

Gridline

The magazine for
National Grid grantors
Winter 09

nationalgrid
The power of action.™

Dig for history

How gas pipeline projects
uncover the past

Going wild

The big cats on their
way to Yorkshire

Oiling the wheels

How SABIC's petrochemical
plants have helped transform
the way we live

Master craftsman

Devon grantor and wheelwright Martin Symes

Also in this issue: project round-up, profile of the Plant Protection team, win a hotel break

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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

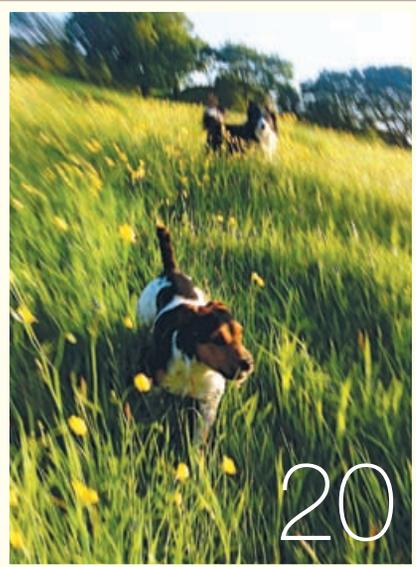
Grid can be made on 0800 404 090. Note the tower's number – found just below the property plate – to help crews locate it.

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.



CONGRATULATIONS TO SUZANNE BAKER, OUR PHOTO COMPETITION WINNER (DETAILS PAGE 20)

LAST ISSUE'S HANDYCAM WINNER IS FROM BUCKINGHAMSHIRE

Many congratulations to Tom Griffiths from Aylesbury who is the winner of the Sony Handycam competition in the last issue of Gridline.

A keen motor sports fan, Tom said he will use the Handycam to capture footage of the trackside action.

"I don't normally win competitions, so to hear I'd been selected was a real surprise and a great early Christmas present," said Tom, who is a self-employed carpenter.

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 you can either phone 01926 656 325, email gridline@uk.ngrid.com or write to the above address.

Welcome to Gridline

GOT A STORY?
CALL: 01926 656 325 or email gridline@uk.ngrid.com. Or write to Gridline, Summersault, 23-25 Waterloo Place, Warwick St, Leamington Spa, Warwickshire CV32 5LA.



Season's Greetings and a prosperous New Year to you all. My last two years as editor of Gridline magazine seem to have flown by. I hope that you have enjoyed reading the magazine as much as I've enjoyed putting it together.

The time has now arrived for me to take on a new role within National Grid, but I'm leaving the magazine in very capable hands. Angela Ford, the new editor, joins Land and Development from our gas side of the business, and has a

wealth of experience in customer service, communications and event management. Please do get in touch with Angela if you have any suggestions for future contents.

On page 6 our special feature looks at archaeological digs carried out prior to gas pipeline and underground cable projects. The term 'rescue archaeology' is sometimes used about digs associated with construction projects, but there's nothing rushed about National Grid's painstaking approach to preserving the past.

On page 10 we visit the Yorkshire Wildlife Park, which in January sees its first big cats arrive, after the success of a fantastic fundraising effort to rescue 13 lions from appalling conditions in a Romanian zoo.

Turning to page 14 we pause for a moment to consider the impact of the petrochemical industry on our everyday lives. Our grantor profile focuses on the operations of Saudi-owned SABIC UK, based on Teesside. We all rely on countless products that are derived from crude oil or natural gas.

On page 16 we look at the role of National Grid's Plant Protection team in Hinckley, which since November have been the single point of contact for all enquiries about the location of National Grid's gas pipelines, underground cables and overhead power lines. The team carry out a critically important role providing grantors with the information they need to work safely during proposed works.

On page 18 you can read about gas grantor Martin Symes, who is one of the few craftsmen still building and repairing wheels in this country.

We had a great response to our photo competition on pets in our last issue. Turn to page 20 for another chance to win a weekend away courtesy of Britannia Hotels.

Angela Ford

Editor, Gridline

New paths improve access for community

Engineers from Electricity Alliance East have helped the managers of a Local Nature Reserve in Northumberland improve footpath access by providing a new surface for several tracks.

The 188-acre Choppington Community Woods, owned by Northumberland County Council, was created on the site of two redundant colliery pits and is a locally important refuge for red squirrels.

Electricity Alliance East, which is currently refurbishing 85 towers between Stella West and Blyth substations, had upgraded one of the main tracks into the wood with a compacted stone surface, so

that heavy plant could access two towers in the neighbouring Willow Burn Site of Special Scientific Interest.

At the conclusion of works it is standard practice to remove and dispose of the top surface of aggregate access tracks.

“Instead, the Alliance generously agreed to move and re-lay the material to form the foundations for new paths in other areas of the wood,” said Barry Wilson, woodland management officer for the council.

A top dressing of ‘finings’ (crushed stone dust) was also added to provide a better surface for walkers and horse riders.

“The Alliance team have laid about



SURFACE TREATMENT: Work gets underway on the new tracks in Choppington Woods

a kilometre of new tracks and paths, which has enabled us to use a £10,000 community grant on other areas of the woods to create a much larger network for the public to enjoy,” said Barry.

Talks to proceed on new North Sea supergrid

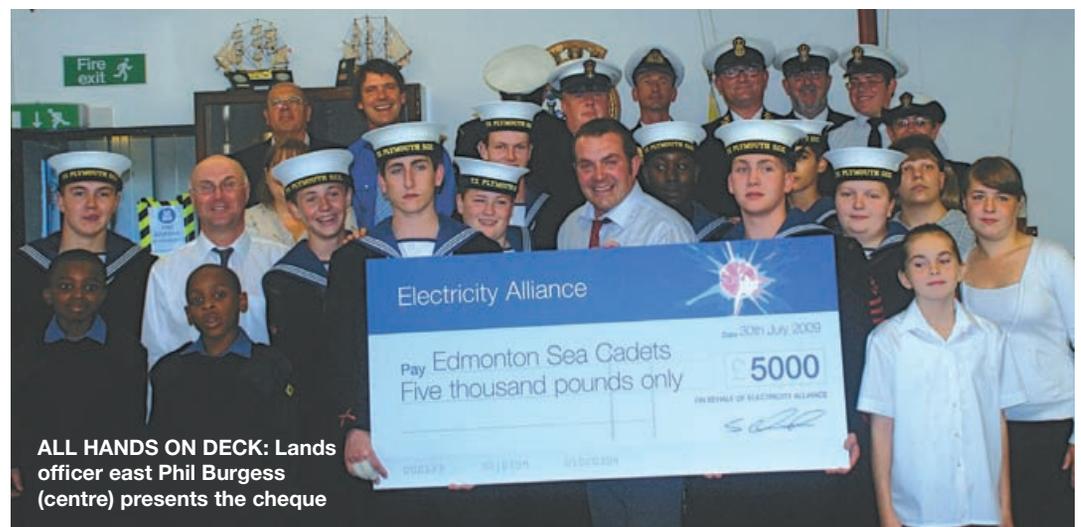
Plans for the world’s longest subsea electricity cable have moved a step closer to fruition after the signing of an agreement between National Grid and its Norwegian counterpart Statnett.

