

Gridline

The magazine for
National Grid grantors
Autumn 09

nationalgrid
The power of action™

Current affairs

How National Grid's
live line team keep
the power flowing

Wild and woolly

Bison in Leicestershire

Water works

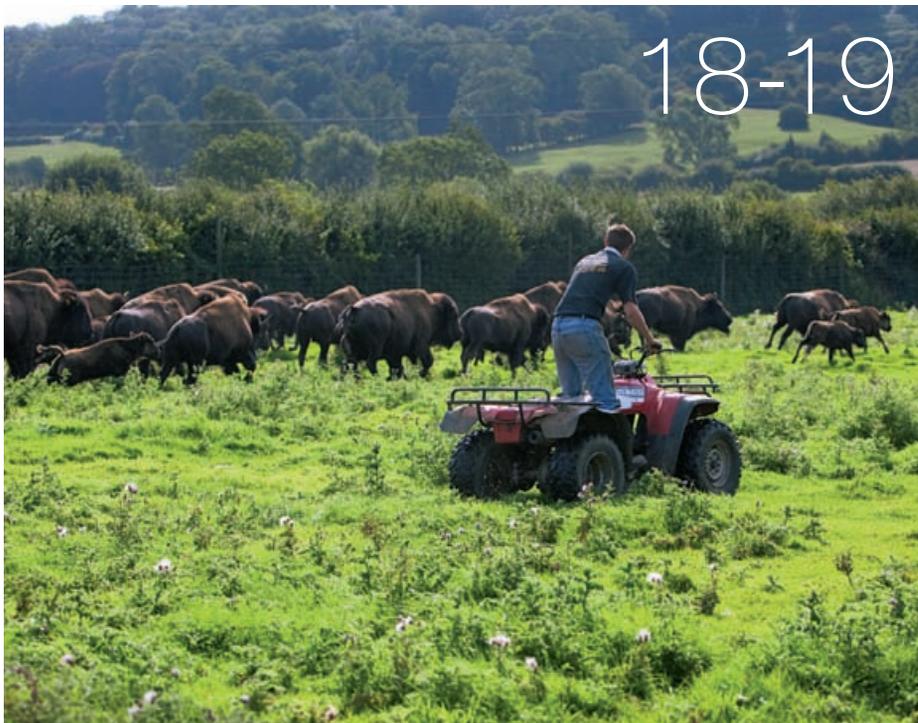
A new approach to
managing floods

Woof justice

How police dogs are on the front
line against crime

Also in this issue: the Forestry Commission, project round-up, win a hotel break for two

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NATIONAL GRID'S LAND AND DEVELOPMENT GROUP

is responsible for acquiring all rights and permissions from statutory authorities and landowners needed to install, operate and maintain National Grid's electricity and gas transmission networks. The Group acts as the main interface for landowners who have gas and electricity equipment installed on their land. Listed below are your local land and development team contacts.

ELECTRICITY AND GAS

■ North west and Scotland
0161 776 0706

■ South east 01268 642 091

■ South west 01452 316 059

■ East 0113 290 8235.

WAYLEAVE PAYMENTS

■ For information on wayleave payments, telephone the payments helpline on 0800 389 5113.

ELECTRICITY EMERGENCY

■ Emergency calls to report pylon damage to National Grid can be

made on 0800 404 090. Note the tower's number – found just below the property plate – to help crews locate it.

ELECTRIC AND MAGNETIC FIELDS

■ For information on electric and magnetic fields, call the EMF information line on 08457 023 270 (local call rate).

Website: www.emfs.info.

GAS EMERGENCY

■ 0800 111 999.



12-13

CUMBRIAN GRANTOR STRIKES IT LUCKY

Congratulations to Sarah Edmondson of Netherhouses Farm, near Ulverston, Cumbria, who is the winner of the Sony Handycam competition in the last issue of Gridline.

Sarah and her husband run a mixed sheep and beef farm and produce barley as a feed crop.

“I’m sure the Handycam will be really useful for recording ‘before’ and ‘after’ images of the various projects we do during the farming year, and will also come in handy at family events,” said Sarah.

GET IN TOUCH

Please contact Gridline if:

- You have any news which you think would be of interest to other grantors
- You think that your business or hobby would make a good article
- You have any suggestions for topics you would like to see covered in Gridline.

Gridline is produced by Summersault Communications, 23-25 Waterloo Place, Leamington Spa, Warwickshire CV32 5LA. To contact Gridline either phone 01926 654 948, email gridline@uk.ngrid.com or write to the above address.

GOT A STORY?
CALL: 01926 654 948
or email gridline@uk.ngrid.com. Or write to Gridline, Summersault, 23-25 Waterloo Place, Warwick St, Leamington Spa, Warwickshire CV32 5LA.

Welcome to Gridline



Welcome to another issue of Gridline.

Our special feature on page 6 focuses on how climate change is expected to result in more extreme weather events. Northumberland grantor Simon Henderson is taking part in a scheme to restore the flood plain of the River Till in order to more effectively manage future flood events. As Simon says, going forward we may need to find more imaginative ways to work with nature and not against it.

On page 10 we profile the work of National Grid’s select team of linesmen who are qualified to work on live overhead power lines, either from a basket suspended from a helicopter or from trolleys. It’s an operation that calls for a high degree of co-ordination between the helicopter pilots and the linesmen conducting the work.

As National Grid’s workload increases as a result of connecting up new sources of low-carbon energy sources, there is likely to be more reliance on live line working because it avoids the need for potentially costly and disruptive power outages.

Turn to page 16 to read our profile about the Forestry Commission, the single largest landowner in Great Britain. National Grid continually surveys its overhead power lines to ensure that no vegetation comes within two tree lengths of an overhead power line. We also liaise closely with the Forestry Commission to ensure the safety of overhead power lines, gas pipelines and underground cables during timber harvesting operations and any road construction activity.

We have two grantor profiles for you this time. On page 14 we visit to Balsall Common in Warwickshire, where the West Midlands Police Dog Training Centre – an electricity grantor – is based, to find out what makes a good police dog.

