



connect



AWE's Steve Fussey, right, presents the cheque to Kathy Owen and Roy Young from the Farming and Wildlife Advisory Group

Park project gets £2,000 cash boost

A local community project, which has improved access to Paices Wood Country Parkland, has received a boost from AWE.

For years, regular enthusiasts have used the old park entrance within Youngs Industrial Estate, Aldermaston to get to the 85-acre park. But because that gate is closed in the evening and on Sundays, seven days a week access has been out of the question until now.

This all changed in May when the new access road, which runs parallel to the estate, opened just off Paices Hill, on the A340.

The Kennet Valley Conservation and Community Project, run by the Farming and Wildlife Advisory Group (FWAG), has been working for a number of years to enhance and develop Paices Wood as a country parkland.

As well as organising groups of volunteers to help manage the park, it also aims to improve access and recreational opportunities for visitors.

Although organising the construction of the new access road into the park has been its greatest achievement, the project has also successfully run a wide range of community events such as pond dipping, treasure hunts and guided walks.

AWE has given £2,000 to the project, which has helped pay for new tools for the volunteers to continue vital management work in the woodlands, new pond dipping kits for local children to use in the park, wild flower seed to sow along the new access road and a new leaflet for visitors.

Project co-ordinator Kathy Owen, from the Farming and Wildlife Advisory Group, said: "The fantastic generosity of AWE has meant we were able to claim additional money from Natural England we would have lost without this matched funding.

"The new tools and pond dipping kits we've been able to buy will make a huge difference to the volunteers and children who come to Paices Wood, and the new leaflets will help many more people enjoy the parkland's wonderful woodlands and lakes."

The project has cost more than £160,000 – paid for partly by Natural England through Defra's Aggregates Levy Sustainability Fund

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and matched funding from Young (Aldermaston) Developments Ltd, which owns the land and the adjacent industrial estate, in the form of machinery and staff time.

Roy Young, company secretary for Young (Aldermaston) Developments Ltd, said the company was happy to get involved to

provide better access for the local community. It will allow them to extend their fencing to the industrial site, separating it from the country park and improving security for his tenants.

He said: "We are incredibly grateful for the generosity AWE has shown in helping ensure that Paices Wood is enjoyed by many generations to come."

Steve Fussey, AWE's director Site, said: "AWE is delighted to be able to help when it has the chance with projects like this. The dual benefit of greater security for the industrial estate and the wider gain the access road brings for the public is something we can really support. We enjoy working closely with local communities and helping with practical help or donations where we can."

Assessors impressed by Burghfield site exercise

The annual site exercise at AWE Burghfield effectively demonstrated the company's competent emergency response capabilities, and reinforced AWE's integration with the local emergency services.

Representatives of the Health and Safety Executive, Nuclear Installations Inspectorate and MOD were among those who observed the event, and they considered the exercise to be an effective demonstration of AWE's emergency arrangements.

The exercise saw AWE comply with the requirements of Licence Condition 11 (Emergency Arrangements) of the Nuclear Site Licence for the Assembly Facility, as well as meeting the company's aim to continuously improve.

It involved a large response by the external emergency services supporting AWE's own teams in dealing with the exercise scenarios, which involved simulated "incidents" in the assembly area and the Mensa construction site.

Heather Young, director Environment, Safety and Health, said: "The exercise went extremely well and highlighted the importance of carrying out these regular on-site tests."

"The exercise assessors were particularly impressed with the teamworking and professionalism displayed by exercise responders. They concluded that, in the highly unlikely event of a significant incident at AWE, we would have succeeded in minimising any risk to our people, the environment, our programme and the communities living around AWE. Some useful opportunities for further enhancements to AWE's emergency response capability were identified and these will be reviewed and implemented as part of the company's quest for Total Quality and our ongoing programme."

Andrew Jupp, director Site, said: "I would like to thank and congratulate everyone involved in the Burghfield site exercise. This was a really important demonstration of our emergency response capability and our ongoing commitment to safe, secure and clean programme delivery."



AWE's Steve Fussey, Heather Young and Dominic Jones talk to Suzie Southgate, Hampshire County Council's media communications manager, during Aldex

Off-site plans put to the test

AWE's response to the unlikely event of an emergency with off-site consequences was put to the test at the Aldex exercise.

AWE was both player and planner in the three-yearly exercise, which involved 250 people from more than 20 agencies and was led by West Berkshire Council and overseen by industry regulators.

