

GRILLINE

The magazine for landowners

AUTUMN 2014

nationalgrid

GAMBLING ON CHERRIES

The couple putting the
sweet treat on the map

Buffalo in Barnsley?

A taste of Asia making
its mark in Yorkshire

The confetti queen

Wedding business is
blooming... naturally

PLUS: Engineering a brighter future • All aboard for tunnel vision • Plant a wood... the safe way • Win a tablet

WELCOME TO GRIDLINE

We're seeking the **engineers of tomorrow** to match the **innovation and ingenuity** of our landowners

For many grantors, National Grid's only impact on their daily routine is when engineers arrive to carry out essential work or our helicopters carry out safety checks.



engineering feat that created the longest canal tunnel in the UK, which you can read about on page 15. We also take a look at the pioneers of a different kind, who epitomise the spirit of enterprise by diversifying to grow

We are always striving to ensure gas and electricity reaches your homes and businesses safely and reliably, and are increasingly looking to the future in researching more efficient ways of achieving that with new, alternative energy sources.

confetti, breed buffalo and even to take a chance on cherries.

To stay ahead of the game we need to maintain our reputation for being at the forefront of engineering, but it's an area experiencing a growing and alarming skills gap.

The ingenuity of our grantors never ceases to impress, so please keep sharing your success stories with us to inspire others, as we hope to inspire the next generation of engineers.

In this edition of Gridline, you'll see how National Grid is committed to redressing the balance to make sure the next generation of young engineers - many of whom are still at school - keeps emerging.

Dawn McCarroll
Editor, Gridline

We've developed a raft of educational programmes, as well as supporting schemes in communities near you, to help make this happen and maintain, improve and innovate the infrastructure that serves the nation.

It's the modern day equivalent of the

BE A PART OF GRIDLINE

Four of the five grantors we featured in the last edition contacted us with their story, so why not drop us a line?

Tel: 01926 656 325
Email: gridline@nationalgrid.com
Write to: Gridline,
Summersault Communications,
23-25 Waterloo Place, Warwick Street,
Leamington Spa, Warwickshire, CV32 5LA.

nationalgrid

Some useful contact numbers

The Land & Business Support team 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. Your local contacts are listed below.

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

CHANGE OF DETAILS

- To inform National Grid of changes in ownership or contact details, telephone 0800 389 5113 for electric and 01926 654 844 for gas, or email grantorservices@nationalgrid.com

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

DIAL BEFORE YOU DIG

- Before carrying out any work in the vicinity of gas pipelines, overhead power lines or underground electric cables, you should contact Plant Protection on 0800 688 588 so that searches can be made to determine the exact position of any National Grid assets

CUSTOMER COMMENTS

- Write to Land & Development, National Grid House, Warwick Technology Park, Gallows Hill, Warwick, Warwickshire, CV34 6DA. Or email ld.customercomments@nationalgrid.com

Gridline is produced by Summersault Communications
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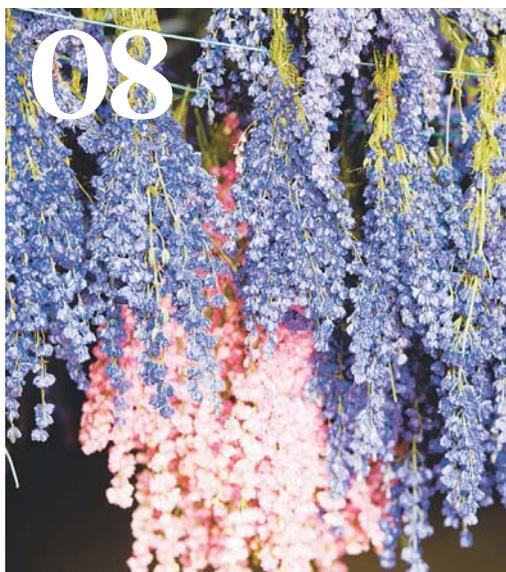
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Moth in bloom

Jon Avon from Devon won a £150 M&S giftcard for this sensational snap. You could be next – see how on page 20.

Competition winner

Congratulations to Gemma Bland, from Hyde in Cheshire, who won a two-night luxury gourmet getaway for correctly telling us that farmer Harry Wilson grazes cross-bred Mule sheep on his Lancashire estate.

For your chance to be a winner this time, turn to page 20.

Regulars

- 04** The robots helping to engineer a brighter future
- 05** Small changes mean a lot on World Environment Day
- 06** The historic waterway offering a thoroughly modern solution



Features

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- 20** Win a 7-inch Samsung Galaxy tablet

The latest news from
National Grid and its
landowner partners



Young visitors get to grips with remote-controlled robots to discover more about engineering

March of the robots is key to tomorrow's success

YOUNGSTERS VISITING National Grid's stand at the Great Yorkshire Show gained a fascinating insight into the world of robotics - and found out why science, technology, engineering and maths (STEM) skills will be key to solving the UK's energy challenge.

The visitors used robots supplied by VEX Robotics in fun activities, such as lifting and moving small objects using handheld remote-control devices.

Passionate

"National Grid is passionate about engaging and inspiring the next generation of young people to take up STEM subjects, and tackle a growing skills shortage by following a career in science or engineering," said Steve Knight Gregson, regional external affairs manager.

Display boards explained how the company's engineers are at the heart of the UK's drive to meet climate change targets by connecting new sources of low-carbon energy at an affordable price to the consumer.

This year, National Grid has donated VEX Robotics equipment

to a number of student teams designing, building and programming robots to solve a specified challenge. Each year, qualifying schools go on to compete in the VEX Robotics national championships.