And on page 18 we visit Leicestershire farmer George Wakeling who, for the past 12 years, has reared bison on his farm near Melton Mowbray, as well as deer. Breeding wild animals has its challenges, as George describes, but he is convinced that bison meat is a much healthier alternative to red meat.

Finally, don’t forget to turn to the back page for our regular competitions to win a Sony Handycam and a fantastic weekend away courtesy of Britannia Hotels.

Editor, Gridline

National Grid sponsors Welsh awards again

This year's FWAG Cymru – National Grid Silver Lapwing Farm Conservation competition was launched at the Royal Welsh Show.

Once again there will be three regional awards (north, mid and south) and an overall Wales winner, who will receive a plaque and cheque for £800.

Clare White, National Grid's asset protection & central operations manager,

said the company was delighted to enter its third year as a sponsor of the award scheme, which promotes environmental best practice in the farming sector.

Peter Mitchell, lands officer in the south-west, (and a farmer himself) is one of the judges. "Welsh farmers make a fantastic contribution to wildlife conservation and I'm sure it will hard to single out a winner," he said. More details: www.fwag.org.uk.



AWARDS: At the launch (from left to right) Martin Sykes, FWAG trustee, Vince Caruso, National Grid's regional delivery manager south-west, Clare White, Dr Glenda Thomas, director FWAG Cymru, and Roger Williams, local MP and Liberal Democrat spokesperson for Wales

First use of biogas to supply gas grid in the UK

In a UK first, National Grid is teaming up with United Utilities to convert a by-product of the waste water treatment process into gas for injection into the local gas distribution network.

The ground-breaking initiative is centred on one of the country's largest waste water treatment plants at Davyhulme, in Manchester.

Biogas is produced when waste water sludge is broken down by the action of microbes in a process known as anaerobic digestion. In the pilot project the biogas will be upgraded to remove CO₂ and trace elements to leave biomethane, which is then conditioned with propane and odorants.

"Biomethane is a fuel for the future," said Janine Freeman, head of National Grid's Sustainable Gas Group. "Not only are we reusing a waste product, but biomethane is a renewable fuel, so we are helping to meet the country's target of 15 per cent of all our energy coming from renewable sources by 2020."

The project is funded by Defra and it's anticipated that it will be operational by early 2011.



ALL ABOARD: Pam (left) and Mike (far right), with other members of the leadership group, on a tall ship trip

Trip of a lifetime

Mike Rockett, a lands officer in the east regional delivery team, has just returned with four other leaders and 12 Scouts from the annual International Jamboree, held in Canada this year.

He became a Scout Master with the 1st Isle of Axholme-Baden Powell Scout Group, based in Westwoodside, Lincolnshire, when it formed in 2007. Daughters Frances and Hanna are Scouts and wife Pam is an assistant Scout Master.

"The visit was a fantastic opportunity for the young people, who are aged 12 to 18, to meet fellow Scouts from all over the world, practise

their camp craft skills and to see tourist sights like Niagara Falls and the CN Tower," said Mike.

The Scout Group raised a fantastic £36,000 in its first 12 months of existence, helping it finance a variety of projects – including the purchase of more than 50 tents. National Grid stepped in with a £800 donation through its community funding scheme and another £400 as part of an employee fundraising matching programme.

Mike has been active in the community for many years, including work with youth clubs and as a local organiser of the Duke of Edinburgh Award Scheme.



TEAM EFFORT: Some of the volunteers with members of the community at the opening event

Youth house gets a facelift

National Grid has helped renovate an important community facility near Sittingbourne, Kent, which is celebrating its tenth birthday with a new garden and interior.

The work was carried out by National Grid and the South East Electricity Substation Alliance (SEESA), which is delivering a project at Kemsley substation (see page 12). Materials were donated by sub contractors.

The Youth House opened 10 years ago after local people, affected by unemployment and crime, united to demand a safer environment for young people to meet.

Today the facility offers arts and crafts, an after-school club, and a mothers and toddlers club.

More than 350 volunteer hours were devoted to the renovation. "As well as our team gaining pride in their involvement, the local community recognises that we are a good neighbour, which is satisfying," said Graham Ross, National Grid project manager.



CHEQUE THIS OUT: Pupils from Cradoc Primary School with (from left to right), acting Trust chairman Peter Ogden, National Grid senior project manager Martin Kinsey and PTA chair Sarah Stafford-Smith.

Brecon Beacons Trust launched

Initial funding has been provided by National Grid for a new Brecon Beacons Trust, which will provide grants for a variety of environmental, heritage and educational awareness projects.

The Trust was launched in June and the first grants have already been made to local voluntary and community groups in the Brecon Beacons National Park.

Acting chairman Peter Ogden presented the first grant to Cradoc CP School Parent Teacher Association, at the launch event.

National Grid completed construction of the 316km Felindre to Tirley gas pipeline in November 2007, which included a section in the Brecon Beacons.

Senior project manager Martin Kinsey said: "Supporting the communities in which we work is extremely important to National Grid. We hope the Trust will provide a lasting legacy which will help local groups undertake work, that will improve the quality of life for people who live, work and visit the Brecon Beacons Park."

f Going with the flow

Electricity grantor and farmer Simon Henderson is taking part in a pioneering project in Northumberland to mitigate the effects of flooding

The river in the background glides serenely through a peaceful rural landscape. But where farmer Simon Henderson stands has, in the past, been under 15ft of raging flood water.

Living in the rain shadow of the Cheviot Hills, on the border between England and Scotland, he knows all about the consequences of climate change and the extreme weather events which scientists say will become more common.

A fourth generation tenant farmer, Simon manages the 600-acre arable and grassland West Fenton Farm on the Earl of Durham's Lambton Estate in the Glendale Valley. Four years ago, redundant farm buildings were converted to create the Fenton Centre – an interactive visitor centre offering agricultural and environmental

education for farmers and school groups. The centre is also open to the public and attracts 18,000 visitors a year.