The agreement explores the prospects for a High Voltage Direct Current (HVDC) connection linking Britain and Norway.

The cable could include nodes along the route with spurs taking power from offshore generation and supplying low carbon electricity to oil and gas platforms. In addition, it could potentially become the basis for a new North Sea ‘supergrid’.

Enabling the two-way flow of electricity would have some important benefits.

A UK-Norway cable could tap into new large-scale wind energy, as well as making use of renewable generation, such as Norwegian hydro-electric power.



ALL HANDS ON DECK: Lands officer east Phil Burgess (centre) presents the cheque

Sea Scouts get shipshape

National Grid has presented Edmonton Sea Cadets with a £5,000 donation to provide a much-needed refurbishment to their land-based training centre, near the River Lea canal towpath.

The funding will enable renovations to the kitchen, shower block and boatshed at the TS (Training Ship) Plymouth site. After six decades of use, the facility was ready for a makeover.

Electricity Alliance East is currently working in the area, refurbishing the overhead power

lines between Waltham Cross and Tottenham. The contractor, Red 7 Marine (which is providing the Electricity Alliance East linesmen with barge access to pylons along the Lea Navigation Canal), has also donated three boats to add to TS Plymouth’s fleet.

“This funding is a great boost to the young people who use the facilities,” said Tony Stevens, the Edmonton unit’s commanding officer and chief petty officer. “This is a positive step and will enable us to offer a better and more varied training programme than is already available.”

Wanted... your memories of the grid

Following the success of *The Secret Life of the Motorway* and *The Secret Life of the Airport*, BBC Four is making a new series paying evocative homage to another of Britain's engineering masterpieces: the national grid.

The series will chart the history of the grid, the power stations that supply it and the impact that electrification has had on Britain. Besides being a three-part social history of how the grid came into being, the series will be an entertaining look at how Britain got used to living with it and the ways it changed us.

"A crucial part of the story will be the role of the 22,000 towers that bestride the country, and the recollections of the land officers who champion them, the grantors who host them, and the linesmen who maintain them," said producer Gaby Hornsby.

The production team are keen to speak to grantors willing to share their memories about the first grid going up in the 1920s and 30s, and the first supergrid in the 50s and 60s.

If you have a story to tell please contact Gaby on gaby.hornsby@bbc.co.uk or 020 8008 0025. The series is due to be broadcast on BBC Four in autumn 2010.



BEFORE AND AFTER: Frank with the new-look hedge; (inset) as it was before the competition

A cut above the rest

A hawthorn hedge planted seven years ago with funding from National Grid was rated 'first class' by the organisers of the Cheshire Hedge Layers competition, held at Agden Hall Farm, Little Bollington, in September.

"During vegetation management works in advance of a refurbishment of the 400kV Deeside to Daines overhead line, it was necessary to drastically cut back trees in the vicinity of the line," said Dominic Toft, lands officer north-west and Scotland.

"To replace them we agreed to provide the grantor, Frank Cookson, with saplings for a new 380-metre stretch of hedgerow."

The hedge was at just the right stage of development for a hedgelaying competition.

Each person works on an eight-yard section of hedgerow over a six-hour period using a billhook and axe to cut and bend stems to form an angle, with the aim of making an effective barrier to livestock. The judges look for craftsmanship and straightness, and the correct angles to encourage regrowth.

"The hedge forms an impenetrable barrier to sheep and cattle, won't need any cutting or maintenance for three years and is great for wildlife," said Frank, who farms 2,000 acres devoted to dairy and arable crops.

Unearthing the past

How gas pipeline projects often provide a unique opportunity to discover more about the rich heritage of the areas in which they are constructed

Over the past few years, National Grid has constructed numerous gas transmission pipelines throughout the UK to meet the increasing demand for energy and to connect new sources of gas supply in the face of declining North Sea reserves.

Archaeological digs associated with these works have made a significant contribution to knowledge about the historic environment. Important finds have been discovered, which might never otherwise have come to light.

One of these new pipelines, completed in late 2007, connects the Liquefied Natural Gas (LNG) terminal at Milford Haven in Pembrokeshire with the national transmission network at Aberdulais, near Swansea, and Tirley, Gloucestershire. By 2010, imported LNG from Milford Haven could provide around 20 per cent of Britain's energy needs.

Buried at a minimum depth of 1.5 metres and



stretching for 316km, the pipeline is the largest extension to Britain's gas transmission system in 40 years and has been hailed as the biggest archaeological dig in Welsh history.

"The project provided an unparalleled opportunity to uncover 12,000 years of settlement for just a brief moment before the pipeline was covered again," said Neil Fairburn, the archaeology project manager working for contractors NACAP Land and Marine, which constructed the 209km Milford Haven to Brecon stretch of the pipeline.

"The construction of Terminal 5 at Heathrow is often referred to as one of the largest one-off archaeological digs, but National Grid carries out projects on a similar scale all over the country. Every year it probably funds more archaeological digs than any other company," continued Neil.

Up to 100 archaeologists worked on the initial 120km of the route from Milford Haven to Aberdulais, in which 129 sites were identified and recorded, 20 of which developed into

significant finds. Archaeological factors are considered at the earliest stages of National Grid's planning process to decide a preferred route for a new gas pipeline or underground electric cable, along with topographical considerations and environmental constraints.

"The aim is always to leave something in situ if we can," said Neil. "Preservation is the preferred option and digging is a last resort."