Steve said: "Working with robots

gives the youngsters a real insight into every aspect of being an engineer, from team-working and project management, to design and build, testing, fault diagnosis and commissioning."

➤➤ For more, see *Inspiring a generation* on page 13

At our responsible best

National Grid has been named Business in the Community's (BITCs) Responsible Business of the Year.

The most prestigious accolade given each year, the award celebrates the single organisation that has achieved the highest degree of integration of responsible practice through its business.

The judges singled out National Grid from a field of 150 companies for its 'commitment to creating sustainable energy solutions for the future while supporting the need for economic prosperity now'. Last year's winner was Jaguar Land Rover.

The judges drew attention to the company's achievements in

lowering its own greenhouse gas emissions by 53% since 1990, while investing billions to develop responsible practices in its own organisation, and inspiring the next generation of talent through education programmes.

"This is a fabulous and well-deserved accolade for us, confirming that sustainable and responsible behaviour is central to everything we do here at National Grid," said CEO Steve Holliday.

For more information...



... go to www2.nationalgrid.com/responsibility



We're making a difference

MORE THAN 400 National Grid employees at 21 sites marked World Environment Day with a variety of activities inspired by the theme 'make a small change to make a big difference'.

- A team of volunteers, led by the Warwickshire Wildlife Trust, created foraging and access areas for water voles in the banks of the Oxfordshire Canal, which cuts through 30 acres of woodland and fields owned by National Grid, near to Coventry substation.
- Volunteers from Neepsend substation joined forces with Hillsborough College and the Canal & River Trust to regenerate non-operational land at the substation for educational use by the

college. Invasive species were cleared to create a new wildflower meadow, and new raised beds, pathways and a shed are planned.

- Old pallets have been upcycled into bird and bat boxes, creating much-needed spaces for nature and demonstrating the principle of 'resource, not waste'.
- Employees got on their bikes to raise £4,966 for Macmillan Cancer Support by using more sustainable forms of transport. National Grid donated a pound for

every mile an employee abandoned their car in favour of walking or cycling.

- In the Our World, Your Planet competition, employees were asked to come up with ways to improve the sustainability of their local community. The winners were given £1,000 to create new school allotments and orchards, energy-efficient lighting for a Scout group, and a wildlife haven at a stroke rehabilitation hospital.



The Neepsend team opened up land for use by college students (main pic). The Coventry crew by the canal (above)

News in brief



SAVING A PEARL OF THE WOODS

Tree felling near a power line in the south-west is set to help create a valuable habitat for a rare butterfly.

The Pearl-bordered Fritillary butterfly thrives in woodland clearings, but the last 25 years have seen two thirds of its colonies become extinct due to a decline in traditional woodland management practices, such as coppicing, which have caused habitats to become shady or overgrown.

As part of our Enhancing Ecosystems strategy, National Grid is managing its land differently to create havens for nature and stepping stones for wildlife.

Nearly an acre of mixed conifers and broadleaf trees near the power line in Haldon Forest, Kennford, Exeter, will be removed by contractors to maintain safe clearances from conductors. By opening up the area it will also allow the rare butterflies to thrive.

The charity Butterfly Conservation is working with the Forestry Commission on a project to expand and link existing habitats.

A HELPING HAND FOR HOSPICE

National Grid volunteers have helped to create a woodland walk at Shropshire based Severn Hospice – an independent charity that cares for people with complex and progressive illnesses. They cleared a huge area of overgrown land, and relocated a garden shed from an area prone to flooding.



One-minute interview



Amanda Pritchard,
acquisitions manager

BACKGROUND: I've worked in the electricity industry on property matters for about 20 years, apart from taking eight years off to have children.

CURRENT FOCUS: Leading a small team of specialist surveyors and town planners providing strategic property advice for major National Grid projects and third party projects that affect the company's assets. I also support our regional lands teams and occasionally do case work on compensation and land acquisitions.

LEISURE INTERESTS: I enjoy hiking and recently spent three weeks in Brazil, which included walking.

MOST LIKELY TO SAY: 'Goodness, really?' (or so my children tell me).

NOT MANY PEOPLE KNOW: I have a pathological fear of heights.

DREAM JOB: I work with a great team of people, the work is varied and challenging – I wouldn't change anything.

UNFULFILLED AMBITION: To visit the Silk Route in China.

FAVOURITE HOLIDAY DESTINATION: Iceland. It's just awesome.

IDEAL DINNER GUEST: Gregory Peck or Cary Grant – such gentlemen.

FAVOURITE FILM: Lord of the Rings – it's a family ritual to watch it every Christmas.



(l-r) Connah's Quay councillors Paul Shotton and Andy Dunbobbin with Prysmian site engineer Quentin Amboise

The path to knowledge

A NEW NOTICE BOARD AT The Rock, Connah's Quay – a well-known vantage point on the Wales Coastal Path – is sparking interest from passing walkers and cyclists.

Designed by local blacksmith Richard Jones, the board has been crafted from steel to complement

other sculptures in the area. It was installed by cable manufacturer Prysmian, part of the consortium building the £1 billion Western Link project bringing renewable energy from Scotland, via sub-sea cables, to homes and businesses in England and Wales.

Prysmian is currently preparing to

install electricity cables under the River Dee, which will link National Grid's substation in Connah's Quay with a new electricity converter station being built on Deeside as part of the scheme. The noticeboard will provide project updates, before being handed over for community use.

Historic canal solution to 21st-century demands

A 200-YEAR-OLD LOCK FLIGHT is helping National Grid cope with extreme demands on the grid.

In normal use, pumps at the lock flight are used by the Canal & River Trust to send the equivalent of 9,000 Olympic-size swimming pools of water back to the top of



the hills along the canal, after the movement of boats through the locks has brought the water down the slopes.