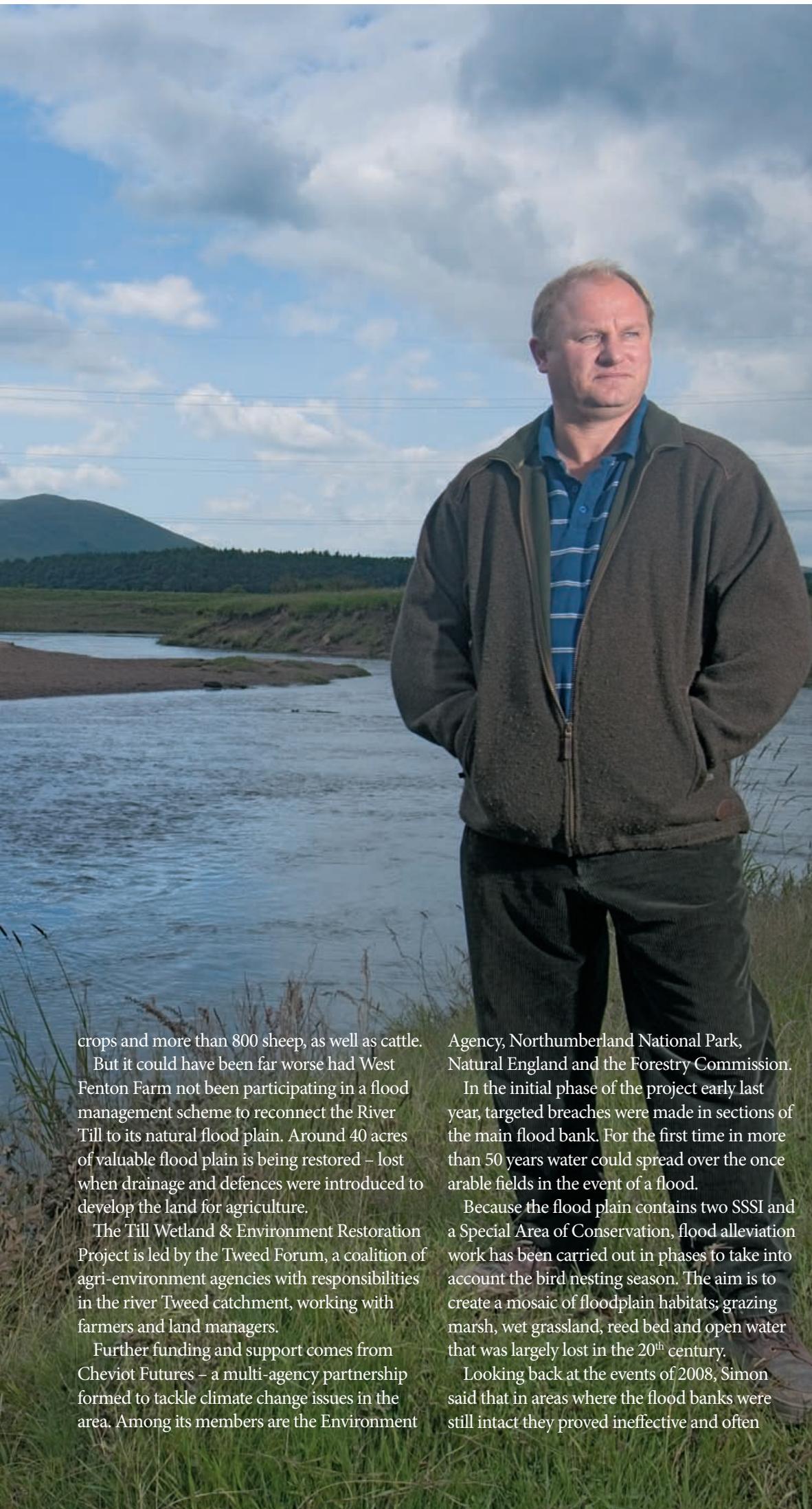
In September last year catastrophe struck when the River Till, just over a kilometre away from the farmhouse, burst its banks after the equivalent of a month's rainfall in a single day on the Cheviots and surrounding hills.

"We were inundated by nearly 3ft of water, which swept through the farm and Fenton Centre, ruining everything in its path," said Simon. "With no insurance settlement in sight we had to cash in pensions and plough in our savings to be up and running again for Easter."

The floods, which were the worst in living memory, destroyed key local infrastructure such as roads and bridges, along with fences,



FLASHBACK: The September 2008 floods left West Fenton Farm under 2-3ft of water



RISING DAMP: Flood water swept through the Fenton Centre, ruining everything in its path

crops and more than 800 sheep, as well as cattle.

But it could have been far worse had West Fenton Farm not been participating in a flood management scheme to reconnect the River Till to its natural flood plain. Around 40 acres of valuable flood plain is being restored – lost when drainage and defences were introduced to develop the land for agriculture.

The Till Wetland & Environment Restoration Project is led by the Tweed Forum, a coalition of agri-environment agencies with responsibilities in the river Tweed catchment, working with farmers and land managers.

Further funding and support comes from Cheviot Futures – a multi-agency partnership formed to tackle climate change issues in the area. Among its members are the Environment

Agency, Northumberland National Park, Natural England and the Forestry Commission.

In the initial phase of the project early last year, targeted breaches were made in sections of the main flood bank. For the first time in more than 50 years water could spread over the once arable fields in the event of a flood.

Because the flood plain contains two SSSI and a Special Area of Conservation, flood alleviation work has been carried out in phases to take into account the bird nesting season. The aim is to create a mosaic of floodplain habitats; grazing marsh, wet grassland, reed bed and open water that was largely lost in the 20th century.

Looking back at the events of 2008, Simon said that in areas where the flood banks were still intact they proved ineffective and often

made the situation worse because of the destructive effects when they burst.

“Another problem was that the flaps on the flood bank sluice gates were forced shut by the pressure of the incoming water from the river. But run-off from the hills on the other side of the valley continued to swell the drainage ditches and so they eventually over-spilled behind the defences,” said Simon.

Allowing the water to rise slowly and to dissipate its energy over the land, saved the village of Fenton and neighbouring hamlets from being more severely hit than they were. And while the flood water subsided after two days, fields in other areas remained under water for three or four months.

“Ensuring that flood water retreats back

FEATURE

VISIT THE FENTON CENTRE

You can explore the fields and riverbanks of this working farm for yourself by visiting the Fenton Centre. Admission is free to members of the public. More info tel 01668 216 216 or go to: www.fentoncentre.com

TORRENT: Fields at West Fenton Farm were inundated with flood water

towards the river in a controlled manner is very important,” explained Simon. “We have lengthened and created a more meandering course for the main Fenton Burn drainage channel, which slows the passage of water and enables it to soak into the soil structure.”

