to environmental matters.**

Near the peak of co-operation with Guildford Borough Council (GBC), GEF signed a Service Level Agreement with the GBC on 24th November 2006 and some of this continues to this day. However, the declining interest in environmental matters since the financial crisis in 2008 has led to a fall in GEF membership and other priorities for GBC (especially linked to funding cuts from Central Government). Nationally, the environment, climate change and biodiversity were hardly mentioned in the lead-up to the 2015 general election.

However, the Executive of GEF would like to know of any views or suggestions that you might have to help take this initiative forward. To help you to respond, we have internally decided/learnt the following:

- We are offering GBC the support of GEF in raising the profile of the environment in Guildford and especially in the forthcoming Local Plan.
- We have learnt from GBC that:
 1. As part of the Local Plan, the planning policy team is commissioning a Green Infrastructure/Biodiversity Strategy.
 2. Later this year GBC will be putting forward its Countryside Vision document – a policy and strategy for managing our land holding and working with others to deliver on the landscape scale approach required by government.
- GEF membership is now beginning to grow again and the Executive would like to build on the momentum of the Paris talks to re-focus on our original aims if there is enough support from our members.
- In Sept 2015, Woking BC published *Woking 2050 – a Vision for a Sustainable Borough* (link – <http://www.woking.gov.uk/environment/climate/woking2050>) which sets out Woking’s environmental strategy and is supported by other documents such as *Natural Woking – a Biodiversity and Green Infrastructure Strategy*.
- GEF currently has adequate financial resources to prosper for many years and has helped finance many projects as diverse as Transition Guildford’s Rosamund Community garden, Sandfield Primary Schools solar PV system, the provision of artificial otter holts on the river Wey in Guildford and is currently supporting projects to provide nesting sites for peregrines.
- GEF plans to strengthen its finances and increase local awareness by expanding on the apple pressing that members have run at RHS Wisley and the Surrey Hills Wood Fair amongst other venues.
- GEF believes that Guildford should have a Green Infrastructure/Biodiversity Strategy and that, with your support, we could help in this way to make Guildford a better place to live.

Would you be interested in joining the GEF team to work with GBC on this initiative? We would really welcome any comments or ideas on the above and would ask for them to be submitted by e-mail to adrian@lampcottage.net

Mathematical genius

Wasps are the ultimate perfectionists when constructing their hexagonal cells, even more so than bees. At every Y-shaped intersection where the walls of three cells meet, the wasp checks the angles, calibrating each to a perfect 120 degrees. (Source: BBC Wildlife, Jan '16)

FACTS & FIGURES

University share sell-off

The University of Surrey has sold all its shares in the fossil fuel industry following a two-year campaign by students and staff. The sale of its £33,000 investment in multinational metals and petroleum company BHP Billiton was the final portion of more than £200,000 formerly invested in fossil fuels as part of its £42 million endowment. (Source: Surrey Advertiser, 23 Oct '15)

Beastly baggage

More than 300 animal and plant species, and their derivatives, were seized at UK airports and ports during Operation Cobra III, which ran from mid-March to end May 2015. Seizures included 166 turquoise blue geckos, 10,000 seahorses, 400 Horsefield tortoises, 11 black bear claws, 23 orchid and cacti, 157 health supplements and 57 ivory products. (Source: Independent, 20 June '15)

FRACKING

Dr Damien Short, Reader in Human Rights, School of Advanced Study, University of London, and Director, Human Rights Consortium

Key sources used for this article can be found on the Forum's website at [http://gefweb.org.uk/Bibliog.%20for%20Short%20on%20Fracking%20\(3\).pdf](http://gefweb.org.uk/Bibliog.%20for%20Short%20on%20Fracking%20(3).pdf)

AS CONVENTIONAL ENERGY RESERVES are depleted and demand for energy rises, there is increasing pressure to exploit unconventional energy sources. Michael Klare first coined the term 'extreme energy' to describe a range of relatively new, higher-risk, non-renewable resource extraction processes that have become more attractive to the conventional energy industry as the more easily-accessible supplies dwindle. Extreme energy has since been described as a 'process whereby extraction methods grow more intense over time, as easier to extract resources are depleted'. The foundation of this conception is the simple fact that those energy sources which require the least amount of effort to extract will be used first, and only once those are dwindling will more effort be exerted to gain similar resources. Extreme energy, in this sense, is evident in the history of energy extraction – in the change from gathering 'sea coal' from British beaches and exploiting 'natural oil seeps', to opencast mining and deep-water oil drilling. Viewed in this light, the concept of extreme energy becomes a lens through which current energy extraction efforts can be explained and the future of the energy industry predicted.