But the pumps on the Avon & Kennet Canal in Calne, Wiltshire,

can be switched off when there are sudden peaks of demand, such as when millions of people switch on kettles and other electrical equipment during ad breaks in major sporting events or popular programmes.

Conversely, the pumps can be turned on if there is too much energy on the grid – like when 17 million people watched Andy Murray's Wimbledon win. The pumps helped absorb the excess energy left on the grid while people were cheering him on.

BRANCHING OUT

Planting a wood in the vicinity of a **gas pipeline** turned out to be straightforward for grantors Graham and Miriam Clarke, who **consulted** with **National Grid** from the outset

A day out at the Norfolk Show provided the spark of inspiration for an ambitious woodland creation project.

A chance chat between Miriam Clarke and a Woodland Trust charity worker led to the change at Church Farm in Porlingland, near Norwich.

"I found the charity would contribute 60% of the cost of planting native broadleaved trees on farms like ours, as part of a strategy to create small-scale areas of connected woodland habitat," she said.

Miriam and husband Graham have always been fond of trees, but were also attracted by the idea that in 10 to 15 years, the wood could be harvested and used as fuel in a large boiler that supplies all their hot water and heating needs.

Suitability

After a site visit to confirm the farm's suitability, the Trust drew up a plan for 1,250 trees on a three-acre site previously used for crops. Fourteen different species of native trees and shrubs were chosen, both for their habitat value and suitability for coppicing.



The trees (below left) provide a woodland habitat. Graham and Miriam (above) worked with National Grid from the outset

But one potential stumbling block remained - the presence of a gas transmission pipeline crossing the proposed site.

"We knew from advice in Gridline, and in the annual calendar they send us each year, that anybody thinking of doing any work near a pipeline should make contact at the earliest opportunity," said Graham.

On calling the helpline, Graham was asked for the site's map reference and told that a technician would visit to detect and mark out the pipeline's exact position with pegs. After first preparing the ground by

ploughing, planting was completed in January 2014.

Harvesting

"We planted small groups of same-species tree in random patterns to give a natural look to the wood," said Miriam.

"National Grid had given us an information sheet setting out the minimum distances that various species of tree could be planted from the pipeline. We planted shallow-rooted shrubs like hazel and hawthorn closest and trees with more aggressive root systems further away."

A four-metre width of land was left unplanted over the pipeline to double up as vehicle access for harvesting, and to provide a walkway when the trees mature. The couple have a 12-year agreement with the Trust to maintain the woodland.

"It's great to think we will be leaving a footprint on the landscape that will have lasting benefit for wildlife, as well as being enjoyed by future generations," said Miriam.

PLANTING GUIDE

➤➤ Large-growing species of poplars and willows must not be planted within 10 metres of the pipeline's centre.

➤➤ Large conifers and deciduous forest trees must not be planted within 6 metres (and only as individual specimens or a single row between 6 and 10 metres).

➤➤ Dwarf stock fruit trees (including amenity and ornamental trees) cannot be placed within 3 metres.

➤➤ Shrub-planting bushes, fruit bushes



and roses should not be planted within 1.5 metres.

➤➤ Hedge plants and ground cover may only be planted across a pipeline to screen or mark boundaries.

➤➤ For a full list of permitted trees and distances visit www2.nationalgrid.com/UK/Safety/Trees-and-vegetation-near-gas-pipelines/

➤➤ If you are planning work

or have a query about tree planting, call Plant Protection immediately on 0800 688 588.

For more information...



... about the Woodland Trust's MOREwoods scheme, go to www.woodlandtrust.org.uk/plant-trees/help-and-support

WANT A NEW CHALLENGE?

I DO

The quest for the **perfect wedding** with green credentials is gathering pace, and one gas and electric grantor is determined to be **first up the aisle** to meet demand

This time last year the extent of Lilian Sykes's knowledge of the countryside and its quirks was a night in watching Monty Don on the telly.

But an invitation to a family wedding was to prove the spark for a new venture that has changed all that to dramatic, and colourful, effect.

The mother of four once dreamed of a career in acting but, after drama school, embarked on a career in retail marketing and sales instead.

Skills learned along the way are now set to come to the fore once more now her fledgling natural confetti business has celebrated its inaugural harvest.

Metallic confetti

Redundancy from her last job selling construction and DIY materials left a nagging gap in the life of a woman who, you sense, isn't keen on sitting still for too long.

She and retired builder husband Tom, proud of not wearing the trousers in the business, considered a bed and breakfast and came within an oar's length of buying a boatyard in Stratford-upon-Avon.

But keen gardener Lilian hopes Shakespeare Country's loss is the nation's newlyweds' gain. "It all started at a wedding reception when I saw a bowl of metallic confetti. I felt it just wasn't right in terms of how it looked and the fact that it would take 80 years to biodegrade," she said.

Lilian had just put in an offer on a dilapidated house in the forgotten countryside behind the M6 Corley services near Coventry, and within hours of returning from the celebration, the fate of its 23 acres had been decided.

She said: "We had nothing after buying and renovating the house, so we rented the land to a farmer friend who planted maize to get it going."

Trials of delphinium seeds proved successful, despite the exposed field's gentle slope inviting unforgiving winds to do their worst. "After I'd seen how hardy they were and dried them, we planted £3,000 worth of seeds over three acres. If it didn't work it wasn't a disastrous gamble - that was Tom's attitude," she said.

Living art

A stroll through the vivid pink, lilac and white rows of swaying perennial flowering plants suggests it's a gamble that's in the early stages of paying off. Lilian said: "We planted in April and started hand picking in August. I've never worked so hard. It was a 12-hour a day job because we were picking the tops like gardeners rather than taking the whole stem. Then we planted again in September."