New sluices with ‘drop-in’ panels in drainage ditches enable the level of the water within a 35-hectare area of the flood plain to be controlled, while silt traps and reed beds trap sediment and capture dissolved nutrients before they enter the river.

Another feature is ‘leaky ponds’. Drainage ditches are designed with a burst-out point in the corner of a field surrounded by a slight bund. Water gathers in the pond in heavy rain but then leaks back into the stream over about a week, rather than in just 12 hours.

Anything which reduces the volume of water in the river at such times is vital, said Simon. “At peak flow the water can scour the main channel out and make it wider. The water level then drops because there’s not so much flow, and the temperature rises.

“The River Till is famed for its migratory salmon and trout, and only a small temperature increase in summer could lead to oxygen loss which kills the fish.”

As well as flooding, farmers in the area are vulnerable to drought and wind. Climate change projections for the county indicate that major rainfall events will be interspersed with long periods of drought.

“Earlier this summer we had very little rain for three months,” Simon said. “Many farmers here grow potatoes and carrots, which need a lot of irrigation. Downstream, at Berwick-

on-Tweed, boreholes fed by aquifers are relied upon to supply water and these could be threatened in the future if the water table drops too much. So enabling water to percolate into the ground is important.”

Many of the projects at West Fenton result in multiple benefits from one input. Wind breaks, for example, are necessary to prevent top soil erosion and they have been planned to link woodlands together to create habitats.

Barn owls, red squirrels, water voles and otters are among the wildlife thriving in the improved habitats. Wetland areas have seen an increase in waders like lapwings, snipe and redshank, as well as wildfowl such as teal.

A new interpretative trail enables visitors to see for themselves the habitats and features being developed. A pedestrian bridge crosses the Fenton Burn drainage channel and the trail continues along a stretch of remaining flood defence, with views of the landscape.

In July this year the area suffered its second major flood within 10 months. More than four inches of rain fell in just 12 hours, with the flood water coming within 100 yards of the farm. But although fields were flooded, again they could be worked on just days later.

“Of course, not everybody can remove their flood banks,” said Simon. “But a lot of land managers are now realising that the future lies in working with nature and not in flood defences which don’t work.

“Increased flooding as a result of changing global weather patterns is inevitable and we need to plan ahead and adapt to the future, in a sustainable way, which takes into account the views and needs of local people.”

WHAT IS NATIONAL GRID DOING?

However infrequent, major flood events have the potential to cause severe disruption, as the events of the summer floods in 2007 demonstrated.

Since 2007 National Grid has participated in a review of substation vulnerability to flooding by the Energy Networks Association (ENA). By its nature the gas network is less vulnerable to flooding – and flooded sites are normally able to maintain the flow of gas despite losing the ability to operate equipment.

OTHER MEASURES

■ All 259 National Grid substations have been assessed to establish the fluvial (river) flood risk profile of each site. Current analysis indicates 25 at high risk (1 in 100 year flood eventuality).

■ Information on the weather, groundwater and river levels is constantly monitored, along with input from the Environment Agency and Met Office (National Flood Forecasting Centre) on forecasted rainfall and potential extreme rainfall events. The data is used to decide which sites to protect during flood risk periods.

■ Around £1.5 million has been invested in improved flood response capability, including 1.2km of temporary flood defence barriers, which can be delivered and erected on site within 12-48 hours of a decision to deploy defences.

■ Depending on potential flood depth projections, and warning times, some sites will have perimeter flood defence protection installed, while others may have protection installed within the site for critical equipment.

■ The LiDAR network mapping aerial survey tool is being used to model flood profiles at existing substations to better understand pluvial (rainfall-related) flooding risks, and to assist in identifying potential new sites.

■ There are ongoing assessments about flood risks to tower foundations.

MEETING THE CHALLENGE

Elliot Robertson, Head of Inland Flooding for the Environment Agency, looks at some of the challenges posed by climate change in the UK – including the increased risk of extreme weather events such as flooding

Q What is the role of the Environment Agency?

A We are responsible for protecting and improving the environment for England and Wales. We also have responsibility for managing the risk of flooding and coastal erosion and managing water resources.

Q What is climate change?

A The planet's climate has varied from natural causes since the earth was formed, but scientists believe that this natural fluctuation has been overtaken by a rapid human-induced global warming. Man-made carbon emissions from the burning of fossil fuels have contributed to a concentration of greenhouse gases in the atmosphere, such as carbon dioxide and methane, which trap heat. If nothing is done to reduce emissions, current climate models predict global temperatures will increase by 1.4-5.8°C by 2100.

Q What are the latest projections?

A The extent of likely climate change is starkly illustrated in the latest generation of UK climate projections (UKCP09). This shows how our climate may change during this century and confirms what we suspected – that we should expect warmer, wetter winters and hotter, drier summers with a greater

likelihood of extreme weather events such as storms, floods, droughts and a rise in sea levels.

Q What is the evidence that extreme weather events are occurring more frequently?

A The 2007 summer floods, the 2004-06 drought and the 2003 heatwave demonstrated how climatic events can have a major impact on households, business and critical infrastructure. Eleven of the 12 hottest years globally on record were in the last 12 years. Global temperatures are approaching 1°C higher than in the pre-industrial age and in fact 2007 was the wettest summer since records began in 1914.

Q What is the UK's vulnerability to flooding?

A Around 5.2 million properties in England are at risk from flooding – equivalent to about 1 in every 6 homes. Changes in our climate, resulting in fiercer storms and wetter winters will increase this risk further.

Q What can be done about climate change?

A Our view is that in addition to efforts to reduce greenhouse gas emissions, we must focus on adapting to inevitable climate change. It will never be possible to prevent flooding entirely, for example, but we can manage the risks, to reduce the likelihood of flood events and their impact. The good news is that the future is in our hands. UKCP09 graphically



“
It will never be possible to prevent flooding entirely, but we can manage the risks
 ”

demonstrates that the choices we make today will either result in a future we can live with or a future which we can't. If we start cutting emissions today, then the future looks promising.

