

# Sellafield

**Issue 04**  
July 2016

## In focus

First Generation  
Magnox Storage Pond

## Cyber security

Our defence against  
the dark arts

**One  
Sellafield**

Collaborative  
working



# Safety

Our annual review  
of performance in  
**2015/16**



## Andrea Leadsom MP

We interview the Minister of State  
for Energy and Climate Change

## In context

New terms and conditions  
for new starters

## Well oiled machine

Preparing for our  
maintenance outage

# NUCLEAR 2016

THURSDAY 1 DECEMBER  
PARK PLAZA VICTORIA

SPONSORSHIP AND EXHIBITION  
PACKAGES ARE NOW AVAILABLE

VISIT  
[NIAUK.ORG/NUCLEAR-2016](http://NIAUK.ORG/NUCLEAR-2016)  
CALL  
020 7766 6648  
EMAIL  
[VERONICA.LEKAVICIUS@NIAUK.ORG](mailto:VERONICA.LEKAVICIUS@NIAUK.ORG)



SPONSOR EXHIBIT REGISTER

# Editor's Letter

**W**e often talk about the safety and security of the Sellafield site being our number one priority. It is a big statement, but it is also a commitment. We live this commitment every day on the site and in our offices across Cumbria and Warrington. It is visible by the presence of armed officers and security teams at our gates. You can hear it at the start of every meeting as we share our safety experiences, and when our teams challenge each other if they see something with the potential to cause injury. We also deliver against this commitment every time we reduce the risk or hazard associated with our old facilities, and every day as we manage nuclear material. For Euan Hutton, the man responsible for safety (along with health, environment and quality), our responsibility is clear: "For me the most important thing we do every day at Sellafield is protect the environment and keep nuclear materials where they are meant to be". He sat down with us to give his thoughts on our safety performance in 2015/16 and where he thinks we can get even better this year.

In this issue we have started the final countdown to the end of our reprocessing operations (page 93). In future issues we will keep track of the tonnes to go in both the Magnox reprocessing plant and the Thermal Oxide Reprocessing Plant (or Thorp, as it is better known). The completion of this mission will see us turn all of our resources to hazard and risk reduction, waste management and the management of nuclear materials.

One of our priority risk and hazard reduction projects is the clean-up of the First Generation Magnox Storage Pond. In this issue we take a closer look at the legacy pond, the landmark moment earlier this year when we retrieved fuel from it for the first time, and we meet the lady who is doing a PhD on the sludge that sits at the bottom of the pond.

Elsewhere in this issue the Minister of State for the Department of Energy and Climate Change, Andrea Leadsom MP, talks about her career, skills gaps in the nuclear industry and women taking up science and engineering as a career. Some of our biggest suppliers tell us how they went from competitors to collaborators, and we delve into our photographic archives in a new feature that looks at how much Sellafield has changed in its seventy years.

We hope that you enjoy this issue – let us know what you think – [editor@sellafieldmagazine.com](mailto:editor@sellafieldmagazine.com)



*Sellafield Magazine talks to the new NIA Chief Executive, Tom Greatrex page 56*



*Working on our new archives feature pages 18 & 31*



*Jade interviewing Andrea Leadsom, MP page 12*

Keep up to date with our progress at Sellafield:



[www.sellafieldsites.com](http://www.sellafieldsites.com)



@SellafieldLtd



[www.sellafieldmagazine.com](http://www.sellafieldmagazine.com)



## Your thoughts...

As always, we would love to hear your thoughts on the magazine and your suggestions for future issues. An email to [editor@sellafieldmagazine.com](mailto:editor@sellafieldmagazine.com) in April led to the development of a supply chain collaboration article with Jacobs, Balfour Beatty and Amec Foster Wheeler (see page 61) – so your input really can shape future issues.

# Contents

- 8 What is... the difference between radiation and radioactivity**
- 10 LATEST NEWS**  
Since April we have...
- 12 COVER Andrea Leadsom**  
MP, Minister of State for Energy and Climate Change
- 14 COVER Defence against the dark arts**  
Cyber security



- 18 From the archives**  
A look at Sellafield through the years
- 20 COVER In Focus**  
First Generation Magnox Storage Pond explained



- 24 Hand in hand in pond**  
How the supply chain helped us to make history
- 27 Sludge**  
Not your everyday choice for a PhD
- 30 West Cumbria Sites Stakeholder Group**  
Ways to get involved
- 31 From the archives**  
A look at Sellafield through the years
- 32 Ambassadors assemble to inspire others**  
Former Sellafield apprentice picked for national campaign
- 34 New national training centre**  
a new firearms training facility for the Civil Nuclear Constabulary
- 34 World class**  
Cumbria will be home to the UK's National College for Nuclear
- 35 COVER Annual Review of Safety**  
An overview of our safety performance in 2015/16
- 44 Sellafield SME floors the competition**  
Site is a stepping stone for the supply chain



- 46 Keeping an eye on ROV development**  
Trialling new additions to our army of remotely operated vehicles
- 47 Willow weaving**  
Restoring the bank of a beck close to the Sellafield site
- 48 INTERVIEW Adrienne Kelbie**  
Chief Executive, Office for Nuclear Regulation



**SITE VISIT**  
Adrienne Kelbie visited Sellafield to see first-hand the challenges of the site



# In conversation



From addressing Members of Parliament on the development of the next generation of engineers, to a former Sellafield apprentice being chosen to front a national apprenticeship campaign, there has been a lot to Tweet about.



**Alexandra Poynter** @AllyPoynter

Years of planning, testing and specialist engineering pays off for the #Sellafield #nuclear #waste retrieval mission

↳ **Sellafield Ltd** @SellafieldLtd

We're celebrating a major milestone in the clean up of one of our oldest buildings #nuclear <http://www.sellafieldsites.com/2016/05/youve-been-framed/> ...



**Dr Tania Mathias MP** @tania\_mathias

Great discussion on engineering with Charlotte Page, Dr Weston, Prof Cohen and Prof Duberley who spoke to MPs today.

↳ **Sellafield Ltd** @SellafieldLtd

Rebecca Weston "Together we can develop a diverse, skilled generation of engineers" @indpartrust @tania\_mathias



**BEPDT** @BEPDTuk

Dee kindly came to talk to our group from #PhoenixRoleModels last week-a wonderful ambassador for #apprenticeships

↳ **Sellafield Ltd** @SellafieldLtd

Proud to see one of @SellafieldLtd's own feature in the new @bisgovuk #GetInGoFar @Apprenticeships campaign



**Dianne Richardson** @DianneCumbria

Great presentation by @SelLtdCommunity @becbc on why businesses working with schools matters



**Cumbria Apprentices** @CumbriaApps

A former Sellafield apprentice has been hand picked to front a national apprenticeship campaign... Awesome!



**BECBC** @becbc

Ads on TV at present – good to see Cumbrian apprentice featured and promoting @selltdpress

↳ **Sellafield Ltd Press** @selltdpress

Meet the stars of the Government's new #apprenticeships campaign #GetInGoFar – including one of our own



**Hospice at Home** @HospiceatHomeWC

@SellafieldLtd Great to see your very own Steve Bostock getting his hands dirty at our Big Boss Car Wash on Saturday



**Sellafield Community** @SelLtdCommunity

@SellafieldLtd Risley Design Apprentices latest efforts raised £300 for @RNLI through a car wash!

↳ **RNLI** @RNLI

@SelLtdCommunity @SellafieldLtd Great stuff! Thank you so much



**Sellafield Ltd** @SellafieldLtd

Volunteers from @SellafieldLtd Risley office have been painting Burtonwood library. Looking good as new! #community

↳ **Cathy Mitchell** @CathyMitch

@SellafieldLtd Thank you so much to your wonderful staff for doing such a brilliant job!! :)

Join the conversation @SellafieldLtd

# Meet our contributors:

## Steven Stagg



In this issue we address the question that we get asked time and time again at Sellafield. What is the difference between radiation and radioactivity? A clear understanding of the difference has been important throughout Steven Stagg's career. As a member of the team in our Magnox reprocessing plant he worked with radioactive materials and needed to understand how he and his team were protected from radiation. Now he explains the answer to this and other questions about Sellafield to visitors to the site, and provides the answer for us on page 8.

## Jade Malem

Jade Malem is a Business Administration Apprentice based at Hinton House, Risley. She met Andrea Leadsom MP, Minister of State for Energy and Climate Change, for an exclusive one-to-one interview.

She said "I felt unbelievably daunted beforehand. I was terrified of making an awful first impression or stumbling on my words. I soon realised she was not as intimidating as I'd imagined her to be, she was in fact very warm and hospitable and had no problem answering any of my questions."



## Bob Jones



Bob is no stranger to Sellafield, having served as a member of the executive team when the site was owned and operated by British Nuclear Fuels. Now a parish councillor, Bob takes an active role in the West Cumbria Sites Stakeholder Group and, in this issue, explains how he got involved in the consultation on the Nuclear Decommissioning Authority's third strategy.

## Stephanie McKenna

As the Secretariat for the Nuclear Industry Association's (NIA) decommissioning business group and its member relations manager, Stephanie understands what businesses across the supply chain need. Here she writes about how companies across the nuclear sector can make the most of their NIA membership and be more involved in its work.



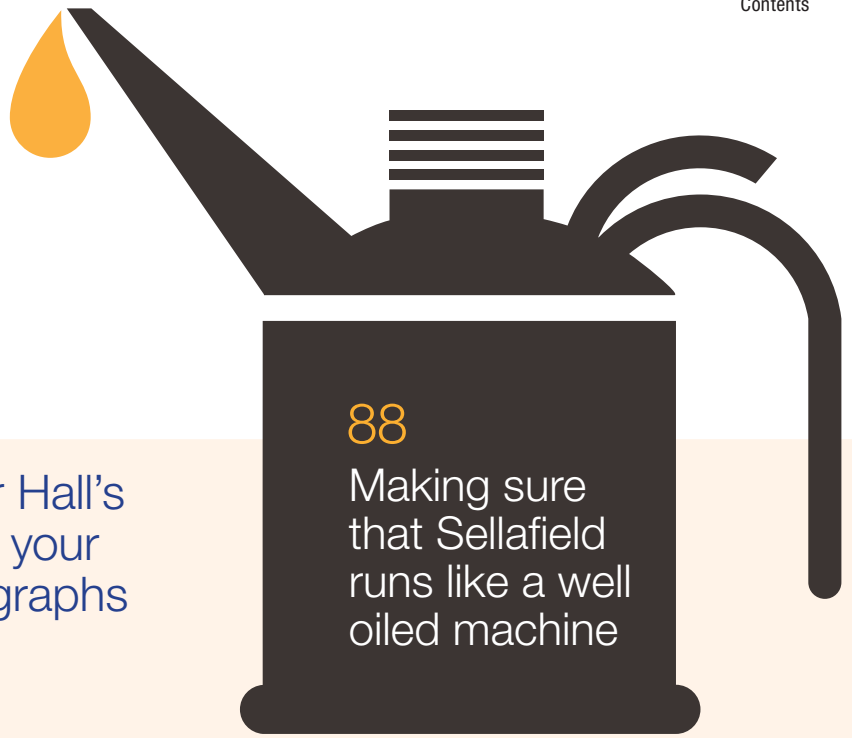
- 50 Let's celebrate Calder Hall**  
Share your memories of Calder Hall
- 51 Sellafield work in progress**  
Sellafield success criteria
- 54 COVER In context**  
New terms and conditions for new starters
- 56 INTERVIEW Tom Greatrex**  
Chief Executive of the Nuclear Industry Association
- 58 Jacobs**  
Supply chain interview
- 60 NDA Strategy consultation**  
Bob Jones voices his views on the nuclear consultation
- 61 Sellafield competitors collaborate**  
Three supply chain competitors come together to deliver work at Sellafield
- 64 INTERVIEW Alyson Armett**  
Head of our new independent performance assurance group
- 67 Pop up shop**  
Temporary village shop to finally close its doors





50

Help celebrate Calder Hall's 60th anniversary with your memories and photographs



88

Making sure that Sellafield runs like a well oiled machine

- 68 Our environment**  
Photographic feature
- 79 10 facts**  
Environmental discharges
- 80 Amec Foster Wheeler**  
Supply chain interview
- 82 Distinctive research**  
Our academia collaboration
- 83 COVER One Sellafield**  
Our teams and supply chain, operating as one
- 86 INTERVIEW Rob Higgins**  
NDA director of business services
- 88 COVER Outage**  
Keeping our plants running

- 92 Fukushima: 5 years on**  
Fukushima has played host to an international conference
- 93 Making progress**  
The first cut and The final countdown
- 94 How the nuclear industry association can work for you...**  
You get out of it what you put in
- 96 Looking after orphans**  
A new challenge
- 97 INTERVIEW Somewhere across the sea**  
Dr Paul McKenna
- 99 Did you know?**  
Fact files
- 100 G6 Conference**  
Setting the scene for another successful year

- 104 PHOTOGRAPHER in residence**  
Sellafield through the lens
- 106 Five minutes with...**  
Gareth Hewer



**PAGE 99**  
How many gnomes could you make with the concrete we use?



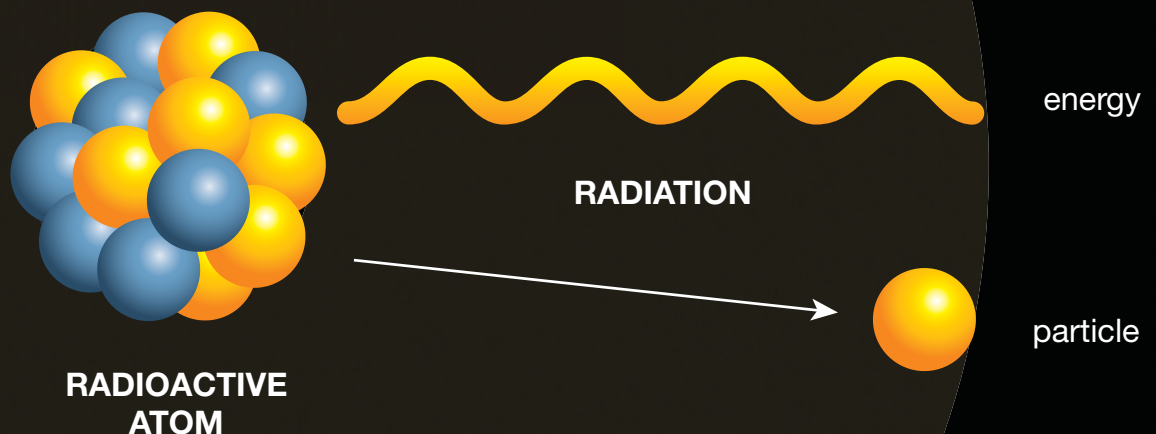
64

How do we ensure that we are on course to deliver our diverse portfolio of work?

## WHAT IS...

# the difference between radiation and radioactivity?

The terms radiation and radioactivity are often used interchangeably. While they are related, they are not the same. Here, one of our information officers, Stephen Stagg, explains the difference.



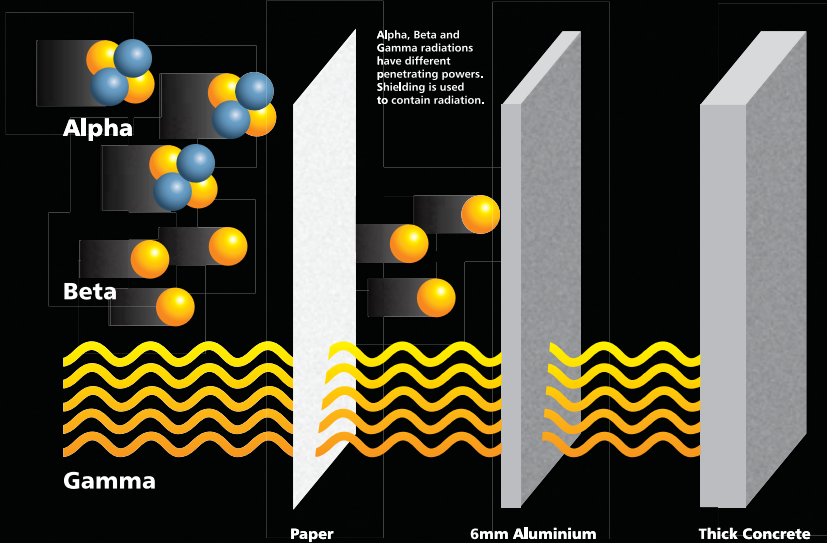


**BRING THIS IMAGE TO LIFE**

WITH THE FREE AURASMA APP

1. Download the free Aurasma app
2. Follow the Sellafield channel
3. Point your device at the page

**Different types of radiation is stopped by different barriers**



**M**y first introduction to the terms radiation and radioactivity came when I joined the site and started work in the Magnox reprocessing plant. Our job was to take fuel that had been used to generate electricity in a Magnox nuclear reactor – like our own Calder Hall – and treat it to extract the uranium, plutonium and fission products.

Nuclear fuel spends, on average, five years inside a nuclear reactor. After that it becomes less efficient so is replaced with new fuel. In its time in the reactor it is subjected to the process of nuclear fission; the splitting of atoms which generates energy.

This process meant that by the time the fuel came to us it was irradiated. The radioactive fuel was emitting – or radiating – alpha and beta particles and gamma-rays of radiation.

Simply put, that is the difference. Radioactivity relates to the source material and radiation is the energy, in the form of either waves or particles that comes from that material. The waves and particles become less intense the further the distance from the radioactive material, as they become more spread out as they travel.

Radiation can be absorbed by substances in its path. It can also be absorbed by people, and cannot be detected by human senses. In the reprocessing plant, as with all nuclear facilities at Sellafield, barriers are put between the radioactive material and the workers.

Alpha radiation travels only a few centimetres in air and can be stopped by a piece of paper. Beta radiation travels tens of centimetres in air

and can be stopped by a sheet of aluminium. Gamma radiation travels many metres in air and when high dose rates are present, it can only be reduced to low dose rates and safety in a short distance by lead, or thick concrete.

As well as these layers of protection, we also have multiple ways of monitoring people who work in our nuclear facilities. Every time they come out of the building they check themselves with hand held monitors and stand in full body monitors which would detect any contamination. They also wear a ThermoLuminescent dosimeter which measures the levels of radiation that they have been exposed to.

I think that my experience of working

with radioactive materials and being protected from radiation makes my current job of explaining Sellafield to site visitors much easier. Some of our visitors don't understand that radiation is not something that is unique to Sellafield, or even to the

nuclear industry, and that it is also naturally occurring. Regardless of where you live or work, we are all surrounded by it every day.

For example, if you live in Cornwall, you will receive a higher dose of radiation in a year than an average Sellafield worker because of the presence of igneous granite. That granite naturally contains more uranium than other rocks, and that uranium radiates into the environment.

Whether something is radioactive or emitting radiation, our priority at Sellafield is the protection of our employees, the environment and our local communities. ■

**Some radiation is man-made, but around 85.5% of the radiation dose everyone receives comes from natural sources.**

**Comparator dose rates**



The average annual background dose to a UK citizen is

**~2.6mSv**



Airline pilots annually receive a dose of up to

**20mSv**



The average dose from a full body CT scan

**~10mSv**



However, if you live in Cornwall your annual dose could rise to

**~7.8mSv**

Due to the natural release of radon gas from the granite rock



On a return journey from the UK to Spain each passenger will receive, on average, a dose of

**~0.08mSv**



Average dose for a Sellafield worker

**~1mSv**



Average dose for a coal miner working underground is

**~6mSv**



A six-months stay in the international space station exposes its occupants to

**~120mSv**

# Since April we have...

## LAUNCHED...

A new 'Project Academy for Sellafield' with the University of Cumbria. It will provide specialist education, training and professional qualifications necessary to deliver the complex and challenging projects associated with decommissioning Sellafield.

## ANNOUNCED...

that Cumbria will be able to decide where tens of thousands of pounds of our community funding will be spent. Under our new crowd sourcing scheme local good causes will submit funding bids which will then face a public vote.

## TRANSFERRED...

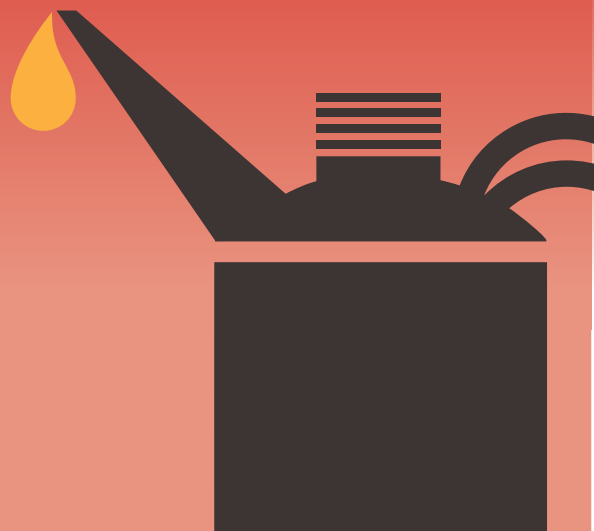
On 1 April 2016, the ownership of Sellafield Ltd transferred to the Nuclear Decommissioning Authority.



Nuclear  
Decommissioning  
Authority

## DEDICATED...

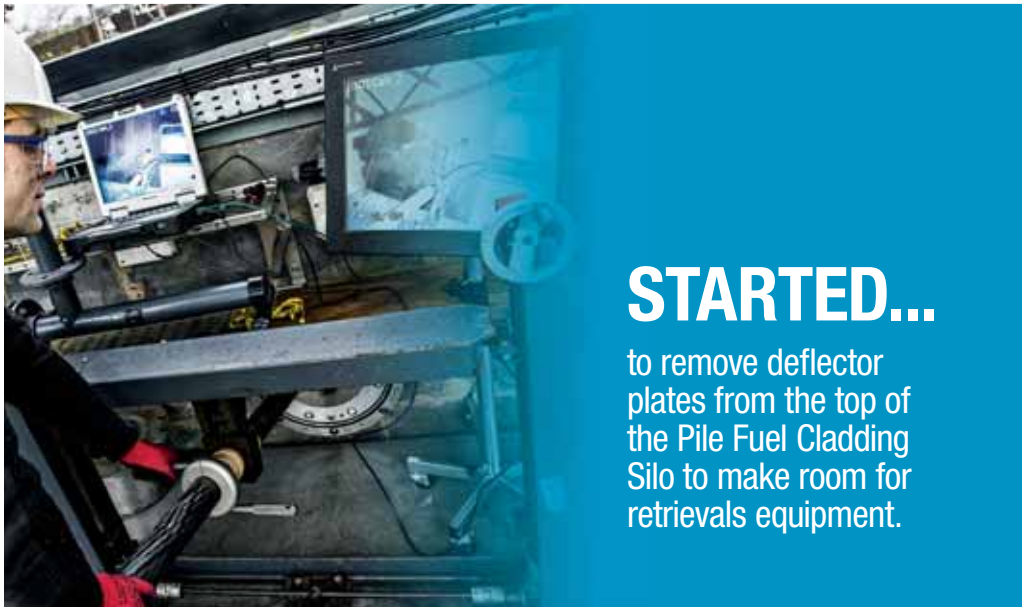
we now have a dedicated site outage team who work tirelessly to deliver an outage programme across all of our operating plants, (For more, see page 88).





## WORKED...

with our supply chain partners to make our new Separation Area Ventilation facility fully operational. (For more, see page 83).



## STARTED...

to remove deflector plates from the top of the Pile Fuel Cladding Silo to make room for retrievals equipment.



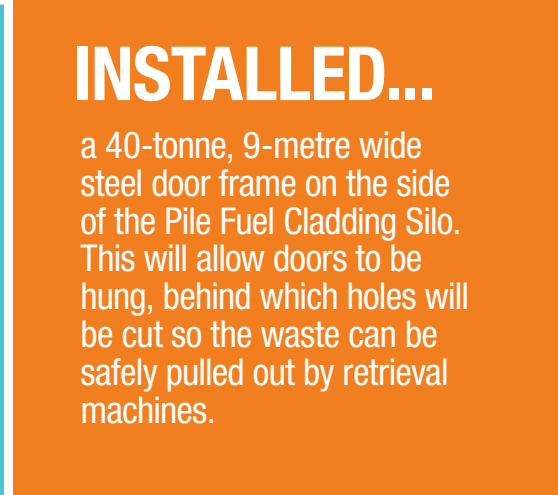
## PROUDLY...

watched one of our former apprentices, Deanna Pearson beat 200 other apprentices to take part in the Department for Business, Innovation and Skills' 'Get In Go Far' apprenticeships campaign. (For more, see page 32).



## RETRIEVED...

the first 500kg of fuel from the First Generation Magnox Storage Pond. (For more, see page 24).



## INSTALLED...

a 40-tonne, 9-metre wide steel door frame on the side of the Pile Fuel Cladding Silo. This will allow doors to be hung, behind which holes will be cut so the waste can be safely pulled out by retrieval machines.



BY JADE MALEM

**A**ndrea Leadsom MP, Minister of State for Energy and Climate Change visited the new University Technical College in Warrington to find out how the college, when it opens its doors in September 2016, will specialise in Energy and Engineering to support the training of future engineers and help fill the UK's skills requirements.

During her visit Andrea Leadsom MP met with some of the college's key employment partners, including ourselves and the Nuclear Decommissioning Authority, where she discussed the benefits and opportunities that UTCs can provide to students in working towards achieving productive careers.

She said: "The £10 million investment in this University Technical College will help young people in Warrington and the surrounding area develop the skills they need to meet the challenges of the modern world. Making sure our young people have the right skills to compete is key to helping the region prosper as part of the Northern Powerhouse."

I sat down with the Minister to discuss her career, skills gaps in the nuclear industry and females taking up science and engineering as a career.

# Andrea Leadsom



**JM: What attracted you to a career in politics?**

**AL:** I was thirteen when I decided to be an MP, and it was because of the Cold War. I was terrified that there might be a nuclear war, and so my theory was that if I became an MP I could make sure this didn't occur.

**JM: What are the most enjoyable parts of your role?**

**AL:** As an MP, it's definitely being able to wave a 'magic wand' and try and help to solve people's problems. I do get lots of cries for help from my constituents (in South Northamptonshire) on issues ranging from parents trying to get their child into a particular school, to a family whose mum has had a terrible experience in hospital, to problems with Visas or benefits – quite harrowing stories sometimes. One of the best things about being an MP is the extent to which you write on that magical House of Commons letterhead and suddenly things can start to happen and that's incredibly satisfying.

**JM: Do you believe the UTC has a strong role to play in filling the skills gaps in engineering and science to support key industries such as nuclear?**

**AL:** Yes, absolutely. It's really interesting to see the new build today and in particular to hear about the amazing, hi-tech equipment that will be available to young people that will give them a real chance. Not just to hear about what engineering is, but to actually get involved themselves. I think the practical level of involvement for young people, working alongside local engineering organisations, will be really inspirational and raise their interest, and I sincerely hope that the college will attract the interest of girls to STEM subjects.

**JM: What do you believe are the challenges in attracting students, including females to study STEM subjects and then take up science as a career?**

**AL:** I think there is a bit of a cultural thing about girls' jobs and boys' jobs, and I think it's really important that teachers treat students as students and look at where their talents and interests lie.

My daughter, who is 12, is really keen on the Minecraft computer game which is incredibly creative. In the game you're building and designing using technology, so to me that is quite a science based, definitely a skills-based interest and I think often it's the interpretation of what constitutes an interest in science that should be captured. It's not whether you're using a drill but actually what is your level of interest.

I think it's potentially easier to attract boys and the real challenge is to attract girls, but at the same time the advantage of the UTC is being able to offer students the chance to have a go themselves, to be creative, to use their talents at designing new pieces of equipment or just playing with some of the kit. I think it's really important, and my strong advice to teachers is look outside the box slightly and try and identify where the STEM interests lie.

**JM: Have you encountered any challenges/barriers as a female while you have progressed through your career?**

**AL:** Very much so, yes. When I started life in the city in finance, there were all sorts of challenges with being female and I'm glad to say that a lot of those barriers I faced have now gone away. The interesting thing is people say to me "isn't politics incredibly sexist?" and I always say no, compared to where I've come from its actually extraordinarily egalitarian in politics.

**JM: How do you believe females can progress in a male dominated organisation such as engineering?**

**AL:** I think they are progressing, I think there's every opportunity and I think what's changed perhaps in the last 10 or 20 years is everyone has come to realise the value of diversity. It's not just about 'oh, we need the odd few women in here' but I think people generally have started to realise the benefit of having a different type of person involved in a particular job.

I remember meeting a fantastic female engineer at Sellafield who was talking about her own work. She's running a very complicated decommissioning project and said – very tongue-in-cheek – that men would make 'big plans' but then she came along and got strong daily delivery into project.

Whether you can say that's a female characteristic versus a male characteristic I don't know, but the point is that a diverse range of views and approaches is always going to benefit the industry, and the fact that this is recognised means that we are breaking down any barriers.

**JM: What words of advice would you give to aspiring students who wish to take up a career in science?**

**AL:** Think broadly and don't limit yourself. Don't imagine there's only one type of science because science applies across so many areas, from technology to health care to engineering to energy.

If you go into science you've got a broader career choice than if you pursue other subjects such as English. You will tackle practical and theoretical challenges and develop skills to allow you to branch into any career. ■

## Andrea's favourite things

**WHAT IS YOUR FAVOURITE BAND/MUSIC?**

These kinds of questions are always really tricky because in 10 years' time I'll think 'oh, did I really like that singer or band?'. At present, one of my favourite singer/songwriters is Jason Mraz, because his songs are so cheerful, about life and really catchy.