If the dream gathers momentum - much will depend on Lilian's sales skills in the competitive wedding planning market - she has her sights set on a £1 million turnover business covering all 23 acres inside five years.

"By then we might have staff and a sales team, but for now it's incredibly rewarding being in at the beginning of something that is so sustainable and makes our fields look like a living art canvas," she said.

Once harvested, the small, textured flowers - a world away from the bland synthetic confetti resisted by church wardens - are hung out to dry. If the dried flowers remain damp-free and packaged in plastic, they keep their colour for five years, but significantly, break down in the churchyards far quicker.

Lilian expects to make little financial headway until the business develops its volume, but is convinced the average wedding day spend supports her plans.

As well as brightening up ceremonies, Lilian is proud of her small role in redressing the decline in wildflower meadows and the bee, bird and insect life that thrives in them.

Tom, as silent as a nervous groom throughout, has no doubts about the project's future: "If Lilian puts her mind to it, it will be done," he said.



Lilian has thrown herself into her confetti venture, and hopes to eventually turn over £1 million a year as part of a booming wedding industry





Petal points

- The word confetti comes from the Italian for small sweets or confit, which were traditionally thrown during carnivals.
- The use of rice or grain as a fertility symbol dates back to ancient times, and was common in pagan wedding ceremonies.
- The name delphinium hails from the Latin for dolphin, referring to the shape of the nectary.
- Italian businessman Enrico Mangili was the first to sell paper confetti for the Carnevale di Milano in 1875, to replace silk.
- New Year's Eve 1885 in Paris sparked confetti's growth throughout Europe and its boom in Victorian England.



In numbers

34% of couples spend £10-20k on their wedding day

£89 for a 50-guest kit of Lilian's natural confetti

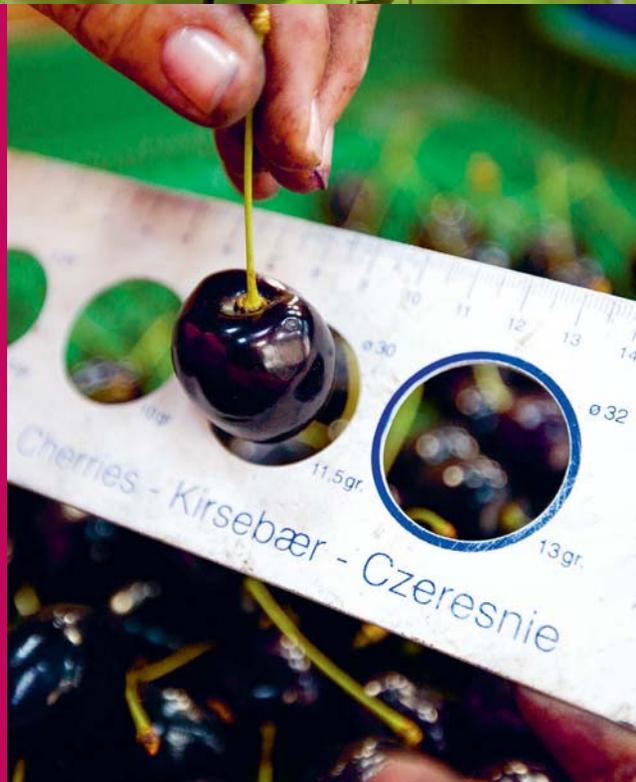
For more information...



... visit www.confettpetals.com



"The gamble looks like it's paying off as supermarkets are responding to customers' desire for quality and knowledge of the provenance of their food. **We're retaking the cherry for Britain.**"



ROMANCING THE STONE

Chris Price and his National Grid land officer wife are fighting to put **cherries back** on the British landscape, but they've had to **be brave**

Shoppers browsing their supermarket's fruit aisles will always find one of the smallest sections devoted to the sweet yet unassuming cherry.

Comparatively expensive, tricky to eat politely and not the most versatile ingredient unless twinned with crumble, it's suffered from a lack of positive PR over the years.

So when Chris Price decided to build on the success of his cider apple orchards by planting three cherry orchards, his farming neighbours thought he was taking on too great a challenge.

After all, Britain isn't even in the top 20 producers and until a decade ago, Kent was the only county having a decent stab at producing the succulent treats.

Eight years on though, the only scoffing going on is being done by those same farming neighbours buying the Moorcourt Fruit farm crop by the boxload.

Leap of faith

The 500-acre farm, north-east of the Brecon Beacons in Herefordshire, was split between arable, sheep and cattle until Chris's father diversified into apples in 1999.

It was a change that ignited a passion for fruit farming in Chris who, despite the naysayers' warnings of difficult soil and inconsistent climate, dived in headfirst.

"It was very much a leap of faith because for the first five years it is all cost until the trees are established," said Chris.

"Only now, after eight years, are we starting to turn a profit. Last year we had two orchards and produced 40 tonnes. This year with three it's 70, and next year we hope to hit 100."

Chris is delighted the demand for quality and locally produced cherries is returning

Chris and Catherine with boxes of the most popular Kordia cherries



to the nation's consumers, heading off a flood of less tasty extended season rivals from abroad.

"It was a gamble because at the time supermarkets were extending the season at both ends with cherries from abroad, but they were inconsistent in quality and smaller," he said.

"Now it looks like it's paying off as supermarkets are responding to customers' desire for quality and knowledge of the provenance of their food. We're retaking the cherry for Britain."

Labour intensive

Ironically, the 15-strong team of pickers helping them do it are largely eastern Europeans, who work the lines of polytunnels daily under instructions to 'pick big' or 'pick small' depending on the destination.