The exercise fulfils obligations set by the Radiation Emergency Preparedness and Public Information Regulations (REPPiR), and tests strategic multi-agency co-ordination of a radiation emergency.

"Aldex tests the communications and

interactions between AWE, the MOD, the police and other civil emergency services and local authorities – all the agencies that would be involved in the response to a real incident," said Paul Cooper, AWE's manager emergency response. "This important exercise builds relationships with our partner agencies and gives both them and our local community confidence in our ability to respond to the unlikely event of an incident at AWE."

"The regulators were impressed with the realism, enthusiasm and professionalism of all those involved."

Pupils get an insight into inventors' work

AWE experts and scientists took time out from their day jobs to explain the mechanics behind the science to Berkshire pupils.

The Inventors' Day event, supported by AWE's Schools Liaison initiative, was held at Ashford Hill Primary School, Thatcham where pupils aged four to 11 put questions to the experts.

Dr Claire Leppard, a senior scientist at AWE, is Ashford Hill's Schools Liaison contact. She was asked by headteacher Helen Borley if AWE staff could demonstrate some of the excellent science and technology inventions to the children.

The aim was to spark their ideas and support the school on a relevant curriculum topic.

Dr Leppard, who works at AWE on the mechanical properties of explosives, joined colleague Beckie Govier to talk to pupils about explosives technology in car airbags and fireworks and how it is used in the demolition of buildings.

Allen Millyard, a senior manufacturing engineer, designs and builds bikes in his spare time. He was able to bring along two mountain bikes and showed how the chain sets are entirely enclosed in the frame to protect from mud or damage.

Dr Graham Smith and Dr David George set up demonstrations with subliminal imaging equipment and a fibre optic light cable. Here, the children had hands-on experience of studying each other via a specially-designed box with a cable fed through, and observing each other. They were also introduced to the world of high-speed cameras.

AWE's sponsored PhD student Antonia Carmichael travelled from the Cavendish Laboratory at Cambridge University and spoke to the youngsters about screen technology and



Antonia Carmichael carries out a refracted light experiment

refracted light and how the images we take for granted are created through different technologies and science.

Dr Leppard said: "I think I speak on behalf of the other presenters in that we all found the day enjoyable and rewarding. The company enjoys working with local schools to encourage interest in science, engineering and technology."

Dr Smith said: "I was very impressed with the discipline of the pupils and the interest they showed in our exhibits and the other demonstrations from AWE."

Headteacher Helen Borley said the day was a great success: "Children are accustomed to using and seeing technology every day, but not necessarily having the opportunity to consider its origins and applications."

"Children will use the knowledge they gained from the AWE workshops to develop a wider understanding of inventions and the part they play in the wider world."

"On behalf of Ashford Hill Primary School, we would like to thank AWE for giving up their time and, particularly, Dr Leppard for helping organise this event."

'Total Quality is crucial to our strategy'

AWE marked World Quality Day with an event dedicated to a "right first time" approach.

The exhibition featured stands from a range of organisations, including Birmingham City University, Portsmouth University and the Chartered Quality Institute.

Rob Fletcher, AWE's Director Commercial, opened the focus lunch and said: "Total Quality is crucial to our strategy. It's going to be our guiding light – it's our philosophy."

Stephen Mitchell from the Chartered

Institute of Quality, of which AWE has more than 60 members, said: "The quality practitioner must reduce waste and improve productivity. Look at your processes. If you can't describe what you do as a process, then I would argue that you don't know what you're doing."

Stephen said the basics are very straightforward. "Take a step back. Do you know who your customer is? Are you providing them with what they need?"

"These questions may seem simple, but they are the key to success. Ignore your customer's voice at your peril."

Jeff Shoulter from the US Office of Stockpile Management, also addressed the audience.

"In our line of work, it's imperative we get things right first time. Using quality tools, such as Lean Six Sigma, reduces waste and increases success rates."

"I believe the key factors in quality improvement are the six Cs – communication, collaboration, control, corrective action, continuous improvement and celebration. When we use these factors hand-in-hand, we can create success."

Tom Bett
outside Orion

A crowning achievement for sponsor Tom

A lifetime in lasers will be crowned for AWE's Tom Bett when Orion fires at full capacity for the first time.

The project's sponsor has spent 36 years developing and operating lasers for the business, from Merlin in 1974 and HELEN in 1979 to Orion.