Energy measurement

Using this extreme energy lens necessitates an understanding of 'the amount of energy which is needed to obtain energy', as in this process it is that value which is continually rising. This value may be calculated as either 'net energy' or 'energy return on investment (EROI)', whereby net energy is the available energy for use after subtracting the energy required for extraction, and EROI is the percentage of energy produced divided by the amount required for extraction. When charted together, the net energy available to society is seen to decrease along with EROI in a curved mathematical relationship, which forms the 'energy cliff' – i.e. the point at which EROI becomes increasingly low and net energy drops to zero.

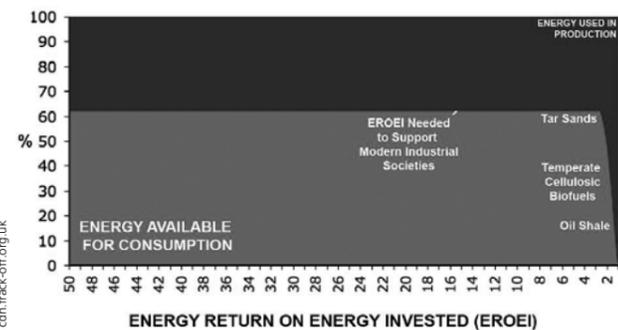
The EROI of unconventional resources is typically considerably worse than for conventional extraction which requires much less effort to extract. It is this often overlooked fact that makes a mockery of the pro-fracking 'lower emissions' due to proximity arguments used by industry and government, often expressed as 'better to have local 'home grown' gas and oil than importing from afar – which completely obscures the EROI differences between conventional and unconventional resources.

The meaning of 'fracking'

The march towards the net energy cliff is being spearheaded by the most recently developed family of extreme energy extraction methods known as 'fracking', a colloquial expression which usually refers to the extraction of shale gas, coal-bed methane (CBM) – termed Coal Seam Gas (CSG) in Australia – and 'tight oil'. Exploitation of unconventional oil and gas is a new, more extreme form of fossil fuel extraction, targeting much less permeable rock formations than previous conventional oil and gas extraction. It is characterised by the drilling of dense patterns of, usually horizontal, wells (up to 8 per square mile or more) in conjunction with other more intense processes such as hydraulic fracturing and de-watering. Different rock formations can be targeted, such as shale (Shale Gas & Oil) and coal (Coal Bed Methane), but the negative impacts on the environment and society are very similar. For many local people affected, 'fracking' has come to mean petroleum extraction companies turning up where they live and coating the area in hundreds or thousands of well pads, compressor stations, and pipelines alongside large volumes of truck traffic with some likening it to an 'invasion' and 'occupation' bringing with it a large variety of negative consequences for them and their environment.

In the countries where 'fracking' development has taken place it has been controversial and divisive. Supporters of unconventional gas development often claim that it reduces gas prices, creates employment opportunities and provides 'energy security', all the while producing lower carbon emissions than coal. Its detractors often contest all such claims, usually pointing to contrary data emerging from the US and Australia. Indeed, in numerous studies from both countries, local communities most affected by developments often cite considerable negative impacts on the environment and human health, including groundwater contamination, air pollution, radioactive and toxic waste, water usage, earthquakes, methane migration,

THE NET ENERGY CLIFF



and the industrialisation of rural landscapes, the cumulative effect of which has led to calls for the United Nations Human Rights Council (HRC) to condemn fracking as a threat to basic human rights, particularly the rights to water and health. Fracking development is fast becoming a human rights issue.

The United Nations Environment Programme (UNEP) has issued a 'Global Alert' on the issue of fracking development, warning of significant environmental risks to the air, soil, and water (contamination and usage competition); ecosystem damage; habitat and biodiversity impacts; and fugitive gas emissions – which will endanger carbon reduction targets. In terms of public health, UNEP warned of risks of pipeline explosions; release of toxins into air, soil and water; and competition for land and water resources needed for food production and that unconventional gas would likely be used 'in addition to coal rather than being a substitute' and would thus pose a threat to the development of sustainable economies.