The first stage of a project is a detailed desk-based assessment involving a search of existing records and old maps about known archaeological features, as well as aerial photos, followed by a field reconnaissance.

For the stretch to Aberdulais that meant walking through 852 fields within the proposed 44 metre-wide working corridor, recording local topography, field boundaries, geological features and anything of archaeological significance.

"Sometimes it can be as simple as standing in the landscape and thinking 'if I was an Iron Age man would I put my settlement on top of that hill or near that water course?'. We would then investigate the area more closely," said Neil.

"You might end up moving the pipeline 100 metres to the left or right to avoid some significant archaeological feature. That can be quite a big cost to National Grid."

Non-invasive geophysical surveys are also used to establish the presence of artefacts in the subsoil, using a variety of methods including ground-penetrating radar operated from mobile units, as well as LiDAR (Light Detection and



UNEXPECTED DISCOVERY: Neil pictured with the Bronze Age canoe found at St Botolphs

A photograph of a man standing in a stone archway of an ancient building. The man is wearing a dark jacket and blue jeans. The building is made of rough-hewn stone and has several other arches. The lighting is dramatic, with strong shadows and highlights.

**WHAT'S
YOUR STORY?**

Gridline would like to hear from any grantors with interesting archaeological features or scheduled monuments on their land for future articles in the magazine. Please call 01926 656 325 or email gridline@uk.ngrid.com.

WATCHING BRIEF: Neil Fairburn, the archaeology project manager on the Milford Haven to Brecon gas pipeline project

Ranging) aerial surveys. One complication is that geological features, such as volcanic rocks, can mask archaeological traces with their own magnetic signatures.

Experts in other fields have also benefited from the wealth of information gained from these surveys. “Geophysical data from the Milford Haven project is giving geologists a unique insight into rock formations across a swathe of South Wales, and some of the borehole data from the archaeological palioenvironmental work is being used to evaluate climate change,” said Neil.

Trial trenching is carried out to assess the quality of archaeology and to help arrive at a decision about whether to preserve a site in situ by rerouting a pipeline, or to adopt a strategy of investigation and ‘preservation by record’.

“The trenches are usually about 30 metres long and 2 metres wide and the landowner is always compensated by National Grid,” said Neil. “Because our remit is confined to the area within the working corridor, it can be frustrating if we clip the edge of something that looks interesting but extends beyond the working corridor. We report the find and have to leave it to somebody else to investigate.”

The archaeologists are also on hand when the first cut is made into the ground by the excavators. On the Milford Haven to Aberdulais stretch of the pipeline, another 93 sites of interest were identified in this way.

Among the discoveries was a possible Bronze Age wooden canoe – measuring 4.5 metres in length – at St Botolphs, near Milford Haven. The structure, which could have been used as a cooking trough, was carefully removed for conservation and preservation (funded by National Grid).

Another dramatic find was a 1st century



PRECIOUS FIND: Neil with the copper halberd, which dates from around 4,500 years ago

Roman road in the Brecon Beacons in June 2007 as excavations were about to begin. “Its presence came as a complete surprise because it was not on the alignment that had been postulated for the road in that area,” said Neil.

A copper dagger or ‘halberd’ dating from about 4,500 years ago, at the dawn of metallurgy in the British Isles, was spotted during the watching brief at Trecastell in Powys. No human remains were found with the artefact, and one theory is that it may have been a ‘potlatch’ offering, where a high-value object is discarded as a demonstration of wealth or social standing.

“Broadly, we normally expect an archaeological feature every 1-1.5km,” said Neil. “But gaps can be larger because sites are identified in surveys and are, therefore, left outside the pipeline easement.”

There were also unexpected stretches devoid of any finds, such as the 20-mile stretch from Camarthan to Llanelli, where the hilly nature of the terrain may have persuaded people to settle in flatter, easier areas to farm.

The final stage of the archaeologist’s brief is to write up findings in a report at the conclusion of the project, and to disseminate it to the wider community. In the case of the Milford Haven to Brecon project, it runs to five volumes.

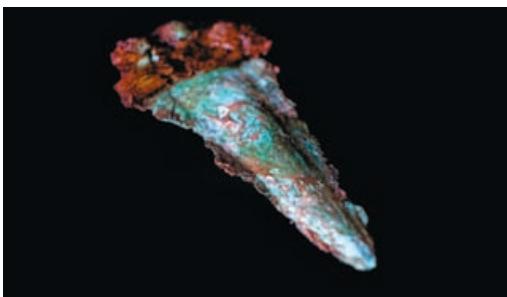
“All artefacts that are found during a pipeline excavation on behalf of National Grid belong to the landowner,” said Neil. “National Grid pays for the conservation and storing of any item, and very often the grantor is happy for it to go to a suitable museum or public collection.”

“Sometimes I go back to a landowner who has shown an interest and explain what we’ve learned from the dig,” he added. “They are often appreciative that I’ve followed up in this way.”

Archaeology can have its lighter moments too. During the Milford Haven project a police investigation was launched after human remains dating from the 1950s were discovered among some buried rubbish in Camarthenshire. Pathologists reported that not only had the limbs been dismembered but that the finger bones had holes drilled into them.

“It transpired the landowner had thrown out an anatomical skeleton with the rubbish and buried it, as was customary,” said Neil.

“In a sense all archaeology is rubbish because what we find is refuse or waste that has been discarded, whether it’s seeds, burned material or bones. Copper daggers and gold coins are the exception, accounting for less than half a per cent of finds, which is why the discoveries made in Wales were so extraordinary.”



PRESTIGE OBJECT: The halberd close up

GUARDING OUR HERITAGE

Louise Austin, head of heritage management at the Dyfed Archaeological Trust, explains how the historic environment is protected in Wales

Q What is meant by the term historic environment?

A Archaeology doesn't only lie beneath our feet. It's the study of the physical remains of the past that have survived into the present and tell us about how the people who came before us lived. The historic environment is the sum of this historic landscape, the different aspects that give it its character and all the individual sites and features within it.

Q What is Cadw?

A Cadw is the part of the Welsh Assembly Government (WAG) responsible for looking after the historic environment of Wales. Its role is to protect and sustain Welsh heritage, encouraging community engagement and improving access.

Q What are the Welsh Archaeological Trusts?