"Delivering it has been very much a team effort, not just the Directorate Major Projects staff but the plasma physics department staff, including the laser operations staff who did the evening shift we needed to get back on schedule," said Tom, group leader for lasers in plasma physics.

"There was a real buzz in the control room when we fired the first shots for December's project milestone."

The firing itself is a bit of an anti-climax: no big bang, just data appearing on a screen, said Tom, one of a handful of people involved since the project's start.

"I'm really quite proud of what we've achieved," he said. "The next stage is all 12 beams working and the first experiment for the final milestone in 2012, then open for business."

"As I near the end of my career, I'm looking forward to seeing that last milestone. Yes, it's fair to say it will be a crowning achievement for me."

Dave Starling with
Orion schematics

Globetrotter beats biggest challenge

Dave Starling has worked on major engineering projects around the world, but Orion has been the biggest challenge of his 40-year career.

"It's been the most difficult because there is no standard way of designing and building a facility like this," said Dave, who was brought in from Jacobs, one of AWE's parent companies, in 2008 to handle the final design, construction and commissioning phase.

"Normally, you'd have schematics showing the total content of the process installation but, as they weren't available, we developed graphics that indicated by commissioning subsystem what had to be installed where and in what order."

"These allowed us to produce IKEA-style installation instruction packs for material from more than 5,000 orders – following thousands of fabrication drawings from the onsite design team – and the 800 offline assemblies built by AWE's scientists."

"The team worked very well together, especially on the commissioning night shift that worked hard to meet the demanding schedule."

Dave's next project is a biotech facility for Singapore which "will have totally different challenges to Orion".

As Orion's commissioning ramps up, *Connect* looks at what the leading-edge laser – one of the most powerful in the world – is doing for AWE and for British science, and talks to two of the many people who have worked to make the £183 million facility a reality...

Orion set to be the star attraction

"Orion's got a real wow factor – walking round, you can't help but be fired up by it," says Peter Roberts, AWE's head of plasma physics.

Although not yet fully "fired up", the facility – one of the UK's biggest capital science projects in 25 years – is hugely important to AWE and to the scientific community.

"For us, in the absence of underground testing, Orion will be the only way we can validate our computer

simulation models on weapon performance in the stockpile," said

Peter. "It's also going to be a

crucial element of capability for UK science generally in the high-energy density physics world and we're very keen that it's available to universities."

As well as providing the vital data on how materials in a warhead behave, the high temperatures, pressures and compressions its "shots" will briefly create can also research areas of wider scientific interest like conditions in the sun, black holes, particle acceleration and, possibly, even fusion power.

But before Orion's 10 long-pulse and two short-pulse beams can be used at full capacity in 2012, they need to go through extensive commissioning and pass more project milestone tests.

The materials modelling experts working for Dave Chambers are keener than most to see Orion working as its data will feed into their validation of the models used to maintain the capability of certifying the stockpile.

"We're getting very excited about it now construction's complete and commissioning's started," said

Dave, head of design physics in

Directorate Science and Technology. "Building something like this sends a positive message to our stakeholders."

Orion will also benefit the business by strengthening its profile with the publication of unclassified results and through links with the academic community, says Dave.

Professor Steven Rose, Imperial College's head of plasma physics and a former Orion team member, says universities are already developing experiments they would like to carry out.

"The 15 per cent of beam time that's offered for academic use is a huge attraction," said Steven, who came up with the idea of combining long and short pulse lasers in the design while at AWE.

"It makes a huge difference having a facility like this in the UK as academics won't need to go around the world to work. And there's a lot of interest in using Orion from France, Italy and America, too."

"It's a wonderful system. I think the people who have built it have done an outstanding job. It's going to be a very significant facility for AWE and for the UK in general – AWE should be very proud."

Orion factfile

- More than three million hours worked on it by more than 500 people since February 2006
- 10,000 cubic metres of concrete, 1,500 tonnes of steel and more than 100 kilometres of cabling have gone into 100-metre long facility
- The 4.2-metre target chamber has 14 laser entrance ports and more than 130 ports overall
- Orion is run under operating theatre, clean room conditions
- There will be a major opening ceremony in 2012

Orion timeline

2001 discussions begin for a successor to HELEN

2006 construction starts

2009 HELEN closes

2010 construction project ends

2011 commissioning starts

2012 final milestone completed

Custard powder helps reveal the secrets of science

Custard powder was just one of the ingredients used to reveal the secrets of science to more than 200 school pupils at an event run by AWE graduates.