**WHAT IS YOUR FAVOURITE MEAL?**

Sunday roast, which I always have to cook. That's the downside. However the kids tend to wash up so that's good. It's all the family sitting down together so it's not so much the food as about the company.

**WHAT IS YOUR FAVOURITE BOOK?**

I have two, a serious and less serious book.

The one I used to read to my children is an Australian book about a wombat, and it's a just very sweet story about mothers and children. I guess my serious one would be Adam Smith – 'The Wealth of Nations', which is about how expanding free trade makes everybody better off, something I believe in whole-heartedly.

**WHAT IS YOUR FAVOURITE FILM?**

Four Weddings and a Funeral, a good British film.

**WHAT IS YOUR FAVOURITE PASTIME/HOBBY?**

It's time with family, my husband and three kids. I'm also quite keen on going to Northampton Saints rugby matches, but the best time is definitely with family on holiday.

# DEFENCE AGAINST THE DARK ARTS



# CYBER SECURITY IS IMPORTANT TO ANY BUSINESS, BUT WHEN YOUR BUSINESS IS NUCLEAR, IT'S MORE THAN JUST IMPORTANT – IT'S CRITICAL.

That's one of the reasons why we have our own crack team of cyber hackers looking for vulnerabilities in our systems.

Such is the nature of the cyber terrorism threat, with developments and new vulnerabilities being exposed across the world daily, it is important that our team know just how to undertake these – so they can stop them in their tracks.

Open up a newspaper on any day of the week and you'll find examples of cyber-crime. All of these attacks are damaging, but in the more extreme examples, operations have been stopped and confidential information has been released.

As no organisation can say they're immune to an attack or is unhackable, it's the work our team do, behind closed doors, at all times of the day and night, using all the technological trickery available, and battle scars gained from this that keeps us safe.

As one of our cyber-experts (who will remain anonymous to protect their identity), explains: "We take cyber security threats very seriously, and work hard to protect our network, every single day. We've all undergone intense, challenging training to ensure we're on top of our game, and this coupled with our passion for what we do, is the key to staying safe."

The training they refer to certainly is intense – it includes a 24 hour exam, which requires successful participants to hack into an advanced network, compromise it, and show their working out. It covers areas such as network intrusion and detection, hacking techniques and exploits and incident handling. It is provided by the SANS Institute, which is widely regarded as the best in the business.

"We need to undergo training like this to understand how hackers are able to do it. If we weren't successful, or didn't do it, then we wouldn't know what hackers are able to do. It's this, and our love for what we do that drives us."

In addition to this training, each member of our team has their own area of specialism and interest, to ensure they are qualified and experienced, with widest range of skills possible.

## Anti-social social media?

As security increases, and new ways of defending against the dark arts are developed, you might imagine things were getting harder for the hackers. Sadly this isn't the case. And one of the many reasons why is something many of us will be familiar with – our use of social media.

Our cyber-expert explains: "Hacking might conjure up an image of a lone wolf, operating from a darkened room, but the reality is often far from this – imagine a bright, modern, call centre, with teams

of people who have trained for years to exploit our vulnerabilities – and you might be closer to the mark."

These teams, and the automated bots they create, spend their time 'scraping' the internet and popular social networks for information like the names of our pets, our schools, our teachers, where we live – all those things we share online daily. They can then use these to identify the passwords we've associated with these things.

### Beating the threats

When you consider these call centres, and teams of well-resourced hackers, you'd be forgiven for thinking that we were all doomed. But while it sometimes feels like the odds are stacked against us, things like joint working, advancing technology and learning from other attacks, all help make us more secure.

As our cyber-expert explains, "We work with our partners across the nuclear sector and with central government and the security agencies – so we are supported by some of the very best security experts in the business. In fact, given the size and complexity of our work, we're called to support other organisations just as much. In fact, CESG – the information security arm of GCHQ recently highlighted our commitment to cyber security on a national level, after our team put forward some suggestions to improve the national cyber security centre."

The nature of the Sellafield site can also bring its own advantages – many of our plants were some of the first of their kind, and were built before digital technology. This means that their analogue systems are physically

and electronically separate from our modern technological systems.

In 2015, the Ukrainian power distribution networks were taken down following a sophisticated attack. When such attacks occur, we use the learning made available to ensure the vulnerabilities that were exploited do not exist in our own systems.

I asked our cyber-expert to sum up our approach to cyber security: "All of our work is about layers of protection – so we have the correct systems in place, we regularly review these, we train our teams on an ongoing basis, and we ensure all of our employees understand the role they have to play in keeping us safe.

"When you put all of these things together they're ultimately about ensuring that we're secure by choice, not by chance."

### Learning from Ukraine

Last year, there was a sophisticated attack on the Ukrainian power network. About 225,000 people were left without power for several hours when Ukraine suffered what is believed to be the first successful cyber-attack on an electricity distribution network.

The attack occurred months after phishing emails were sent to the employees of the Ukrainian power companies. The emails contained malware which installed itself on systems and then lay dormant.

But the malware – known as BlackEnergy 3 – allowed the hackers to gather passwords and logins, with which they were able to mount an attack.

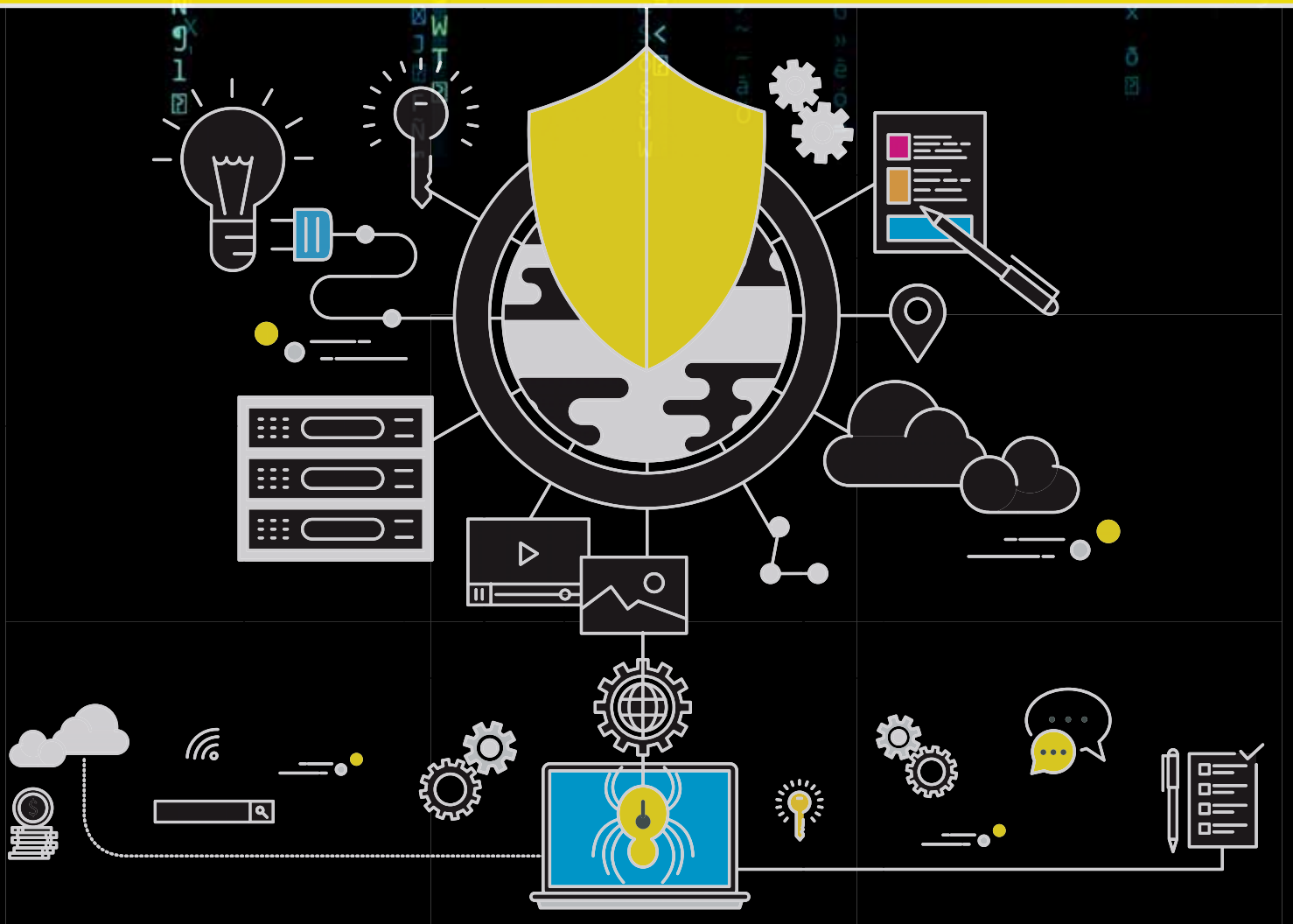
After months of work, they gained the ability to remotely log in to vital controls, known as supervisory control and data acquisition (Scada) systems.

Eventually, the hackers 'remote desktopped' into the computer systems, and cut power to a number of substations.

The attacks were only reversed when they were able to switch to manual operations.

In this country, the response to the attacks has included significant extra funding for GCHQ to bolster their cyber capabilities.

Closer to home, we have analysed the attacks to learn from the experience, and address the root cause, making it harder to replicate in our own systems. This is the approach we take following any cyber-attack on critical infrastructure.





# Phishing

## for your personal information

**PHISHING AND SPEAR PHISHING ARE TWO OF THE METHODS USED BY CRIMINALS TO GAIN ACCESS TO COMPUTER NETWORKS. BEING ABLE TO RECOGNISE A POTENTIAL ATTACK YOU CAN KEEP YOUR INFORMATION SAFE AT WORK AND AT HOME.**

### Phishing

Phishing is a method of social engineering that cyber criminals use to steal private information such as usernames, passwords, bank account/ credit card numbers and sensitive data, or to gain access to networks. These emails pretend to come from government organisations, banks, credit card companies, online shops, auction sites or other trusted entities, and include an attachment or embedded link which will attempt to gather sensitive data from the message recipient or compromise network security.

### Spear Phishing

Spear phishing is a specific type of phishing attack, but rather than sending out an email to large numbers of people, this type of attack targets specific victims, usually within a single organisation. Spear phishing targets individuals by gathering information that can be found in their online presence, such as their social or professional networking accounts i.e. LinkedIn, Facebook, Twitter, with the objective of malicious activity against the individual, their employer or a family member. The email contains malicious files or links within in the message.

- The recipient is fooled into thinking that this link or attachment is legitimate – the email address may look genuine or include company logos, for example.
- The recipient opens an attachment or clicks an embedded link and this activates 'malware' (computer software which is malicious or harmful).
- This malware may open up a gateway within the computer or network which allows the sender to gather information stored within the network, or to infect the network with other malicious code which could stop it working altogether. ■

### WHAT CAN YOU DO?

- Don't open unknown or unexpected email attachments.
- Never reply to unsolicited email (Spam).
- Think before you click! Hover your mouse over any embedded links to display the true location where the link leads – if it doesn't seem right, it probably isn't: don't click it.
- Never share account information or passwords.
- Check that email addresses are from the organisation that the email claims to be from.

### SOME TELL-TALE SIGNS OF A PHISHING ATTACK

- Sense of urgency to encourage opening attachments or links.
- Misspelt words or poor grammar.
- Requests for personal information.
- Requests to verify security details.
- Random documents being sent by unknown entities.



## FROM THE **ARCHIVES**

During our trawl of our photographic archives we came across the images of our site laundry in 1952. How times have changed – look at our laundry today (opposite).





## [ IN FOCUS: ]

# First Generation Magnox Storage Pond

The First Generation Magnox Storage Pond has something of a reputation on the Sellafield site. Anyone working here, and indeed many who don't, will know its nickname (which we can't print here for security reasons around revealing building numbers). But in nuclear folklore it's seen as a big, dirty, problematic radioactive beast that encapsulates the challenge we have in dealing with the legacy of its past.

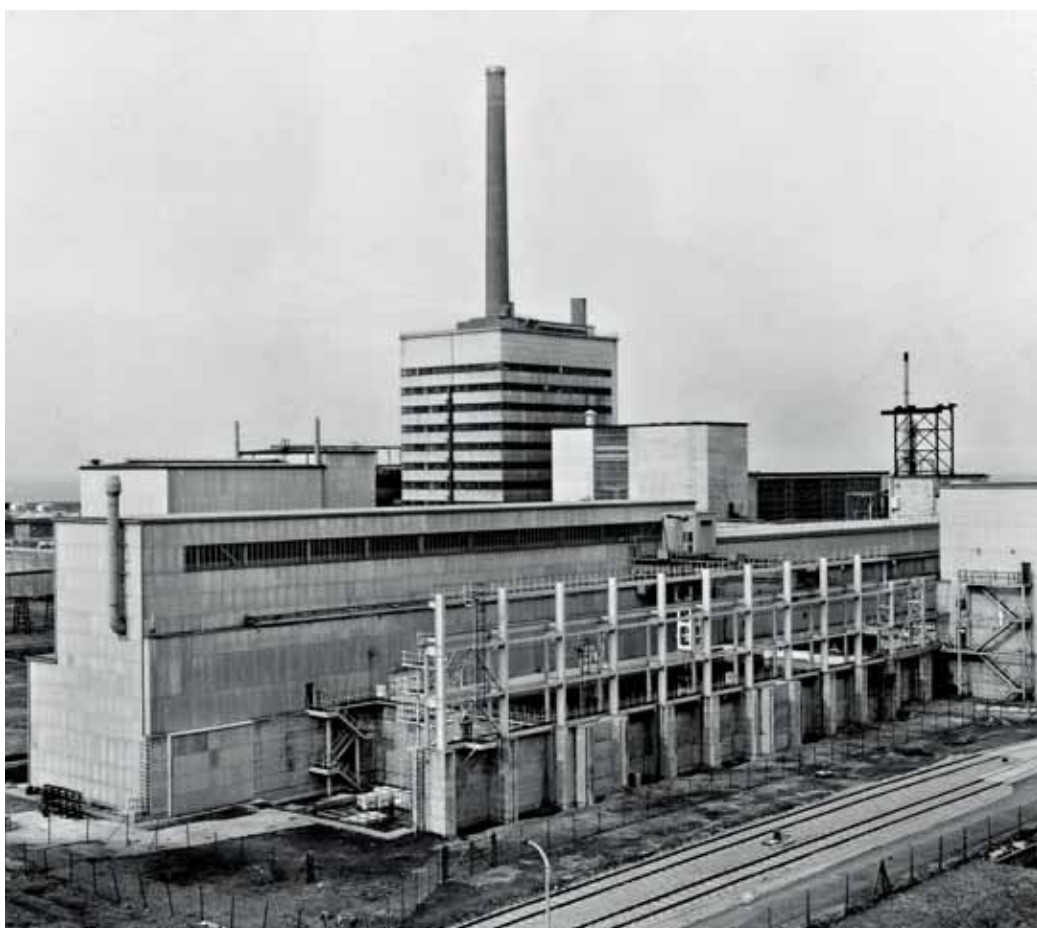
## Factfile

In its 26 years of full operations, the First Generation Magnox Storage Pond processed around 27,000 tonnes of nuclear fuel – that's nearly 2.5 million fuel rods.

The water in the pond is kept at an alkaline level of 11.4 to minimise the corrosion of material in the pond.

The pond is classed as the second highest hazard at Sellafield (Magnox Swarf Storage Silo is the highest hazard).

From the archives: the  
First Generation Magnox  
Storage Pond in 1965





Elevated view of the pond and gantry system

It's a reputation which has been hard earned. Primarily a storage pond and 'decanning' facility to strip the cladding from used fuel rods so the fuel inside could be reprocessed, the pond has seen some action. As well as receiving spent fuel from all of the UK's nine Magnox nuclear power stations, the facility has been used to process fuel from Italy and Japan.

"It's a bit of a battleship," said the Head of the First Generation Magnox Storage Pond Programme, Dorothy Gradden. "It was out there helping to keep the lights on in Britain during national coal strikes in the 1970s. It was a stalwart of operations on the site and has definitely got its scars from those days. Around half of the Magnox fuel that has ever come to Sellafield has been through here – and that includes the fuel going to the facilities which replaced it."

The year it opened (1962) was the same year the last trolley buses ran in London and Britain opened its first legal casino. It's been around for exactly the same time as James Bond has been on screen – but as much as possible has been neither shaken nor stirred in that time.

The opening of the modern, enclosed Fuel Handling Plant in 1985 meant that for the last 30 years, the pond has been largely redundant in terms of operations and the focus has been on care, control and surveillance. But the pressing need to decommission this

ageing asset with its significant inventory of irradiated solid nuclear fuel, mobile uranic sludge and miscellaneous beta gamma waste, together with the contaminated pond water, has long been our high priority (along with decommissioning the three other main legacy facilities in the Pile Fuel Storage Pond, Pile Fuel Cladding Silo and Magnox Swarf Storage Silo).

Emptying such hazardous material from a building that was not built with emptying in mind has taken years of planning, research,

It was out there helping to keep the lights on in Britain during national coal strikes in the 1970s.

design and engineering. While that work was going on, the pond programme has had two main priorities: Keep It Safe and Keep it Standing. Achieving these has involved significant refurbishment of the facility to strengthen its structure – including replacing all degraded steelwork – as well as overhauling, fixing and replacing its operational equipment, such as the huge skip handler crane which slides over the top of the pond area to lift and move the skips below.

This strengthening work has also been vital to underpin the programme's third key priority: get the waste out. Installing the new equipment

needed for waste retrievals has been like fitting a new engine in a vintage car – nuclear engineers have to be sure that the old parts of the 'vehicle' will run safely and effectively alongside the new ones.

The good news is that the car is now on the road. In March 2016, the first ever 'bulk' sludge export took place from the pond, starting a gradual transferral of the pond's main radioactive sludge content, which will take until 2022 to remove. Sludge had

already been transferred from the pond via a pipebridge to the specially-built £240m Sludge Packaging Plant over the preceding 12 months, but this was via a lower volume 'Plan B' floating platform sludge removal system which was primarily designed to check that the main system worked and allow the active commissioning of the packaging plant.

The other key recent development showing historic progress in this crucial mission was the removal of the first skip of fuel in April 2016 – billed as officially starting a new era of hazard and risk reduction at the Sellafield site. By taking a skip of fuel out of the pond

and exporting it to the Fuel Handling Plant (the same facility which replaced it as the main recipient pond for Magnox fuel in 1985), we proved that we had all the equipment, all the know-how and all the capability to gradually begin emptying the plant of bulk stocks of sludge and fuel.

It is part of a mission expected to take until 2022, at which point the risk and hazard at the facility will have been massively reduced as the main stocks of its most radioactive contents

**It's a mission expected to take until 2022, at which point the risk and hazard at the facility will have been massively reduced.**

will be stored in a far safer place. But even then there will still be a significant radioactive inventory in the pond and the decommissioning work will stretch on for more than 25 years, according to the current programme schedule.

The step change into waste retrieval operations has required a completely new mindset from the people running the

programme. As Dorothy Gradden has already been on this journey when she was in charge of the Pile Fuel Storage Pond's shift into retrieval operations (that pond completed its bulk fuel exports in early 2016), the facility is in good hands.

"I'm working with great people who have got incredible expertise. As you go into operations, the pulse rate of the whole place changes," said Dorothy. She compares the step up to a football team, which can spend hours on the

training pitch and planning in front of videos or blackboards, but when they're on the pitch, decisions have to be taken instantaneously. "Things really do have to come together and everyone knows their jobs and what they're accountable for. The heartbeat at the start of waste retrieval operations will be slow as we understand the equipment and the material. But

then it will quicken up as we really get going."

Of course, safety will remain the overriding priority throughout. "The First Generation Magnox Storage Pond is a completely different challenge from Pile Fuel Storage Pond. There's far more radioactive waste inside it and the building itself requires a more sensitive approach in terms of maintaining its structural integrity while introducing new equipment.

"It isn't a trite comment with a facility like this that nuclear safety has to come first. If something went wrong here, it would affect the whole of the site, the whole of west Cumbria and the whole nuclear industry," said Dorothy.

There is an understanding and acceptance among all of our stakeholders that in order to achieve long-term risk and hazard reduction by emptying the legacy ponds and silos, there has to be a period of elevated risk as we stir these sleeping giants back into action. Radioactive material that has sat undisturbed for decades starts to be moved again. It is our job to manage that risk and have fail-safe procedures in place which allows the job to get done. ■



The pond under construction in 1958

# First Generation Magnox Storage Pond Timeline

1962	1967	Late 1960s onwards	1972	1974	1978	1986	1992
The pond starts operations. The newly built facility consists of the inlet building to receive irradiated fuel from Magnox reactors, the open air storage pond to cool and store the fuel, the wet bays to remove the fuel cladding, and a sludge settling pond.	Decanning in the wet bays ceases. The wet bays are subsequently used as storage areas for sludge and miscellaneous beta gamma waste, fuel and sludge before being covered up to reduce dose levels to the workforce.	The facility is extended to improve operations and increase capacity. This includes extensions to the pond storage area and new dry decanning caves for improved fuel cladding removal.	The start of the national miner's strike meant that the generation demand from nuclear power reached unprecedented levels. This massively increased the amount of fuel going into the pond.	A long reprocessing shutdown caused fuel to be stored underwater in the pond for longer periods than usual, resulting in the corrosion of the fuel which in turn gave rise to increased radiation levels and poor underwater visibility.	Construction starts on a new Fuel Handling Plant – an enclosed pond and fuel handling facility designed to replace the pond.	Fuel Handling Plant becomes operational, diverting the main route for Magnox fuel away from the pond.	The pond stops importing fuel and goes into care and surveillance.

# Inventory Estimates

14,000m<sup>3</sup> of water – the equivalent volume of nearly six Olympic-sized swimming pools.

1,500m<sup>3</sup> of radioactive sludge – this varies in depth around the facility. Around two-thirds of the sludge is in the pond and the other third in the ‘wet bays’ which were originally used for decanning fuel rods, but then became waste storage areas.

500 tonnes of solid nuclear fuel.

Waste contents consist of sludge, fuel, miscellaneous intermediate level waste and low level waste.



Top and bottom, the construction of a store for sludge from the pond. Centre, improvements to the pond's infrastructure.



## Looking Ahead

Current programme estimates – these are subject to change:

- 2018**  
Begin exports of waste in self-shielded boxes to the Interim Storage Facility.
- 2019**  
Start sludge retrievals from D Bay.
- 2022**  
Complete bulk fuel and sludge exports.
- 2033**  
Complete all solid waste retrievals.  
Start dewatering
- 2038**  
Dewatering complete.



**2000**

The facility's skiphandler is removed from service due to severe steel corrosion, meaning skips can no longer be moved around the pond.

**2006**

A Gantry Refurbishment System is installed to facilitate the repair of the corroded steelwork.

**2008**

Remotely Operated Vehicles are introduced to the pond as an observational aid.

**2011**

An ROV picks up and moves a fuel rod in the pond for the first time.

**2012**

The refurbished skiphandler returns to active service.

**2015**

First export of radioactive sludge into the new Sludge Packaging Plant using the 'Plan B' floating platform system.

**2016**

First 'bulk' sludge exports using main sludge retrieval system.

**2016**

First fuel exports using new fuel retrieval system from the pond to Fuel Handling Plant.

# Hand in hand in pond

We could not do what we do at Sellafield on our own. Our supply chain partners are crucial in helping to deliver the expertise, technical specialism, capacity and equipment needed to run the site and press on with the decommissioning mission. Here, some of our key supply chain partners in the First Generation Magnox Storage Pond programme explain the part they played in helping to deliver the **first fuel and sludge exports from this legacy facility.**

**W**ithin just 25 days of each other, two significant milestones in nuclear decommissioning history happened this year on the Sellafield site. On 24 March, the first ever 'bulk' transfers of radioactive sludge started from the First Generation Magnox Storage Pond to the Sludge Packaging Plant. On 18 April the same facility saw its first exports of fuel to the Fuel Handling Plant.

Head of the pond programme, Dorothy Gradden said at the time that the successful start of waste retrievals involved "thousands of people and hundreds of companies". It was also the culmination of years of work and planning.

It would be impossible to individually name and thank all the companies and people involved here – so apologies to all of those not mentioned. But Sellafield Magazine has taken the opportunity to ask some of the key partners involved how they saw the start of exports, and how they helped get us to the point where it was possible.





**Andy Leigh**  
Chairman, ACKtiv  
(consortium of Jacobs, Carillion and Atkins)

**Contract:**  
**Bulk sludge retrievals**

“Our involvement in the sludge retrievals project stretches back to the turn of the century. It’s a contract where we have around 250 people contributing to the success. We have also sub-contracted significant amounts of work to other nuclear specialists in the supply chain – particularly the SMEs in West Cumbria, so a great many people felt a sense of personal pride at the point the system started working.

The main challenge with this project was the ageing infrastructure of the facility and the hazardous environment we were working in. Dose levels have been a significant factor in the way we’ve managed the work, but having just passed the milestone of 4 million hours without a Lost Time Accident and 10 successive years of RoSPA gold awards, I think we can all be proud of the way we’ve worked safely.

Key to success was adopting an integrated team approach between Sellafield Ltd, ACKtiv and others in the supply chain, to bring different capability together for this complex project. We build an open dialogue between the project team, supply chain and the stakeholders so that everyone feels part of one project. That way all the energy is focused on implementing great solutions to reduce the hazard.

It’s hard to underestimate the technical challenge, including the enabling works to support retrievals. Miles and miles of electrical cables have been installed in a radioactive environment. You have to get it right first time too, as you don’t want to have to remove equipment after it’s contaminated. In preparing for the bulk transfer of sludge, many firsts and records were achieved. For example, the installation of the pipebridge to transfer the sludge over to the sludge packaging plant utilised the largest mobile crane in Europe. We created an exact mock-up replica of all the surrounding buildings so that we knew we could manoeuvre the crane around this congested environment and build stakeholder confidence. We proved it was possible and that helped create a paradigm shift in the way the site allows crane movements now.

The day sludge came out for the first time was a bit of a strange one. It happened and then our thinking was ‘great... time to crack on with the next bit’. Our focus now is on installing the system to remove sludge from the wet bays.”



**John Ball**  
Regional director,  
Nuvia

**Contract:**  
**Export facility**

“Building the new export facility which allows skips of fuel to be transferred into shielded flasks for removal was certainly a unique challenge. Turning a facility where operations had stopped for years into a construction site had to be done carefully and safely.

The project was worth around £50m over three phases, beginning in 2013. We employed around 100 full time employees at peak, (not including others in the supply chain or Sellafield Ltd personnel). There was a core group of around 10 main sub-contractors working for us, with Nuvia carrying out the mechanical installation.

The contract included developing a full off-site integrated test facility, with the machines and control system in a simulated cell structure. This facility enabled us to validate and ‘debug’ the equipment before coming to site and also improved the on-site commissioning schedule.

One of the real successes – in terms of safety, schedule and cost saving – was the design and deployment of a shielded trolley system, which allowed work to be carried out from the trollies, safely in the export cell. This award-winning innovation increased the working time in the cell from one hour to a full working shift.

Nuvia are proud to have been associated with this project, working collaboratively with Sellafield Ltd and its supply chain, having expended over 1 million man hours without any accidents, and helping to achieve the export of fuel for the first time in 27 years.

The moment the first flask was exported gave an enormous sense of personal pride for everyone involved in the project. Everyone saw that their three years of hard work had resulted in a tangible outcome of risk reduction in an ageing facility.”



**Simon Pyne**  
Business development Manager,  
James Fisher Nuclear

**Contract:**  
**Remotely Operated Vehicles**

“The first fuel that came out of the First Generation Magnox Storage Pond was picked, sorted and placed in the right place thanks to the underwater ROVs we have helped develop and operate with Sellafield Ltd. The installation of the sludge retrieval equipment was also made possible by these machines and our people.

It’s been quite a journey. Way back in 1998, Sellafield Ltd first trialled ROVs as an observational aid, but it was in 2008 that they really took off and JFNL became involved.

The work has been successful because of the close working relationship we have with people in Sellafield Ltd who passionately want to make progress. The easy thing is to say ‘that’s not allowed’ and stop. But the people we’ve worked with in Sellafield Ltd have made the safety cases, challenged the status quo and managed to prove these machines can do the job. A contractor would never be able to make this case – it has to come from the people within.

The ROV team in James Fisher Nuclear has gone from a couple of pilots and a project manager to around 35 people. Thanks to the success and profile through working on the legacy ponds, new opportunities have presented themselves. We’re working on feasibility studies to support work at Fukushima and other areas of the nuclear industry.

Finally we need support as well and have worked with the ROV manufacturers who have benefited as well. They can now add the nuclear industry to their list of areas where their machines work.

We’ve built an incredible network of knowledge over the years and the start of fuel and sludge exports were proof of what they can help achieve.”



# Low drama, high rewards

A front row seat at our most important milestone of the millennium was a unique opportunity. Gareth Cosslett from stakeholder relations gives this eye witness account of the first First Generation Magnox Storage Pond fuel export.



The 2012 Olympics started with a spectacular opening ceremony and fireworks extravaganza. State Visits, with golden carriages and all the pomp you can shake a gilded stick at, are similarly impressive affairs. Britain is pretty good at marking its big moments. But this is different.

I'm standing in a building where nuclear industry history is about to be made. The export of fuel from the First Generation Magnox Storage Pond is the culmination of over a decade of work and £1.5 billion of investment from British taxpayers. It's only about 90 minutes away from happening, but I'm not jostling for position with any crowds. It's just me and a bloke called David, who escorted me here, standing and waiting.