High-end supermarkets like M&S insist on a plump, burgundy coloured crop of 28mm or more in diameter, with the smaller 22mm ones heading for other retailers and the rest destined for the wholesale market.

The 10ft tall dwarf root trees are a leap forward from

the 30ft giants of yesteryear that made cherries a delicacy reserved for the wealthy, due to the costs of big-ladder harvesting.

But it's still a hugely labour intensive job from the hand-mixed trickle irrigation feed to the branch pruning and downward tying that ensures the best quality fruit.

Then there's the picking itself, which Catherine describes as absolutely manic from the end of July to September as the six different varieties ripen week by week.

"I like cherries in June, but by September I'm not so sure," she joked.

The British cherry harvest had been rooted in Kent until changing climate and

consumer demand saw it edge inexorably northwards to Herefordshire.

Catherine said: "We grow six varieties of cherry - Regina, Karina, Kordia, Lapin, Sweetheart and Skeena - and they all vary slightly, but you'd need a very fine palate to be able to tell the difference.

"Having mixed varieties is good for pollination, so we buy in bumble bees and honey bees to do the job. They come from Holland and cost around £100 a box."

But even with the help of nature, the crop is never guaranteed - frost, mild winters and too much rain are all enemies of the perfect cherry.

Despite the elements of chance and failure percentage, 29-year-old Chris is adamant he has made the right decision and has invested in two six-tonne cold stores to keep the crop ready for delivery to a nearby pack house, which handles the distribution to supermarkets.

He said: "We've always been a family farm and want to stay that way, so I'm mindful that we don't become too big. We wanted to do something niche that had less impact on the environment and although we had some issues with the weather to start with, I think we definitely made the right decision."



In numbers

15,000

cherry trees are harvested each year at the couples' Moorcourt Fruit farm

5 weeks

the time the team have to collect the entire crop of cherries

3,000

tonnes of cherries grown in the UK. Turkey, the USA and Iran are the top three growers

Dual vision keeps everyone happy



Catherine's double life means she understands perfectly the pressures of running a farm

while ensuring vital work is carried out in the countryside.

Most of the time she's a National Grid land officer liaising with grantors and contractors, but when annual leave comes around, it's all hands on deck at the farm.

"In my two weeks' leave it's all paperwork, such as checking contracts, and some cherry picking too - it's absolutely manic," she said.

But the stark contrast means she is fully aware of the pressures facing many of the landowners she comes into contact with as part of her day job. She spans an area from Cornwall to Oxford and Birmingham to south Wales, engaging with grantors who have

been notified of major engineering works or National Grid updates on their land. She said: "I appreciate the huge effort that goes into running a rural business and try to get that across to our contractors to find the best, least impactful way of getting the work done.

"I might suggest a different meadow instead of the prime agricultural field the engineers have identified. It may be proposing a different time of year acceptable to all parties. Usually there's a compromise."

Catherine prides herself on the rapport she enjoys with grantors on her patch, and added: "The engineers come in, do the work and then move on to another job. It's the nature of the essential safety work they do.

"The landowners and land officers like me are left behind, so it's our job to ensure the grantors are happy. Hopefully, having a foot in both camps is a help."



DESIGNS ON THE FUTURE

Innovation and **creative** design are key to protecting Britain's engineering future, but first we have to **inspire** a generation

As the man in charge of ensuring gas and electricity reaches our homes and businesses safely and reliably, Steve Holliday knows standing still is not an option.

His teams silently power the nation today, but National Grid's CEO is aware his business must also leave a lasting and visible legacy.

It's a challenging ask, especially given the dwindling ranks of young people taking up engineering as a profession. The industry needs 156,000 people a year to meet demand over the next decade - last year 74,500 joined the profession, which is why National Grid is launching a string of long-term educational and training initiatives Steve is confident will inspire a generation.

It's critical. Without creative new minds working on solutions to today's challenges on the land and in our cities, his business and industry in general will struggle to achieve their ambitions in the future.

Over the next decade, 6 in 10 new UK jobs will have science, technology, engineering and maths (STEM)

subjects at their core, making the Grid's groundbreaking efforts to bridge the skills gap even more important.

Steve said: "We safely connect people to the energy they use, so we need people who think creatively and innovatively to find answers to complex engineering problems."

He hopes young people inspired by exciting initiatives already under way in schools - where last year only a fifth of the 97,000 A-level maths and physics students were girls - may one day end up working for National Grid.

Infrastructure to move gas and electricity has to be constantly upgraded to provide a reliable service that meets demand, ensures landowners' businesses flourish without disruption and does so with minimum intrusion on the landscape. It's a challenge that will increasingly need the sharpest of young minds, and Steve added: "We're working with schools, parents, government departments and other organisations and businesses who share our vision to realise young people's potential in STEM careers that benefit them, their communities and our economy." ➔

STEM-ming the skills gap

One programme giving the previously stuffy subject of design technology a new lease of life is capturing the imaginations of children at schools around the UK, and proving that engineering and fun do go hand in hand.

VEX Robotics, where teenagers use sensors, motors and 3D modelling design technology to create working robots, is one of the new projects and apprenticeships National Grid is investing in.

Steve (pictured below with one of the VEX teams) said: "We are also supporting the teachers of the future through Teach First, a charity that trains and supports committed people to become inspirational classroom leaders in low-income communities."

The scheme puts more than 1,300 top graduates a year into schools, many supported by National Grid employees as part of our volunteer programme. The business is also a founding partner of City Year, a youth and education charity that takes young adults and places them into volunteer service for a year.

Teams of City Year Corps Members help raise their attainment levels while developing their own personal and professional skills, making them perfect candidates for employment in the future.