The day, involving science and engineering demonstrations for year seven youngsters from nearby schools, was held at the AWE recreational society.

"The Secrets of Science event is run annually to stimulate interest in science and engineering among 11 to 12-year-olds," said electro-mechanical engineer Dave Richards,

who organised the event with a group of fellow graduates. This year's event featured a presentation – the Science of Magic and the Magic of Science – from professional entertainer Ian Dunne.

"There were also five demonstrations by AWE staff, from exploding custard powder – showing what happens in an explosion – to electrifying explanations of lightning. Three AWE directors – Graeme Nicholson, Heather Young and Rob Fletcher – attended the day, and they were all impressed."

Dave ran this year's event alongside fellow graduates Scott Shimmen, Peter Watkeys, Tristan Nicholas, Jonathon Gray and James Courtier.

"The project came in under budget and was a good day for everyone involved," said Dave. "Feedback from the schools was very good and the pupils all left AWE feeling enthused and excited. Thanks go to the visiting directors, project sponsor Duncan Broughton and all the AWE colleagues who helped out."



AWE's Amy Sahota presents the dodo statue to environment competition winners North Waltham Primary School

Jungle rumble is a mighty winner

Forests and oil barons played their part in North Waltham Primary School's winning entry for AWE's Environment Competition.

From dozens of entries, four schools were selected to present their 10-minute play on this year's theme of biodiversity and perform them in front of four judges.

The schools chose different aspects of the variety of life on earth; looking at ecosystems, living organisms and animals and plants, and their habitats.

The winning entry, *The Mighty Rumble in the Jungle*, came from North Waltham Primary School. It focused on protecting the jungle from outsiders hoping to plunder the area for oil and trees.

Gareth Beard, AWE's head of environment, said: "Each of the schools did extremely well and captured the intricate elements of man's

inherent interdependence on biodiversity. Devastation of habitats seemed to be a consistent theme which brought out a very emotional reaction in all of the judges.

"There were some great ideas on how individuals could contribute to preventing the loss of habitats."

Stephanie Walker, from North Waltham, said she was delighted her class had won: "I felt the play captured and portrayed the issues very well in a creative and fun way.

"The children thoroughly enjoyed taking part and working with AWE as it gave them the opportunity to become involved in issues that affect them.

"It shows how important the issue of biodiversity is and how the children can influence the future."

Lindsey Appleton, chairwoman of AWE's

Schools Liaison Scheme, said: "The standard was very high and it was an incredibly hard decision for the judges.

"The level of interest generated by the pupils showed they really are aware of biodiversity and surrounding issues. At AWE, we enjoy working alongside local schools and helping to generate more interest in science and other topics."

The winning class was presented with a dodo statue, made at AWE for the first environment competition in 2009, which celebrated the 150th anniversary of Darwin's *Origin of Species*. They will enjoy a trip to Kew Gardens later in the year.

The other schools that took part were Fairfield's Primary School, in Basingstoke; Falklands Primary School, in Newbury; and Ashford Hill, in Ashford Hill.



Pupils from Bishop Challoner School get to grips with an interactive display

Pupils tackle sustainability issues

Serious global concerns were in the spotlight as pupils enjoyed a trip to the Royal Institution of Great Britain in London hosted by AWE.

The theme of the event was sustainability and was targeted at GCSE pupils. The Royal Institution was the perfect backdrop for the day of informative lectures and workshops on the subject of technology for sustainability.

After an introduction from AWE's head of technical outreach Gordon Arthur, the pupils enjoyed an interactive series of demonstrations emphasising issues around generation of energy and conversion of energy into useful forms, given by AWE's team of experienced presenters led by physicist Dr Fraser Dear.

AWE's head of technology Eamonn Harding helped the group focus on the serious issues

society faces regarding global warming and sustainability.

During the lunch break, pupils were able to see the Royal Institution's exhibition as well as have hands-on sessions looking at non-destructive testing techniques and energy harvesting with AWE staff there to help.

In the afternoon, AWE distinguished scientist Dr Norman Godfrey showed how materials science can offer solutions to sustainability issues, and professional school's science presenter Ian Dunne entertained the pupils with technology demonstrations and challenging messages about future sustainability.