A The four Welsh Archaeological Trusts (WAT) provide a network of locally based experts providing advice on understanding, conserving and interpreting Wales' historic environment. They hold and maintain the regional Historic Environment Records, which are an index to all of the recorded information about each region's archaeology. Partly supported by the WAG and Local Authorities, the trusts provide the same services as in-house local authority archaeology services in England and Scotland.

Q What's the situation in England and Scotland?

A English Heritage and Historic Scotland are the national agencies with similar responsibilities to Cadw. Processes and procedures vary from country to country.

Q How do the trusts work with landowners?

A Through their involvement in government-funded agri-environment schemes, they provide information to landowners about the archaeological sites and other historic environment features on their land. They also provide advice about how best to protect and manage sites/features.

Q What are the main threats from farming?

A Deep ploughing can destroy buried archaeological remains as well as eroding away the 'humps and bumps' of earthwork sites visible on the surface. New 'energy crops' such as Miscanthus, have intrusive root systems, which can result in more damage than traditional crops. Overstocking of pasture can lead to erosion and damage to archaeological remains.

Q What are Scheduled Ancient Monuments?

A They are nationally important archaeological remains that enjoy legal protection. Any actions that could damage or destroy such sites are illegal unless Scheduled Monument Consent (SMC) has been sought and granted by Cadw, in Wales, or through the other



“
Archaeology is the study of the physical remains of the past that have survived into the present
 ”

national agencies in the other home countries. Activities for which SMC is required include any moving of soil, digging holes (even archaeological excavation), ploughing previously unploughed sites, metal detecting and the dumping of material.

Q What are historic landscapes?

A Uniquely, in Wales a number of specific areas of historic landscape have been recognised as being of national importance. Fifty-eight nationally important historic landscapes are on the register. Cadw has funded studies of these landscapes to identify what is special about them. The reports on the results of this historic landscape characterisation are available on each of the WAT websites.

SOURCES OF INFORMATION IN WALES

- Trusts: Glamorgan Gwent Archaeological Trust (www.ggat.org.uk); Dyfed Archaeological Trust (www.dyfedarchaeology.org.uk); Clwyd Powys Archaeological Trust (www.cpat.org.uk); Gwynedd Archaeological Trust (www.heneb.co.uk).
- Historic Wales <http://jura.rcahms.gov.uk/NMW/start.jsp> provides an index to records held by the WATs, Cadw, the Royal Commission on the Ancient and Historic Monuments in Wales' National Monuments Record and the archaeological collections of the National Museum of Wales.
- More detailed information, drawings and photos are available from the National Monuments Record through Coflein, their online database www.coflein.gov.uk.

ANIMAL MAGIC: (right) Neville feeding grapes to ringed tail lemurs; (below) Red river hogs are native to west and central Africa; (below right) Bennetts wallabies are found throughout Australia and Tasmania



GO WILD IN YORKSHIRE
 For more information on the Yorkshire Wildlife Park call 01302 535 057 or go to www.yorkshirewildlifepark.com. To find out more about the lion project, or to make a donation, go to www.lionrescue.co.uk.



Just eight months after its opening, Yorkshire Wildlife Park, at Branton, Doncaster, is preparing to welcome a significant addition to its collection, with the arrival of 13 African lions rescued from Oradea Zoo in Romania.

Husband and wife team Neville and Cheryl Williams, together with fellow director John Minion, acquired the 286-acre site, formerly run as a farm visitor centre, in May 2008. Cheryl and John have both previously worked at Woburn Safari Park.

With a £100,000 grant from the regional development agency Yorkshire Forward and £500,000 of their own money, they spent the winter transforming the place into one of the country's top wildlife parks, complete with restaurant, education facilities and a jungle play barn for children.

"The lions, whose ages range from 18 months to 27 years, have spent their entire lives in cramped cages in quite shocking conditions and they faced an uncertain future," said Neville.

A walk on the wild side

National Grid grantors who run a wildlife park in Yorkshire aim to make it the country's top 'walkthrough' attraction



ATTRACTIONS: (above) The horns on ankole cattle can grow to 4.5 feet; (right) the critically endangered black and white ruffed lemur

Other animals inhabiting the 45 acres devoted to the wildlife park are painted hunting dogs, the most endangered carnivore in Africa, three species of lemur from Madagascar, wallabies, a pair of red river hogs and a family of meerkats.

In the seven-acre African Plains enclosure there are herds of lechwe antelope, ankole cattle, zebras, camels, ostrich and four rare addax antelope. There are less than 500 addax left in the wild, so the species is part of the European Breeding Programme. A ha-ha (sunken ditch) has been created in the enclosure, enabling a panoramic view of the grazing animals.

The vision is to create the country's premier walkthrough wildlife park. "Safari parks in the 1970s were a step change to the notion of having big open spaces where the visitors are enclosed rather than the animals," explained Neville. "We're going a stage further by having walkways and viewing platforms, wherever possible, so that people can really go into the world of the animals and get close to them."

The park has three entirely different habitats – grassland, woodland and a 65-acre wetlands area (not yet developed) – which means that the animals can live in an environment that is most appropriate to their needs.

"We had a clean sheet to start with, unlike many of the smaller zoos, which were founded at a time when the ethos was to keep animals behind bars," said Neville. "Our woodland walkthrough, for example, is more than an acre in size and there are plenty of tall fir trees for the lemurs to leap about in.

"Our aim is to have larger groups of just a



CAPTIVE: The suffering endured by the lions at Oradea Zoo in Romania will soon be over

small number of species, so that individuals can interact together in a more natural way."

The grantors devote another 100 acres of land to arable and root crops, and to producing straw for the animals' bedding.

"Much of the land is managed for wildlife and habitat diversity under the Countryside Stewardship Scheme," said Neville.

"It's important that children can learn about what we're doing on the farm to protect wildlife in the local environment, in addition to finding out what is being done to save endangered species abroad."

Members of the public can get involved by adopting an animal and already more than 1,300 people have taken out an annual membership, which entitles them to discounted entry, among other benefits.

"We've come a long way from what was a farm attraction to being a serious conservation wildlife park, as well as a great day out for the whole family," said Neville.

A public appeal launched in August 2009, in conjunction with big cat charity the Wildlife Heritage Foundation and the News of the World, has already raised 80 per cent of the £150,000 needed to bring the lions to Doncaster. At the time of writing, they are due to arrive at the park in January.