"I firmly believe that the 21st-century workforce we need will, in part, come from young minds active in and affected by programmes like this," said Steve.

"I firmly believe that the 21st-century workforce we need will come from young minds active in and affected by programmes like this"

Once attracted to STEM subjects and, hopefully, a career in engineering - potentially with National Grid - the progression is swift and rewarding, with A-level and degree candidates on the company's two-year Engineering Training Programme starting on £23,500 a year rising to £30,150 on completion.

The company's Learning and Development Centre in Nottinghamshire is home to high-voltage and high-pressure gas training facilities, where 848 apprentices and engineering training students have learned their trade since 2004.

Igniting a spark

Key to getting them there - once signed up, the retention rate is impressive - is igniting a spark while recruits are still at school.

Projects include work experience days, open house visits to our operational sites and support for engineering roadshows like Big Bang. Careers Lab, where ambassadors from businesses like National Grid share their career experiences with schoolchildren in specially devised lessons, is also pivotal to raising awareness.

Steve said: "All these projects will hopefully help us find young people able to work with communities and stakeholders to design, develop and implement sustainable, reliable and affordable energy solutions that will continue to underpin our way of life."



Inspirational numbers

£23,715

the starting salary for National Grid apprentices on completion of training

178 the number of apprentices and graduates we're taking on next year

6 in 10

teenagers aged between 14 and 19 couldn't name a recent engineering achievement

4% the ratio of professionally registered female engineers in the UK



Alan Stopher at the Marsden entrance to the tunnel

TUNNEL VISION

For an **enthusiastic** group of campaigners, bringing the Huddersfield Narrow Canal **back to life** after 60 years of **dereliction** was the **impossible dream**

With the boat's engines cut and lights extinguished, an impenetrable darkness descends in Standedge canal tunnel, which runs more than 600ft below one of the wildest stretches of the Pennines.

Visitors travelling half a mile into the barrel-vaulted tunnel on daily boat trips can only marvel at this remarkable feat of engineering, completed by flickering candlelight 200 years ago by gangs of navvies using picks, shovels and explosives.

At 3.2 miles, it's the longest navigable canal tunnel in the UK, as well as the highest in the country at 645ft above sea level, and the deepest at 638ft. The tunnel lies at the heart of the Huddersfield Narrow Canal, today owned and operated by National Grid grantor the Canal & River Trust.

Stretching for just under 20 miles between Ashton-under-Lyne and Huddersfield, either side of the Pennines, it was

built because the area's mill owners needed a cheap and reliable way to transport raw materials and finished cloth for export. The canal provided the shortest connection to existing waterways serving the ports of Liverpool and Hull.

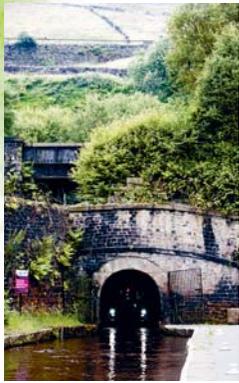
Previously, all goods had to go over the Pennines by packhorse, but one narrow boat could carry 20 tonnes of goods - the equivalent of 200 packhorses - and dramatically slash the cost of transport.

Eventually superseded by the railway, the canal fell into dereliction and closed in 1944. But 30 years later in 1974, a group of 20 like-minded canal enthusiasts met in the Zetland Arms pub in Huddersfield to form the Huddersfield Canal Society, with the 'impossible dream' of restoring the canal.

"Seventy-four locks had been filled in with concrete and turned into weirs, 17 bridges lowered, and almost two miles



Feature **Canal restoration**



of canal filled in and obliterated," said Alan Stopher, chairman of the Society and a member since 1983. "In some cases, factories had been built over the canal."

The volunteers, from a variety of backgrounds, brought a diverse range of skills to the project, along with an unwavering enthusiasm and capacity for hard work.

Regeneration

In the mid-1980s, the Society teamed up with British Waterways - which had initially dismissed the project as unfeasible - and three local authorities (Kirklees, Tameside and Oldham councils) to form a partnership. The canal restoration came to be seen as a potential catalyst for regeneration and inward investment in the region.

Additional funding for the Society came from hosting job creation schemes aimed at equipping unemployed people with new building skills, while also carrying out vital dredging works, as well as lock and towpath repairs.

"The major breakthrough came in 1997 with the award of a £30 million grant from the National Lottery-funded Millennium Commission and government regeneration agency English Partnerships," said Alan.

The award enabled work to begin on some of the remaining substantial blockages, such as the 16,000 tonnes of silt that remained in the tunnel.

With a 30-year background as a civil and mining engineer, Alan took on a project manager role in the final four years of works, liaising with the three local councils, the Millennium Commission, Huddersfield Canal Society, British Waterways and English Partnerships.

Finally, after 27 years of restoration and an estimated £50 million investment, the canal was officially reopened by the Prince of Wales in September 2001.



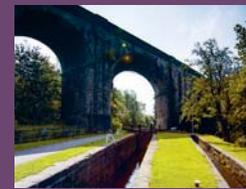
Uppermill

Housed in an old mill building on the canal edge, the Saddleworth Museum explores the area's heritage and has a working woollen mill



Saddleworth viaduct

The 22 brick-built arches of the Grade II listed Saddleworth viaduct soar over the canal. The viaduct was constructed in 1849 for a new rail link between Manchester and Huddersfield



Portland Basin

The starting point for canal trips and site of a museum that enables visitors to step back in time to learn about the lifestyle and industries of previous generations of Tamesiders



Stalybridge

With no trace of the canal left after a new sports centre, car park and industrial buildings were built, a completely new section of canal was excavated in a multi-million pound makeover at the centre of the market town



The Stakes aqueduct

The oldest surviving navigable cast iron aqueduct in England, built by renowned engineer Benjamin Outram in 1801



Feat of engineering

➤➤ A total of 74 locks were required for the Huddersfield Narrow Canal when work started under the engineer Benjamin Outram in 1794, as well as five aqueducts and 10 reservoirs to replenish water in the canal.