Shale oil

'Shale oil', 'light oil' or 'tight oil' is petroleum which is located in low permeability rocks, usually shale or tight sandstone. The key difference between such unconventional oil and conventional oil, is that it is situated in the rock formation itself, rather than being contained within a permeable rock formation by an overlying layer of impermeable rock. Thus, shale oil usually requires similar extraction techniques to shale gas, such as the drilling of long horizontal laterals alongside massive hydraulic fracturing, and crucially, the drilling of densely spaced patterns of wells and is consequently included within the process known colloquially as 'fracking'. Moreover, shale oil extraction has many similar impacts to those associated with shale gas and identified by the UN amongst other bodies, including water contamination, air pollution, industrialisation of the countryside and the production of large amounts of toxic and radioactive waste, plus some unique ones.

Unlike shale gas where pipelines are usually constructed to move the product, the possibility of moving the oil in road and rail tankers leads to additional hazards. In North Dakota, USA, the development of the Bakken Shale area, where there are few pipelines, like in the UK, has led to a massive proliferation of so-called 'bomb trains'. In recent years over half a million tanker cars per year of crude oil have been transported by railways in North America, much of which is driven by the Bakken Shale oil 'boom'. Predictably this has resulted in numerous train derailments, spills and



Passionate anti-frackers at Horse Hill in February

Byn Truscott

explosions over the last few years. So far, possibly the worst disaster occurred in the Canadian town of Lac-Mégantic, Quebec when a Bakken Shale oil train derailed and exploded, killing 47 people and leaving more lingering toxic effects. The US Department of Transportation is projecting 14 tanker train derailments per year, over the next few years.

Here in the UK

In the UK the main area of likely tight (shale) oil extraction is the **Weald Basin** in South East England. The first tight oil exploration well in Britain was in **Balcombe** and was drilled by Cuadrilla Resources over the summer of 2013, in the face of considerable community opposition.

While Cuadrilla have since refocused their efforts on shale gas extraction in **Lancashire**, other interested parties have emerged in the Weald. A plan by Celtique Energy to drill wells at **Wisborough Green** and **Fernhurst** in West Sussex has, at least temporarily, foundered in the face of massive community opposition. Recently a well drilled at Horse Hill, near **Horley** in Surrey, is said to comprise a relatively shallow discovery, called Portland, which is estimated to host around 21mln barrels of oil-in-place, as well as a deeper and possibly larger 'hybrid' play, described as being 'tight' and comprising both conventional and unconventional formations.

To extract in the latter will undoubtedly require fracking and it is this play which has resulted in grand claims by UK Oil and Gas Investments (UKOG) that there are billions of barrels of oil in the Kimmeridge Clay shale formation. Even so, only a small percentage of this could possibly be extracted and even a typical recovery fraction, say 5 percent, would require the drilling of thousands of wells across the region. A well planned by Europa Oil & Gas near **Leith Hill** in Surrey would also target the Kimmeridge Clay and has been described as a tight oil 'proof of concept' by UKOG. For more details on these and other similar applications in the county, and information on how fracking may impact Surrey residents see www.frackfreesurrey.com

Whilst these developments should be resisted out

of concern for the local environments alone, in an era when over three-quarters of known conventional reserves need to be left in the ground, going after unconventional reserves with pitiful EROI figures and

huge localised impacts, is tantamount to scraping the bottom of the fossil fuel barrel and sprinting in the wrong direction, towards the net energy cliff and runaway climate change.

After Paris

by Forum member Michael Tanner

WAS IT JUST HAPPY COINCIDENCE that one of the many fireworks that soared into the heavens on 15th December 2015, the day that COP 21 terminated, went rather further than the others, carrying Major Tim Peake into orbit from a remote site in Kazakhstan which had once served Yuri Gagarin, the first human ever to go into orbit and return alive?

The splendid, glittering halls in Paris were rescheduled, the amplification systems dismantled, the contents of wastepaper bins shredded and captains of security were able for a brief while to draw a long, deep breath. The Press did what the Press always does: sought the next big story and poked the ashes of the most recent to generate a little more heat. On 12th December, the 21st Conference of the Parties had virtually completed its real business and would soon enter the realm of chronicle headlines with accompanying photos and captions, to join its predecessors of 2001, 2006, 2010 and even earlier: a cynical, facetious reflection?