"The money will cover the relocation costs, vets bills and the creation of a 10-acre reserve, where the public can come and see the lions from special raised viewing platforms," said Neville. "The lions will need careful rehabilitation because they've never seen grass, for example, or run at their natural speed, chased birds or anything of that kind."

The rescue is a welfare operation rather than a conservation project because the African lion is not endangered, unlike the Asiatic lion. Inbreeding also makes the group unsuitable for future breeding programmes.

"Just by drawing in extra visitors, the lions will act as ambassadors for our conservation programmes, enabling us to fund new acquisitions for the collection," said Neville.

Protect and preserve

Maintaining a transmission network of more than 7,000km of overhead power lines calls for a range of solutions by National Grid and its Electricity Alliance partners

PEMBROKESHIRE TO SWANSEA OVERHEAD LINE STEEL REPLACEMENT WORKS

» **When:** Oct 2009-March 2011

» **Why:** Major steelwork replacement is needed to combat severe corrosion that has taken place on the two 400kV overhead power lines that run in tandem between Pembroke and Swansea substations. The towers are being replaced during planned outages in April-June 2010 (4YW line) and August-October 2010 (4YV).

» **What:** Seventy-nine of the 108 towers on the 85km route will be replaced, while sections of steel will be replaced on another 29 towers. “The project is more like a new build than a refurbishment, and it’s one of our biggest construction challenges to date,” said Phill Roberts, project manager Electricity Alliance West.

Steelwork assembly starts in January. Each replacement tower will be pre-assembled on-site in box sections prior to dismantling the redundant structure by crane.

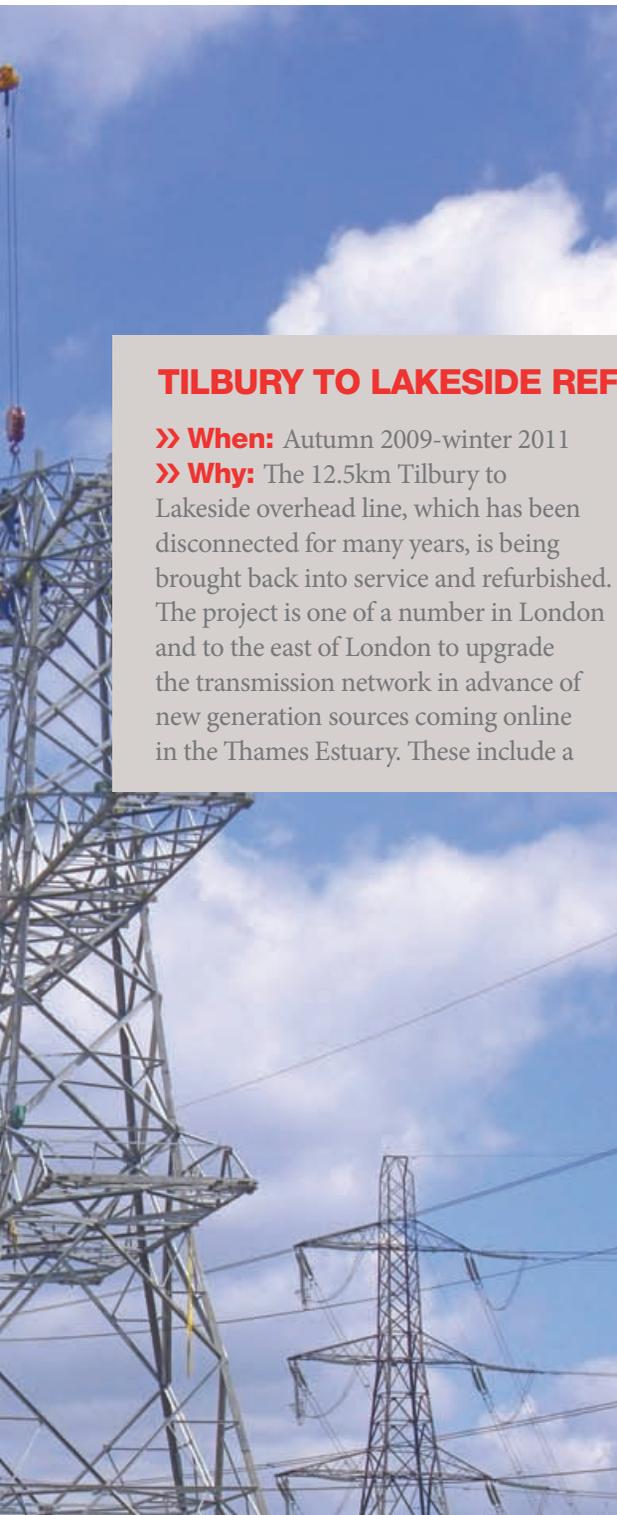
A large-scale use of scaffolding will be made to protect the public and wildlife habitats, and to maintain minimum clearances during the time that the conductors are lowered. Among the features



protected in this way are hedges, trees, footpaths, railway lines and low voltage distribution power lines.

» **Lie of the land:** “Numerous compacted stone access tracks and working pads for the cranes and tower assembly are required,” said Gareth David, environmental coordinator for the project. “We will be consulting with the Countryside Council for Wales (CCW) to ensure there are mitigation measures in place to protect the habitat of ground-nesting birds, dormice, badgers and bats.”





TILBURY TO LAKESIDE REFURBISHMENT PROJECT

» **When:** Autumn 2009-winter 2011

» **Why:** The 12.5km Tilbury to Lakeside overhead line, which has been disconnected for many years, is being brought back into service and refurbished. The project is one of a number in London and to the east of London to upgrade the transmission network in advance of new generation sources coming online in the Thames Estuary. These include a

Combined Heat and Power station at the Isle of Grain, the BritNed interconnector with Belgium and the London Array offshore wind farm.

» **What:** As well as the line being upgraded from 275kV to 400kV, the 37 towers on the route are undergoing full refurbishment and two new terminal towers at Lakeside Tee and Tilbury constructed. To avoid the use of scaffolding in confined spaces, catenary support systems are being used where possible to restrung the conductors where the line crosses roads, pole lines and a railway.

New Sealing End Compounds are also being constructed at Lakeside Tee to enable the Tilbury to Lakeside line to connect to other overhead power lines via underground cables.