Q What practical steps are being taken?

A We are working with a range of other agencies on projects to mitigate the effects of climate change. For example, in the Pennines we have helped restore some 1,250 hectares of blanket peat bog by blocking drainage ditches, which were originally dug to make agriculture more productive. When managed properly, peat acts as a carbon store to prevent carbon being lost to the atmosphere, as well as absorbing heavy rainfall, which can cause flooding downstream.

Q How do I know if I am at risk of flooding?

A Log on to our website at www.environment-agency.gov.uk and enter your postcode to see if your property is in a flood risk area. If it is, sign up to Floodline Warnings Direct by calling 0845 988 1188. This free service from the Environment Agency provides flood warnings direct to homes at risk of flooding by telephone, mobile, email, SMS text message, fax or pager. In addition to signing up for warnings, you can get simple advice on what to do before, during and after a flood.

High wire act

Maintaining the UK's high voltage transmission network sometimes calls for a head for heights and some seriously high-tech solutions

A National Grid helicopter hovers above an overhead power line while suspended 30 metres below in a basket two linesmen carry out repairs on live 400kV conductors. It's all in a day's work for the elite live line team.

In addition to baskets, linesmen can also work from trolleys, which are placed on the conductors by the helicopter, and are then self-propelled along.

"Keeping lines energised during maintenance and refurbishment helps National Grid fulfill its obligation to provide uninterrupted service," said specialist techniques engineer Chris Land, who has led the team since 2004.

"Live line working is really coming into its own now because of the huge challenge of expanding and reinforcing the transmission system to meet the target of producing 15 per cent of the UK's energy from renewable sources by 2020."

Taking a line out of service can be expensive. If a power station has to be put offline to accommodate a planned outage on a connecting overhead line, the compensation can be up to £1 million a day.

Typical live line tasks include replacing spacers and conductors damaged by lightning strikes or high winds, and installing/removing bird flight diverters (coil shaped devices on conductors to deter large birds from colliding with an overhead line).

Whether to utilise live line is decided on a case by case basis. Factors include cost and system security considerations, whether there is capacity to accommodate additional outages, and what resources are available (ie helicopters and linesmen).

National Grid currently has eight linesmen fully qualified in live line working and another six undergoing training. The team members work as linesmen at different locations around the country, only coming together for specific jobs.

New recruits normally have a minimum of four years' experience as linesmen before joining the team. They receive a week's theoretical instruction covering the technical aspects of the work and up to four weeks



Being anchored to a 30-metre cable and basket is an alien environment for a pilot and calls for very high levels of concentration

practical training before qualifying.

"The kind of person we're looking for is someone who is calm, level-headed and methodical," said Chris. "Everything is done in a very safe, controlled sequence."

A landing site is usually set up at a central point to the section of overhead line being worked on. The convoy of vehicles includes a 10-tonne lorry carrying the equipment, a mobile mess and fuel bowser.

The two linesmen in the basket don helicopter helmets and head-to-toe suits made out of 75 per cent flame-retardant material and 25 per cent stainless steel fibres.

The polypropylene insulation rope attached to the basket prevents the helicopter from being energised and protects the linesmen from electrical flashovers between phases.

Generally, the helicopters approach the conductor at a 90 degree angle. At first a small amount of sparking normally arcs

across, until the linesmen attach a bonding lead from their suits to the conductor.

"The metallic mesh in the suit serves as a Faraday Cage, putting the linesman at the same electrical potential or 'voltage' as the energized circuit," explained Chris. "The 400,000-volt charge effectively flows around the outside of the suit and not through our bodies. The same thing happens when lightning strikes an aircraft."

Working to instructions from the linesmen, the pilot carefully hooks the basket under the conductor and raises it a little, providing the helicopter with a degree of stability to help keep it in a fixed position.

While one linesman works, the other is in constant communication via 2-way radio with the pilot, advising of any small alterations in positioning that are necessary.

One of the helicopter's two pilots concentrates on hovering the aircraft – using a fixed reference point on the ground below to guide his movements. The other pilot monitors the flight controls and communications with air traffic control.

"Being anchored to a 30-metre cable and basket is an alien environment for a pilot and calls for very high levels of concentration and precision flying," said Chris.

The helicopter maintains at least a 20-metre safety distance from the overhead line. As an extra precaution two spotters are on the ground armed with radios and binoculars – one ahead monitoring lateral risk and one at the side monitoring fore and aft.

The twin-engined Squirrel helicopter is stripped to the minimum to keep its weight down, with no rear seats or doors, for example. It carries enough fuel for 20-25 minutes flight so that if one engine fails it has sufficient power to make a controlled landing with the remaining engine.

Live line working is a natural progression for any linesmen looking to expand his skills," said Chris. "The only difference is that instead of hanging off a steel structure you're in a basket which can be 500ft off the ground when the helicopter flies to the overhead line.

"It's like being on a fairground ride – a real adrenaline rush."

Switched on to tomorrow's energy needs

National Grid is investing £3 billion a year in its electricity and gas networks in the UK and US – including projects to connect new sources of renewable energy



STALYBRIDGE SUBSTATION REINFORCEMENT

» **When:** Jan 2006-April 2010

» **Why:** A network reinforcement project has been carried out at Stalybridge substation, in Greater Manchester, to ensure the long-term security of essential energy supplies to Manchester from power stations on the eastern side of the country.

» **What:** The previous 275kV substation equipment dating from the 1960s has been replaced with new indoor Gas Insulated Switchgear (GIS). Two new towers have



been built to connect the new substation with the existing 400kV substation within the same compound. As part of the reconfiguration, two towers and sections of overhead power line close to a residential estate to the east have been removed.

The first tower, located in a field, was removed in April. The removal of the second tower in June was challenging due to its position – and was only possible at all thanks to the co-operation of residents. A crane located in a front garden lowered the sections down an embankment at the rear of the house, to skip wagons on a footpath near the Huddersfield Narrow Canal.

» **Lie of the land:** “National Grid doesn’t normally remove towers, except for projects of national significance like the 2012 Olympics,” said Ian Price, National Grid’s project manager. “But in this case we needed to remove the towers for unavoidable operational reasons.”