I'm looking at a large white metal flask inside the ante-chamber of the pond's newly refurbished export bay – over 50 tonnes of stainless steel saving my life. For if it wasn't

there and its contents of Magnox fuel rods were out in the open, both David and I would be in big trouble.

The regular sonic pings from the criticality reassurance bleeper make the room sound like the inside of a submarine, even though the roof 25 metres or so above gives none of the feeling of claustrophobia.

The faint breeze on my cheek, which up to now was bearded but is now clean shaven because of the facility's facemask policy, is also a reminder that we're in no submarine.

Then a few more people begin arriving; crane operators, engineers, banksmen and others accumulate to do their job of moving the flask out of the export bay and onto its transporter. As both the commissioning and operations team are involved in this first ever fuel export, there's more than double the number of people who would normally be involved here.

The atmosphere is of absolute calm and control. Everyone knows exactly what they're doing because they have practised it many, many times before.

The hulking metal box seems to glide slowly and seamlessly out of its chamber and down the hoist well. Stops and checks are done at all the appropriate times; machines and their operators all doing exactly what they're supposed to.

The wheels of the transporter swell as it finally shoulders the load and the flask beds down onto its back.

It's tempting to give a whoop of appreciation. This is after all the culmination of work involving thousands of people and hundreds of companies. But the air of calmness and modesty displayed by all around me stifles any urge to high five.

At 6.30pm we see the transporter drive out of the building and through the facility gates towards the Fuel Handling Plant. I overhear a couple of people talking.

"1979 I started working here. Seen a lot since then. Big one, that."

"Aye. Remember where we were four years ago? Wouldn't have seemed possible then."

And that was the end of their understated podium moment. But even this newcomer, turning up at the end to capture the moment of glory, can tell what it means to them. To be able to say 'I was there. I helped make it happen'. ■

# sludge

not your  
everyday  
choice for  
a PhD

**We talk a lot about sludge at Sellafield. What it is, where it is, how we will get it out of our legacy ponds, how we will treat it and where it will be stored.** Thanks to our involvement with the University of Manchester, we have found someone who loves the subject almost as much as we do. **Hollie Ashworth**, is doing her PhD on our sludge and, as part of her research, visited Sellafield in May. What makes someone want to base their academic career on the work we do on the site?

It is always inspiring to meet someone who genuinely loves what they do for a living. They present the same demeanour at work that others usually reserve for hobbies or spending time with family and friends.

For PhD student Hollie Ashworth, following her passion has given her a career that she loves. When we meet up, she is fresh from visiting some of our buildings on the Sellafield site. "I can't believe how big the First Generation Magnox Storage Pond is," is her first impression of the legacy pond that is home to the radioactive sludge that is taking up so much of her time. "When people first started talking to me about the pond I imagined something the size of a swimming pool, but it is actually 130 metres long. It is just completely different to what I had envisaged."

Our Sludge Packaging Plant, which will provide modern containment for the sludge retrieved from the pond, had the opposite impact. "The building is actually smaller than I thought considering the volume of sludge it is destined to handle, especially when you see the size of the pond you think, how is all of that going to fit in there?"

The first batch of sludge was moved from the pond to the packaging plant in March 2015 in what was a major step forward in the clean-up of one of our highest hazard projects. Hollie said: "The transfer of sludge sounds like a really simple idea, but I can appreciate the detailed planning around things like 'what will happen if' takes time. Every eventuality has to be thought of."

Had the prospect of visiting the most iconic nuclear site in the world made her nervous? "I hadn't even heard of Sellafield until



"I already had a research topic in mind, but the opportunity to work on a real life project that had industry input and links was too good to pass up."



I started university, so I didn't have any preconceptions about the site. It felt a bit surreal when I visited for the first time [today is Hollie's second visit], but it is the best way to put everything I have read about into context.

"I find the history of the site fascinating. The operations that went on here in the early years are quite remarkable and the way the site has expanded over the years. There are still people that I talk to in Manchester who don't know what Sellafield is when I mention it. I find that quite odd now."

Hollie started working with us when she applied for a doctoral training programme at the University of Manchester called 'Nuclear FIRST'. She was approached to lead a Sellafield Ltd sponsored research project on sludges and now works with our experts and colleagues from the National Nuclear Laboratory.

"I didn't actually have a project in mind – until the beginning of my final year I was convinced a PhD was not for me, but then became interested in the Nuclear FIRST programme. From that, this project became an option. The opportunity to work on a real life project that had industry input and links was too good to pass up," she explained.

The project in question is a study into the influence of organics on radionuclide distribution in the First Generation Magnox Storage Pond – namely strontium-90 and caesium-137. That involves seeing whether they sorb to and if they will be

released from corrosion products present in the pond with and without the presence of organics. She said: "I am also looking at the biological side of the algae bloom in the pond by linking up with other universities that are looking at the algae in the pond."

Her enthusiasm for the project is clear, has she had any frustrations so far? "The very nature of a PhD is hard. Sometimes when you get a bad result, or you don't get usable data it can be really frustrating. But, I really can't complain. I love the project, I am working with other students at other universities to share data, and I get to work with industry experts. I can call my contacts in both Sellafield Ltd and the National Nuclear Laboratory to ask questions or, if there is anything strange in my data, I can ask them to review it to see it is supported by real life sample data.

"I know that it might sound strange to some people, but I really love what I am doing."

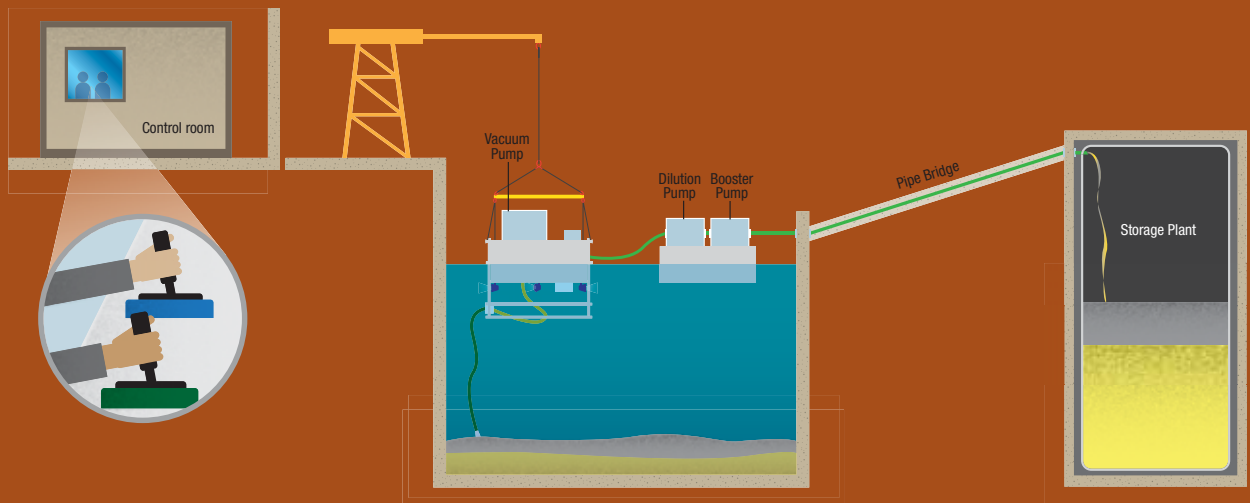
Where did her passion for science come from? "I really enjoyed the practical side of science and chemistry in secondary school. The simple act of mixing stuff together, burning things, the hands-on side excited me more than subjects like English. I did mathematics, history, biology, general studies and chemistry at A-level and while I got a better grade in biology, chemistry was my passion. My university strongly encourages its students to go out and engage with schools and as a Science, Technology, Engineering and Maths

ambassador for the Museum of Science and Industry I am keen to encourage more young people to consider a career in these areas."

What does she hope that the future holds? "When I finish my project I will have been involved in the nuclear industry for four years and I would definitely like to stay involved in the industry in some way. I am looking for the perfect role where I can stay technical but not necessarily work in a lab all day." ■

"I love the project, I am working with other students at other universities to share data, and I get to work with industry experts. I can call my contacts in both Sellafield Ltd and the National Nuclear Laboratory to ask questions or, if there is anything strange in my data, I can ask them to review it to see it is supported by real life sample data."

## How to move sludge...





## West Cumbria Sites Stakeholder Group

The West Cumbria Sites Stakeholder Group is an independent body that scrutinises the work done at nuclear sites in the West Cumbria area

# Have your say about Sellafield...

Dates and venues for the West Cumbria Sites Stakeholder Group (WCSSG) main meetings and Working Group meetings for 2016

Date	Event	Venue	Time
<b>Tuesday 19th July</b>	Spent Fuel Management and Nuclear Materials Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
<b>Wednesday 20th July</b>	Low Level Waste Repository	Drigg and Carleton Village Hall	1800-2000
<b>Tuesday 2nd August</b>	West Cumbria Sites Stakeholder Group meeting	Cleator Moor Civic Hall and Masonic Centre	1300-1600
<b>Monday 12th September</b>	Emergency Planning Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
<b>Wednesday 21st September</b>	Risk and Hazard Reduction and Waste Management Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
<b>Tuesday 18th October</b>	Spent Fuel Management and Nuclear Materials Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
<b>Wednesday 19th October</b>	Low Level Waste Repository	Drigg and Carleton Village Hall	1400-1600
<b>Tuesday 1st November</b>	West Cumbria Sites Stakeholder Group meeting	Cleator Moor Civic Hall and Masonic Centre	1300-1600
<b>Thursday 24th November</b>	Environmental Health Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600
<b>Wednesday 21st December</b>	Risk and Hazard Reduction and Waste Management Working Group	Cleator Moor Civic Hall and Masonic Centre	1300-1600

Please note: Dates and venues could change and it would be advisable to confirm arrangements with the relevant contacts prior to the meeting:

**West Cumbria Sites Stakeholder Group**  
Rosina Robinson: 019467 85802

**SFM&NM Working Group**  
Rachel Hodgson: 019467 71889

**Low Level Waste Working Group**  
Cath Giel: 019467 70233

**Emergency Planning Working Group**  
Matthew Welsh: 019467 88503

**Environmental Health Working Group**  
Deborah Docker: 019467 72608

**R&HR&WM Working Group**  
Thomas Dowd: 019467 78691

**Enablers Working Group**  
Rosina Robinson: 019467 85802

For more information visit

[www.wcssg.co.uk](http://www.wcssg.co.uk)

FROM THE  
**ARCHIVES**

In 1978, a local farmer needed to know the weight of his prize bull. Sellafield was the only place with a weigh-bridge big enough for the task.



# Ambassadors assemble to inspire others

**While the X-Men were launching their next mission and the Avengers were assembling to help Captain America on the big screen, a band of real-life heroes were coming together on the small screen to inspire the next generation of apprentices.**

**D**eanna Pearson, a former apprentice and now one of our health physics monitors at Sellafield, was chosen from more than 200 apprentices to take part in the Department for Business, Innovation and Skills' 'GET IN GO FAR' campaign which aims to show vocational training as an exciting alternative to further education.

From billboards up and down the country to a national TV advert, Deanna, 22-years-old, is playing a leading role in the campaign alongside six other trainees from some of the UK's leading apprentice employers such as JCB and the Premier Inn.

Deanna said: "I am thrilled to be part of the campaign and to help encourage other young people to give apprenticeship training the same consideration as they give to further full-time education.

"It was also an honour to stand alongside the other six ambassadors. We all come from very different backgrounds, we work in very different industries, but we have all been on the same apprenticeship journey. Without this campaign we may never have met, but I truly have made friends for life."

Over a series of weeks earlier in the year, a film crew spent time with Deanna at her home in Cockermouth and at work in Sellafield, following her story of how she juggled her apprenticeship with being a young mum.

She said: "The usual route into a career after school is University; a lot of my teachers were pushing me to do this

but I knew it wasn't feasible for me as I've got a little girl.

"I wanted to be able to work and I needed to earn money to support my daughter, but I didn't want to stop learning and getting qualifications so it made sense for me to follow the apprenticeship route.

"There are many different career routes that young people can choose now, it can be quite overwhelming. This campaign – which is giving thousands of young people role models who they can relate to and look up to – will help more young people understand and consider an apprenticeship and I'm so pleased that I've been chosen to be a part of it." ■



[www.getingofar.gov.uk](http://www.getingofar.gov.uk)







**GET IN  
GO FAR  
APPRENTICESHIPS**

# New national training centre

Work has started on a new **£39 million firearms training facility** for the Civil Nuclear Constabulary, who provide policing services to Sellafield and the rest of the UK's nuclear estate.

Phil Bishop, chief superintendent at the Constabulary, said: "The new facility will allow us to continue to meet the most stringent armed policing standards set by the College of Policing and UK government regulatory standards for the protection of nuclear sites such as Sellafield."

The facility is set to open in January 2018.



**£39 million facility**

# World class

The Government has confirmed that Cumbria will be home to the UK's National College for Nuclear, a world class training facility designed to fire the growth of the UK's nuclear industry.

We and EDF Energy will lead industry input into the college, helping to ensure its curriculum and qualifications are based on employer need.



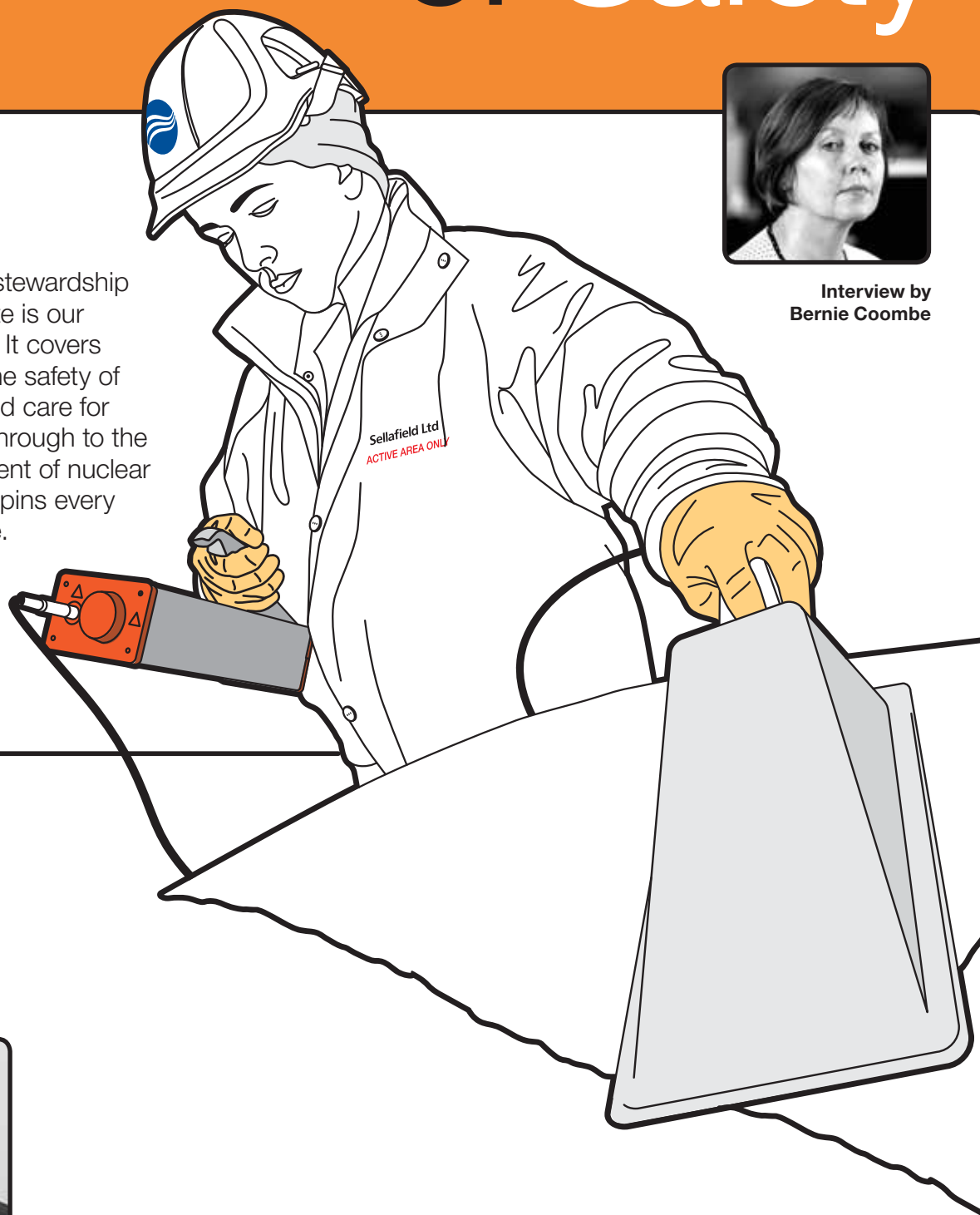
The **£15m college** will be based on two sites, one in a new multi-million pound training facility at **Lakes College** in Cumbria, shown right, and the other at Bridgwater College in Somerset. Both will open their doors in 2017 with the aim of **training 7,000 people** by 2020.

# Annual Review of Safety



Interview by  
Bernie Coombe

The safe, secure stewardship of the Sellafield site is our overriding priority. It covers everything from the safety of our employees and care for the environment through to the secure management of nuclear materials. It underpins every decision we make.



**Euan Hutton,**  
EHS&Q Director has  
24 years' experience  
in the nuclear industry.

AN INTERVIEW  
with Euan Hutton

**“Ultimately, we are here at Sellafield to ensure that the nuclear materials on the site are safe and contained.” This was our Environment, Health, Safety and Quality Director, Euan Hutton’s opening address to our senior management team at a recent meeting.**

It is also his starting point when he sat down with me to talk about our safety performance in the last financial year.

He continued: “For me the most important thing we do every day at Sellafield, and the reason that we’re all here, is to protect the environment by assuring nuclear safety. Keeping nuclear materials where they are meant to be.

“Our risk and hazard reduction work is also a key feature of our safety performance on two fronts. Firstly, reducing risk and hazards on the site – cleaning up our old buildings – makes Sellafield safer. We’re not in the position where, if we don’t like something, we can switch it off. In a number of our facilities, predominately our legacy storage buildings, we don’t have that option. We can’t just switch them off; we’ve got to do something about them. We also have to stay safe while doing this work”.

While our focus shifts more and more to this vital clean-up work, it is not the only activity carried out on the site. Euan is keenly aware of the potential for people to get hurt at work.

“On one site we are running nuclear facilities, waste treatment plants, waste storage plants, using chemicals and managing nuclear materials. Sellafield isn’t just a complicated nuclear site; it is also an industrial site. This involves design and build, commissioning, operations, decommissioning, waste management and demolition – every part of a project lifecycle. Our work requires radiological controls, environmental restoration, industrial safety challenges such as working at heights, working with asbestos and legionella control.

“Our daily working environment presents radiological, chemical and conventional safety hazards. It is fundamental that every single one of our 11,000 employees and upwards of 3,000 contractors go home safe every day.”

All of these activities are underpinned by an equally stringent approach to quality. He continued: “By making sure we have the right quality service, and the right processes, we can do what we need to do and deliver return on investment. It is important too that our subcontractors understand where nuclear safety fits in, and that they continue to produce goods and materials to the right quality so that the things we get, do what they’re supposed to do.”

When I ask Euan how he thought we had performed across our various aspects of safety, he pauses.

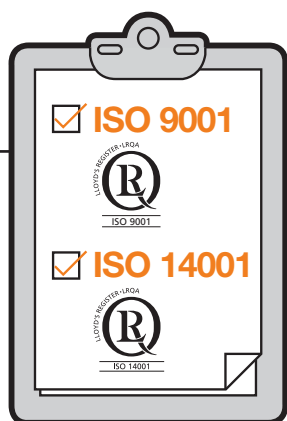
“When you look at the cold statistics you have to say that our performance was mixed, with good performance in nuclear, environmental and radiological safety, but we missed targets in our industrial performance. When I look at what we delivered across the site in the same >>

**Risk and hazard reduction 2015/16**

Our safety performance has been achieved while delivering progress in the clean up of our most hazardous facilities. Delivery highlights include:

- Removal of the entire bulk stocks of historic nuclear fuel from the Pile Fuel Storage Pond, reducing radioactivity levels at the 68-year-old pond by 70 per cent.
- Beginning of bulk sludge transfers from the legacy First Generation Magnox Storage Pond to the Sludge Packaging Plant. This success was followed by the start of bulk fuel exports from the pond at the beginning of this financial year. This achievement was the culmination of over a decade of planning, preparation and investment. Thousands of people, both at Sellafield and in the nuclear supply chain, have been involved in getting ready to start emptying the First Generation Magnox Storage Pond of its highest hazard contents.
- Completion of the assembly of the first 11 modules of the Silo Emptying Plant, which will be used to grab radioactive waste from the compartments at the Magnox Swarf Storage Silo (completing the main mechanical build – 300 tonnes of the 360 tonne machine).
- The first delivery in March 2016 of equipment needed to install the huge, steel silo containment doors which will be attached to the Pile Fuel Cladding Silo. This marks progress towards retrievals starting in the last of the four legacy buildings, to get radioactive waste out and into a safer place.
- A new ventilation stack has been built at Sellafield – so an old one can be knocked down. Completion of the Separation Area Ventilation project has paved the way for the demolition of a stack on top of one of the site’s reprocessing plants. The new ventilation building will provide a modern state of the art aerial discharge route for existing facilities at Sellafield, and enable the removal of older facilities to be completed.
- We reduced highly active liquor (HAL) stocks achieving a regulator mandated milestone. The work we have undertaken to secure long-term evaporative capacity is key to this success.

For more information on our risk and hazard reduction progress, please visit [www.sellafieldsites.com](http://www.sellafieldsites.com)



**Sellafield Ltd has received re-certification from Lloyd’s Register Quality Assurance for our quality and environmental management systems (ISO9001 and ISO14001) – the benchmark for international standards.**

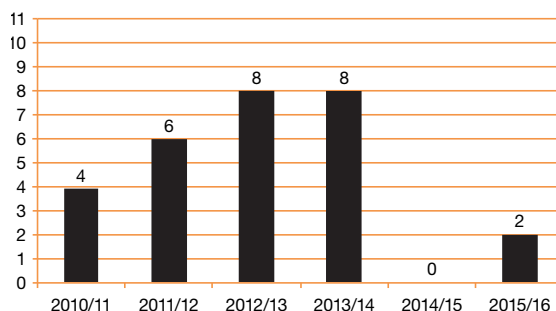
# Nuclear Safety

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
<b>No. INES</b>	3	3	4	4	0	3

**Note:** The International Nuclear and Radiological Event Scale (INES) is a rapid alert system used for consistent communication of events across the nuclear industry. These are categorised between Level 1, which is an anomaly, to Level 7 which represents a major accident. In 2015/16 we had three INES events rated Level 1 (an anomaly).

**Note:** This metric represents the number of nuclear incident reports categorised as significant under our sentencing scheme. The two recorded this year were: One of our four standby diesel generators failed while another was undergoing maintenance, meaning that we temporarily dropped below the required level of standby electrical generation capacity. Contingencies were put in place to address the issue. The second was in relation to the ventilation system within the Magnox Swarf Storage Silos. For more information, see page 38.

**No. Nuclear SIRs**



1. We continually assess how we are performing, carrying out a wide range of internal regulation and assurance activities to help us assess how we're doing and where we need to centre our attention and provide insights for continued improvement.

2. Our nuclear professionalism standards support and reinforce our nuclear safety culture. They reflect the fundamental behaviours required of all nuclear professionals regardless of their position in the organisation.

## Annual Review of Safety (cont.)

period though, I have to say that, overall our safety performance was good.

“We have built upon our previous strong environmental performance with no significant environmental events; overall discharges and disposals of waste are well within permit limits.

---

**Variations to site-wide permits have been made to ensure appropriate regulatory permissioning is in place to facilitate operations and decommissioning activities. This included permitting the Calder Interceptor Sewer to take low activity streams to benefit existing and future major projects. The variations also included a 10% reduction in alpha, beta and tritium limits for site aqueous discharges and consequential reductions in specific plant limits.**

---

“Doses to the most exposed members of the public from operations at Sellafield remain very low at approximately 100 microsieverts ( $\mu\text{Sv}$ )/yr. This compares to the average annual UK dose of around 2,700  $\mu\text{Sv}$ , of which 2,230 ( $\mu\text{Sv}$ )/yr is derived from natural sources.

“Our radiological protection performance remains strong in a year of increased high hazard risk reduction work. All doses to the workforce remain less than 10 millisieverts ( $\text{mSv}$ )/yr with the average being less than 1  $\text{mSv}$ .

“We also recently collected nine awards – eight gold and one silver – at the Royal Society for Prevention of Accidents Occupational Health and Safety Awards 2016. Many of our contractor colleagues also won awards for their safety performance at Sellafield.

“These successes are a reflection of the hard work put in by our employees and contractors in making Sellafield a safe place and of our collective commitment to continually improve safety.

“That said, while our industrial safety accident rates remain good when compared with comparable industry averages, it is disappointing that we missed the challenging targets that we set ourselves. We have a combined Sellafield Ltd and supply chain workforce of approximately 14,000 people. These people are delivering a wide range of work in a mix of office, radiological and industrial environments. During the year we had 45 recordable injuries. The majority of these injuries were strains and sprains, bone fractures and cuts, caused predominantly by slips, trips and manual handling. Our focus remains on preventing all injuries and near misses.

“With safety we strive for zero accidents, so there are always areas for improvement and we continually look at how we can perform better. We are continually assessing how we are performing, carrying out a wide range of internal regulation and assurance activities to help us assess how we're doing and where we need to centre our attention and provide insights for continued improvement.”

An example of how we are striving to make these improvements is seen through the way we reacted to three International Nuclear and Radiological Event Scale Level 1 events. What happened and what are we doing as a result?

“Of course we strive to have no events. We take all events seriously and address gaps and areas where we need to make improvements.

“There were three events which were rated as Level 1 on the International Nuclear Events Scale which means that they are classed as anomalies with no release of radioactivity or increased dose to individuals. We have investigated these events and are sharing learning across our business.

“The first event was a temporary power failure on 30 December 2015 which resulted in a loss of power to certain hydrogen analysers in the Magnox Swarf Storage Silo. There was no release of radioactivity or increased dose to individuals.

“A Board of Inquiry has been carried out and lessons learned are being shared across the organisation – focusing on equipment checks and risk mitigation measures.

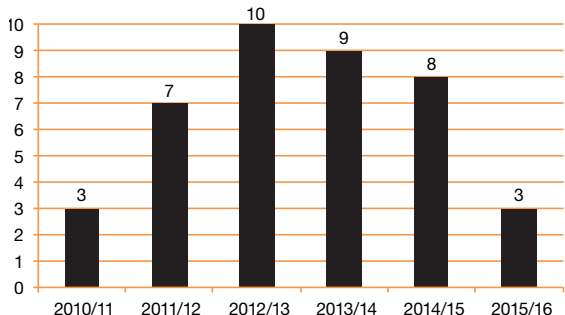
“The second incident occurred in the same facility. The silo has a forced ventilation system for hydrogen management which draws air via electrically powered fans >>



**We recently collected nine awards – eight gold and one silver – at the Royal Society for Prevention of Accidents Occupational Health and Safety Awards 2016.**

# Environmental Safety

**No. Environmental SIRs**



**Note:** This metric represents the number of environmental incident reports categorised as significant under our sentencing scheme. The three incidents were a minor release of non-radioactive nitric oxide, an exceedance of the dry weather flow limit in our sewage treatment works and a discharge of sodium nitrite. There were no environmental consequences or radiological discharges as a result of these incidents.

1. Our beach monitoring programme for the 2015/16 financial year was successfully completed to schedule. A total of 166.75 ha monitored, against a target of 160 ha. Beach monitoring provides reassurance that the risks associated with using the beaches around Sellafield remain very low. Public Health England's risk assessment concludes that "the overall health risks for beach users are very low and significantly lower than other risks that people accept when using the beaches."

2. All radioactive discharges remained well within authorised limits. Marine discharges remain at historic low levels.



## Annual Review of **Safety** (cont.)

through all compartments and then through a cleaning system before it is discharged to the atmosphere through a chimney stack. It also has an alternative 'passive' ventilation system installed as a safety measure in 2013 to mitigate against a prolonged loss of power.

"During routine maintenance work we exceeded the building's 33-hour requirement for using passive ventilation only.

"Throughout this period of low ventilation flow, hydrogen levels were monitored throughout. There was no increase in hydrogen concentration and no increase in levels of airborne activity within the facility.

"An investigation has been carried out and lessons learned are being shared across the organisation – focusing on equipment checks and challenging assumptions.

"In March this year we carried out a new process whereby a radioactive source is temporarily introduced to a sealed cell in order to test the functionality of gamma monitors inside the cell. During the transfer of the source in to the cell one of our employees was briefly exposed to an elevated level of radioactivity. The employee is still well within our annual dose limits, which are lower than the permitted annual dose rate. Learning is being shared across the organisation and the process has been changed to include additional safeguards."

**"With some of our ageing assets we can't employ a traditional, zero-based risk approach – we can't switch off legacy plants."**

Continual improvement is a subject that Euan and his safety teams are passionate about. What improvements have they made as a result of our safety performance over the year?

"As I said earlier, our industrial safety performance is an area that we're focused on improving. We have a plan in place to enhance our industrial safety performance focusing on improving standards, preventing accidents and reducing human errors.

"We have increased visibility of industrial safety with dashboards across our plants highlighting performance in this area; progress against gaps is also discussed at the management daily meeting.

"We're also looking to make improvements to the effectiveness of the environmental case process and increase visibility of Best Available Techniques (BAT) governance arrangements within project and programme areas.