Russians used to be able to measure the level of importance and the level of desperation attaching to Soviet Five-Year Plans by the harvest of acronyms they generated. Party members took pains to memorize them and those with photographic memories had a field day. These Plans served the function of encouraging the willing to adopt burdens they could not sustain and persuaded them that those in power had pinned down the main problems. Of course, acronyms also save newsprint but they can be a symptom of malaise: the documents swelling files and briefcases in Paris certainly had a bounteous share of them, anything from EWEAs to REDDs +, all labelling deserving, vital facets for consideration by succeeding CCCs.

A soundbite for Sustainability

Just one of the Ten Commandments is held by some to contain the essence of the ten: *'Love thy Neighbour as Thyself'*. Might there be such a magical phrase for the disciple of Sustainability? Perhaps that very one? How about Jonathon Porritt's *"...the terrible damage being done to the human spirit through the pursuit of unbridled materialism, will compel a profound transformation of contemporary capitalism"* or does that lack crispness? How about *"...sustainable development is as much about the wellbeing of the human species as about the wellbeing of the natural world"*? Still not crisp enough? How about no more words, just deeds, however minute, if contributory to the whole human attempt at sustaining the natural world of which man is an integral part?

Well, just what did Paris at least claim to achieve? That certainly is not easy to state since it is inevitably bound to legality, a legal framework and a legal kind of language. Its stated aim was to create an INDC (Intended Nationally Determined Contribution) to reducing global emissions. On 12th December, representatives of 190 nations under the mandate of the United Nations agreed to restrict the increase in global temperature since pre-industrial times to no more than 2 degrees Celsius, and thereafter to pursue efforts to restrict it still further (hopefully to 1.5 degrees by the year 2050). A legal version of this Agreement, in a large number of pages, is available in each of the UN's six official languages (Arabic, Chinese, English, French, Russian and Spanish). The Agreement enters into force on the 30th day after the date on which 55 Partners to the Convention (equalling 55% of total greenhouse gas emissions) have deposited their instruments of ratification. The Secretary General of the UN is depositary of the Agreement. He will open the list for signatories at UN headquarters in New York on 22nd April 2016 and keep it open for that purpose until 21st April 2017. All parties are (however) invited to sign the Agreement at the Opening Ceremony!

I imagine that the layman has mixed responses to all that: puzzlement, amusement, optimism, cynicism – maybe even the belief that a serious matter was being taken seriously. Many had made up their minds about the outcome well before the Conference, though from polarized positions.

The fatal corruption of power

What no-one was able to conceal in the months leading up to the Conference, though some would certainly have wished to, was the huge failure of two gigantic corporations any longer to conceal what amounted to criminal behaviour in attempts to maintain huge profits and even increase them at the expense of the environment and their customers. I refer, of course to the diesel emissions scam by Volkswagen and to Exxon Mobil's wilful concealment of the scientific truth. All of this has since been clearly established.

There were other factors that no one could conceal: dramatic vagaries of climate both across the globe and closer to hand: repeated devastation by flooding in several parts of Great Britain, unseasonal high temperatures throughout the British Isles and elsewhere in the world and the failure of snow in those places on the continent to which skiers normally flock. The last sounds horribly trivial against the not improbable fate of the Marshall Islands and large parts of Bangladesh.

Apart from the forces of nature and the forces of human nature mentioned above, Europe, the Middle East and Africa have increasingly been subject to other forces of human nature which daily produce misery of the most abject kind: millions displaced; thousands killed by indiscriminate or quite deliberate violence; innumerable, unrecorded deaths of those fleeing intolerable circumstances. How is the Paris Conference relevant to all that suffering? My reply to that question would be 'totally relevant'. If we can solve one quarter of the listed problems on the agenda we will have used skills and virtues which need all the enhancement they can derive from any source whether group or individual in character.

The virus of rampant consumerism

Education, commitment, empathy, compassion and patience are the virtues a green world and a happier, less selfish human existence require. The 'instant' gratification that mass consumerism engenders is the arch enemy of Paris and of the human race and certainly nothing to do with sound economics, sound capitalism or sound socialism. To be more specific: of course 'Paris' was necessary and it was worthwhile. Past experience had taught commentators to be cautious and the hugely ambitious project deserved much more than hype. It was a further ratcheting up of public awareness across the world and provided that vital opportunity for parties to share their pain and their vision – in the reports and information made available since, by responsible and honest groups: journalists, scientists, technologists, economists, visionaries and imminent victims of climate change who have helped to pinpoint areas where the world can and should direct finance and skills to improve and sustain the human condition. The large majority of these people would engage in this dedicated work even if it were proved, against all the odds, that accelerated climate change was not primarily caused by human beings. Those who continue to deny this fact are producing mere noise generated either by ill-informed sources or by institutions and individuals who have stifled their own consciences. Amongst the pinpointed areas referred to above are:

1. The position of women in regard to decision-making, taking into account that 70% of the adults in developing countries are women and that it is they who are primarily and directly involved in the provision of cooking fuel (and cooking itself), the provision of water and the cultivation of food crops. The access of women to decision-making is a point to be much more seriously taken in the developed countries as well.