» **Lie of the land:**

“The main focus over the next two years are new substations being built at West Thurrock and Tilbury, and the refurbishment and installation of overhead lines and cables in and around them,” explained Peter Bullen, Electricity Alliance East project manager. Almost the entire route is on land owned by market gardening business CH Coles and Sons.



RIVER BREAMISH BANK REINFORCEMENT SCHEME

» **When:** September 2009

» **Why:** Emergency works were carried out by Electricity Alliance East to reinforce a section of embankment at Brandon Ford, on the River Breamish, in Northumberland, after flooding threatened to undermine the foundations of a tower on the Stella West to Eccles 400kV overhead power line.

» **What:** Exceptional rainfall in September 2008 caused the Breamish to change its course. Later floods eroded the riverbank to within 12 metres of the tower. Using excavators, contractors moved the river channel back to its original course and installed a new reinforced embankment made of interlocking block stones. The tower is now 35 metres from the river.

» **Lie of the land:** “We only had a month to complete the work before the fish spawning season began in October,” said Doug Gray, site delivery manager Electricity Alliance East. “Prior to work starting, we blocked the river off upstream and collected the trout and salmon in nets to relocate them, before filling in the redundant section and creating the new river channel.”



USKMOUTH TO WHITSON OVERHEAD LINE REFURBISHMENT

» **When:** June 2009-March 2010

» **Why:** Refurbishment is needed on the 275kV overhead line between the Uskmouth Power coal-fired power station and Whitson substation, near Newport, South Wales.

» **What:** Insulators, conductors and fittings on all 20 towers are being replaced, as well as about 40 tonnes of corroded steel. The first circuit on the 6km route was completed between June and July 2009 and the second circuit is scheduled to begin in February, lasting approximately a month. Load capacity on the line is also being increased to take into account a new 850-megawatt Combined Cycle Gas

Turbine power station being built on a site adjacent to Uskmouth Power by Dong Energy.

» **Lie of the land:**

The towers are located in the Newport Wetlands Nature Reserve and a Site of Special Scientific Interest. “Specific licences have been obtained from the CCW to operate in the vicinity of two protected birds – the Cetti’s warbler and bearded tit,” said Andrew Jenkins, project manager for Electricity Alliance West. “Measures are also being taken to protect the habitat of great crested newts, and other amphibians, in the drainage ditches that have been a feature of the area since Roman times.”

From crude oil to



NORTHERN STAR: An aerial view of the 1,200-acre North Tees plant

SABIC's petrochemical plants on Teesside have played their part in a revolution that has transformed our lives

It's almost impossible to spend a day without encountering products made by the petrochemical industry, whether it's the carpet we walk on, the plastic bottles we drink from, car tyres, paint, pharmaceuticals – the list is almost endless.

And yet we take them all for granted, without realising the link between everyday products and the chemicals they are derived from.

Three years ago Saudi Basic Industries Corporation (SABIC) – the fifth largest petrochemical company in the world – acquired the former Huntsman UK petrochemical operation on Teesside. In doing so, it became the first major Middle Eastern chemical company to put down roots in the area.

SABIC UK's North Tees plant, near Middlesbrough, and its sister operation Wilton International, in nearby Redcar, produce more than 3 million tonnes of petrochemicals a year

and employ around 750 people.

"Crude oil and natural gas provide the feedstocks for the petrochemical industry," explained Wayne Alexander, site manager at North Tees and logistics senior operations manager for both plants. "From these building blocks, further multiple transformations by downstream processing companies create the various plastics, resins and other products used in the manufacture of consumer goods."

The 1,200-acre North Tees site (complete with high voltage National Grid towers) is wholly owned by SABIC but significant areas of the complex are leased to a number of other chemical companies.

"At one time, all the plants in this area were owned by ICI until it exited the industry in the late 1990s, but despite a change of ownership the trading relationships and shared logistics arrangements still exist," said Wayne.



FUELLING THE FUTURE: Wayne Alexander, site manager at North Tees and logistics senior operations manager, in front of the plant

cosmetics



LOGISTICS HUB: SABIC operates one of the busiest ports on the River Tees

The North Tees plant provides logistics and transport services for SABIC and other chemical companies, shipping more than six million tonnes of hydrocarbon and liquefied petroleum gases annually from four jetties on the River Tees. “We’re the second busiest port on the Tees, which is the second busiest river in the country,” said Wayne.

In addition to above ground storage, SABIC also makes use of underground caverns created by Teesside’s former brine extraction industry to store hydrocarbon liquids and gases.

SABIC’s cracker operation at Wilton provides feedstocks for the downstream processing industry by ‘cracking’ hydrocarbon molecules using very high temperatures.

One of the outputs from the cracker is ethylene, which is piped to the North Tees liquefaction plant for processing at very low temperatures (-1030 ° Celsius) into a form which can be shipped to Europe. It is used in the manufacture of all sorts of petrochemicals

and plastics materials, from PVC building products to materials used in car interiors.

The company is currently commissioning a £250 million low density polyethylene (LDPE) production plant at Wilton, which will eventually be the world’s largest plant of its kind.

“Rather than exporting so much ethylene to the Continent – where we compete with other suppliers who don’t have our transport, distribution and liquefaction costs – we will now be able to use more of the ethylene in our new plant,” said Wayne.

SABIC also solely or jointly operates more than 600km of pipelines transporting ethylene from Wilton to Grangemouth in Scotland and to Ellesmere Port in north-west England.

The North Tees plant takes a by-product from the Wilton Cracker to manufacture benzene. Benzene is also combined with hydrogen at the plant to form cyclohexane – the main building block for the nylon industry and its enormous range of products, from ski suits to rope.

Health, safety and the environment are top priorities at SABIC’s Teesside operations, whether it’s the way the plants operate, the safety of employees or the wider community.

“Emissions from plants in this area are down by around 50 per cent since the mid-90s,” said Wayne. “That’s partly been driven by legislation but also because we operate in an energy-intensive and competitive industry.”

An initiative jointly conducted by industry and Northumberland Water since the 1970s has dramatically cleaned up the River Tees to the extent that migratory salmon have returned to the river, as well as grey seals and dolphins. Conservation efforts at the company’s former brine fields have resulted in avocets nesting on the lagoons for the first time in over 200 years.