"We're developing our management system to make it easier to use and to reduce the volume of documents, simplifying the process and aligning it to our changing business needs.

"The biggest improvement that we as a company can make to the continued safety of the site is to ensure that we continue to focus on looking after our site assets, accelerating the clean-up of our highest hazard facilities."

In order to retrieve waste from our legacy ponds and silos we have to do things that have never been done before – how do we balance risk and safety?

"With some of our ageing assets we can't employ a traditional, zero-based risk approach – we can't switch off legacy plants. Therefore, to get work done with the urgency needed, we face the challenge of doing different work in a different way.

"This will involve balancing the transient increase in risk against reducing the overall risk and hazard whilst maintaining control. Time at risk is a critical factor in how we plan and execute the things that we have to do. We have to develop the boundaries that define nuclear safety in this context, deliver work closer to these boundaries than we have in the past whilst providing governance that we are making the right decisions and not going too far."

You mentioned how highly regulated we are, what do you mean by that?

"We operate within a stringent and highly monitored environmental regulatory regime and are subject to exacting regulation and oversight from independent regulators including the Office for Nuclear Regulation and the Environment Agency.

"Our external and internal regulators provide oversight and action required when we don't meet the high standards that we set ourselves.

"We work with our regulators and key stakeholders to safely drive risk and hazard reduction to keep ourselves, our facilities and the environment safe.

"We measure our performance against industry best practice at a national and international level through our >>

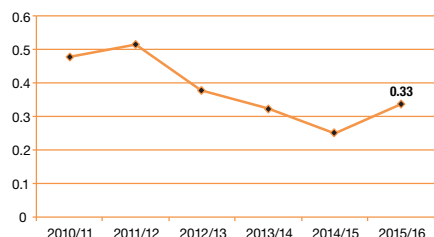


**£40,000 has been donated to ten charities as a result of our employee-led peer to peer observation programme 2015/16.**



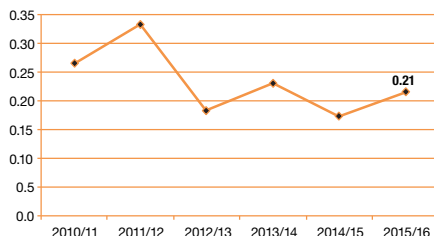
# Industrial Safety

**Total Recordable Incident Rate**



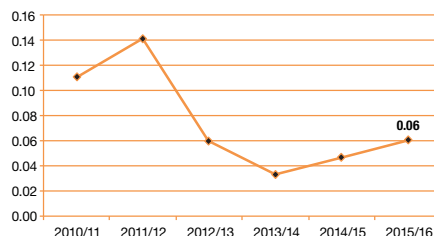
**Note:** This records the rate of all recordable injuries including medical treatments, lost time accidents, and RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations) reportable injuries.

**Lost Time Accident Rate**



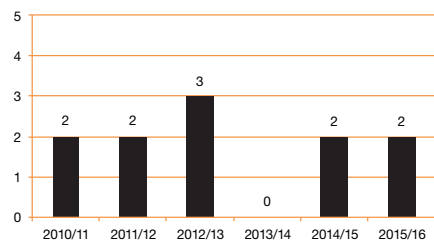
**Note:** This metric records accidents which result in individuals being away from work for more than one day.

**RIDDOR Injury Rate**

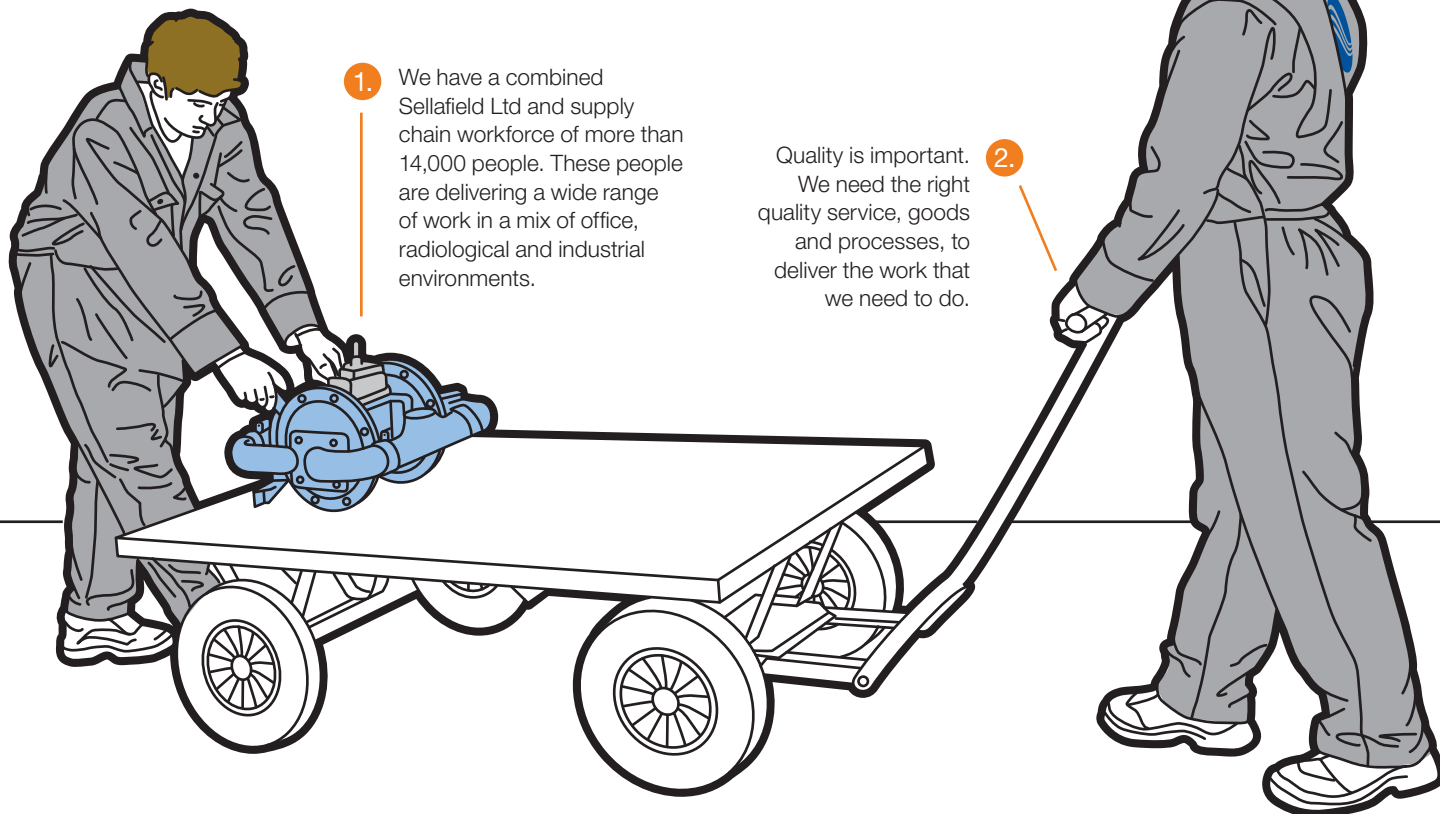


**Note:** This metric records the rate of RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations) injuries which result in employees being away from work from more than seven days, and Major Injuries.

**Dangerous Occurrences**



**Note:** This metric records the number of RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations) Dangerous Occurrences.



**1.** We have a combined Sellafield Ltd and supply chain workforce of more than 14,000 people. These people are delivering a wide range of work in a mix of office, radiological and industrial environments.

**2.** Quality is important. We need the right quality service, goods and processes, to deliver the work that we need to do.

## Annual Review of Safety (cont.)

membership of the World Association of Nuclear Operators, helping us strengthen and improve our arrangements.

“Our internal regulators provide an important role in helping us assess how we’re doing and where we need to centre our attention. They’re continually providing oversight on our performance and independent assessment of compliance with legal requirements under Site Licence and UK legislation.

“A key part of a strong safety culture is having a healthy reporting culture to identify and resolve potential problems, at their lowest level of consequence, before they impact nuclear safety. We have a corrective action programme where employees can raise a condition report when they find something unexpected, including any gaps in our systems, processes and procedures. This supports safe and reliable operations at Sellafield.

You mentioned the fact that once some of our retrievals work is under way, it can’t just be turned off – how do we prepare for the worst case?

We’ve been developing over a number of years our emergency preparedness to consider the worst case, taking into account the specific action that might be needed to manage our retrievals work as well as learning from wider events such as Fukushima and the flooding we have been unfortunate to have had in Cumbria over the last decade.

As a member of the site emergency duty team I’ve seen a significant difference in the amount of time and resources we’re investing in making us ‘match ready’. The

start of each of our emergency duty weeks is now a half-day session of briefing, training and exercising (as opposed to the half hour we used to diary). There are also new tools to help us understand the situation more quickly – these range from electronic boards that are interlinked between our command facilities to the use of GIS (the Geographic Information System). The on-plant response teams have also seen significant changes in the amount and quality of preparation that is being undertaken and the associated time we are investing.

It’s difficult to place a value on the people that are involved in our emergency preparation and response because we’d rather not call their skills into practice. I’m certainly proud to be a member of this team and have confidence that if we are called on we will be able to respond effectively.

So a follow on question about pride, looking back to last year, what is it you’ve been most proud of?

“Although I took up the post of EHS&Q Director in April this year, I was part of the senior management team over this time.

“It’s been a very busy year leading up to our transition to a new ownership model as Sellafield Ltd became a subsidiary of the Nuclear Decommissioning Authority on 1 April 2016.

“I am proud that our employees and contractors remained focused on safety throughout and that every single day I see people looking out for each other, challenging when things are unsafe, focused on continually improving safety.” ■

“I am proud of our employees and contractors for their focus on continually improving safety.”



Our annual particles in the environment report, and our annual discharge and environmental monitoring reports, are found at: <http://sustainability.sellafieldsites.com/environment/environment-page/ehsq-resources>

Information on our groundwater report/programme can be found here: <http://www.sellafieldsites.com/land/pages/document-library.html>

Incidents reports can be viewed on our website: [www.sellafieldsites.com/press-office/incident-reports/](http://www.sellafieldsites.com/press-office/incident-reports/)

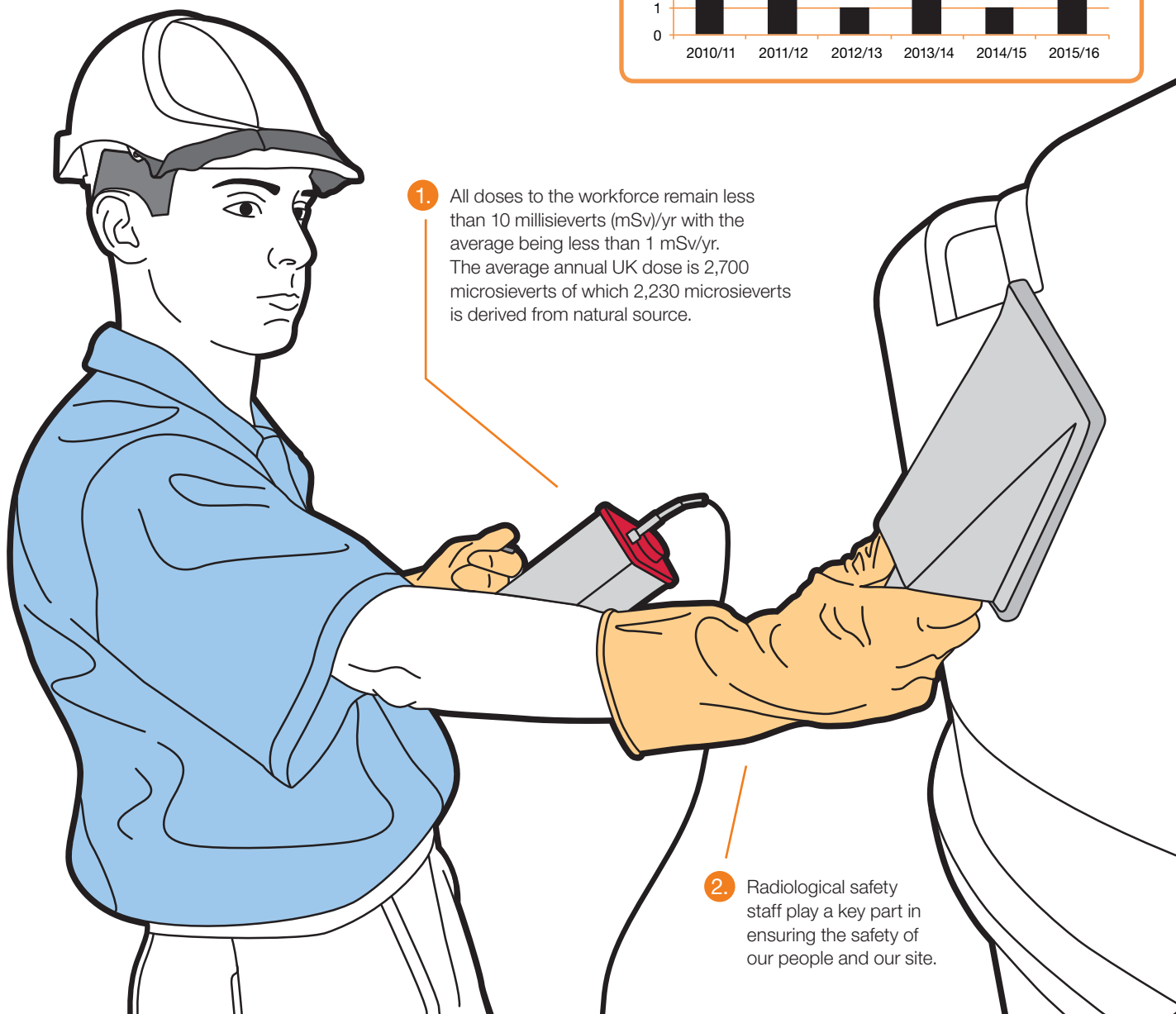
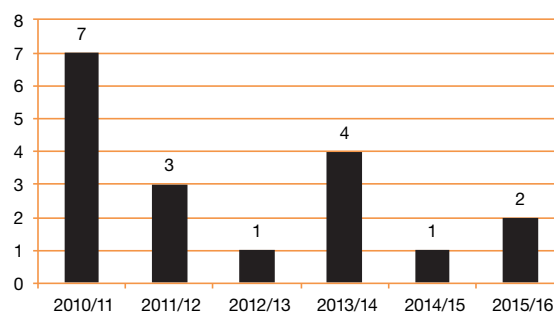
# Radiological Safety

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
<b>No. Reportable Contamination Events</b>	22	28	29	13	23	14

**Note:** This metric provides the total number of personal contamination events. None of these events resulted in any significant radiation exposure. We continue to work with radiological protection working groups to further prevent contamination events.

**Note:** This metric represents the number of radiological incident reports categorised as significant under our sentencing scheme. There were two recorded this year. The first related to a radioactive source that was found not to be stored in its rightful container. The source was immediately returned to its safe storage; at no point was there any significant exposure to anyone. The second occurred when we carried out a new process whereby a radioactive source is temporarily introduced in to a sealed cell in order to test the functionality of gamma monitors inside the cell. During the transfer of the source in to the cell one of our employees was briefly exposed to an elevated level of radioactivity. The employee is still well within our annual dose limits, which are lower than the permitted annual dose rate.

**No. Radiological SIRs**



1. All doses to the workforce remain less than 10 millisieverts (mSv)/yr with the average being less than 1 mSv/yr. The average annual UK dose is 2,700 microsieverts of which 2,230 microsieverts is derived from natural source.

2. Radiological safety staff play a key part in ensuring the safety of our people and our site.

# SELLAFIELD SME

## *floors the competition*

For some businesses, working on the Sellafield site represents the pinnacle of their success. For Whitehaven based flooring experts Tony Roberts Carpets, it was a stepping stone to a very royal appointment.

In the six years that they have been working on the Sellafield site as a sub-contractor to Mitie, the Tony Roberts Carpets team have laid 7,500 square metres of carpet on the site, won national contracts and are raising the bar for small to medium sized enterprises (SMEs) with their commitment to apprentice training.

Kate Roberts-Bott, director at Tony Roberts Carpets, believes that their commitment to quality and service, their willingness to work as a sub-contractor, and training young local people have all been pivotal to their success.

“We started working on the Sellafield site in 2010 as a sub-contractor to Mitie. By 2013 the amount of work we were doing for Mitie had increased substantially and we realised there was a need for us to increase our capacity. We wanted to fill the gap by recruiting local young people and giving them an apprenticeship, and Glenn Miller from Mitie helped us every step of the way.

“With Glenn’s help we initially recruited three lads and once they completed their training we recruited three more. It is quite a financial commitment for an SME like us and a commitment for the guys involved as they had to travel to Devon every 6-8 weeks to complete a week’s training.”

When they needed to increase their office staff capability they once again turned to their passion of training young people. Kate explains: “As you might expect, working with businesses as big as Sellafield Ltd and Mitie brings a greater level of administration than we experience with our other clients. In January 2014, Shannon Blacklock joined our team

as a business administration apprentice from Lakes College. She scooped the Apprentice of the Year accolade in 2015 and we are already wondering how we ever managed without her. We will support Shannon in her level 3 qualification so that she can take on additional responsibilities and will recruit another level 2 apprentice to fulfil the duties that she will no longer have time for.”

Shannon said: “My apprenticeship so far has been a fantastic journey – winning the award was the ‘icing on the cake’ – showcasing that the hard work I had put in over the last 12 months with the company, had really paid off. Working in the local area, and gaining a recognised qualification is the perfect combination for me.”

As a sub-contractor to Mitie, Tony Roberts Carpets had access to other commercial opportunities, which led to a royal appointment for the West Cumbrian firm.

Kate explains: “In 2013 we were thrilled to win the contract to supply entrance matting to the Royal Opera House. The finish achieved on the mats, in particular the large image of the Royal Crest, was spectacular and the client was delighted with the end result.”



Our head of socio-economics, Helen Fisher, believes that others should follow in the footsteps of Tony Roberts Carpets. She said: “What an amazing success story. They are playing their part in creating sustainable growth in the local area through bringing business into the area and developing local people. They are delivering a quality product to us at Sellafield and using this to grow their business into other markets. I would encourage other businesses to learn from them. ■



**SME PROFILE**

**TONY ROBERTS CARPETS**

Discipline:  
Flooring

Location:  
Whitehaven

Contractor or  
sub-contractor:  
Sub-contractor to Mitie

**TONY ROBERTS  
CARPETS ADVICE TO  
OTHER SMES**

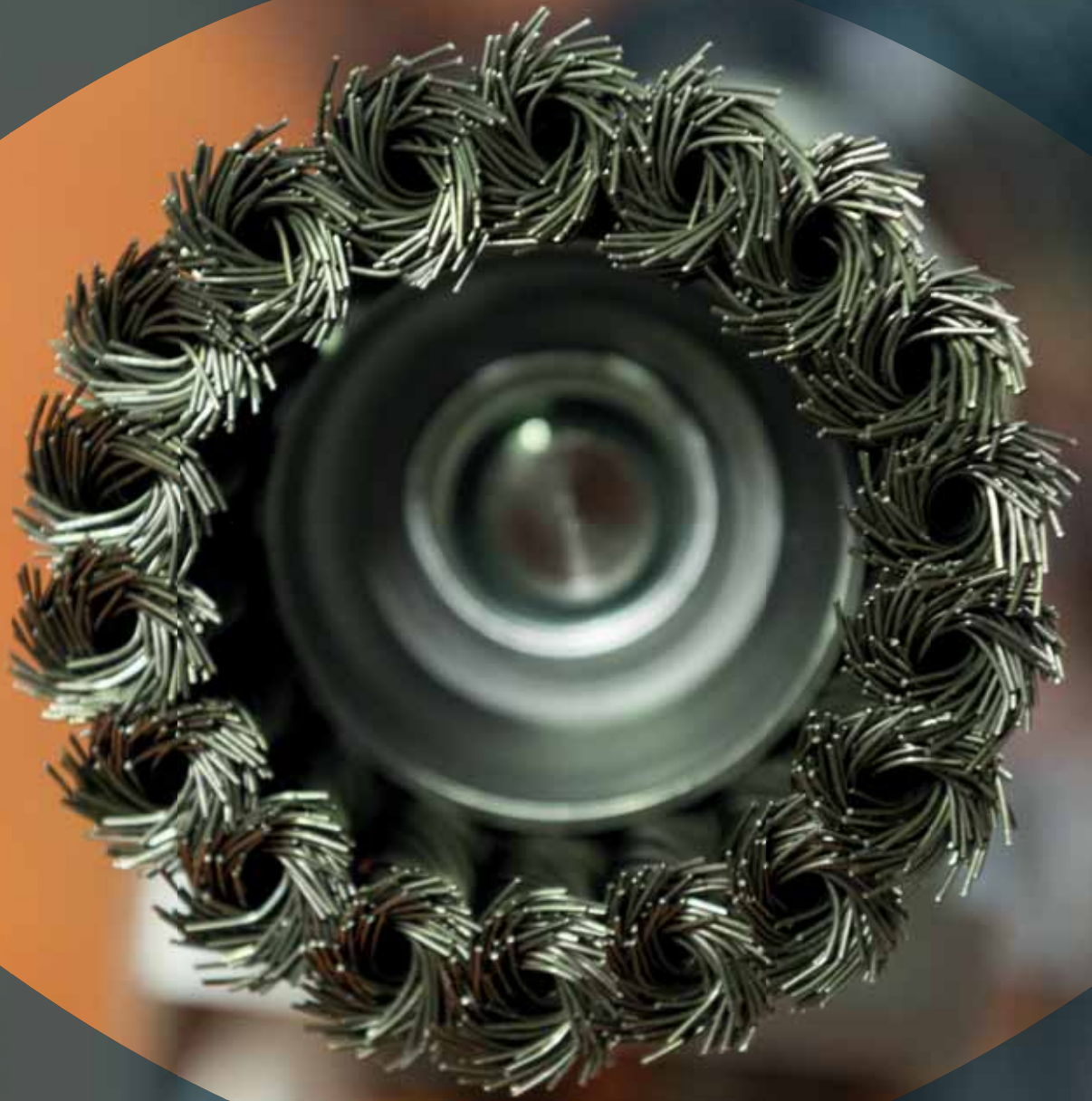
Use the Sellafield Ltd website to make contact with partner organisations and express an interest in work where you know that you can add value.

Be patient because there are sub-contractor questionnaires to complete and health and safety procedures to comply with, that you might not be familiar with as an SME.

If required, ask for help with health and safety or staff training issues. The sub-contractor team, certainly at Mitie, are always keen to assist in ensuring compliance. They want the relationship to work as much as you do.

Above all else, be patient, it is worth it!

# KEEPING AN EYE ON ROV DEVELOPMENT



**While the country was celebrating the first UK Robotics Week, we were trialling some potential new additions to our army of remotely operated vehicles.**

Above, the rotating steel brush attachment could be used to clean skips and walls in our legacy ponds. Right: The remote operated vehicle trialled at Sellafield.



# WILLOW

## WEAVING



**Faced with the challenge of restoring the bank of a beck close to the Sellafield site, we looked to the past for a truly natural and environmentally friendly solution.**



**D**uring work to install some new security fencing to the south of the Sellafield site, we noticed that the bank of the New Mill beck was starting to erode.

Our first thought was to reinforce the area with rock armour, but this was soon replaced with a more natural solution.

In consultation with specialists from the Environment Agency we agreed a programme of Willow Spiling to prevent further erosion and provide a natural wildlife habitat.

A team from the Fencing Partnership wove live willow rods between live willow uprights and filled the area behind the natural fence with soil for the willow to root into. ■



*Willow spiling was mentioned in Rudyard Kipling's poem The Land:  
"They spiled along the water-course with trunks of willow-trees, And planks of  
elms behind 'em and immortal oaken knees..."*

INTERVIEW



BY STEVE BARNES



An interview with

# Adrienne Kelbie

The Office for Nuclear Regulation's new Chief Executive, Adrienne Kelbie, visited Sellafield in March 2016 to see first-hand the challenges of the site and how a new collaborative approach between key organisations, including Sellafield Ltd and ONR, is delivering tangible progress on the site.



# W

hen you think about the relationship between industry and its regulators, you would be forgiven for picturing a formal, distant and legislation driven arrangement. Our regulators rightly have the power to stop our operations and to take enforcement action should we fail to meet our legal requirements.

One such regulator is the Office for Nuclear Regulation (ONR). Responsible to Government for ensuring that nuclear sites in the United Kingdom are safe and secure.

Adrienne Kelbie, the ONR's Chief Executive, was just seven weeks into her new role when she visited the Sellafield site to see our challenges first hand. We sat down with her after her visit to talk about how the ONR is balancing its role in holding us to account at Sellafield while taking a more collaborative approach to key activities on the site.

**“Sellafield is clearly a vocation more than a job for many of the people working on the site.”**

**Steve Barnes:** Welcome to Sellafield.

**Adrienne Kelbie:** Thank you. I really appreciated the opportunity to come in person. Sellafield is a hugely complex operation with many more physical constraints than can be explained on paper. Seeing the site first hand really brought the briefings I have had about Sellafield to life and put some of your challenges into context.

**SB: Was the site what you expected?**

**AK:** This was my first visit to Sellafield and I was struck by the dedication, enthusiasm and skill of the team – and the professionalism shown in facing the challenges posed by the legacy facilities and in managing safety and security on such a complex site. Sellafield is clearly a vocation more than a job for many. I was particularly impressed by the fresh thinking being applied to some of your legacy issues – when you give innovation a chance, the results are truly impressive.

**SB: How do you balance your role as regulator with being part of the G6 arrangement involving Sellafield Ltd and other key organisations?**

**AK:** I don't see our roles of regulating Sellafield and collaborating with you through the G6\* arrangement as a balance or conflict – I see our ability to do both as good practice. We have a public duty to regulate the nuclear industry in the interests of public safety. Being part of G6 means that we can advise all the way through the problem solving process at Sellafield, and help to clean-up the site quicker.

Collaboration does not mean compromise. We absolutely retain our independence and organisational accountability, and we continue to publish our regulatory decisions which demonstrate this.

**SB: Do you see the G6 process helping to accelerate work?**

**AK:** G6 provides collective leadership and accountability to address a stubborn problem. Simply put, people work together to deal with a specific issue, and recognised the need for and benefit of shared ownership of solutions by everyone involved at Sellafield.

The progress made using this collaborative approach already includes the completion of bulk fuel exports from the Pile Fuel Storage Pond, the start of sludge pumping from the First Generation Magnox Storage Pond, and the adoption of a revised waste management strategy for exports from the Magnox Swarf Storage Silos. The latter achievement especially will accelerate risk reduction at a much lower cost to the UK taxpayer.

**SB: How does the ONR interact with Sellafield Ltd and the site?**

**AK:** Our work on Sellafield is divided into two clearly defined teams. The first focuses on the sort of work that people would expect from

a regulator, like inspections, ensuring the site continues to meet its legal requirements, and taking enforcement action when necessary. The other considers how ONR can help to accelerate risk and hazard reduction in ways that avoid resorting to over-engineered or complex processes. That team engages with Sellafield's priority programmes to encourage and challenge Sellafield Ltd to think differently about the way it works. When it comes to cleaning up Sellafield we share the same goals. We want to see you safely deliver your projects sooner and more efficiently.

**SB: You mentioned our priorities, what are the ONR's priorities at Sellafield?**

**AK:** Our main priority regarding Sellafield remains the same – the decommissioning of your legacy ponds and silos. This area will continue to receive considerable regulatory attention as materials are retrieved in the months and years ahead. Other high priorities are the reprocessing of Magnox fuel, your plutonium facilities and analytical services. In addition, we are keen to see the continued development of your security arrangements. This includes not only physical security provisions such as fences, cameras and guards, but also your increased resilience against the cyber threat.

**SB: What do you think we could do better at Sellafield?**

**AK:** When you work on something for years and years, it is essential that you build in fresh perspectives and considerations, to help you challenge whether 'known' assumptions are still valid. A good example I witnessed during my visit today is the use of technology to clear your legacy ponds. The use of remote technology has not only delivered work quicker with cheaper outcomes but also reduced risk to

workers. There are perhaps more opportunities to challenge the norms, especially as the site mission moves closer towards an entirely decommissioning focus.

**SB: What attracted you to your new role in ONR?**

**AK:** I am happiest when I am part of an organisation that is really making a difference to the public, is well perceived by stakeholders, and is led with ambition and professionalism. So ONR's mission and professionalism were irresistible.

I am thoroughly enjoying the role. In just seven weeks I have been overwhelmed by the professional pride, commitment and enthusiasm of our people within the ONR to deliver regulation that really makes a difference.