CHESTERFIELD TO HIGH MARNHAM OVERHEAD LINE REFURBISHMENT PROJECT

» **When:** August-October 2009

» **Why:** National Grid has carried out refurbishment work on 124 towers between its substations at Chesterfield, Derbyshire and High Marnham, close to the River Trent, Nottinghamshire. The investment is necessary to ensure the reliability of energy supplies in the East Midlands.

» **What:** Refurbishment of most of the towers was undertaken in 2007 but the last 10 towers were not completed due to problems with one structure, which had been affected by ground settlement. Steelwork on the tower had twisted and buckled, requiring substantial refurbishment of the foundations, as well as new sections of steel. The programme is now continuing on the remaining 2.4km section between Chesterfield and Spring Wood.

There are a number of road crossings on the route including the main B6425 access route to Chesterfield Royal Hospital, requiring the use of a Skycradle hydraulic platform to enable reconductoring to go ahead without a road closure.

» **Lie of the land:** “One span crosses a number of horse paddocks and the owners have temporarily relocated the animals during the overhead line refurbishment, work” said Wayne Steel, National Grid’s project manager.



BRAMLEY TO DIDCOT CABLE REPLACEMENT PROJECT

» **When:** Jan 2008-Oct 2009

» **Why:** The project is to replace 400kV underground cables, which are nearing the end of their working life, between South Oxford and West Berkshire.

The new XLPE cables, which are bedded in a special absorbent sand, are environmentally friendly because they don't require any fluid-filled cooling system and have a longer lifespan.

» **What:** The cable is being laid in 700-metre sections over a 3.5km distance. A priority was to minimise disruption to flora and fauna in an

Area of Outstanding Natural Beauty. Directional drilling techniques were used to pass under the Ridgeway National Trail, as well as some ancient burial mounds, and the route was diverted round an area of mature trees.

» **Lie of the land:** "All project team members were briefed by wildlife experts at the outset to ensure a high level of awareness about environmental issues," said Walter Riddle, project engineer Electricity Alliance West. "We also worked with the RSPB to restore a nesting site for stone curlews – erecting fencing with special post tops designed to prevent predator birds like buzzards and crows from perching." Removal of the old cable starts in November.



KEMSLEY 400KV SUBSTATION EXPANSION

» **When:** 2008-2011

» **Why:** The South East Electricity Substation Alliance (SEESA) is expanding and modifying the existing 400kV substation at Kemsley, in Kent. The project is part of a wider investment programme to reinforce the electricity network across the Thames Estuary region to help meet increasing demand in London and the South East.

» **What:** Two new quad boosters are being added to the substation to control power flows from new generating sources in the region – the BritNed Interconnector with the Netherlands at the Isle of Grain and the London Array offshore wind farm.

More than 500 cubic metres of concrete (about 1,400 tonnes) was used to create the base for the first of the new quad boosters. The concrete pour required 144 lorry movements through Kemsley village, on the outskirts of Sittingbourne. The quad booster deliveries are expected in winter 2009 and early 2010.

» **Lie of the land:** "Spoil excavated during the works is being used to create a landscaped screen, on a section of the boundary," said Graham Ross, National Grid's project manager. "As part of our environmental mitigation plan, a new habitat for great crested newts, slow worms and lizards is being created."

Police dogs play a vital role in the fight against crime and turning out dogs with the 'right stuff' is something that the West Midlands Police has got down to a fine art

Paw

and order

There's little to suggest that the litter of puppies will become part of an elite crime-busting unit. But destiny – and careful breeding – has selected them for a very different life to the average family pet.

West Midlands Police has 69 dog handlers – the third largest dog unit in the country – and more than 170 dogs on its books.

"At one time we relied entirely on public donations but we found it increasingly difficult to find dogs with the right qualities or in sufficient numbers to meet operational needs," explained Tony Brown, who has been a handler and instructor with the Dog Unit for 20 years and breeding programme manager since 2004.

"In 1994 we decided to start our own breeding programme to ensure that when a working dog retired there would be another one to replace it."

The West Midlands Police Dog Training Centre at Balsall Common has state-of-the-art kennel facilities for 55 dogs, as well as a whelping centre for brood bitches complete with air conditioning and under-floor heating.

Operational police dogs carry out either general purpose or specialist search tasks. "These days our general purpose dogs are mostly bred from a Czech strain of pedigree German Shepherd," said Tony.

"We breed for the inherent qualities that go into making a good police dog. When a dog is introduced to a new exercise now in training it almost knows what to do without being asked."



STAR POTENTIAL: Another batch of puppies take their first steps on the way to becoming top dogs

Around 50 puppies are born each year and at six weeks they're placed with members of the public who act as puppy walkers. Besides having plenty of play, the dogs are socialised to people and other animals, and introduced to the sights and sounds of traffic and a host of other situations they will come across.

Between six and nine months later the dog and their handler undergo 12 weeks of training. They learn 20 skills ranging from detaining a fleeing person to tracking a scent. Those that pass are licensed to carry out operational duties.

"If a dog fails the puppy walker has the option of buying it back, but very often they've enjoyed the experience and are keen to get their next dog through," said Tony. Adult dogs that don't make

the grade are sometimes sold to security firms, landowners and gamekeepers.

Operational dogs live with their handlers – housed in an outside kennel – until they retire at about eight, when they usually move into the family home as a pet.

The dogs and their handlers are on 24/7 standby to respond to break-ins, search for people or property, confront violent people, or carry out crowd control. They can pick up some 27 different scents and their sense of smell is 1,000 times more sensitive than that of humans.

"A police dog must be fit, naturally courageous, confident and above all playful," said Tony. "All our training is on a reward basis. Even biting a padded arm is play – the dog sees it as something of yours that it wants to possess. That's a quality we like because it's what makes them chase people and detain them.

"Police dogs used to be trained to be aggressive – and look aggressive – but were often less easy to train. Today's dogs need to be highly driven and enthusiastic for work, be able to turn on the aggression as required, but also achieve high standards in control and obedience."