➤➤ Although the waterway was largely completed in five years, the tunnel took another 11 to finish, due to the difficulties of excavating Pennine millstone grit - a particularly hard form of sandstone. Excavated from both ends, the tunnel was also found to be 38ft out of line on completion, requiring an S-bend to be made in the middle.

➤➤ With the additional burden of financial constraints during the Napoleonic Wars, the total cost of the canal more than doubled to £402,653 (equivalent to £20 million today).

➤➤ The canal was opened in 1811, but it was another 13 years before a dividend was paid, by which time it faced competition from the railways. By 1847, a railway company owned the canal and, in the succeeding decades, three rail tunnels were built, running parallel to it under Standedge Moor.

➤➤ After operating for 133 years, the canal was officially abandoned in 1944.

Standedge tunnel

The 3.2-mile tunnel took 16 years to construct and opened in 1811. Guided boat trips enable the public to explore deep into the tunnel from the Standedge Visitor Centre at Marsden, where there is also an exhibition on the tunnel and tea rooms



Wildlife

Sections of the canal have been designated as a Site of Special Scientific Interest (SSSI) for a range of aquatic plants and is home to a range of other wildlife



Huddersfield

In 2011, as part of the Waterfront regeneration scheme, the relocation of Sellers Engineers Ltd enabled a 350-metre section of the canal that had passed under workshops in a tunnel to be brought to the surface again



MARSDEN

MILNSBRIDGE

Slaithwaite

Currently the only town in the UK with a canal running the length of its main street, it also provided the backdrop for fictional Skelthwaite in the TV series *Where The Heart Is*

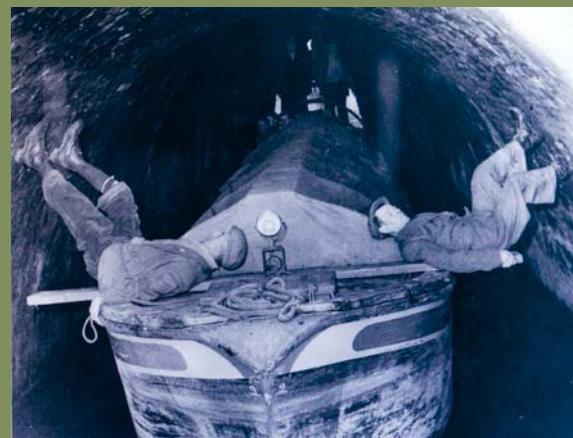


The Diggle Flight

Originally designed by Thomas Telford, and restored in 1996, this flight of locks is the most impressive on the canal, with the final climb to the summit set against a stunning moorland landscape



DIGGLE



Legging it through the tunnel

To keep costs down, the tunnel was built without a towpath. So while horses were led over the hills to join the boat at the other end, professional leggers were employed to move the boat through the tunnel. It took four hours for two men to move a fully laden narrowboat through. The solo record of just 1.25 hours – in an empty boat – was achieved by David Whitehead in 1914. A commemorative stone records the tunnel's reopening in 2001 by his daughter Lily Turner.



"The impossible proved possible and nothing could have been achieved without the Canal Society," said Alan.

Over the last 13 years, the Society has protected that legacy, acting as a local interest group and promoting the canal at every opportunity. Its volunteers carry out maintenance activities such as trimming vegetation, repainting lock gates and re-greasing lock gear.

In July 2012, responsibility for the nation's 2,000 miles of canal passed from British Waterways to the Canal & River Trust, a registered charity, which the Society works closely with.

The canal is now a leisure, heritage and wildlife resource, visited by three million people a year, and there are ongoing restorations of mills and other buildings.

The Society has just celebrated its 40th anniversary. "The aim was to look back, but also forward," said Alan.

"We've reinvented ourselves since the canal reopened and aim to be around for years to come, by pushing for improvements and ensuring the canal never again falls into disrepair."



For more information...



... go to www.canalrivertrust.org.uk/standedge-tunnel. More information on the restoration campaign and the work of the Huddersfield Canal Society can be found at www.huddersfieldcanal.com

WHERE THE WATER BUFFALO ROAM

Yorkshire grantors Steven and Cath Battye have **swapped** their **traditional** herd of dairy cows for a more **unusual** animal

"If you'd said to me a few years ago that I'd be at a farmer's market every weekend selling meat to the public, I'd have said you were mad," smiled former dairy farmer Steven Battye.

He and his wife Cath quit dairy farming 11 years ago after becoming disillusioned by plummeting milk prices and soaring feed costs, switching to buying and fattening Holstein cattle for meat production instead.

Then, in 2009, they purchased 15 domestic Asian water buffalo from a farmer in Wales, after reading an article about how easy they were to keep and the high quality of the meat. Snowden Hill Water Buffalo was born, and the couple haven't looked back.

They now have more than 100 of the animals grazing peacefully in grassy paddocks on 168 acres at Tenter House Farm, just outside the village of Oxspring, close to Barnsley.

Hardy and unaffected

Their eldest son Robert helps manage the herd, while his younger brother Edward, a trained chef, often joins his parents selling buffalo burgers and fresh meat at farmer's markets, food festivals and events throughout South Yorkshire. The meat is also available at a nearby farm shop, while the burgers are on the menu of the local pub in Oxspring.