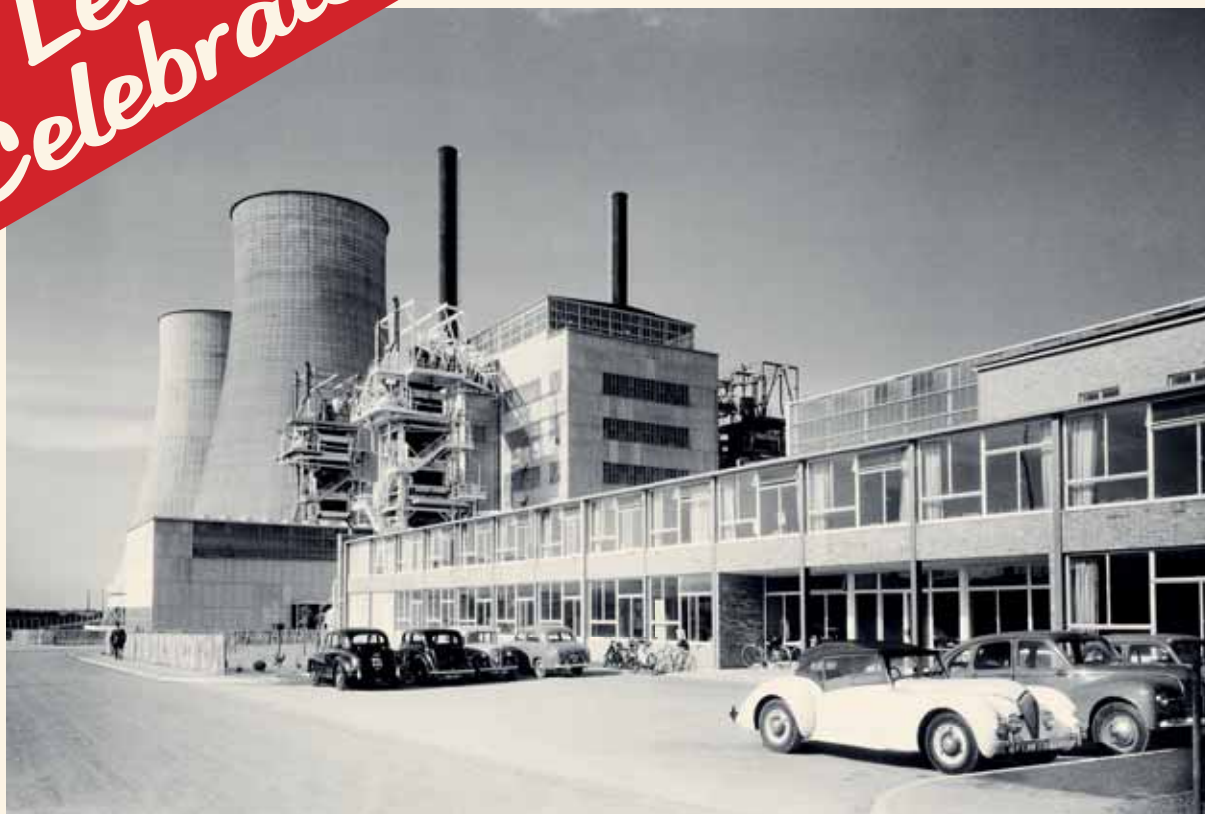
**SB: I hope that we can welcome you back to Sellafield again soon.**

**AK:** The work at Sellafield is high on our agenda in ONR, so I look forward to returning many times. ■

**“When it comes to cleaning up Sellafield we share the same goals. We want to see you safely deliver your projects sooner and more efficiently.”**

\*G6 is a way of working agreed between the six key organisations with influence over delivery of Sellafield's hazard reduction mission: the Department of Energy and Climate Change, UK Government Investments, Nuclear Decommissioning Authority, Office for Nuclear Regulation, Environment Agency, and Sellafield Ltd

Let's Celebrate!



# CALDER HALL

*Calder Hall and Her Majesty Queen Elizabeth II are celebrating big birthdays in 2016 – and they have more in common than you might think...*

---

**W**e often talk about the fact that Her Majesty Queen Elizabeth II opened Calder Hall in 1956, but did you know that The Queen and the world's first commercial nuclear power station have something else in common? They both have two birthdays. While the station was officially opened on 17 October 1956 it achieved criticality almost three months earlier, on 29 July. The station was then connected to the grid on 27 August.

This is just one of the fun facts uncovered during our trawl through Calder Hall's archive of facts, myths, photographs, videos and memories. The station will be the star of our October issue as we celebrate its 60th birthday. We will explore the impact of the station on the local area, its pioneering role in the production of electricity in the UK, and the decommissioning work under way today.

---

WE WOULD LOVE TO HEAR YOUR CALDER HALL MEMORIES AND TO SEE ANY PHOTOGRAPHS THAT YOU HAVE – THEY MIGHT EVEN APPEAR IN THE OCTOBER ISSUE!

[EMAIL\\_EDITOR@SELLAFIELDMAGAZINE.COM](mailto:EMAIL_EDITOR@SELLAFIELDMAGAZINE.COM)

# SELLAFIELD

## WORK IN

### PROGRESS

Our work at Sellafield will take us more than a century to complete, so how do we and the Nuclear Decommissioning Authority know on any given day that we are on schedule and making the right progress?

#### What does good look like at Sellafield?



**O**n 1 April 2016, the ownership of Sellafield Ltd transferred to the Nuclear Decommissioning Authority (NDA). This change removes the need for a complicated contract between our two organisations and shifts our efforts from contract management to front line activities.

Like all good relationships, we and the NDA need to have clear and agreed expectations. What will we do, and when? How much will the work cost, what resources do we need and what support can the NDA give us?

Our shared understanding of when work will be completed at Sellafield is set out in three plans which look at delivery in the short, medium and very long term.

The operating plan sets out our short term priorities at Sellafield which, in turn, are linked to the NDA's priorities. It is based on the positive spending review settlement and allows a four year view of the site's funding to be allocated within the business. It

includes a snapshot of the key milestones up to three years out and is refreshed on an annual basis.

The corporate plan looks across a 20 year horizon and communicates the short and medium term objectives and enabling activities at Sellafield.

Finally, the performance plan sets out what will be done at Sellafield, when and at what predicted cost over the site's entire lifetime. That means that the plan looks ahead for more than a century.

Every long journey starts with a single step, and so we have a fourth element to our agreed plans, known as our success criteria. These very specific targets set out exactly what we will deliver in our key areas in the current financial year. It is against these targets that the NDA will judge our performance.

We have included our success criteria for 2016/17 over the page and will publish our performance in each issue of the Sellafield Magazine this year. The success criteria will also form a basis for incentives and bonus arrangements.

# WORK IN PROGRESS – SUCCESS CRITERIA

SUCCESS CRITERIA NO.	TARGET	DESCRIPTION	SUCCESS CRITERIA PERFORMANCE RANGE		
			Acceptable	Good	Excellent
<b>DECOMMISSIONING GENERAL</b>					
1	3m <sup>3</sup> Box production plan approved	Procurement and production plan approved to demonstrate a sufficient number of 3m <sup>3</sup> boxes can be procured to support retrieval operations in the PFCS and MSSS programmes	01/10/2016	15/09/2016	15/08/2016
<b>PILE FUEL STORAGE POND (PFSP)</b>					
2	Export of drums of sludge – through WEP to store	Completion of active commissioning of PFSP sludge removal system, with a minimum of 10 drums of sludge exported to the Waste Encapsulation Plant, and a minimum of four drums then processed from WEP through to an Encapsulated Product Store	10 exported 4 to store	30 exported 24 to store	40 exported 32 to store
<b>FIRST GENERATION MAGNOX STORAGE POND (FGMSP)</b>					
3	Fuel exported to FHP	Volume of fuel exported to Fuel Handling Plant	30 te	45 te	51 te
3	Strategic decision taken on use of self-shielded boxes	Strategic decision taken on whether self-shielded boxes can be used to store washed self-draining magnox fuel	26/09/2016	26/08/2016	31/07/2016
4	D-Bay – complete D3 & E3 isolations and install gridline 20 platform and shield walls	Isolate redundant sludge pipework in D-Bay and install maintenance platform and shield walls to prepare for sludge retrievals in 2019	30/04/2017	31/03/2017	28/02/2017
<b>MAGNOX SWARF STORAGE SILO (MSSS)</b>					
5	SEP 2 – Installation complete	Installation complete for first Silo Encapsulation Plant retrieval machine (SEP2) so it is ready for inactive commissioning	01/03/2017	01/10/2016	earlier than October 2016
6	BEP – Area 600 (Effluents) detail design complete	Complete design of new effluent handling and sampling section (Area 600) of Box Encapsulation Plant	15/12/2016	11/11/2016	15/10/2016
6	BEP – delivery of Low Active Effluent Vessel (system 610)	New Low Active Effluent Vessel (System 610) delivered to Box Encapsulation Plant	15/10/2016	30/09/2016	15/09/2016
7	Alternative ILW Approach – Design complete inc Hazop II studies	Complete design on new Alternative Intermediate Level Waste (ILW) approach retrievals system (bolting robot; lid handler; skip grapple; park stands and bogie), including a 'Hazard and Operability' study, with technical specifications available to support procurement	28/02/2017	31/01/2017	23/12/2016
<b>PILE FUEL CLADDING SILO (PFCS)</b>					
8	Waste Retrievals Containment Areas – Prelim design complete	Preliminary design complete for new, simplified waste retrieval containment area situated at the top of the new retrievals superstructure	19/11/2016	19/10/2016	22/07/2016
8	Silo door installed on compartment 5	First silo door (compartment 5) installed on side of silo under the 'lead and learn' early retrievals approach, with works test complete	11/12/2016	11/11/2016	11/10/2016
<b>FIRST GENERATION REPROCESSING PLANT</b>					
9	Demolition of stack to 39M level	Demolition of the top of the stack at the First Generation Reprocessing Plant (Magnox)	Nov-16	Oct-16	Sep-16
9	SEP Area Ventilation – Project complete	The project to replace the ventilation system for the separation area is successfully completed	31/07/2016	26/06/2016	30/05/2016
<b>MAGNOX REPROCESSING</b>					
10	Reprocess Magnox spent fuel and DFR material	Reprocess Spent Magnox fuel and Dounreay Fast Reactor material in our Magnox reprocessing plant separating out the reusable plutonium and uranium from the Highly Active Waste	≥ 420 te	≥457 te	≥500te
<b>THORP REPROCESSING</b>					
11	Thorp Reprocessing	Reprocess spent nuclear fuel in Thorp separating out the reusable uranium and plutonium from the highly active waste	≥350 te	≥395 te	≥405 te
<b>SAFE STORAGE OF PU</b>					
12	Transfer of SPRS cans	Transfer of cans containing nuclear material which arise as a result of reprocessing, for safe and secure storage in the Sellafield Product and Residual Store (SPRS)	488	512	536
13	DESF – first fuel shipment received with all cans placed in store	The first delivery of nuclear material is received safely and stored in the Dounreay Exotics Storage Facility	31/10/2016	30/09/2016	31/08/2016
14	Safe Storage of Pu SRP – Concept design complete	The concept design of the Sellafield Retreatment Plant is to be complete by 23 August 2016	23/08/2016	09/08/2016	27/07/2016
<b>INFRASTRUCTURE</b>					
15	Fellside Boiler Park – Completion of stage 3 commissioning	Completion of stage three commissioning, which involves connecting the boilers to the site steam system and testing them online	15/04/2017	15/03/2017	28/02/2017
15	Analytical Services – Approval of IPDG business case	Approval of the Analytical Services Project in support of future Sellafield operations	30/10/2016	31/08/2016	31/07/2016
<b>SECURITY AND RESILIENCE</b>					
16	Island Sites – Fully operational	Following our defence-in-depth approach to security, the operational requirements for access to these areas will require all personnel to be searched (as opposed to high security areas where a random search policy will be in place). This searching is in addition to deterrence and unauthorised detection systems which will be completed as part of this work	10/03/2017	31/01/2017	22/12/2016
16	Cyber – Protective monitoring capability in place	Ongoing enhancements in our capability will be delivered through a series of hardware and software projects and workforce education. All personnel have a part to play in spotting and reporting potential cyber events	31/03/2017	31/12/2016	31/10/2016

SUCCESS CRITERIA NO.	TARGET	DESCRIPTION	SUCCESS CRITERIA PERFORMANCE RANGE		
			Acceptable	Good	Excellent
<b>SECURITY AND RESILIENCE (CONTINUED)</b>					
16	MSCF – Piling construction complete	The Main Site Command Facility will become the physical focal point for unified command and control of our security and resilience response capability. The completion of piling for the new facility, located at North Group, will be an physical indicator of progress in this area	31/12/2016	30/11/2016	30/09/2016
16	Resilience Enhancements – Physical risk reduction achieved	A series of improvements are planned which will provide us with an enhanced capability in responding to an emergency. Examples include replace existing paper based building emergency muster information with real time electronic data for key buildings and enhanced voice communication systems independent of existing systems for key emergency responders	80 points	90 points	100 points
<b>HIGHLY ACTIVE LIQUOR</b>					
17	Vitrification of HAL	To reduce our stock of highly active liquor – the highest hazard waste we hold – through vitrification, into glass.	≥853 teU	≥1035teU	≥1130teU
18	Evap D Water Throughput trials – complete	Completion of these trials moves the Evaporator D project one step closer to completion. Evaporator D delivers evaporative capacity needed to reduce our highly active liquor stock levels and complete the clean-out of our reprocessing and high level waste plants	27/01/2017	25/11/2016	
<b>SELLAFIELD CHANGE PROGRAMME</b>					
19	Approval of Target Operating Model	Sellafield Ltd Board approval of the blueprint and Target Operating Model that will set out the proposed future state for the business taking into account the change in mission and external drivers. This will allow the development of a programme of changes over the next few years	31/10/2016	31/10/2016	31/08/2016
19	Corporate overhead reduction	Reduction in the cost of delivering functional support to the business	3%	4%	5%
19	Cost reduction	A reduction in the overall cost to deliver the work in the baseline plan for this year through the delivery of efficiency	2.5%	3%	3.5%
19	Introduction of revised terms and conditions for new starters	The introduction of a set of new terms and conditions for people joining the company after the defined dates. This change is being made to make the workforce more flexible, by having people available for work more often	30/09/2016	31/08/2016	31/07/2016
<b>SAFETY</b>					
20	Nuclear SIRs	Nuclear SIRs: nuclear related Sellafield Incident Reports (SIRs) are identified under Sellafield Ltd's classification and sentencing scheme. The Sellafield Site Sentencing Authority, with information from local plant management, makes an independent decision on the company classification of the condition report and determines if an SIR is necessary <b>Examples of a nuclear SIR could be:</b> <ul style="list-style-type: none"> <li>Any uncontrolled criticality excursion</li> <li>Any explosion or outbreak of fire on the licensed site, affecting or likely to affect the safe working or safe condition of a nuclear installation</li> <li>Declaration of a site incident or condition, where personnel or resources are mobilised in response to an unexpected occurrence that creates a hazard to the safe operation of the facility, and/or to the health and safety of personnel on or off the site</li> <li>Examination, inspection, maintenance, test or operation of any part of the plant revealing that the safe operation or condition of the plant may be significantly affected</li> <li>Any operation or condition of plant that is prohibited by operational limits and conditions or operating rules</li> </ul>	≤5		
20	Personal Contamination Events	Personal contamination events: Any personal contamination at a level greater than action level for leaving a controlled area, that requires decontamination at site surgery	≤18		
20	Total Recordable Injury Rate	Total Recordable Injury Rate (TRIR) records the rate of all recordable injuries including medical treatment and lost time accidents per 200,000 hours worked	≤0.29		
20	Environmental non-compliances	Environmental non-compliance: An environmental non-compliance is where we don't meet the conditions or limits of our environmental permits. Examples of non-compliances could include failure to maintain equipment, failure to apply best available techniques, or causing pollution or harm to the environment	≤18		
<b>COMMERCIAL EXPENDITURE</b>					
21	Expenditure with SMEs	The percentage of our supply chain spend which is routed to Small and Medium Sized Enterprises (SMEs). Spending more public money with SMEs is a government objective, with the aim of growing the UK economy	≥22%	23.5% to 25%	>25%
<b>INFORMATION SERVICES</b>					
22	Approval of the sanction paper for the Atos extension options	Sellafield Ltd is part of an alliance with other civil nuclear companies receiving IT services provided by Atos, an outsourced partner. The Atos contract moves into its final contracted year in 2016 and Sellafield Ltd has been tasked by the NDA to review the various options for sustained service provision for it and the alliance members (which include LLWR, Magnox and NNL), and for putting in place any contract extensions required	30/09/2016	23/09/2016	16/09/2016
22	Approval of the developed business case – alternative sourcing options	Sellafield Ltd is reviewing and developing sourcing options for ICT services required to help Sellafield Ltd meet its business challenges over the next decade of significant transformation. Plans for the securing of these services, that lead up to and include the delivery of a Developed Business Case for the new arrangements, need to be completed by end of June 2016	TBC	TBC	TBC
<b>GENERAL</b>					
23	Achievement of SL Operating Plan milestones	The number of operating plan milestones which have been achieved	≥70%	≥80%	≥90%



# In context

## New terms and conditions for new starters

**Our workforce is undoubtedly our greatest asset – but it is also one of our most expensive.**

With a fixed cost of over £700million per annum, over a third of the £2billion of funding we receive annually from the government is spent directly on employing the 11,000 plus people who work directly for the company.

So when the company is tasked with being more efficient – making taxpayers' money go further by getting more work done for the same cost – it is right that the cost of the workforce comes under the same level of scrutiny as all other expenditure.

“The good news is that because of the length of time the business will be around for, we can make changes now which are relatively small but which have a significant cumulative effect, and don't negatively impact our existing workforce,” explains Human Resources Director, Colin Reed.

We have introduced a new set of terms and conditions, which are applicable for new starters with the business from July 2016.

These focus on making the workforce of the future more productive and more flexible, while reducing the overall cost.

Colin explained: “Our old terms and conditions are what they are – our workforce is contracted to work for 35 hours a week (when industry standard is 40) and we pay, on average, around 20 percent above the equivalent market rate.

“In the current economic climate that is unsustainable – but those terms and conditions have been long established, and as an employer we cannot just change them without negotiation.

“What we can do is make changes now so that we do not perpetuate the issue. We are going to be around long enough to reap huge benefits by making changes now, which only affect those people joining the company after a given date.”

The new terms and conditions see wages align more accurately to market rates, with new staff also expected to work more hours each week. There have also been reductions in the allowances for sickness and special leave. Everyone will still start and finish at the same time, but because they are contracted to work more hours per week, new starters will not ‘accrue’ additional days off, as is the case for existing employees.

Even with the changes, the packages on offer for new starters are attractive. A newly qualified apprentice, for example, would start on £24,000. Benchmarking shows that this is still significantly better than the national average for a newly qualified apprentice, which is around £18,500, and higher than local comparable companies.

Introducing new terms and conditions for



new starters saves the business over £4million in the first year – but this saving increases year on year, and with a work plan that lasts for the next century, the savings will, eventually, run into many hundreds of millions of pounds.

Colin added: “I believe we have a duty of care, as custodians of the major employer in Cumbria, and a major employer in fact for the North West, to create a sustainable business which can continue to employ high numbers of people for many years to come. In order to do that we have to continue to demonstrate to our stakeholders, particularly those in Government, that we can do the work we have safely and cost-effectively.

“We have a finite pot of money to spend each year, and making changes now which mean we have to spend less of that on employment in the future puts us in a much stronger position.”

Even after the changes, our company is still an attractive place to work – with better than average terms, conditions and salaries.

“We’ve done extensive benchmarking, including with other companies in the nuclear industry and with people in our supply chain, so we know with a good degree of certainty that we remain a very attractive company to work for.

“Our employees of the future will come here and build their careers, doing challenging and exciting work, and being fairly rewarded for it. They just won’t be quite as well rewarded as some who have gone before.”

The company is confident that it will still be able to attract and retain employees with the skills and experience it needs to complete its mission.

Colin added: “What we’re offering is still a very good, competitive set of terms and conditions – and new employees will still have a fantastic opportunity to enjoy a great career, with exciting, challenging work. Not many companies have a work plan that stretches out for decades to come.”

\*Please note at the time of publication the company remains in constructive dialogue with national, regional and local officials from GMB, Unite and Prospect – the three unions representing our workforce. This dialogue centres on the potential to link the annual pay review, with the company’s ability to recruit existing apprentices and trainees on the old terms and conditions.” ■

“I believe we have a duty of care, as custodians of the major employer in Cumbria, and a major employer in fact for the North West, to create a sustainable business which can continue to employ high numbers of people for many years to come.”

## So what's different?

- Revised base salary levels – which better reflect benchmarked, market rates
- Increased working time, achieved by the removal of accrued days (start and finish times stay the same)
- Revised sick pay entitlement
- No increase in annual leave because of length of service – but employees on new terms and conditions can ‘buy’ up to three additional days.

# ACCESS ALL

## for new NIA chief executive

Former shadow energy minister, **Tom Greatrex**, brings a natural fascination in all things nuclear to his new role as **Chief Executive of the Nuclear Industry Association**. He spent some time with us ahead of a visit to the Sellafield site to tell us about his passion for the industry and his hopes for the global export of UK decommissioning capability and technology.

### **I had forgotten how complex Sellafield is.**

I visited Sellafield a couple of years ago and when I watched the BBC documentary 'Inside Sellafield' I was reminded of how complex the situation is on the site. I also remember that work on the site is being delivered by incredibly committed people who are very skilled and knowledgeable. They were making some significant progress towards the ultimate clean-up goal and I can't wait to see how far things have moved on.

### **The best way to understand what is going on is to see it first-hand and to talk to the people who are doing the work.**

I know that very few people get to visit Sellafield, but being able to visit as an MP was invaluable and I am delighted to have been invited back today. As a politician it became obvious to me that it doesn't matter how much you read, how many presentations you watch or how many people come to see you, the best way to get a complete picture and true appreciation of a subject is to see it for yourself. I am looking forward to talking to the people who are delivering at Sellafield on a day-to-day basis.

### **I am looking forward to seeing innovation in practice on the site.**

The last time I visited Sellafield I remember being shown a robotic arm that the team was about to start using in the clean-up of one of the older buildings on site. They

were obviously quite excited about the potential of being able to use this technology to access parts of buildings that people couldn't physically access because of radiation levels. I will find out

already had here today I can see that your approach to socio-economics has changed and it has become much more of a focus area. Looking at the socio-economic outcomes that can

Work at Sellafield is driven by the need to clean-up the site, but it is also putting the area and the supply chain right at the forefront of international nuclear decommissioning capability.

on the second part of my visit tomorrow how well the technology has been implemented and the impact that it is having on the schedule for decommissioning the facility.

### **The work being done at Sellafield can change the international decommissioning market.**

Work at Sellafield is driven by the need to clean-up the site, but it is also putting the area and the supply chain right at the forefront of international nuclear decommissioning capability. These companies have the potential to contribute to the West Cumbrian economy through their work on site which is giving them an unparalleled level of expertise. That expertise is exportable giving them the opportunity to contribute to the broader UK economy while helping to deliver environmental remediation across the globe. It is just endlessly fascinating.

### **Sellafield Ltd's approach to socio-economics has fundamentally changed.**

From the meetings I have

be achieved from the Sellafield mission as a whole, and the role that all organisations can play in achieving that is fascinating. In my role as chair of the NIA I can promote that and take the approach to people working on other nuclear sites and projects.

### **The NIA represents all of the nuclear companies that you would expect – and a few that you wouldn't.**

Just about every aspect of the nuclear industry is represented by the NIA. Our 260 members work across the industry from those leading decommissioning sites to the big companies involved in new build and the supply chains of both disciplines. We also work with a whole host of specialist technical people who are engaged in different aspects of the industry from legal and regulatory to financial advisory and everything in between, like manufacturing and equipment. ■



# AREAS



## Tom's favourite things

**FAVOURITE BAND:**  
BELLE AND SEBASTIAN

**FAVOURITE FOOD:**  
SOUTH INDIAN FOOD SUCH  
AS MASALA DOSA

**FAVOURITE PAST TIME:**  
WATCHING A FILM

**FAVOURITE FILM:**  
I RECENTLY ENJOYED  
SPOTLIGHT BUT MY  
ALL-TIME FAVOURITE IS  
MILLERS CROSSING

**FAVOURITE TV SHOW:**  
DEUTSCHLAND 83 ON  
CHANNEL 4

**Tom Pritt,  
Sector  
Engineering  
Manager,  
Jacobs**



# Jacobs

## DEVELOPING A CENTRE OF NUCLEAR EXPERTISE IN CUMBRIA

As one of the largest technical professional and construction services companies in Britain today, the UK is a major hub for our international business. We are developing a global centre of nuclear expertise in Cumbria which allows us to address local nuclear challenges, build local skills, and ultimately leverage this knowledge and expertise all over the world. Actively participating in the West Cumbrian CoNE initiative, Jacobs is focused on building jobs and the important skills base to support local, sustainable business growth and deliver a range of socio-economic opportunities for local people and the local supply chain that we work with.

### PROVISION OF A WIDE RANGE OF JOBS:

Jacobs is a major employer of highly skilled professionals. As one of the major suppliers in Cumbria, we employ over 600 people across the county; some ninety per cent live locally.

### TRAINING YOUNG PEOPLE:

We have very successful graduate, apprenticeship and technician training programmes. Many of our 37 apprentices, technicians and graduates training in Cumbria support our programme of work at Sellafield.

We are working with Sellafield Ltd on the Trailblazer and degree apprenticeships in nuclear. We established and chair an industry steering group to support the development of the new construction apprenticeship, part of the employer ownership of skills pilot.

As a member of the Engineering Construction Industry Training Board

(ECITB) we help review apprenticeship frameworks within the engineering and construction industry.

Adopted by Sellafield Ltd, our work experience programme is acknowledged as best in class. We are currently in discussions to extend our graduate exchange programme with Sellafield Ltd to include apprentices. We are also helping Sellafield Ltd to set up an equivalent of our Jacobs Futures Network, an employee-led network for our early career professionals.

Part of the Technician Apprenticeship Consortium, we work with other organisations to support the training commitment for recruiting apprentices.

We were the first employer to receive the UK's Investment in Apprenticeships Award (2014).

### ENCOURAGING THE NEXT GENERATION:

We have a thriving local STEM programme and support the "Young Women in Engineering" programme working with the Smallpeice Trust and the Outward Bound Trust. We sit on the executive board of Women in Nuclear, and work with Women in Science and Engineering (WISE).

We work with local schools to raise awareness of engineering, construction and related roles, and encourage students to pursue challenging and rewarding careers in the local nuclear industry. We believe this, combined with the provision of high value jobs, will encourage young people to stay in Cumbria on a permanent basis and grow their capability. Success ultimately relies on a wide range of employers and industry partners working collaboratively for the long term. ■

## 600+

people employed across the county; some ninety per cent live locally

## Jacobs

Jacobs is one of the world's largest and most diverse providers of technical professional and construction services.

**Location in Cumbria:**  
Sellafield Ltd site, Seascale; Westlakes Science & Technology Park; Warrington; and Workington.

**Number of employees:**  
650 employees in Cumbria; 9,000 in UK; 65,000+ worldwide

**Number of graduates:**  
590 across UK

**Number of apprentices:**  
195 across UK

[www.jacobs.com/sustainability](http://www.jacobs.com/sustainability)

# Stakeholder view: NDA Strategy consultation



**As chair of the West Cumbria Sites Stakeholder Group enablers working group,**

**Bob Jones is no stranger to voicing his views on the nuclear industry. He took the lead on preparing the group's response to the Nuclear Decommissioning Authority's consultation on their third strategy in 2015. Here he tells us what it is like to play a role in setting the strategy for the UK's civil nuclear industry.**

I have to confess that being approached to give a view on the Nuclear Decommissioning Authority's draft strategy document sounded like it could be a very dry activity. Did I really want to spend my time reviewing and commenting on it for the West Cumbria Sites Stakeholder Group?

I've been involved in both sides of the stakeholder group. In my time at Sellafield (I retired five and a half years ago, but scarily it seems like only five and a half minutes) I presented information on behalf of the Company on a number of topics. Now, as a Parish Councillor, I represent the villages of Calderbridge and Ponsonby.

The Group is just about the only venue where a wide range of community groups can get together, with representatives from the Nuclear Decommissioning Authority, Environment Agency, Office for Nuclear Regulation and Sellafield Ltd, to both support them and, where appropriate, challenge them and hold them to account. But against what?

We meet every three months to hear what is happening and occasionally there are real gems of progress – such as the



**West Cumbria Sites Stakeholder Group**

recent achievements in the legacy ponds and silos areas, where it is clear that significant steps forward are being made. However, it can be difficult for the Group to put a list of achievements into context and know what it means to them. We have struggled to get a suite of Key Performance Indicators that shows how well the Nuclear Decommissioning Authority and Sellafield Ltd are really doing against things that matter to us.

When you think about it that should start with NDA's strategy to deliver the completion of reprocessing and the decommissioning of its sites safely and cost-effectively. This then should flow into various business plans which should contain the measures which show safe delivery against the strategy.

So in answer to my first question, yes, being involved in the consultation is worth my time. If we can try to get the strategy to reflect what is important to both their business objectives and also the local community the rest should flow from there.

But how...???

The West Cumbria Sites Stakeholder Group can be a bit ponderous. Topics raised at one meeting may not be reported back on for 6 months which is too long when someone is seeking feedback that may influence plans. We do have a number of working groups that look at specific issues but their perspective can be justifiably narrow and so don't reflect everyone's opinions. So the Enablers working-group was formed to address key issues on behalf of the site stakeholder group as a whole.

After that it was just a question of getting a few willing volunteers to sit on the group, getting early sight of the information (the Nuclear Decommissioning Authority really helped here by asking the question early and getting information to us early) and then getting organised against a programme.

We were able to look at the draft strategy and also get the input from each of the other

working groups in their areas of expertise, with a bit of facilitation thrown in to ensure a consistency of approach. People responded well and we were able to produce a composite document which the full Group agreed to as reflecting their likes and concerns about the draft strategy.

Pretty simple really – work out what is needed by when, find people who want to help, then give them the information and support they need.

The Nuclear Decommissioning Authority committed to either take our comments into account in the revised strategy which was published in April, or explain why they hadn't, and they are due to do this shortly. We can also ask Government to respond to certain topics we raised with them because they were outside the Nuclear Decommissioning Authority's scope.