The force has around 30 specialist dogs for searching out drugs, firearms, explosives and money. Springer spaniels make ideal sniffer dogs because they are small for accessing tight spaces, and are less intimidating than German Shepherds in public areas like pubs.

"They need to work for often long stretches without being distracted when, for example, searching hotel rooms for explosives," said Tony. "They're happy to do this for five minutes play with a tennis ball at the end of the day."

Dogs trained to find drugs can distinguish between 13 different narcotics. Recently the Centre has also been training dogs for Crime Scene Investigation (CSI) work. A trained dog can detect a spot of blood that has been outside in all weathers for six months.

Another focus is likely to be the 2012 Olympics. "It's not clear yet if we need to expand the breeding programme for the Games, but we're ready to meet any eventuality," said Tony.



PUP IDOL
You can follow the progress of the latest litter going through the police dog training programme by going to www.west-midlands.police.uk/pupidol

ATTITUDE: Police dogs need to turn on the aggression as required; (right) a training session



From small acorns

The Forestry Commission balances the needs of the timber industry with looking after the environment and providing public access to some stunning countryside

With 2.7 million acres of land under its stewardship, the Forestry Commission is the largest single land manager in Great Britain and one of National Grid's largest grantors.

A non-ministerial government department, its mission is "to protect and expand Britain's forests and woodlands, and increase their value to society and the environment". It also regulates the UK's privately owned forests and woodlands.

The Forestry Commission was created in 1919 to restore the nation's forests after timber reserves were decimated in World War I. Huge quantities were needed for trench construction.

Today the Commission has a broader remit and works to ensure that trees, woods and forests also play their part in enriching people's quality of life and their environment. Providing a sustainable timber source for construction and wood fuel are among other key priorities.

In the early years, the need for re-forestation led to large plantations of fast-growing conifers, mainly in upland areas or land difficult to farm. These days landscape improvement and planting more broadleaved species to promote habitat diversity is given more weight.

The Forestry Commission has also repositioned some of its landholding closer to urban centres as part of a government focus on regenerating brownfield sites, such as former collieries, into woodland landscapes offering

opportunities for recreation and healthy living, as well as improved biodiversity, and social and economic development.

WORKING IN PARTNERSHIP

The Forestry Commission harvests more than 5 million tonnes of timber a year and maintains 24,000 kilometres of forest roads.

Ensuring that National Grid's electricity and gas networks continue to operate safely while commercial harvesting and associated operations are carried out requires close co-operation between the two organisations.

"The industry has been highly mechanised since the mid-1980s," said Emily Ramsay, the Forestry Commission's health and safety manager. "About 97 per cent of our timber is now felled by tree harvesters using chainsaws mounted on hydraulic arms, to cut the logs to prescribed lengths."

Plantations are typically harvested on a 25-year cycle. After cutting, the logs are loaded on to forwarders for transportation from the forest floor to a stacking area near the haulage road.

Last year, after some pipeline near misses during excavation work to maintain forest roads, Rob Stockley, gas asset management engineer at National Grid, gave a safety briefing to operations and civil engineering managers from the Forestry Commission at venues in Scotland, England and Wales.



CUTTING EDGE: A mechanical harvester at work

A yellow Tigercat tracked logging machine is shown in a forest, working on a tree. The machine's large, treaded tracks are visible, and it is positioned next to a tree trunk. The background shows a hilly landscape under a cloudy sky.

THE FORESTRY COMMISSION IN NUMBERS

1.4 billion trees cared for
17 million trees planted each year
50 million of visitors each year
24,000km roads and tracks
3,000 employees
2,600km of cycle tracks
55 visitor centres

More information: www.forestry.gov.uk

“The idea was to cascade the message down to the local teams,” said Rob. “I stressed the need to consult maps at an early stage to identify the location of pipelines and cables, and to contact us ahead of proposed work so that engineers can visit the site, locate the assets using detection tools and mark out their position.”

DVDs about working safely in the vicinity of pipelines were also distributed and subsequently shown to the forestry work teams.

“The near misses were an opportunity to identify and learn lessons, to find out more about each other’s operations and establish better lines of communication,” said Emily.

National Grid employs contractor Fountains to maintain vegetation clearance under power lines within two tree lengths of the conductors.

“Checks on vegetation growth are made every two years, with cutting on a three-year cycle, depending on the species of the tree and other factors,” said Matthew Murphy, National Grid’s lead engineer on vegetation management.

“We ask for as much notice as possible before harvesting begins in the vicinity of power lines so that we can assess whether the line needs to be de-energised and to advise on the proximity and level of cutting,” said Matthew.

“Depending on the project, we may also supervise the work and in some cases erect goalposts to control access to sites where vehicles pass underneath lines.”

BACKING THE ENVIRONMENT

When a new gas pipeline is constructed or overhead power line refurbished, National Grid carries out full ecological surveys to identify and protect rare species. On completion of work it aims to reinstate the ground to its former condition, or better. In some cases this results in improved habitats.

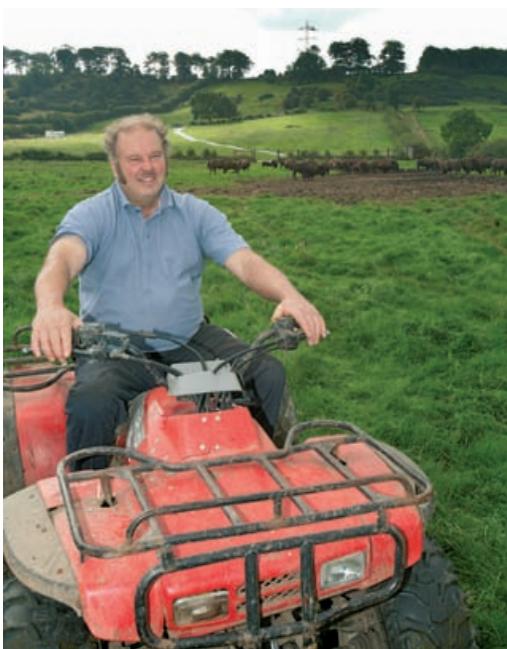
In 2004/2005, for example, the company carried out refurbishment of an overhead power line running through two Forestry Commission woods in Dorset, which are Sites of Special Scientific Interest (SSSI).