"We love talking to customers about the water buffalo. Before they taste it, people think it will be tougher than beef, but it has a softer texture and a sweeter taste," explained Cath.

"There are health benefits too, because it's a very lean meat, high in protein but very low in cholesterol and saturated fats."

Water buffalo have been domesticated for more than 5,000 years in India and south-east Asia, where they are a



Have you 'herd'?

- Asian water buffalo are members of the bovine family, which also includes yaks, bison, antelope and domestic cattle.
- Water buffalo should not be confused with North American bison – sometimes called buffalo – which are closer to wild animals, or with the volatile African Cape buffalo.
- Wild water buffalo, from which domesticated water buffalo are descended, are now an endangered animal, with only 4,000 surviving in isolated pockets of Asia.
- Water buffalo have far fewer sweat glands than cows and use their horns to regulate temperature.
- Former Formula 1 champion Jody Scheckter has a herd of 3,000, producing award-winning mozzarella cheese.
- Water buffalo are doing their bit for wetland conservation on wildlife reserves in the UK, including the Teifi Marshes in Cardigan, Wales. Their grazing keeps down uncontrolled vegetation.

In numbers

168 million water buffalo **are commercially farmed** across the globe for their milk, meat and hide, with more people depending on them than any other domestic animal



beast of burden and a valuable source of meat and milk.

An amazingly hardy and low-maintenance animal, water buffalo thrive on grass and silage, without the need for additional concentrates, antibiotics or growth-promoting hormones. They are unaffected by many diseases common to cows, and no cases of BSE have been recorded.

Living happily outdoors for most of the year, they are moved indoors in winter to avoid churning up the ground.

"More intelligent than cows, they can be stubborn, but are docile by nature, as well as curious and affectionate. You just have to be careful of the long horns when they nuzzle in for a scratch," Steven said.

Trial milking

Each cow produces a single calf each year. The farm keeps two bulls to avoid any risk of interbreeding and has a bull-swapping arrangement with a farmer in Wales to improve genetic diversity further.

Having established the herd, the Battye's are now considering their next step. This winter they intend to carry out a trial milking of the cows, using existing equipment from their dairy farming days.

"The milk is naturally smooth and creamy and makes wonderful mozzarella cheese, ice cream, milkshakes and yogurt," said Cath. "We've had a couple of local ice cream and cheese processors approach us already."

Although water buffalo produce only half the milk of dairy cows, the milk sells at a premium, while labour costs are lower because milking only takes place once a day.

A phone call out of the blue recently has thrown up yet another potential new direction for the herd. One of the farm's bulls has been to Pinewood Studios in London to audition for a walk-on part in a forthcoming film.

For more information...



... on Snowden Hill Water Buffalo and its calendar of events, go to www.snowdenhillbuffalo.co.uk

Lastword

Your chance to enter two great competitions

Richard did. Can you?



Richard Williams contacted Gridline to tell us about his growing Morgan dealership, and said: "We're glad we did. The article was excellent, the photos wonderful, so it was good for business."

Tel: 01926 656 325
email: gridline@nationalgrid.com

WIN! A Samsung Galaxy Tab 4 7.0 Tablet, Wi-Fi, 8GB

ENTERTAINMENT FOR THE WHOLE FAMILY is just a touch away with this Samsung Galaxy tablet.

The palm-size Tab 4's multi-user mode means everyone can have their own personalised tablet experience, whether it's music, movies, apps, games or photos.

It comes with an 8GB hard drive and seven-inch screen and is slim and light, making using it on the go really easy.

The Android device comes with a range of apps from Samsung and Google, as well as a six-month subscription to music streaming service Deezer, a monthly free Kindle ebook and 50GB of Dropbox cloud storage.

So if you fancy making the most of your downtime, simply answer the question below and email or post your answer, and we'll be in touch.

Q How many tonnes of cherries do land officer Catherine Price and her farmer husband hope to harvest at their farm in Herefordshire next year?

Send your answer, name and contact details to Gridline Cherry Competition, 23-25 Waterloo Place, Warwick Street, Leamington Spa, Warwickshire CV32 5LA or email them to gridline@summersault.co.uk
Closing date is 14 November 2014.



Photo competition

Winner Jon Avon, from Newton Abbot, snapped this six-spot burnet moth on a common spotted orchid beneath the pylons as he walked through Stover Country Park Local Nature Reserve in Devon.

He said: "I've never entered a photo competition before, but I saw this scene one lunchtime and had my camera.

"The sun was out and the orchids were just at their best, so I was really lucky to take a few photos."



WIN!



TURN OVER A NEW LEAF

Winning a £150 M&S giftcard is easier than you might think. Simply grab your camera and send us any shots on the theme of 'autumn hues'.

Send in your photo to Gridline Photo Competition, 23-25 Waterloo Place, Warwick Street, Leamington Spa, CV32 5LA, or email it to gridline@summersault.co.uk including your name, address and phone number.

The closing date for entries is 14 November 2014.

COMPETITION TERMS AND CONDITIONS

SAMSUNG TABLET: The winner will be the first entrant selected at random who correctly identifies the answer (to be featured in the next edition) and who is a National Grid grantor at the time of the draw. The editor's decision is final and no correspondence will be entered into. Gridline reserves the right to change the prize without prior notice. The prize is not transferable and cannot be exchanged for cash. The closing date is 14 November 2014.

PHOTO: The winning image will be the one judged to be the most visually appealing, original and relevant to the theme and will feature in the next edition. The winner must be a National Grid grantor. The editor's decision is final and no correspondence will be entered into. Gridline reserves the right to change the prize without prior notice. The prize is not transferable and cannot be exchanged for cash. The closing date is 14 November 2014. Prints cannot be returned.

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