So yes, consulting on a draft strategy can be seen to be a bit of a dry topic at first glance – but we ignore it at our peril and who knows where spending some time thinking about important subjects can lead. ■



The Nuclear Decommissioning Authority's Strategy was published on 1 April 2016. You can find a copy at [www.gov.uk/government/publications/nda-strategy](http://www.gov.uk/government/publications/nda-strategy)

# Sellafield competitors collaborate

Before we can retrieve all of the intermediate level waste from our highest hazard decommissioning projects – the legacy ponds and silos – we need a safe and secure place to package and store it. To deliver the new Box Encapsulation Plant, we turned to our supply chain colleagues.



What makes three supply chain competitors come together to deliver work at Sellafield, and what attracted Amec Foster Wheeler, Balfour Beatty and Jacobs to the new build project?



**Iain Hay**  
Amec Foster Wheeler  
Project manager



**Rachel Beech**  
Balfour Beatty  
Supply chain manager



**Chris Cunningham**  
Jacobs  
Project director

## SELLAFIELD MAGAZINE: HOW DID THIS COLLABORATION BETWEEN JACOBS, BALFOUR BEATTY AND AMEC FOSTER WHEELER COME ABOUT?

**Chris Cunningham (CC):** We joined forces to pursue major project opportunities at Sellafield. We already had strong relationships with each other and with Sellafield Ltd, supporting a portfolio of existing projects, so forming a joint venture was the next natural step to build on our individual experience.

**Rachel Beech (RB):** The alignment of core values is just as important as the

alignment of technical expertise when creating a joint venture. For example, we recognised that our individual safety records were excellent and we were all committed to continually raising the bar. This alignment meant that we could ensure an unrelenting focus on maintaining the safest possible working environment for Sellafield, our staff and sub-contract partners.

**Iain Hay (IH):** In terms of aligning our technical expertise, our combined capabilities and track-records bring unrivalled breadth and depth of experience across the whole major project lifecycle. Our companies have a

combined global workforce of 135,000 people so we knew that together we could bring the capacity and strength in depth to execute the Box Encapsulation Plant project.

**RB:** The long-term strategic relationship that we have created enables further investment in existing local office infrastructure, further local recruitment and up-skilling, and the creation of a sustainable major project delivery platform in West Cumbria. Above all else, the primary goal of our collaboration is to work collaboratively with Sellafield Ltd, operating as a joint venture company first and partner company second.

**SM: WHY DID YOU BID FOR THE BOX ENCAPSULATION PLANT PROJECT?**

**IH:** The project aligned to the original focus of the collaboration to form a major project delivery partner supporting Sellafield Ltd. We believed we had the capability to not only deliver this project, but to add additional value and drive innovation, savings and socio-economic benefits.

**CC:** That's right. At its core, our joint venture is here to support Sellafield Ltd's aims for cleaning up the nuclear legacy and reducing the risk it poses. To ensure the importance of this throughout the project, we bid with the commitment to develop a joint project charter with Sellafield and set out our project vision to "Make Sellafield Safer Sooner".

**SM: WHAT STRENGTHS DOES EACH PARTNER BRING TO THE COLLABORATION?**

**RB:** The joint venture was formed because all three partners are strong nuclear industry players with complementary experience of major project delivery, and we all share the same values and principles. This means together we have many strengths to bring to the collaboration. For example, we have a significant existing portfolio of work at Sellafield and a long track record of high performance on delivery of major projects.

**CC:** We have extensive experience of delivering similar highly regulated projects in large and complex nuclear environments

across the world. We also have common philosophies for promoting rigorously high safety standards and delivering appropriate quality levels, and robust solutions.

**IH:** We have complementary capabilities and skill sets across the full project life cycle, with breadth and depth of expertise to ensure our capacity to deliver this project. Our single team ethos and aspiration for collaborative working is based on a "best athlete" principle to ensure a first-class approach for Sellafield Ltd.

**SM: HOW DO YOU BALANCE BEING PARTNERS ON ONE PROJECT WITH BEING COMPETITORS ON OTHER BIDS?**

**IH:** We all now operate in a climate of collaborative relationships and this modern industry approach means it is common to be both a competitor and a partner. Being competitors has not precluded our three organisations from working together on the Box Encapsulation Plant project and other projects across the Sellafield site for many years now.

**RB:** I think that mature attitudes and the collaborative nature of our people have allowed us to develop relationships between our organisations that promote a single team ethos when working in the joint venture. This collaboration is not damaged when we compete and instead we value the competition as it drives innovation in the industry, helping all three partners improve and evolve.

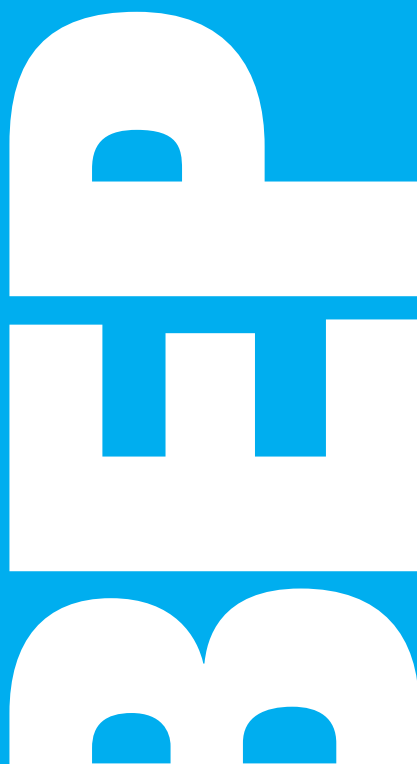
**SM: WHAT ADVICE WOULD YOU GIVE TO OTHER ORGANISATIONS LOOKING TO COLLABORATE ON BIDS?**

**CC:** The key is to identify partners with complementary skills and capabilities so you can both add value to any collaboration. Also look to partners who have similar client relationships and experiences, as it is important you both understand the environment you are joining. Once you have formed a joint venture, be prepared to learn! This applies to everyone at all levels of the project. You will need to develop together to achieve a positive, collaborative relationship and work through any early issues.

Client and partner relationships must be based on trust and open honest relationships. That is the foundation of all successful joint ventures.

**SM: WHAT HAVE YOU BEEN MOST PROUD OF SO FAR?**

**IH:** The project is still in its infancy, but it is going well. I think that I can speak for all of us to say that we are most proud of the way in which we have built the delivery team. The project started with a small core team of just 12 people, but over the last 12 months we have quickly and efficiently grown this into a multi-disciplined, collaborative delivery team of hundreds. This is testament to the partners' ability to work together and our combined organisational reach back to mobilise so many capable people, and



“The joint venture was formed because all three partners are strong nuclear industry players with complementary experience of major project delivery, and we all share the same values and principles.”

start them delivering immediately. We have also successfully co-located this delivery team with Sellafield Ltd employees to support our collaborative working relationship.

**SM: AS YOU KNOW, WE ARE KEEN TO ENSURE THAT THERE IS A POSITIVE SOCIO-ECONOMIC BENEFIT FROM THE WORK DONE AT SELLAFIELD. HOW WOULD YOU DESCRIBE THE SOCIO-ECONOMIC IMPACT OF THE BOX ENCAPSULATION PLANT PROJECT?**

**RB:** We produced a socio-economic plan with the aim of making a positive, lasting impact where the project operates by making a meaningful contribution to the local communities. We achieve this on the Box Encapsulation Plant project through supporting Sellafield Ltd's own socio-economic plan and priorities of skills, community and growth.

**CC:** Addressing the impending skills shortage in the nuclear industry is becoming increasingly important. To support the drive for recruitment and getting people back in to work we have committed to advertising our project vacancies through the job brokerage, West Cumbria Works. We have provided a work experience placement for one individual and the intention of more to follow.

Along with our supply chain partner, Bendalls Engineering, and the Phoenix Youth Centre we have developed a mentoring

programme for young people in Cleator Moor. This is a valuable scheme where young people can access role models from business. We have held a number of sessions so far and are developing a week of work experience for a group of girls at the youth centre.

**IH:** Providing project opportunities for the local and SME (small to medium sized enterprises) supply chain is vital to the success of our project. We have been working closely with Britain's Energy Coast Business Cluster to advertise all of our procurement opportunities online, giving open access to all. We are also developing a supply chain newsletter, which will provide updates on our project progress and tender opportunities.

For a second year running we have supported Cumbria Community Foundation's Big Sleep event, raising £1,236 for a great cause. We also issue a weekly email to all our team highlighting opportunities for them to support their local communities via volunteering opportunities or supporting the fundraising efforts of their team members.

**RB:** The team has just completed voting for our charities of the year in Warrington and West Cumbria. Our charity champions will organise fundraising events for the charities chosen; Claire's House Children's Hospice and Workington Lifeboat. We look forward to building our relationship with these charities as we move forward.

**SM: WHAT ADVICE WOULD YOU GIVE TO SMES LOOKING TO WORK ON THE SELLAFIELD SITE, EITHER DIRECTLY OR AS SUB-CONTRACTORS?**

**CC:** The Sellafield site is a unique place to do business and it is important to do your research and make sure you fully understand the site and the wider industry sector. Luckily there is a lot of help available from places like Sellafield Ltd's own supply chain ombudsman, Britain's Energy Coast Business Cluster, and the companies already working with Sellafield Ltd.

**IH:** As you move into the supply chain and build up contacts it is worth considering if you can collaborate with other companies to solve problems for your customers. Building your capability through collaboration could help you bid for larger contracts. Our project is one example of collaboration between Jacobs, Balfour Beatty and Amec Foster Wheeler, bringing their skills together to deliver a project.

**RB:** We have made a point of being as accessible as possible to the supply chain by doing presentations and attending networking events. All our procurement opportunities are also listed on the Britain's Energy Coast website to ensure they are visible to everyone. We are always happy to have conversations with any SME to help you understand our project, so please do get in touch (rachel.beech@bepdt.com). ■

	Jacobs	Balfour Beatty	Amec Foster Wheeler
<b>Employees</b>	<ul style="list-style-type: none"> <li>• 650 in Cumbria</li> <li>• 9,000 in UK</li> <li>• 60,000 worldwide</li> </ul>	<ul style="list-style-type: none"> <li>• 161 in Cumbria</li> <li>• 36,000 worldwide</li> </ul>	<ul style="list-style-type: none"> <li>• 250 in Cumbria</li> <li>• 40,000 worldwide</li> </ul>
<b>Graduates</b>	<ul style="list-style-type: none"> <li>• 3 in Cumbria</li> <li>• 590 in UK</li> </ul>	<ul style="list-style-type: none"> <li>• 5 in Cumbria</li> <li>• 200 in UK</li> </ul>	<ul style="list-style-type: none"> <li>• 8 in Cumbria</li> </ul>
<b>Apprentices</b>	<ul style="list-style-type: none"> <li>• 40 in Cumbria</li> <li>• 195 in UK</li> </ul>	<ul style="list-style-type: none"> <li>• 18 in Cumbria</li> <li>• 200 in UK</li> </ul>	<ul style="list-style-type: none"> <li>• 8 in Cumbria</li> </ul>
<b>Work at Sellafield</b>	<ul style="list-style-type: none"> <li>• Box Encapsulation Plant (BEPDT)</li> <li>• Design Services Alliance Framework (AXIOM)</li> <li>• Decommissioning Delivery Partner Framework – Lot 1 (CNSL)</li> <li>• Decommissioning Delivery Partner Framework – Lot 2 (Decommissioning Alliance)</li> <li>• FGMSR Retrievals (ACKtiv)</li> <li>• Site Wide Asset Care</li> </ul>	<ul style="list-style-type: none"> <li>• Box Encapsulation Plant (BEPDT)</li> <li>• Decommissioning Delivery Partner Framework – Lot 1 (Nexus)</li> <li>• Silos Maintenance Facility</li> </ul>	<ul style="list-style-type: none"> <li>• Box Encapsulation Plant (BEPDT)</li> <li>• Design Services Alliance Framework (AXIOM)</li> <li>• Decommissioning Delivery Partner Framework – Lot 3</li> <li>• Multi-Discipline Site Works</li> </ul>
<b>Cumbria Base</b>	<ul style="list-style-type: none"> <li>• Sellafield Ltd site, Seascale</li> <li>• Pillar House, Westlakes Science &amp; Technology Park</li> <li>• Workington</li> <li>• Barrow-in-Furness</li> </ul>	<ul style="list-style-type: none"> <li>• Sellafield Ltd site, Seascale</li> <li>• Fleswick Court, Westlakes Science &amp; Technology Park</li> </ul>	<ul style="list-style-type: none"> <li>• Sellafield Ltd site, Seascale</li> <li>• The Innovation Centre, Westlakes Science &amp; Technology Park</li> </ul>
<b>Web Details</b>	www.jacobs.com	www.balfourbeatty.com	www.amecfw.com



**“Assurance? It’s**



Running the Sellafield site is a £2bn business and involves the delivery of world-first nuclear decommissioning, spent fuel management and nuclear waste management across our in-house and supply chain teams, 24/7. How do we ensure that we are on course to deliver our diverse portfolio of work? We sat down with the woman in charge of performance assurance to find out.

just good business.”

Alyson Armett

Independent Performance Assurance Group



As head of our new independent performance assurance group, it is Alyson Armett's job to make sure that the business is supported to deliver and that our executive and Board have all of the information they need to make decisions about our business.

**We are here to provide confidence in delivery outcomes.**

Our role is to provide support to the delivery teams and confidence to the executive, the Board and the Nuclear Decommissioning Authority that work at Sellafield will be done when we say it will and within the predicted cost range – or provide the earliest possible notice if that isn't the case. It is only by highlighting issues early that we can minimise surprises further down the road.

**It is just good business.**

Assurance is not unique to Sellafield or the nuclear industry, it is just good business. Businesses rely on good information in order to make good decisions.

The organisation produces a lot of information from how we are doing against our schedule and cost estimates through to our overall budgets and resource targets. Part of our role is to help join the dots between the various data sources and establish an objective view of delivery.

**We are removed enough from the work to provide an objective view, but close enough to understand it.**

The word independent in the name of our team – the independent performance assurance group – has caused some people to question how we can be independent when we are part of Sellafield Ltd. Our work isn't about being independent of the company, it is about being independent – or one step removed – from the work or project. Being removed enough to look at performance objectively but close enough that you understand the detail and expectations of that work, and the consequences of late or non-delivery.

**We proactively assure the performance of high priority work, but we are here to help everyone.**

We are a small team so we can't get involved in the detail of all work under way, but we have a programme of proactive assurance of Sellafield's priority work, and the business areas can call on us to help at any time.

That is really what success for the assurance group looks like for me – the business embracing assurance as a source of help and challenge, rather than something that is here to trip them up or catch them out, because we really aren't.

**Assurance is much more streamlined now that we are a subsidiary of the Nuclear Decommissioning Authority.**

When we were separate organisations there were teams in both Sellafield Ltd and the Nuclear Decommissioning Authority who were focused on day-to-day performance at Sellafield. Now that we are a subsidiary of the Nuclear Decommissioning Authority, and we are all part of the same family, we can be much more efficient in our performance assurance work and avoid duplication of effort.

**We all come from different backgrounds, but that gives us lots of fresh perspectives.**

Each member of the team takes the lead on a specific area of the business, but we are really one multi-disciplined team. Between us our experience covers programme and project management, operations, commercial, risk, finance, project controls, technical and engineering. Sometimes it makes sense to match that experience to projects – for example, aligning our engineering expert with an engineering project – but other times sending someone from a different discipline in to the situation can really help to bring a new perspective.

**I have been impressed by how quickly the teams in the Nuclear Decommissioning Authority and Sellafield Ltd have embraced closer working.**

I joined the Nuclear Decommissioning Authority when it was first established, so have 11 years' experience of the expectations that the site owner and its stakeholders have of performance at Sellafield. At that time our relationship with the site was managed via a contract, but we are now able to establish closer working relationships. People have really embraced this which is great to see. After all, we have the same mission, we want the same thing."

**It was time to take on a new role, but the Sellafield mission is too exciting to leave.**

After more than a decade, it was time to take on a new challenge. But it is such an exciting time for the site in terms of the progress that will be made in the next five years, and the scale of the challenges that we need to face, I welcome the opportunity to work more closely with the delivery teams on the site. ■

Alyson's favourite things

**FAVOURITE BAND:**  
**TALKING HEADS**

**FAVOURITE FOOD:**  
**CHOCOLATE OR CHEESE**

**FAVOURITE HOLIDAY DESTINATION:**  
**BARBADOS**

**FAVOURITE STAYCATION DESTINATION:**  
**CORNWALL**

**FAVOURITE CITY:**  
**EDINBURGH**

# Pop up shop.



The closure of a small business is rarely a cause for celebration. Yet we are delighted to see a temporary village shop, which was provided by our supply chain after the 2015 floods, close its doors for the final time as the original shop is once again open for business.



In the aftermath of the Cumbrian floods in December 2015, the village of Braithwaite near Keswick found itself virtually cut off from the surrounding area and from basic supplies.

We were proud that suppliers from our supply chain, Costain, Wernick hire and Lawsons Haulage were able to support Bassenthwaite Rotary Club, along with JT Atkinson Builders Merchants to provide a short term solution.

The village created a food group to coordinate help amongst the community, but one of the issues that they faced was the absence of the village store, which meant

that some villagers were not able to get everyday essentials.

Sellafield contractor Costain, with the help of its supply chain, delivered and installed a 20-foot long container into position on a narrow strip of ground between the village church hall and Braithwaite Primary School.

By Christmas Eve, the shop had a power supply, shelves had been fitted by Bassenthwaite Rotary Club using materials provided free by J T Atkinson's, and the shelves were stocked with a range of food essentials generously donated by individuals and suppliers throughout the UK.

John Inman, President of Bassenthwaite Rotary Club, said: "The pop-up shop is another excellent example of what the communities in Cumbria can achieve by working together. We thank everyone, including the teams at Sellafield Ltd, who so generously helped to make this possible." ■



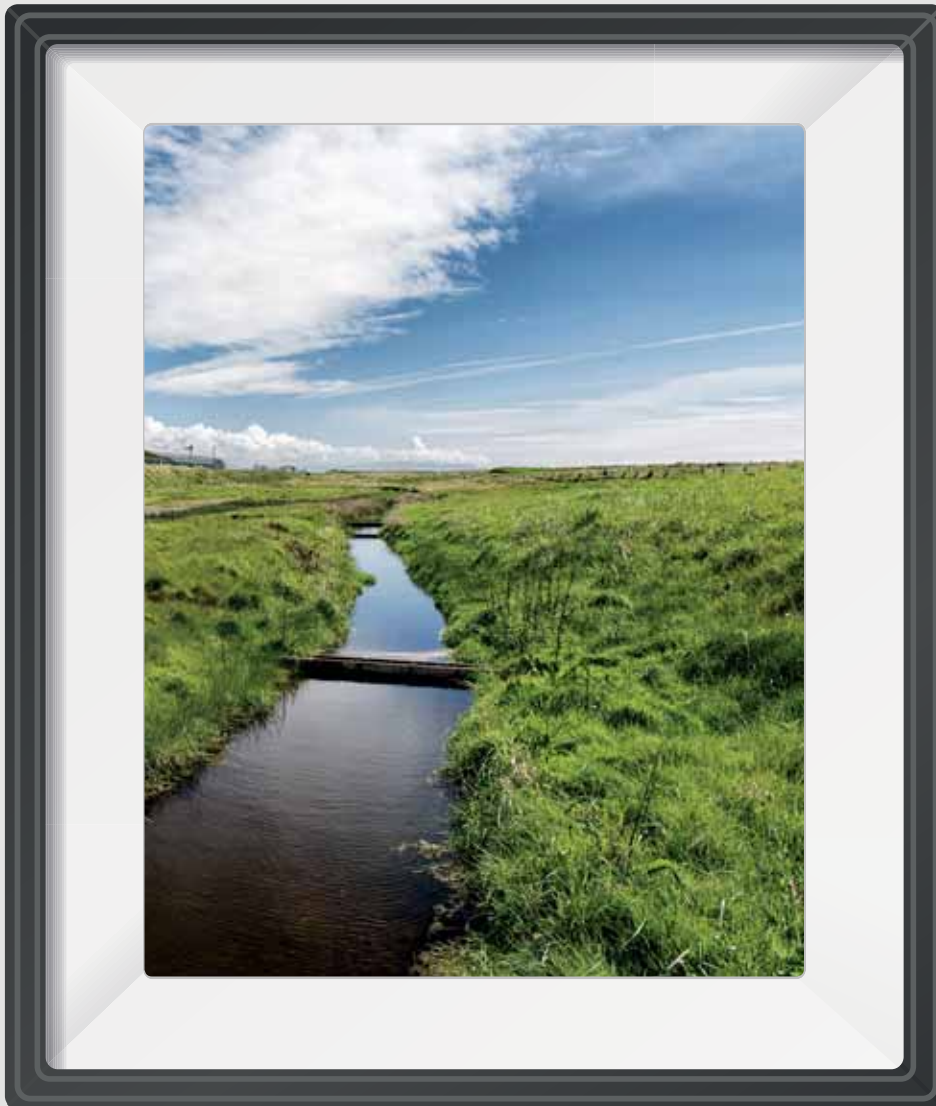
**On 12 December, a plea was made to help create a temporary pop-up shop.**

# ENVIRONMENT



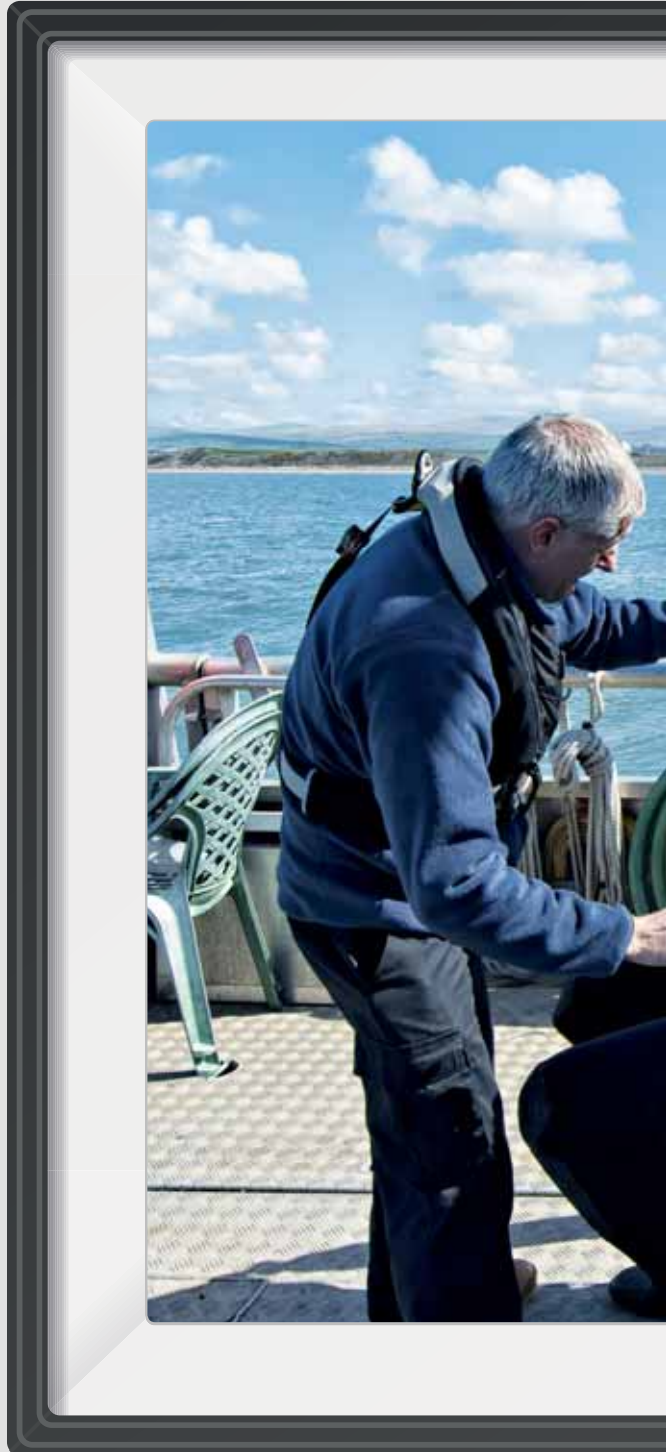
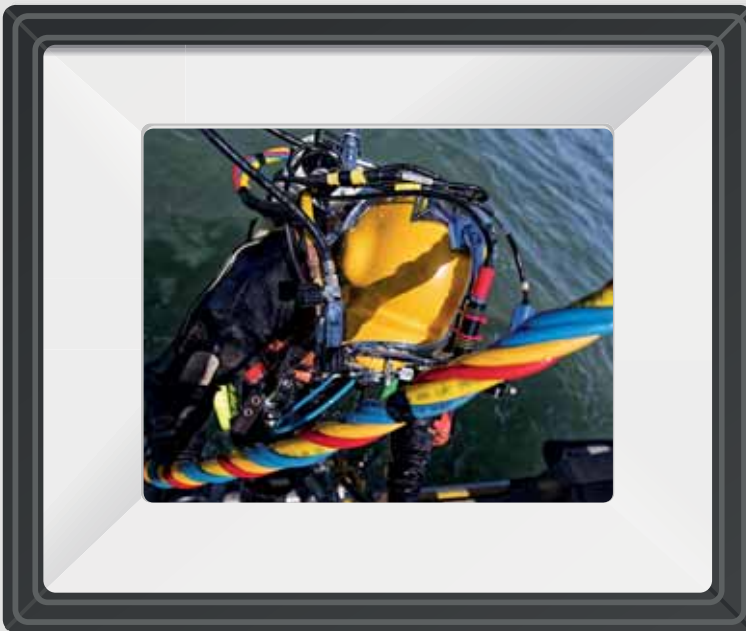
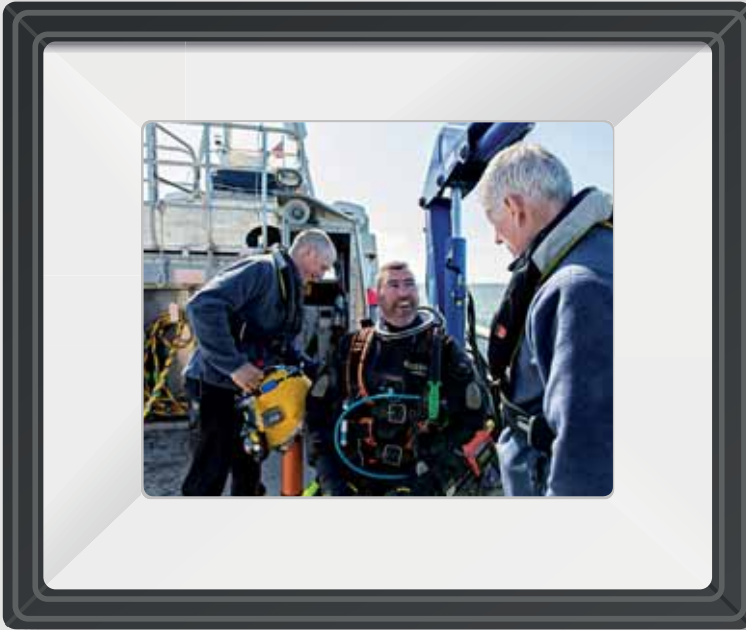


Sellafield is a nuclear and industrial site that sits nestled between the Lake District National Park and the shores of the Irish Sea. The protection of our environment is at the heart of everything that we do.





Flora, fauna and wildlife might be the last thing you expect to see on a nuclear site, but Sellafield is home to it all. Our wildlife even includes an endangered species: Natterjack toads.



We discharge liquid via pipelines on the sea bed, in line with strict permit limits set by our regulators. Our own dedicated dive team regularly check the pipelines to ensure that they are in good working order.





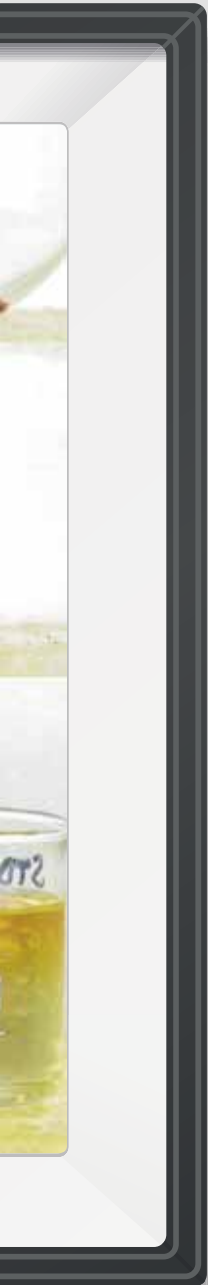


Routine monitoring of the land, sea and air around the Sellafield site is done by our environmental teams.





Samples collected through our environmental and biological monitoring scheme are analysed by our in-house and supply chain teams. This is just one of the ways that we check that the impact of our operations on our employees and the environment is as low as possible.





As a good neighbour we check the noise impact of our operations and site traffic.



# 10 FACTS ABOUT OUR ENVIRONMENTAL DISCHARGES

**1** **111km**

We have 111km of drainage pipework on site – that is the same as the distance from Whitehaven and Kendal.

**2** Our sewage plant treats 1,750m<sup>3</sup> of effluent every day.



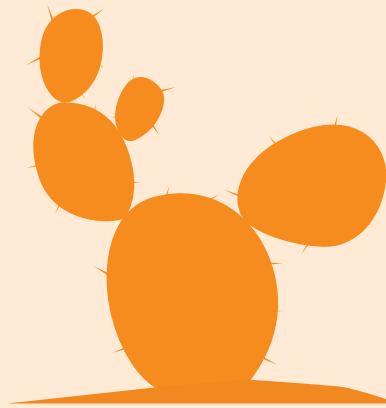
**3** **4,300**

We have over 4,300 active man holes.