2. Land Use, especially in relation to the continued elimination of forests often for inappropriate use (production of beef, palm oil, extraction of hard woods); the degradation of existing cleared soils by fertilisers and heavy machinery, in particular.
3. The financing of sustainable energy, which is undoubtedly the way the world must go, though there remains very muddled guidance from governments (including ours) who seem fatally attracted to the continued use and extraction of fossil fuels and the increasingly dubious use of nuclear energy.
4. The raising and distribution of the necessary finance and clear identification of stake-holders. In particular, the attitude and capability of the private sector needs huge scrutiny, especially since it is clear that wealth is ludicrously distributed and misused in the current world 'set-up'.
5. How much space was allocated to the very delicate subject of population control?

There is little new about the points I have just outlined. Most of them have arisen at the COPs of 2001 onwards, BUT, to misquote W B Yeats in 1916, *'A Terrible Urgency is born'* and is very much among us! All our futures now lie in properly financed monitoring of how the wisdom of Paris is implemented and our individual courage, self sacrifice and sheer will in sustaining that implementation, as long as it takes.

GEORGE ABBOT NOW HAS SUN POWER

George Abbot School is a very large secondary school with buildings of different ages and, naturally, a high fuel bill. In 2004, with the help and encouragement of Guildford Environmental Forum the school carried out an energy audit and several key recommendations were implemented to raise the energy performance. In 2006 we linked up with ECSC to assess the potential for renewable energy; wind, solar thermal and solar PV were considered.

Nothing came of this, but now almost 10 years later the Wey Valley Solar Schools team has pulled off a brilliant result by installing one of the largest school PV solar systems ever – 199 kW of solar PV spread over several roofs at the school. There is a real sense of achievement and a certain amount of relief that it all came good in the end. To crown this achievement, the installation coincided with Wey Valley Solar Schools coming within a whisker of the major milestone of the total PV installed reaching 1 MW over a total of 15 schools. *John Bannister*



Guildford Environmental Forum aims to improve the environment in and around Guildford for wildlife and for people and to build a sustainable future.

Join us in our work for the town and have this newsletter posted to your door four times a year. Forum membership costs only £10 per year or £15 for a couple, and new members are warmly welcomed.

Please contact Adrian Thompson on 01483 222687 or e-mail adrian@lampcottage.net



CALENDAR



All the Forum's Group meetings are open to the public

Monday 4 April

Paul Stacey, Parks and Landscape Manager, Guildford Borough Council:

"Overview of GBC's Parks & Countryside Service".

1900. Committee Room 3, GBC Millmead Offices

Wednesday 4 May

GEF Annual General Meeting

followed by a talk from Nick Dixon, a well-known peregrine specialist:

"Urban Peregrines in the UK".

Nick shares a lifelong passion with raptors. He worked for the Hawk and Owl Trust from 1995 and went on to research, advise and write about peregrines.

He recently helped us with a peregrine project.

1900. Committee Room 3, GBC Millmead Offices.

Saturday 21 May

Now in our sixth year running scything courses with Mark Allery, this is

the first of two scything courses this year.

The second will be in September. Suitable for beginners or those wanting to hone their skills setting up, sharpening and perfecting their use of the scythe.

Time to get rid of the strimmer and lawn mower!

It will run all day from 1000 to 1600 at the Rosamund Community Garden near Longdown Road, Guildford. Cost £30 per head, refreshments and scythes provided and also for sale.

For further details and to register contact John Bannister on 01483 570468 or 07443 914347.

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Waste and Recycling – Position vacant

(Contact Raymond Smith: see Chair's details above)

Sustainable Building – Position vacant

(Contact Raymond Smith: see Chair's details above)

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Please send contributions for the next issue to Clare Windsor by Monday 9 May.

The views expressed in this newsletter are strictly those of its contributors and Guildford Environmental Forum.