“We put in place mitigation measures for protected species such as sand lizards, smooth snakes and peregrine falcons,” said Richard Biggs, lands officer south-west.



Ahead of the herd

George Wakeling was one of the first British farmers to see the potential for keeping bison



ON THE RANGE: George Wakeling, who switched from keeping domesticated cattle to bison

Herds of bison roaming the countryside is a sight more commonly associated with the Great Plains of North America than the green fields of England.

But one Leicestershire farmer – and electricity grantor – has maintained a herd of these magnificent beasts for the past 12 years on 200 acres land at Bouverie Lodge Farm, in Nether Broughton, near Melton Mowbray.

George and Ruth Wakeling decided to move out of conventional beef production when BSE first emerged. “At the time the government was encouraging farmers to diversify and explore niche markets, and there was a lot of publicity about red meat being bad for you,” said George.

“I was attracted by the idea of getting back to an animal that nature intended, rather than one bred primarily for yield. Bison has less fat and cholesterol than both fish and chicken, and 30 per cent more protein than beef. It is full-

flavoured, with a slightly sweet taste, and is not at all gamey.”

Today there are nearly 100 bison, as well as 300 deer, on the farm in large fields surrounded by six-foot high fences and sturdy gates.

North America’s largest native land mammals live on a diet of grass and can consume up to 30lbs of grass a day. Bulls, which can be up to 6ft tall and weigh 1.5 tonnes, can outrun most horses – hoofing it up to 35 miles an hour.

The Wakelings retail their meat from a small farm shop and at farmer’s markets. George said there is strong demand at agricultural shows, food festivals and game fairs for bison burgers. Prime steak cuts and roasts are also popular.

On the less positive side have been George’s constant battles against officialdom.

Under EU and UK rules bison are treated as normal bovines despite the fact that they are not classed as a domesticated species and require a Dangerous Wild Animal Licence. George used



BACK ON THE RANGE

In the early 1800s there were an estimated 60 million bison roaming the Great Plains in North America. By 1900 there were less than 600, the victims of westward expansion. Their rescue by conservationists in the early 20th Century was one of the country's first environmental success stories. There are around 500,000 bison today, mainly in North America and Canada.

to kill his animals on the farm and then send them to a local butcher, but a plethora of testing regimes and regulations for 'bovine casualties' introduced since BSE means that the butcher is no longer prepared to handle the carcasses.

"The sensible way forward is to classify bison as Farmed Game like deer and to kill them on the farm, which is much better from an animal welfare point of view," said George. "The authorities say they must be transported to a slaughterhouse, but they are wild animals and become very stressed. In fact the adrenaline and the corticosteroids which are released can literally ruin the meat."

Meanwhile, he is pressing ahead with building his own butchering and dressing facility at the farm and is hopeful that the authorities will grant him a special licence to begin operations later this year.

To begin with George thought that handling bison would be similar to keeping suckler cows, but soon changed his mind.

"Handling is very different. Unlike cattle,



which have been domesticated over many hundreds of years, bison will not be driven. An American farmer said to me that if you want to move bison you need a kettle. Leave the gate open and have a cup of tea – they'll be where you want them when you get back.

"They're generally docile creatures, but if their tails go up that means they're in a bad mood. They have a highly developed instinct for self-preservation, and if sufficiently frightened, they can be seriously lethal."

On the whole bison are hardy animals but George moves them into huge barns in winter

to protect the ground from being churned up. When indoors, they need four times as much space as domesticated cattle because they have a strict pecking order and can be quite rough with each other.

Bison can be badly hit by even a low worm count that would not bother cattle. It's also necessary to add trace minerals to the soil like copper and selenium, which the animals need in their diet. They are ingested during grazing, and are the only supplements given.

The animals enter a four-month semi-shutdown in winter when their metabolism slows – a process related to their former life in the wild. "If you don't have the weight on in the autumn they may not survive," George said.

Despite the battles with officialdom he is still enthusiastic about his bison project. "I know people who have given up because of the red tape, but it's not an option as far as I'm concerned," he said.

To find out more about Bouverie Lodge Farm go to www.bisons.org. Tel 01664 822114.

To contact Gridline:

☎ 01926 654 948

✉ gridline@uk.ngrid.com

📍 23-25 Waterloo Place, Warwick Street, Leamington Spa, Warwickshire CV32 5LA.

ALL OUR YESTERDAY'S

Well done to Gloucestershire grantor Janet Corbett, the winner of Gridline's last photo competition on the theme of 'past times', with this evocative picture of a steam train



WIN A SONY CAMCORDER

Capture those happy holiday memories and family events with this fabulous Sony Handycam.

The Sony DCR-HC51E Mini DV Handycam has a 40x optical zoom, 2000x digital zoom and 2.5-inch touch screen LCD. Super SteadyShot image stabilisation ensures that captured images are extra sharp. With a 14-hour battery life it also has a DV connection for video editing with a connected PC and AC adaptor/cable, plus rechargeable battery pack.

To be in with a chance of winning this Sony Handycam, simply answer the following question:

Q What is the magnification of the optical zoom on the Handycam?

Send your answer to Gridline Handycam competition, 23-25 Waterloo Place, Warwick Street, Leamington Spa, Warwickshire CV32 5LA. Please note you must be a grantor to enter Gridline competitions. Entry closing date is 13 November 2009.



Win a weekend break for two

Enter this competition to win a two-night stay at a Britannia Hotel

The prize for Gridline's next photo competition is a relaxing weekend break for two*, courtesy of Britannia Hotels.

The lucky winner will be able to choose where to spend their two-night stay from 34 hotels in locations across the UK, from Aberdeen to Bournemouth.

The theme of this issue's photo competition is 'pets'. All you have to do is send in your selected photograph. Send your images to Gridline photo competition, 23-25 Waterloo Place, Warwick Street,



Leamington Spa, Warwickshire CV32 5LA. Or email images to gridline@uk.ngrid.com. Closing date is 13 November 2009.

Regrettably, prints cannot be

*Subject to availability.

FESTIVE BREAKS

Britannia Hotels has a range of fantastic four or five-night festive breaks starting from £298. To find out more visit www.britanniahotels.com or call 0871 222 0100.