**4** **WE HAVE 22 SEPARATE MONITORING UNITS AROUND OUR SITE PERIMETER THAT CONTINUOUSLY SAMPLE AERIAL READINGS.**

**5** We use a specific type of sand called clinoptilolite from the Mojave Desert in California to remove radioactive isotopes from pond water.



**6** **WE USE AN ION-EXCHANGE PROCESS IN OUR SITE ION EXCHANGE AND EVAPORATION PLANT TO REMOVE RADIOACTIVITY FROM LIQUOR BEFORE IT IS DISCHARGED.**



We filter water through Clinoptilolite beds – in simple terms, the radioactive isotopes Caesium and Strontium stick to the sand.

**8** **4-5**  
**THE CLINOPTILOLITE IS CHANGED 4-5 TIMES A YEAR.**

**9** **99%**

The Clinoptilolite beds process captures more than 99% of the radioactivity.

**10**



**THE SITE ION EXCHANGE AND EVAPORATION PLANT WAS CONSTRUCTED IN 1979 AND STARTED OPERATING IN 1985**

# Amec Foster Wheeler

Amec Foster Wheeler is committed to developing the local areas in the 50 locations it operates across the globe, whether this is local involvement, or projects we support from a corporate level, we take our socio-economic commitments seriously.

On a corporate level we are committed to the SOS children's villages support scheme giving over £50k in support aid to the victims of the Nepal earthquake. On a more national level our chosen charity is Alzheimer's Research UK and then there is the work we do locally across all our offices on a national basis, irrespective of market sector.

Our focus in West Cumbria is to inspire pupils of all ages in the pursuit of careers within the nuclear sector. We employ apprentices across all disciplines and provide our Science, Technology, Engineering and Maths (STEM) ambassadors the time to work with the schools to do this. To further our involvement with pupils we are keen advocates and sponsors of the Dream Placement and Bright Stars initiatives coordinated through the Centre for Leadership Performance.

We are proud sponsors of a number of local charities, including the Hospice at Home as well having board representation on the Whitehaven Foyer Development Project.

We are fully committed in supporting Sellafield Ltd in their development and delivery of their socio-economic strategy detailed in this publication and we look forward to working collaboratively with Sellafield Ltd in enhancing the community and making West Cumbria the place to be, to live and work. ■

## £50k

Giving over £50k in support aid to the victims of the Nepal Earthquake

### AMEC

**Location in Cumbria:**  
The Innovation Centre,  
Westlakes Science &  
Technology Park

**Number of employees:**  
40,000 worldwide  
250 in Cumbria  
350 on Sellafield work

**Number of graduates:**  
8 in Cumbria

**Number of apprentices:**  
8 in Cumbria

[www.amecfw.com](http://www.amecfw.com)







# Distinctive research

One of the ways that we collaborate with academia is through a university consortium called **DISTINCTIVE**.

## DECOMMISSIONING, IMMOBILISATION AND STORAGE SOLUTIONS FOR NUCLEAR WASTE INVENTORIES

The consortium brings together ten leading universities and three key nuclear industry partners; ourselves, the National Nuclear Laboratory and the Nuclear Decommissioning Authority. Together, we are tackling world-leading research projects within the broad area of nuclear waste management, decommissioning and disposal.

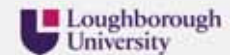
Their aim is to build a greater capacity for research and development to underpin the strategic needs of the UK. They are doing this by:

- Consolidating and expanding academic nuclear related research and development.
- Fostering and developing collaboration with nuclear industry stakeholders.
- Providing routes to innovative technology developments.
- Training the next generation of UK researchers and potential employees in the sector.



For more information, visit [www.distinctiveconsortium.org](http://www.distinctiveconsortium.org)

### Universities involved:

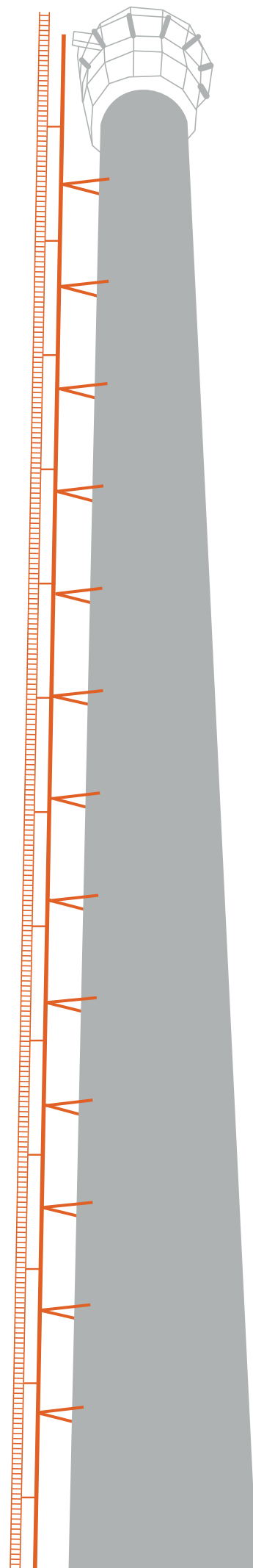


### Industry partners:



They say that it takes a village to raise a child. Everyone has a role to play. This can also be said of the delivery of major construction projects on the Sellafield site. A new ventilation system went live in April 2016. The completion of the project means that we can now demolish the sixty-year-old ventilation stack that it replaced, and remove the risk associated with it. We could not deliver the new ventilation system on our own. It is the result of the collective skills, experience and capability of our teams and our supply chain, operating as one Sellafield, and we thank them all. >>>

# One Sellafield



# One Sellafield

Sellafield Ltd



Doosan Babcock



Kaefer



Focus



Barrier



Servacomm



Mitie



Amec Foster Wheeler



Advanced Air



Bierrium International  
(Stack Design & Construction)



Process Pipework



Balfour Beatty  
(Design, Procurement & Installation CE&I)



MB Air Systems Ltd  
(Compressed Air Generating Equipment)



Beaverway



Atkins  
(Structural Analysis)



Freysinnet  
(Bearing Manufacture)



Lab Impex Systems  
(Monitoring Equipment Manufacture)



Hold Engineering  
(Structural Steel)



Gleitbau



Bureau Veritas



Cumbria Structures



FB Taylor



Keir Group  
(CS&A)



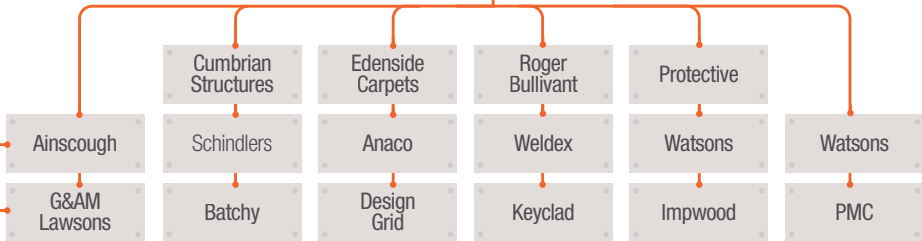
Bendalls Engineering  
(Pipework Manufacturing)



Studsvik UK Ltd  
(HVAC Cooling System)



Senior Hargreaves  
(Ducting Manufacture & Installation)



Cranes

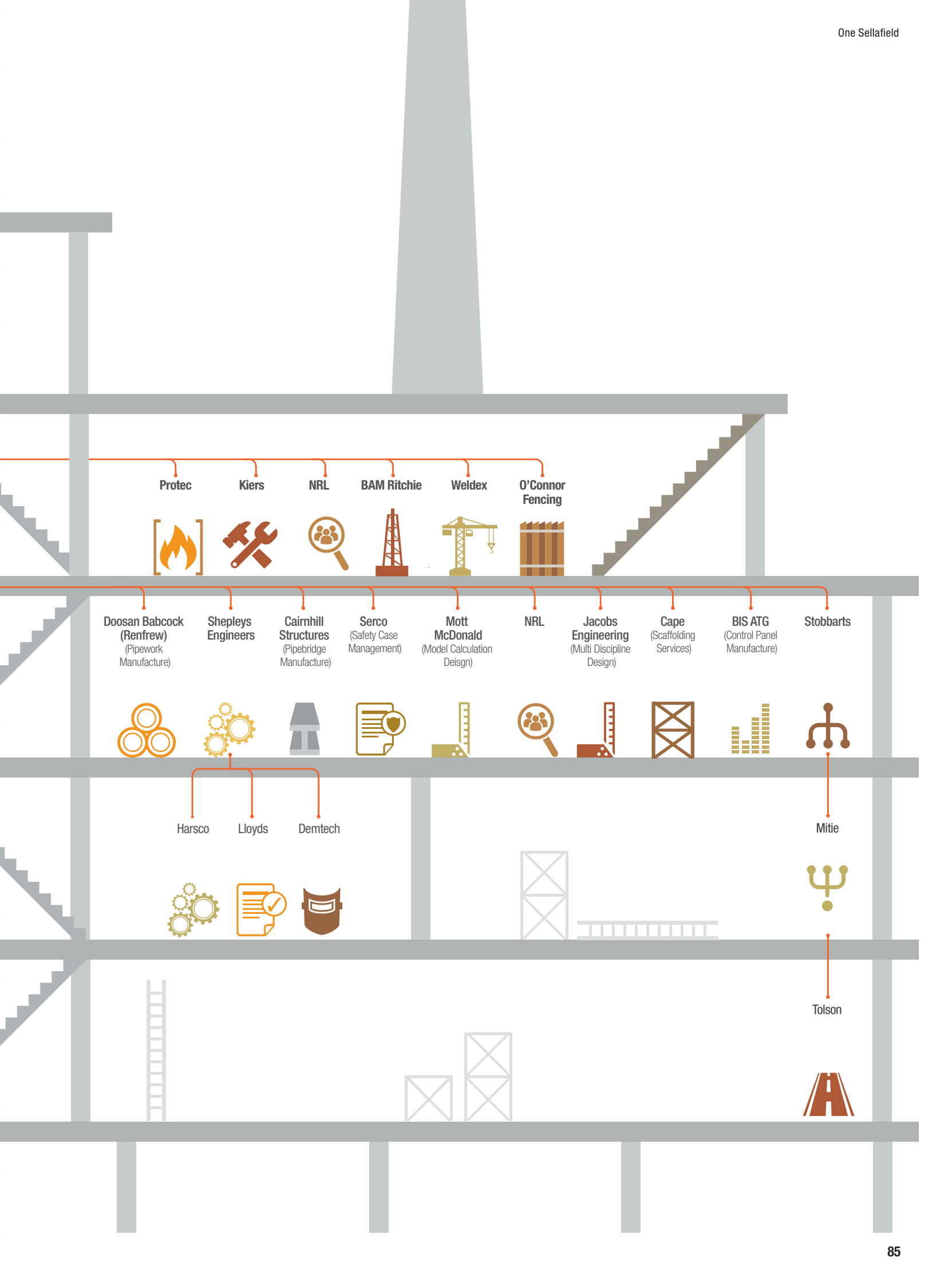


ICC



NRL









BY STEVE BARNES

## Welcome to the Board

# ROB HIGGINS

AS PART OF THE NEW MANAGEMENT ARRANGEMENTS FOR THE SELLAFIELD SITE, THE NUCLEAR DECOMMISSIONING AUTHORITY (NDA) CAN NOW APPOINT MEMBERS OF OUR BOARD. THE FIRST APPOINTMENT OF THIS KIND SEES ROB HIGGINS JOIN OUR TOP TABLE.

Members of a company Board should bring their own specific skills, knowledge and experience to the top table, and there can't be many with more in their armoury than the Nuclear Decommissioning Authority's (NDA) director of business services, Rob Higgins.

Rob joined our Board as a non executive on 1st April 2016, and has a CV that covers the disciplines of engineering, commercial and legal, supported by a number of years in key positions in the nuclear industry.

Starting his career as a civil engineer having graduated from Birmingham University, Rob worked for a number of companies in road and rail, water and waste treatment sector as a structural engineer and site manager.

He said: "One of the highlights from my early career was working for MJ Gleeson as a site manager at Walton on Thames, where we introduced the first treatment works in the UK to use ozone in the purification process on an industrial scale."

A change of career came in 1996 when he re-trained as a solicitor at Kingston University, and became an engineering litigation specialist before moving to WS Atkins as legal Director and then to the NDA as head of legal in 2009.

Rob's current portfolio includes Chair of NDA Properties Limited and NDA Archives Limited, and he has recently taken up the role of Direct Rail Services Chair.

He said: "I continue to lead on estate wide shared services and government supply chain initiatives, and my broad experience over a number of years across a range of projects has enabled me to lead these interesting areas – from property to rail. The nuclear decommissioning sector can be really powerful when its component parts all pull in the same direction."

Rob's role with the NDA puts him in a position, as part of the Sellafield Ltd Board, to cement the

relationship between our company and the NDA following the recent model change.

"I am really proud to be part of the new Board and looking forward to supporting my colleagues in moving the company forward as we tackle the considerable challenges faced in the Sellafield programme," he said.

"My skills and experience, for example working as a contractor in the supply chain where I delivered against key performance indicators to tight deadlines, and promoting collaborative programmes across the estate such as procurement and security programmes, can only benefit the company as we set targets, monitor performance and take a strategic look forward to ensure the near and long term objectives are clear and deliverable."

Rob regards Sellafield as a fantastic concentration of people and skills who are charged with delivering a massive challenge as we transition from a nuclear production site into an environmental remediation project. Potentially difficult, but a great opportunity to do really interesting, socially valuable and ground-breaking work.

"There's a huge change of emphasis on the site as we move from a project based to a waste management organisation, and constant change and improvement is our thing. Performance is crucial and we have to deliver on the promises we have made to government and the tax payer.

"There is a lot to be proud of at Sellafield, including the recent achievements in legacy ponds and silos that are massive steps in reducing high hazards on the site.

"Another big success was the combined NDA/Sellafield Ltd transfer to becoming a subsidiary company. It shows what we can achieve with a real combined effort.

"There is now a massive opportunity for close alignment under the new model, and I look forward to reporting on progress in 12 months' time." ■

There is  
a lot to be  
proud of at  
Sellafield

# Outage

## Keeping our plants running

The sprawling Sellafield site contains a host of individual chemical and nuclear plants, all of which provide an important service in delivering our mission. These plants are operated, not in isolation, but as part of joined-up processes – as a well-oiled machine.

Keeping them well-oiled is, therefore, an important part of what we do.





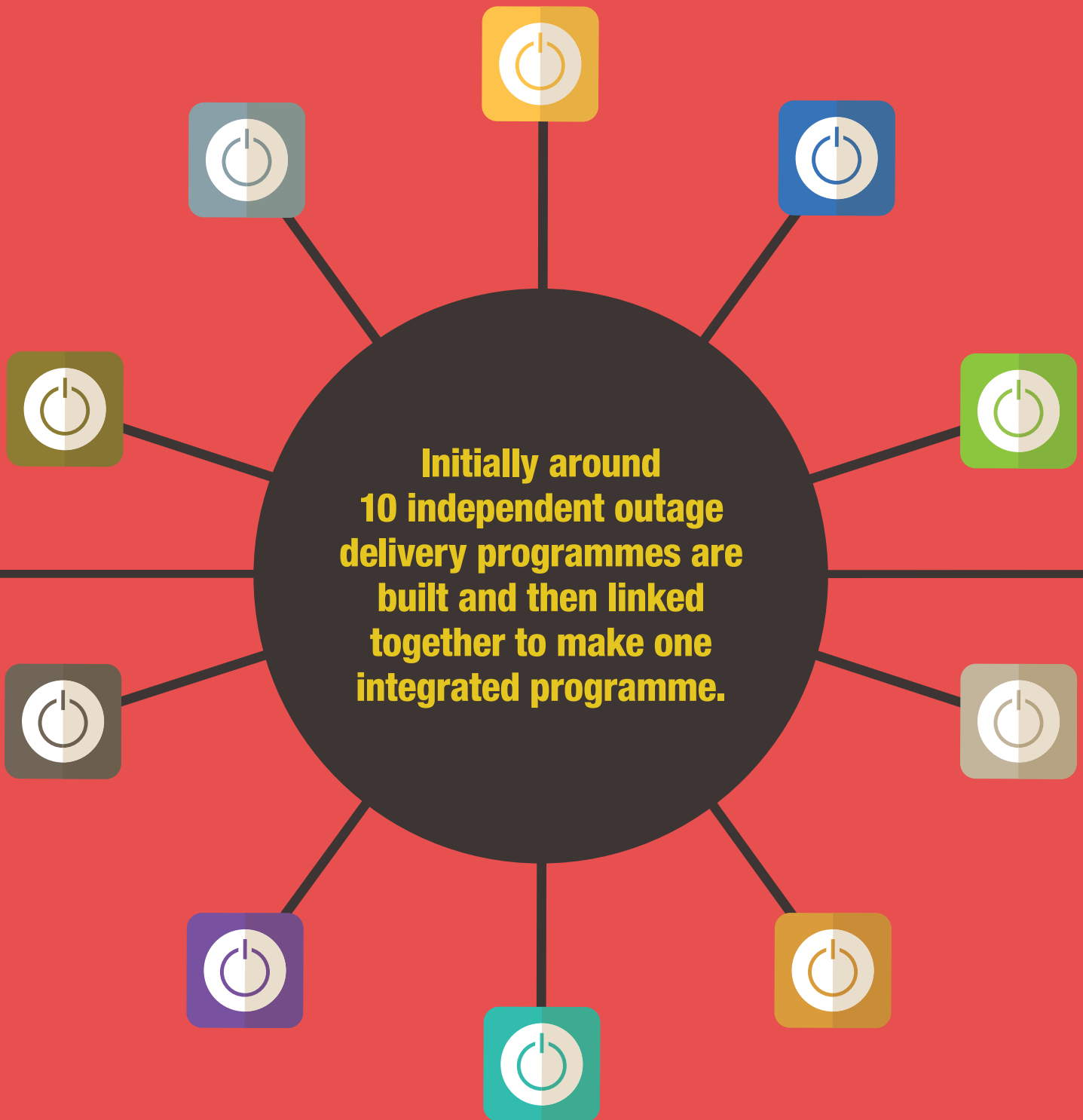


In the not-too-distant past, our plants were operated individually and had their own maintenance schedules. Where a full 'MOT and service' was required, plants would be shut-down for this to take place. However, the implications for other parts of the business weren't always considered.

But when reprocessing spent nuclear fuel is dependent on the ability to evaporate the highly active liquor this creates, which is in turn dependent on our vitrification capacity, this approach was no longer sustainable.

This is one of the reasons why we now have a dedicated site outage team who work tirelessly to deliver an outage programme across all of our operating plants. This complex programme recognises the interdependencies between these plants and is designed to factor these alongside things like the duration and complexity of pieces of work when they need to be undertaken, and resource requirements.

Outage season is an important time for the Sellafield site. It gives us chance to carry out essential maintenance, projects and improvement works that are simply not possible when plants are operating. This activity ranges from small to large projects and simple fixes to major developments over a period of a number of weeks.



Preparing for and managing the outage is a challenging task, and one that falls to Dougie Park, head of outage management and site integration, and his team. Planning, as Dougie explains, is the key to success: and one reason why “Our recent outages have been hailed as a success – this isn’t down to a special approach but rather to thorough planning and following a methodology developed over many years. So as soon as an outage is over, we plan the next one.”

Successfully delivering the outage programme is dependent on a number of different and often complex factors, as well as the crucial work undertaken on plant, these include prompt progress reporting on individual jobs and timely resolution of emerging issues.

Dougie added: “None of this would be possible without working closely with and having the support and cooperation of the operating plants.”



The overall outage schedule is monitored at the site daily ‘fleet call’ meeting, with issues escalated and support provided as required, and again, planning helps minimise these issues.

However all the planning in the world doesn’t mean something won’t crop up and impact the programme – in the 2015 outage, the two biggest issues that led to changes to the programme were a loss of steam due to an external National Grid fault, and supply chain industrial action. As well as allowing maintenance and improvement works, outages also allow for the connection of new plants.

In fact, our most recent outage – in April this year – enabled us to complete the tie-ins for our new separation area ventilation plant.

This has itself been built to allow the demolition of the former First Generation Reprocessing Plant chimney, which doesn’t meet modern safety standards – which shows the importance of a timely

outage programme to the delivery of operations.

The 2016 outage programme, which runs from September to December, will see works taking place across all of our operational plants along with work in utilities, starting with a ten week programme in the Thorp Chemical Plants.

Following this, the next planned outage will take place in 2017 and will enable the final tie-ins for Evaporator D to be completed, prior to operations. This work is crucial to deliver the evaporative capacity needed to complete our reprocessing work and the post operational clean out of these plants and our old evaporators and storage tanks.

An important part of our role is to keep our operational plants running, and sometimes the best way to do this is to shut them down, temporarily – and look under the bonnet. But as we’ve shown, this isn’t as simple as flicking the power switch. ■





# Fukushima: 5 years on

**Five years after the tsunami that devastated the east coast of Japan, Fukushima has played host to an international conference focusing on cleaning up the stricken nuclear reactors.**

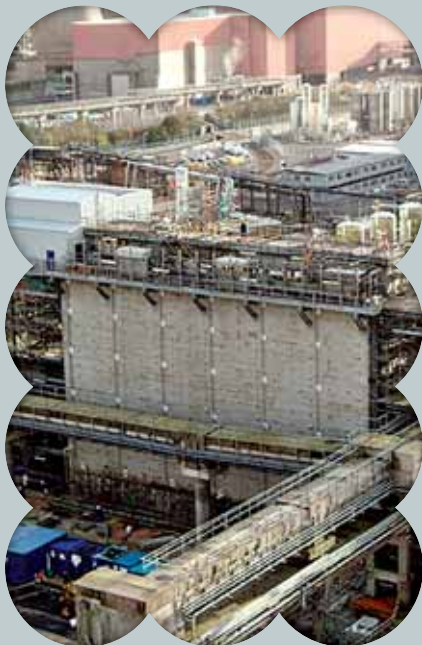
The Fukushima Conference featured expert speakers including our own Phil Hallington, and John Clarke and Anna Clarke from the Nuclear Decommissioning Authority. Sharing experience and lessons learned from other nuclear decommissioning programmes, speakers covered topics including waste management strategy and risk assessment.

Phil, our former “man in Japan” emphasised the importance of collaboration. He said: “Sellafield’s nuclear decommissioning challenges took 60 years to create. At Fukushima Daichii it happened over as many hours. Our Japanese colleagues have made enormous progress, we can take learning from them and share our best practice, and it makes good sense to learn from each other.”

“Sellafield’s nuclear decommissioning challenges took 60 years to create. At Fukushima Daichii it happened over as many hours.”

Community experience was a theme throughout the conference. Copeland MP Jamie Reed and elected mayor for Copeland, Mike Starkie, talked about the importance of effective dialogue between nuclear site operators and the people living nearby and need for complete transparency in order to build trust.

“Copeland and Fukushima have much in common”, said Jamie. “Both communities have lived alongside nuclear facilities for many years, and they each need to be able to engage effectively with the industry. This places many demands on the community in terms of access to information, technical understanding and time commitment. Our communities can learn from each other, and closer community links can benefit both parties”. ■



# The Final Countdown

We are close to completing our reprocessing mission at Sellafield.

We have been reprocessing used nuclear fuel at Sellafield since the 1950s. As part of the site's early operations, fuel from the Windscale reactors was reprocessed in order to capture the plutonium needed for the UK's atomic weapons programme.

Used fuel is reprocessed by stripping the outer cover from fuel, dissolving the fuel and using chemical processes to separate uranium and plutonium from waste materials.

There are two buildings at Sellafield that are dedicated to reprocessing different types of nuclear fuel; the Magnox reprocessing plant and the Thermal Oxide Reprocessing Plant – or Thorp as it is better known.

## The First Cut...

A key step forward is being made in the decommissioning journey of the Pile Fuel Cladding Silo this summer, with the start of the removal of the six deflector plates at the top of the waste compartments.

**The six plates** were originally welded underneath the charge holes which received the waste from the transfer tunnel so that the tipped magnox swarf, pile fuel cladding, and other waste could bounce off them onto either side of the compartment below and spread the waste evenly. However, these plates are now directly in the way of the entry point for the retrievals machinery being assembled alongside the silo and need to be cut away in situ. Each plate will require more than 150 carefully planned cuts so that the pieces of this metal jigsaw can just fall into the compartment below, to be retrieved at a later date along with the rest of the silo contents.



### Magnox reprocessing

Used fuel from the UK's fleet of Magnox reactors, including our own Calder Hall, is reprocessed in the Magnox reprocessing facility. Our ability to take the fuel from the stations in line with an agreed programme has been a critical support to their electricity generating programme.

#### Tonnes to go: 1911

as of 23 June 2016, there are 1911 tonnes of Magnox fuel to be reprocessed until closure of the Magnox operating programme.



### Thorp reprocessing

Thorp reprocesses Oxide fuel from both UK and overseas customers and, at the height of its operations, was the biggest Yen earner in the UK. Revenue from both Thorp and Magnox reprocessing is used to help fund our risk and hazard reduction mission.

#### Tonnes to go: 956

as of 23 June 2016, there is 697 tonnes of Advanced Gas-cooled Reactor fuel and 259 tonnes of Light Water Reactor fuel to be reprocessed. We have also received sanction from the Nuclear Decommissioning Authority to reprocess an additional 220 tonnes of Advanced Gas-cooled Reactor fuel before Thorp's planned closure date of November 2018.

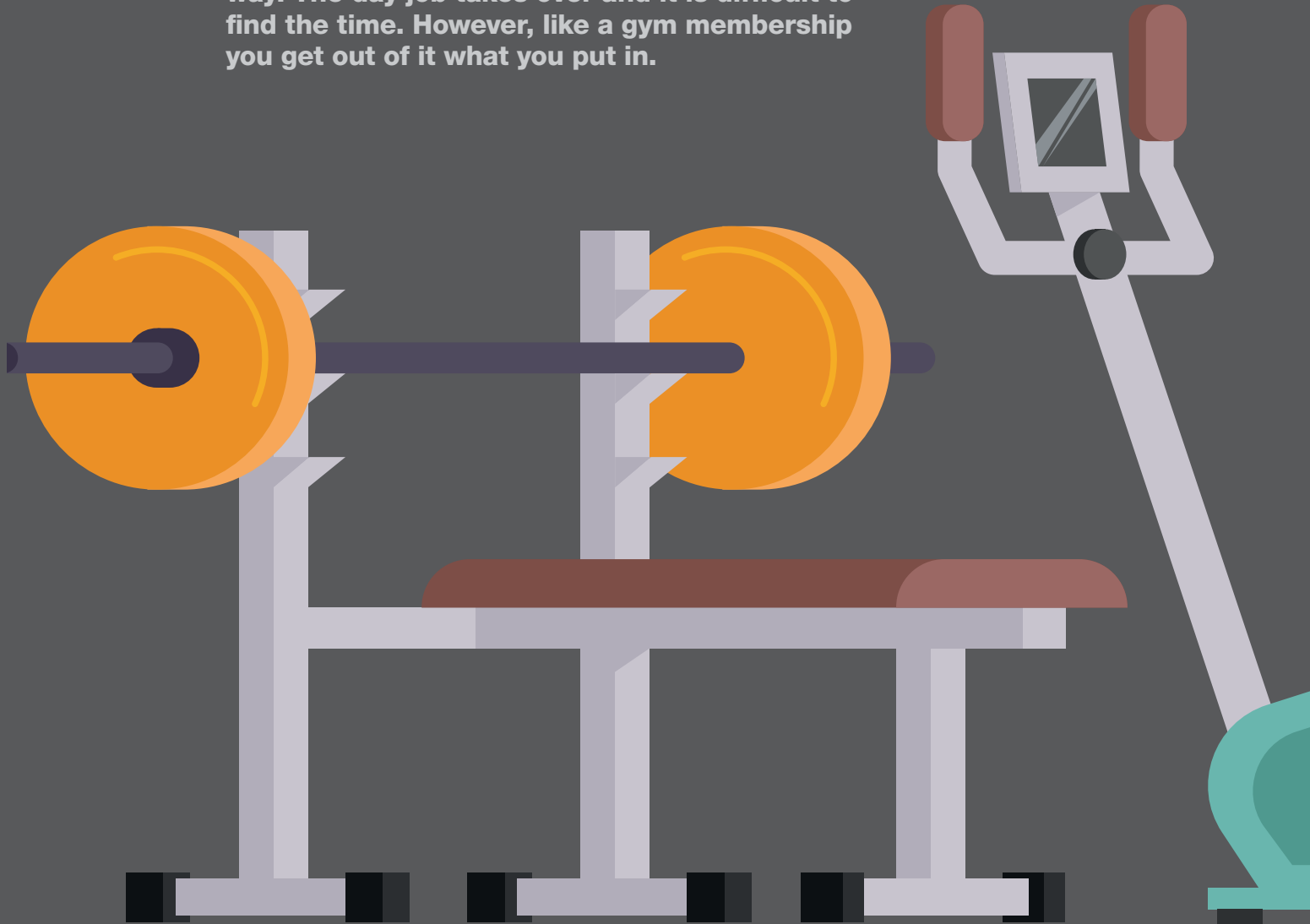
How the

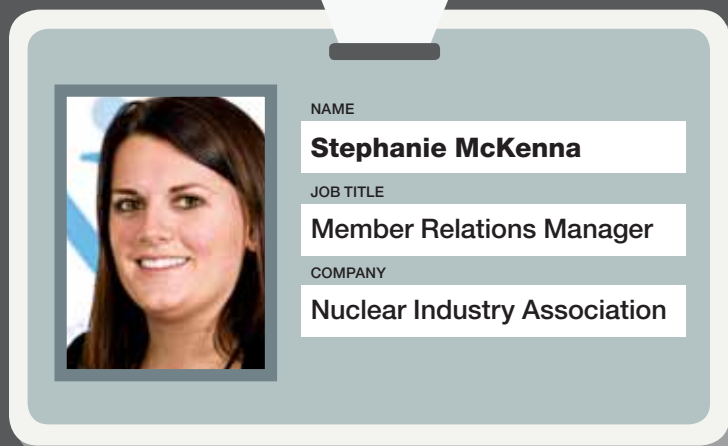
# NUCLEAR INDUSTRY ASSOCIATION

can work for you...