The North Tees plant also provides the RSPB’s nearby Saltholme Bird Sanctuary with a vast quantity of water (created as a by-product of its management of the brine caverns) free of charge, to top up wetland areas.



MEET THE TEAM: Team manager Phillippa Parkes (ninth from left) with colleagues from the Plant Protection team in Hinckley

Oneteam one number

Grantors and third parties now have a single point of contact for all enquiries about proposed work near gas and electricity assets

Since November all enquiries by grantors and third parties about proposed work near National Grid gas pipelines, underground electric cables and overhead power lines have been handled by a single team in Hinckley, Leicestershire.

The Plant Protection team provide information about the location of all National Grid's gas and electricity transmission networks, as well as the gas distribution pipelines that the

Company operates in north-west London, the West Midlands and East of England.

"Simply dial 0800 688 588 and we will carry out simultaneous searches for the presence of any National Grid asset in the proposed work site," said team manager Phillippa Parkes.

Previously, separate searches for National Grid's transmission (gas/electricity) and distribution (gas) assets were undertaken by separate teams in different office locations.

"We had two cable strikes last year which highlighted the danger of contractors mistakenly assuming that a search by one of the two enquiry teams had included all of our assets," said Phillippa. "The driver for the one-stop shop approach is to improve safety and to make the process simpler for people to follow."

The team's 25 employees have undergone extensive training in new systems and processes to efficiently handle up to 800 enquiries a week.



SELF-SEARCH OPTIONS



www.linesearch.org is a free online enquiry system (currently for transmission-only searches) designed to give instant results. Simply enter a grid reference, postcode or street name to search. If your result is within a National Grid zone of interest you can click directly through to the Plant Protection team to request

plant location details. At the same time your search will have checked your enquiry against the plant location for over 20 other companies.



National Grid website for transmission only information at www.nationalgrid.com/uk/landanddevelopment

CONTACT US

0800 688 588

National Grid Plant Protection
National Grid, Block 1, Floor 2,
Brick Kiln St,
Hinckley,
LE10 0NA

plantprotection@uk.ngrid.com

To initiate searches grantors should supply:

- a clearly identifiable plan
- site grid reference or postcode
- a works start date
- contact details
- details on the nature of planned work.

Initial enquiries (by phone, email, post or linesearch) are filtered by employees on the front desk. Simple cases are passed to the General Enquiry team, while those involving planning permission applications or applications for large-scale third party developments are passed to a separate team for further consideration.

At the heart of the process is a new computer-based system, which risk assesses the proposed work against data held about the pipelines,

cables or overhead lines affected. In the case of gas pipelines, for example, it will factor in the pressure, wall thickness and size of pipeline.

The aim is to respond to the enquirer within 10 days, indicating whether the proposed works are high, moderate or low risk (in the case of gas pipelines and underground cables) or whether moderate or low (for overhead power lines).

Included with the response to the enquirer is a map showing the location of the asset, along with Health and Safety Executive advice (HSG47) on 'Avoiding danger from underground services' together with guidance on working near the asset or assets found.

"Missing or incomplete details will delay the enquiry process, and we need at least seven days' notice to comment on plans," said Phillipa. "We're able to scan maps and information

booklets so that they can also be sent out as email attachments."

The team liaise with National Grid's field-based engineers. Whenever a high or moderate risk is flagged up, the details are entered the same day on to a web-based information-sharing system which can be viewed by the field engineers. In many cases engineers will arrange a site visit to investigate further, and to identify the exact location and depth of pipelines or cables using detection equipment.

"In addition to the safety-critical nature of our responsibilities, we are the first point of contact with grantors and third parties," added Phillipa.

"So dealing with enquiries in an efficient and timely manner also strengthens the positive relationships that have been established with our stakeholders and the wider community."

Wheel of fortune

The market for wheelwrights may be much diminished but Martin Symes is living proof that there's still a demand for traditional woodturning skills

The Old Wheelwrights' Shop, Wheelwrights Cottage, The Old Forge – the house names are a reminder of the days when every village had its skilled craftsmen adept in the art of making and repairing cart and wagon wheels.

The widespread mechanisation of farming after World War Two led to a dramatic fall in the number of working horses, carts and wagons used in agriculture. From a high of around 23,000 in 1911, the number of wheelwrights still making a full-time living from the profession today is estimated to be no more than 50.

One man still very much in business is Devon wheelwright (and gas grantor) Martin Symes. He continues to build and repair wheels but has diversified into a range of working and decorative handcrafted items, including wheelbarrows, benches, tables, costermonger barrows, skittles and croquet sets.

In his workshop at Higher Collyforches Farm, Yarcombe Hill, near Honiton, sawn timber is stacked from floor to ceiling, competing for space with turned parts and workbenches laden with tools. Every surface is covered in an inch of wood shavings and sawdust.

"Wheelwrights have been in the family on my father's side for generations," Martin said. "The village wheelwright would also make window frames, gates, kitchen furniture and even coffins

– whatever needed doing. After the war, like many wheelwrights, my uncles moved into general construction work."

Traditionally, wheelwrights used hand-turned lathes to model wheel hubs but Martin believes there is no room for sentiment when it comes to adopting modern tools and techniques.

"I cut and work the timber using band saws, woodturning lathes and hand tools powered by electricity. Like everybody I've got to earn a living and have to be efficient in the way I work."

Agricultural and horticultural shows are his main shop window and he attends about 15 a year, from May through to September.

In 2005 he was selected to present the Prince of Wales and his new wife Camilla with an engraved bench at the Devon County Show.

"It was a great honour to be chosen and to have the opportunity to meet them," he said. "I was impressed by their knowledge of the countryside and traditional rural crafts."

Rather than heading for a working life on the farm, many of Martin's products are decorative pieces, including, for example, a wheelbarrow with a slatted bottom that can be used as a planter and a wheelbarrow bench that can be moved to follow the sun. His handcarts, costermonger barrows and wheelbarrows are also in demand for use in nurseries and farm shops to display fruit, vegetables and flowers.



However, Martin still gets regular work building and repairing wheels for vintage wagons and carts, which compete at shows. Another market is the TV and film industry. In 1998, for example, he repaired a wheel on a dung cart featuring in the movie *Land Girls*.

He has also supplied a number of wheels for gun carriages used on ceremonial occasions, such as the Queen's birthday, and recently made a wheelbarrow for a Royal Shakespeare Company production.