Professor Peter Roberts, AWE's head of plasma physics, closed the day, encouraging

the pupils to move into the science and technology professions, noting that there were tremendous challenges to be solved and exciting science to be done.

Gordon Arthur said: "AWE is committed to the encouragement of education in science and technology at all levels: the sustainability agenda is one that faces current and future generations and we need more scientists and technologists in this area for the future. This event hopefully encouraged some of our local gifted and talented young scientists to realise that there is a tremendous career available to them if they follow the path into science."

Pupils from three schools attended – Mary Hare, Newbury; The Hurst Community School, Baughurst; and Bishop Challoner, Basingstoke.

A raft of ideas introduce girls to engineering

Taking part in a boat race and trying to escape from a desert island were some of the ingenious tasks designed to introduce girls to the world of engineering.

The event, hosted by AWE at Tadley Community Centre, saw pupils build mini rafts using lollipop sticks, paper and corks to show how they would navigate their way off an island.

In another test, they had to construct a

bridge to cross a volcano and then forage for precious food without breaking any eggs.

The schools that took part were St Gabriel's, Newbury; Costello Technology College, Basingstoke; Little Heath School, Tilehurst; and Bishop Challoner School, Basingstoke.

Kevin Hill, electronic workplace assessor, said: "The tasks were designed to

test and demonstrate different aspects of engineering. Overall, the day was hugely successful and all the pupils, as well as the organisers, had fun. More importantly, the girls' opinions about engineering had changed with nearly half of them saying they might consider it as a career."

Points were awarded for different categories and the overall winners were St Gabriel's.

Book early for scheme

Youngsters in schools across Hampshire and Berkshire have been able to furnish their new library with up-to-date science books thanks to AWE.

AWE has run its successful Books for Schools scheme since 2005 and any school registered on the scheme can apply for a £200 share of £10,000.

The money is given on a first-come, first-served basis and can be spent on books, CDs and supporting computer software.

Mike Boys, assistant headteacher at Denefield School, in Long Lane, Tilehurst, said: "We are delighted, once again, to have received this generous support from AWE.

"The additional funding enables us to enhance our library resources to support the study of STEM subjects, particularly at A-level."

The Schools Liaison Committee consists of AWE staff who have links with local schools – and there are now about 90 schools on the scheme.

Other schools that received a donation included Kendrick Secondary School in Reading and St Nicholas Junior School in Newbury.



Denefield School pupils with their science books

Charities benefit from a year's fundraising

Almost £20,000 was raised by AWE staff for the company's 2010 Charities of the Year.

The total amount raised was shared equally between a national and local charity. Help for Heroes provides support for wounded servicemen and women of the Armed Forces, and the local Basingstoke-based charity The Pelican Cancer Foundation is dedicated to helping cancer patients.

The fundraising programme, called the Charities Challenge, was organised by AWE graduates in conjunction with the Community Committee – a group dedicated to co-ordinating the company's support for many good causes, local and national.

Sarah Crane, chief executive officer of Pelican Cancer Foundation, **pictured receiving the cheque from AWE's Terry Edwards**, said: "Without the fantastic support of the employees of organisations like AWE, we would not be able to continue our work to improve cancer patients' lives by advancing cancer detection and treatment.



"AWE's contribution to Pelican has helped to fund the siting, maintenance and induction sessions for a laparoscopic simulator housed in Pelican's start-of-the-art education facility in the Ark, Basingstoke."

Sarah Robertson, from the 2010 graduate charities project, said: "Throughout the year the graduates have hosted a variety of events, from cake and book sales to comedy nights, in order to raise funds for the AWE Charities of the Year 2010.

"The project has been a fantastic experience, we've all found it both

challenging and rewarding. The company is committed to helping local and national charities in this way, through donations and sponsorship.

"We are thrilled to have raised this amount and hope that, in the future, the generous people of AWE continue to keep giving to these extremely worthwhile charities."

Sophie Parry, from Help for Heroes, said: "The money raised is all used to provide direct, practical support to those wounded in the service of our country.

"We may not be able to prevent them from being hurt, but we can certainly do our bit to help them get better. Thank you so much to everyone at AWE for your fantastic fundraising efforts. You raised a huge amount of money and we are extremely grateful for all the work you put in."

Now the challenge is to beat the amount for the 2011 charities – Thames Valley Air Ambulance and Great Ormond Street Hospital.