All his timber is sourced from sustainably managed woodlands within a 30-mile radius of the farm. "I used to haul in a lot more myself but these days contractors and tree surgeons bring me most of what I need," he said.

"Over the past 30 years I've amassed something like 2,000 cubic metres of timber in the yard, purchased from local farms and estates. After sawing, the timber is left to season for at least three years, with the planks left to air-dry in a covered location."

Wheel hubs are usually made out of elm, which doesn't split or crack. Oak is used for the spokes and ash for the rims, because it has a bit more spring and give. It's also the favoured wood for the body and framework of carts.

While Martin's memorial benches are made from durable, heavy woods like oak or chestnut, he produces a lighter but more manageable park bench from Douglas fir which is also durable as long as it's maintained properly.

All the items are treated with an industrial solvent preservative and a wood stain to provide a long-lasting finish.

Nothing in the workshop goes to waste – even the wood shavings are used as a fuel in Martin's farmhouse stove. "I mix it with sawdust – or it can be a bit too combustible!" he added.



MASTER CRAFTSMAN:
Martin Symes in the
workshop where he still
practises as a wheelwright

**TO FIND
OUT MORE**
Contact Martin
Symes on
01404 861 340

To contact Gridline:

☎ 01926 656 325

✉ gridline@uk.ngrid.com

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

WIN A FABULOUS SONY DIGITAL CAMERA

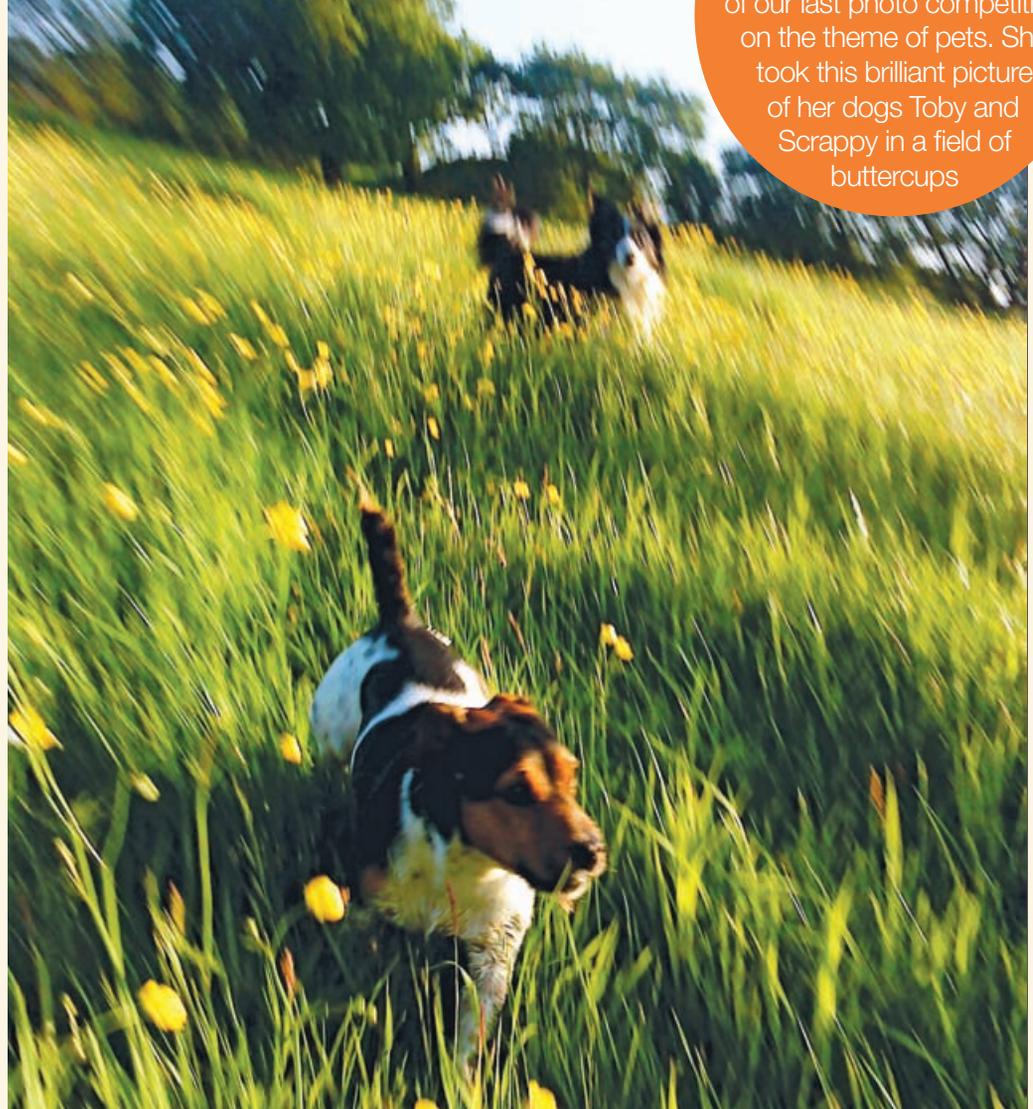
Move up to the next level with the Sony Cybershot W220B digital camera.

Outstanding features include 12.1 megapixel resolution, a 2.7-inch LCD screen, 30mm wide-angle lens and 4x optical zoom.

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

Q What is the megapixel count of this camera?

Send your answer to Gridline Sony Cybershot competition, 23-25 Waterloo Place, Warwick Street, Leamington Spa, Warwickshire CV32 5LA. Please note you must be a National Grid grantor to enter this competition. Closing date is 19 February 2010.



PETS AT PLAY

Well done to Suzanne Baker from Chester, winner of our last photo competition on the theme of pets. She took this brilliant picture of her dogs Toby and Scruppy in a field of buttercups

Win a luxury hotel break

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

The prize for our 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 for this issue's photo competition is 'festive celebrations' – how you interpret the theme is up to you. All you have to do is send in your selected photograph for a chance to win a weekend hotel break for two.

Send your photo to Gridline Photo Competition, 23-25

Waterloo Place, Warwick Street, Leamington Spa, Warwickshire CV32 5LA. Or email your photo to: gridline@uk.ngrid.com.

Closing date is 19 February 2010.

Only National Grid grantors are eligible to enter this competition and, regrettably, prints cannot be returned. *Strictly subject to availability.



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