It's summer time and gym memberships all over the UK are gathering dust... the sunshine is wilting all best intentions to go to a class as post-work beers and barbecues take priority.

Membership of the NIA can be viewed in a similar way. The day job takes over and it is difficult to find the time. However, like a gym membership you get out of it what you put in.





**F**or those of you who haven't heard of the NIA, we're the Nuclear Industry Association, the trade association for the civil nuclear industry. We have over 260 member companies across the nuclear sector.

Sellafield Ltd is one of those members, as well as other organisations in the NDA estate and its supply chain, contributing to the work we do as the voice of the industry.

While we have a role in engaging with the public and helping to explain the nuclear sector to the media and in political spheres, we also exist to help improve the commercial performance of companies within the sector by supporting member organisations to develop their business in the UK and overseas.

We do this through regular newsletters, networking events, supporting UKTI with trade missions and holding high-profile annual conferences.

As with all memberships – you will get the most out of the NIA, if you put the time in. Many member companies, Sellafield Ltd included, are actively involved in the work we do. This can be contributing towards our quarterly magazine, Industry Link – something only member companies can do – to joining our extensive Business Group network.

While all companies in the nuclear sector will benefit from the positive messages we put into the media, only NIA members can benefit from our exclusive Trade Directory and the Business Group meetings we facilitate. These free events for members aim to help you meet the right people and provide the most up-to-date information on sector developments to keep you ahead of the game.

These groups cover many aspects of the nuclear industry – Decommissioning and Existing Generation, and New Build – supported by other groups which focus on Exports, Communications, and Legal and Financial Affairs. They are run by industry for industry, with

the Chair of each group from a company within the sector – the personal trainer, if you like!

The Decommissioning and New Build groups attract over 100 people to each meeting, and take place three times per year across the country.

All of the groups aim to help you forge the right relationships and be among the first to hear about the latest industry developments. All companies which join the NIA have the opportunity to suggest people to join these Business Groups, and up to two people per organisation are able to attend the meetings.

As I write, we're about to hold the second Decommissioning group meeting this year on 23 June. The day, hosted by Arup in London, will focus on the opportunities for companies.

Delegates will hear from Sellafield Ltd on the new operating model and upcoming opportunities, as well as a masterclass on how to navigate its procurement portal.

There's a session with Magnox's Head of Procurement and Supply Chain on its new procurement strategy as well as an outlook on the opportunities available with Tier 2 contractors with Atkins, Jacobs, Costain, Aecom and James

Fisher Nuclear all speaking, among many others across the day.

Member companies can see the presentations following the meeting, through the secure member area on the NIA website, so you'll still be able to get the information discussed – although you'll only see results by attending the meetings.

The next Decommissioning group meeting will be held in October in Oxford and will be

export focused. If you are interested in coming along, or finding out more about this event, please get in touch.

In our secure member area, you'll also find the regular industry information we provide through our newsletters, providing a snapshot of the key industry developments and latest policy announcements from Government as well as information on industry events.

Our unique nuclear industry Trade Directory is an exclusive tool for NIA members and is available through the member area.

It is a comprehensive database of organisations within NIA membership involved in all aspects of the nuclear sector. It provides unrivalled access to over 250 nuclear sector companies to search for products and services meaning your company will be seen by the right people and you stay one step ahead of the competition.

You can see whether your company is a member by visiting [www.niauk.org.uk/our-members](http://www.niauk.org.uk/our-members) and if you contact me, [Stephanie.McKenna@niauk.org](mailto:Stephanie.McKenna@niauk.org) I can add you to our groups and let you know log-in details for the member area... I promise you won't have to do push-ups. ■

The next  
Decommissioning  
group meeting  
will be held in  
October in Oxford  
and will be export  
focused.

# LOOKING AFTER ORPHANS

The nuclear industry has tried and tested routes for the treatment and storage of low, intermediate, and high level waste. Now we have a new challenge – **orphan waste**.

Those close to the nuclear industry will recognise the main categories of nuclear waste; low, intermediate and high.

Low level waste is typically industrial clothing and paper, but also includes X-ray materials from hospitals and universities. It has the lowest radiological content of any nuclear waste and we do as much work as we can to remove that radiation and recycle the material. Any waste that can't be treated in this way is compacted in stainless steel drums and sent to the national Low Level Waste Repository for disposal.

Intermediate level waste is predominantly the cladding which is stripped from used nuclear fuel rods as part of our reprocessing operations. This material is mixed with grout in drums and stored above ground in our waste stores.

As the name suggests, high level waste contains the highest radiological content of any waste form. It is also the lowest volume of any nuclear waste and comes from the separation of plutonium and uranium during reprocessing. The waste is evaporated to reduce its volume, then mixed with glass to form a solid, stable substance which is kept safely in our purpose built high level waste store.

Our ability to manage these wastes at Sellafield has seen us develop an unrivalled nuclear waste capability within the UK.

As many of our decommissioning projects are now well under way, a new category has entered our lexicon – orphan waste, so called because no obvious treatment or disposal route exists.

There are often lots of reasons for the lack of a treatment or disposal route, such as challenging physical, chemical and radiological properties or because they are legacy wastes which may contain unknown components or are poorly characterised.

In these cases we need to undertake significant research and development work to establish the best way to manage the wastes.

We have already had some success in establishing disposal routes for a number of orphan wastes; including for zinc bromide and radioactively contaminated oil. We have now turned our attention to establishing a disposal route for contaminated chemicals.

Kelly Lupton, technology manager, explains: "It is important that we understand our potential orphan wastes, so we can then look to find and implement solutions for these, so they do not impact upon future operations or decommissioning activities."

"This work requires us to fully understand the waste and its composition, so we can deliver a fit for purpose solution."

One thing is for sure – on the Sellafield site, waste comes in all shapes and sizes and finding a solution is a must. It's all part of our bigger picture approach to the clean-up of the Sellafield site, which aims to ensure all waste is managed in the most cost-effective, appropriate way. ■







# Somewhere across the sea

As the crow flies, the Isle of Man sits just over 34 miles from Sellafield, making the island a closer neighbour to the nuclear site than the city of Carlisle. To find out more about the relationship between the site and the island across the sea, we spent some time with the man who advises the Isle of Man Government on all things nuclear,

**Dr Paul McKenna...**

**O**n a sunny day you can clearly see the outline of the Isle of Man from the Sellafield site. While the site isn't equally visible from the shores of the Isle of Man, our operations have long been a topic of conversation for the island's residents and officials.

The relationship between the site and the island has had highs and it has had lows; and as chief nuclear advisor to the Isle of Man Government, Dr Paul McKenna has seen them all. Here he shares his memories of Sellafield, his current role and some of the stranger claims about Sellafield that he has had to deal with.



Dr Paul McKenna

**The Isle of Man has a very clear position on Sellafield.**

The intent of the Isle of Man Government policy, known as the Tynwald policy, is clearly anti-Sellafield, and is expressly opposed to the reprocessing of spent nuclear fuel. The policy also expresses concern about the risk of a nuclear accident from the processes which are ongoing at Sellafield.

**I first got involved in the topic on the island when the accident happened at Chernobyl.**

I was working in London at the time. The accident resulted in contaminated sheep in Cumbria and the Isle of Man and there was a real fear that if something that happened so far away could reach the island, then what would happen if there was an accident at Sellafield?

The chairman of BNFL [the owners of Sellafield at that time] visited the Isle of Man and provided the investment needed for the island to purchase its own environmental monitoring equipment. By taking their own readings they could check the accuracy of the discharge data that was published by BNFL. I was employed by the Government to set up the monitoring programme and to publish our own annual report on the impact of discharges from Sellafield on the Isle of Man.

The report contained results from food samples, environmental materials, marine samples, and seafood, to name a few. All of the information was then made available to the public.

**Our own data shows that there should be no concern on the island from Sellafield's discharges.**

Our monitoring programme hasn't generated any data that would indicate that there is a problem of any real concern, both in terms of environmental impact and health.

**There is much more information available now about Sellafield than when I first got involved.**

Before the 1980s there was very little information about Sellafield in the public domain. A lot of public opinion on the island at that time came from the information provided by the media on

environmental activist perspectives, and TV documentaries like 'Windscale: the nuclear laundry'. The industry is much more open now. It is much easier for people to hear both sides of the argument, to get a balanced view, and then make up their own minds.

**The West Cumbria Sites Stakeholder Group plays a key role in making sure we are informed about the site.**

Over the years we have built a relationship whereby we get early notification of the facts about any events at Sellafield, which is invaluable. Media enquiries to the Government on the island can be very rapid so they need to understand what has happened very quickly. Having that information doesn't mean that we will defend Sellafield, but it at least means that any comments made by the Government will be based on fact instead of rumour.

**Our monitoring programme has given some confidence to the public, but I still get some bizarre and humorous phone calls, all of which are investigated.**

There was an incident where a member of the public brought a dead goldfish and a small piece of seaweed claiming that radiation from Sellafield had killed the fish. Investigations proved that there was no basis for the claim. I also had a call from a visitor to the island's TT races who claimed that radiation from Sellafield was interfering with his motorcycle's electronics.

**It is my job to help provide rational understanding about Sellafield and nuclear in general.**

You can't expect every member of the public to have a detailed knowledge of nuclear physics or chemistry. It is the job of the industry, government and public servants like me to try and convey some rational understanding of what is really going on.

**Today, the island and Sellafield Ltd have a commonality of interest.**

We now find ourselves in a position where we and Sellafield Ltd are working towards the same goal – the accelerated clean-up of the



site. The Isle of Man Government knows that this is not immediately attainable so will continue to seek reassurance that the site is fundamentally safe while the work is completed. The Tynwald policy will resolve to defend the interests of the Isle of Man, but for now at least, the relationship between the island and the site is heading in the right direction. ■

Did you know?

# 10 million

**75,000 tonnes of stainless steel** to make our ILW containers. Equivalent to **37 million 24 piece cutlery sets, or 10 million kitchen sinks** (and usually the exact same grade of steel)



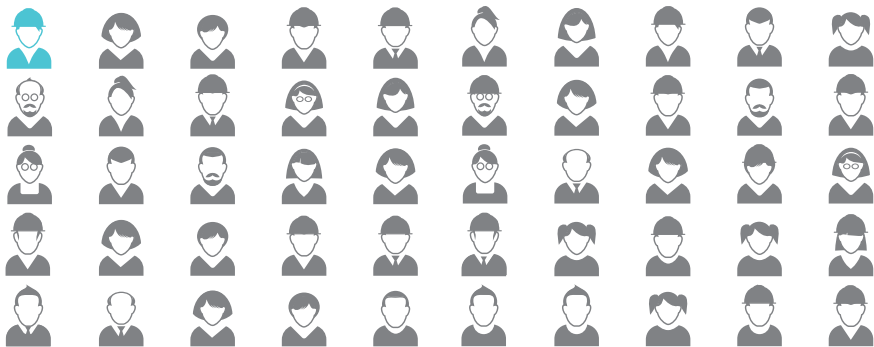
In 2015/16 one of our waste treatment facilities that is used to remove and store radioactivity from liquid before it is discharged to sea, used more than **170,000kg of cement**. That would make **110,000 garden gnomes**.

# 110,000



CARLISLE

SELLAFIELD



**Fifty people** have now found employment in the Sellafield programme through our employment brokerage scheme, **West Cumbria Works**.



# 50th person

03 JUNE 2016

# G6

## CONFERENCE

In the 12 months since the first G6 conference, our new way of working has seen us move fuel from legacy buildings, take a brand new approach to the management of intermediate level waste, and measure corrosion rates more accurately. All of this has saved the UK tax payer millions of pounds. The second conference, held in June, set the scene for another successful year.

**W**hat a difference a year makes. In 2016, we hosted the first ever G6 conference, bringing us together with the Nuclear Decommissioning Authority, Department of Energy and Climate Change, the Office for Nuclear Regulation, UK Government Investments (formerly the Shareholder Executive), and the Environment Agency. The day-long event set out the potential benefits of collaborative working.

One year on and the approach is not only delivering progress on the site, but is attracting international recognition as the way to collaborate to achieve risk and hazard reduction. Almost two hundred people from across the G6 network came together for the second conference to focus on the tangible outcomes delivered by applying the G6 “can do” approach.

Setting the scene, our chief executive officer, Paul Foster, told the audience: “Success breeds success, being on a winning team feels good, it builds stakeholder confidence and allows us to go on and do more. Last year we talked about G6 as a potential enabler to hazard and risk removal. This year we’re seeing the evidence that collaboration has given us. We can do it, and just think what more we can achieve if we unite all our people behind our common effort.”

The conference showcased projects that have benefited from the G6 way of working including the Alternative Intermediate Level Waste project, which through a different approach saved the UK taxpayer millions of pounds, by negating the need to build a purpose built facility. The Evaporator C project implemented a more ‘fit for purpose’ system to measure corrosion rates in the evaporator base, and the canned fuel project reassessed their safety case resulting in all the canned fuel being removed from the ageing building.

Highlighting the important role that our supply chain partners play in the delivery of work at Sellafield, representatives from Graham Engineering Ltd, Safety Critical, Morgan Sindall and the Box Encapsulation Plant Delivery Team talked about G6 and share their perspectives of what it is like to work at Sellafield.

It wasn’t just a show and tell event, however, as delegates were presented with a series of operational challenges or problem statements to address in groups during and after the conference closed. The challenges were themed around a number of topics: operations efficiency challenge; safety cases; business cases; change leadership; opportunities related to intermediate level waste management; supply chain fit for purpose solutions and collaborative working in the supply chain.

The conference also gave attendees the chance to hear from key stakeholders playing an important part in supporting our common mission. The message was clear: G6 is working.

Nathan Phillips from UK Government Investment explained our shared objective in ensuring taxpayers’ money is being spent wisely. He said: “Despite financial pressures we’ve secured funding to progress the crucial Sellafield mission. Telling the story of your successes, allowing government to see how innovation is being turned into delivery helps demonstrate the value of this investment.”

DECC’s Tom Wintle praised the forum and was particularly impressed with the way participants were working together. “There was huge energy in the room, all organisations focused on practical goals and tangible outcomes, everyone was keen to build upon a concept, and the place was buzzing with ideas bouncing off each other.”

The conference ended with some inspiring words from ONR’s Andy Lindley, praising the progress that has been made since G6 was conceived. He said: “Plans and costs were drifting and people were frustrated, now we’re all talking about how G6 has helped us improve.

“We have seen real signs of progress in safety over the past two years; G6 looked at the electrical infrastructure and made real improvements. Our approach has been seen as good practice to such an extent that G6 now has an international brand, most importantly there has been a cultural change. Many thousands of people now work differently, new energy is breathed into problems, and that has been really evident at the G6 forum.”



DATE:  
**03 June 2016**  
LOCATION:  
**Sellafield**

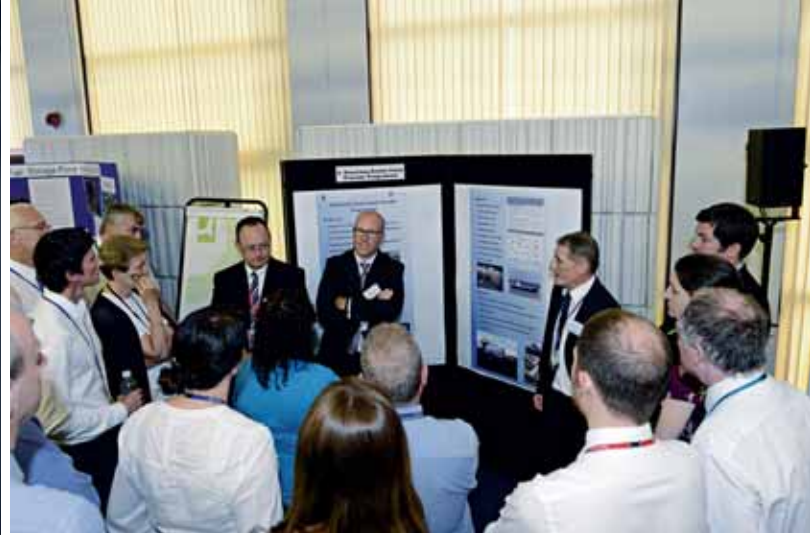


Collaboration  
is key to  
accelerating  
the clean-up of  
Sellafield





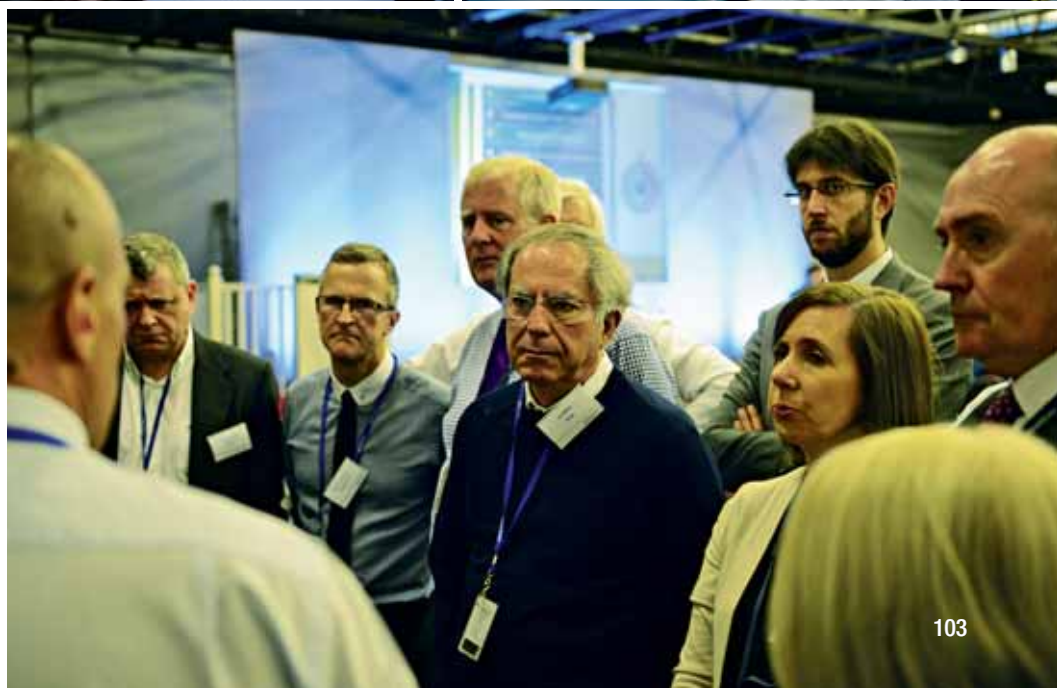
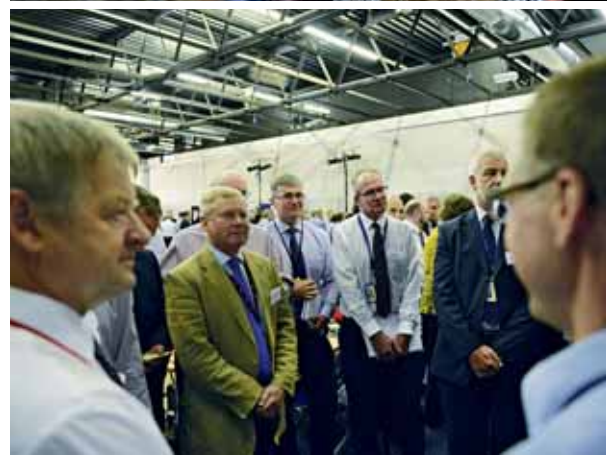
Attendees learning about how and where the G6 approach has worked

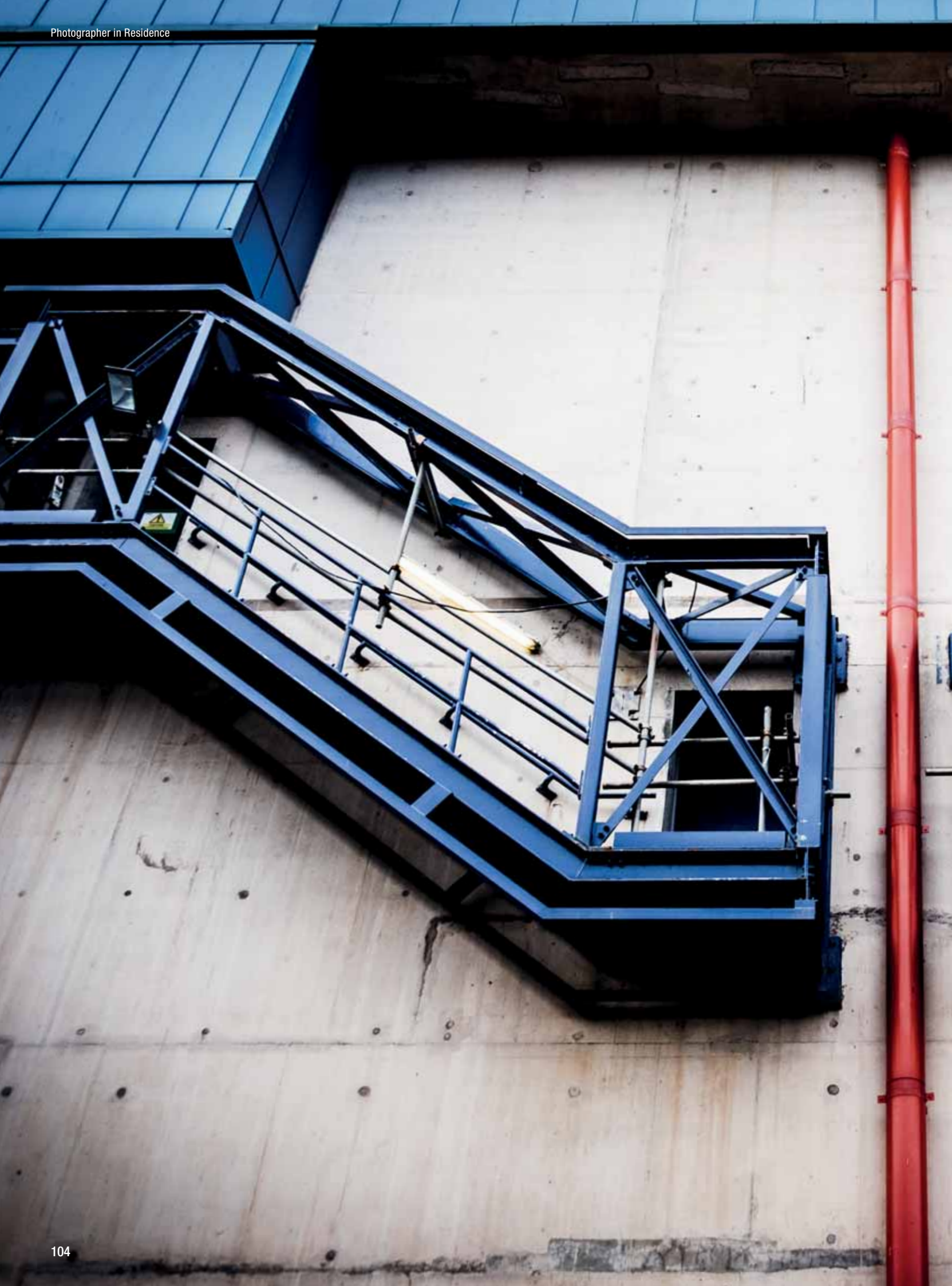


The event was attended by almost 200 people



“Allowing government to see how innovation is being turned in to delivery helps demonstrate the value of investment”  
Nathan Phillips, UK Government Investment









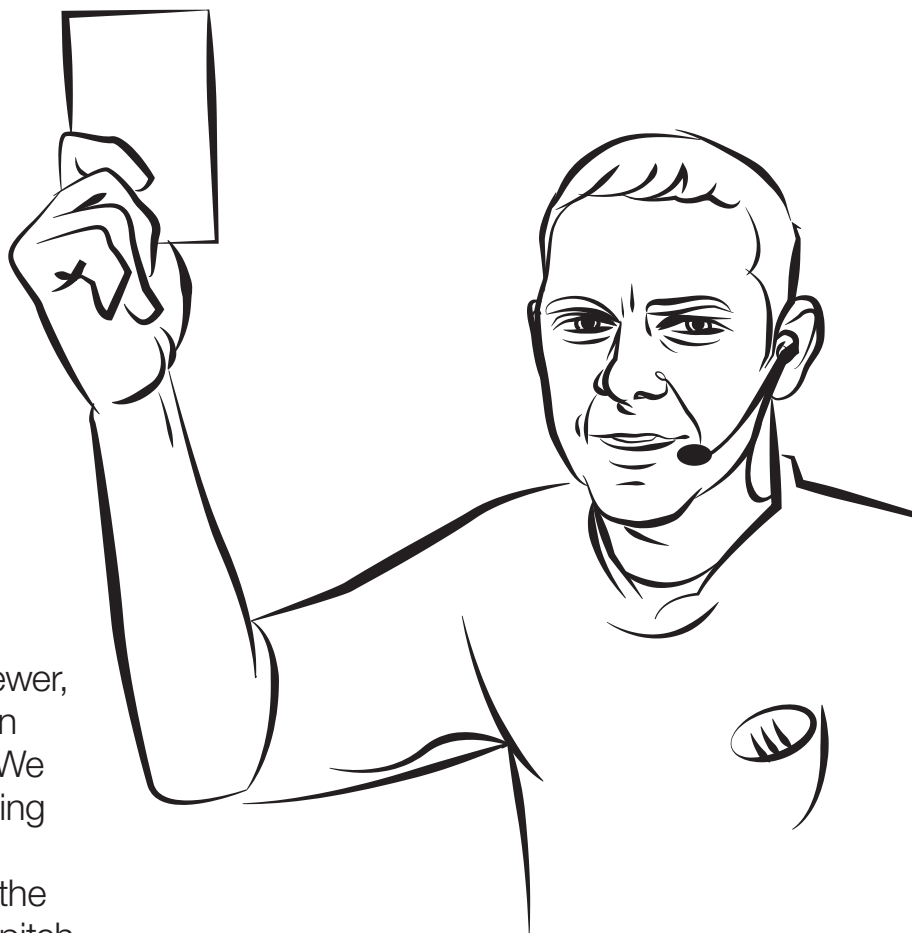
## PHOTOGRAPHER *in residence*

"I find it playful. It looks like a face, maybe with glasses or maybe hands reaching in making the glasses. Or is it just one big smile? A building that smiles? How nice is that, how inviting? There should be more smiling buildings in this world. I love when one can go exploring in photos and make out what one wants. In the end, it's just a photo that makes me smile. Let us all smile a bit. Now get back to work, but keep smiling."

**Thomas Skovsende**



## Gareth Hewer



When Sellafield team leader, Gareth Hewer, isn't at work, you might just spot him on Sky Sports as a rugby league referee. We sat down with him to talk about balancing two careers and whether there are any similarities between leading a team off the pitch and managing two teams on the pitch.

### **Gareth, let's start with your day job. What do you do at Sellafield?**

I am a shift engineering team leader based in our Magnox reprocessing facilities. That means that I am responsible for an electrical and instrumentation maintenance team. We look after the maintenance of our facility and provide support repair and recovery work if something in the building stops working.

### **You were just 21 when you first became a team leader, how did you get there?**

I started with the company as an apprentice. I was actually in the last cohort of apprentices to be trained directly by the company, which was British Nuclear Fuels at the time, before the training schemes moved to GEN2. I went straight into the Magnox reprocessing facility before moving to one of the support buildings in the maintenance team. I became a chargehand before getting the job as team leader at 21.

### **Were you training to become a referee at the same time?**

I have been a referee since I was 17 and at a time when there was a shortage of trained referees. I had played youth rugby at Hensingham so I already had a love of the

game, but decided refereeing as another avenue. I enjoyed it so much that I continued my training through the refereeing ranks.

### **There are different ranks of referee?**

Yes, there are three grades with the professional ranks. Grade three covers the national conference, Grade two covers academy and reserve team games, and Grade one covers the professional teams. To pass each grade you need to achieve specific qualifications and have practical experience of refereeing the game. I am a grade one referee which is the highest grade you can get to. It entitles me to referee within the professional ranks from League One right up to Super league and international games. I have been the only grade one referee in Cumbria for some time.

### **How different are your two careers?**

At work I manage an engineering team and on the field I manage 26 players. There are actually many similarities between being a good team leader and a good referee, but the main commonality is man-management. Whether people work for you or have to take instruction from you, getting the best out of people comes down to the way that you manage them. If you set clear expectations through effective communication people know

what needs to be done and usually appreciate the honesty. In both roles I also have to be able to identify potential issues and situations and to take appropriate action to prevent the issue before it happens.

### **What are your refereeing highlights so far?**

I am proud that I have worked my way through the ranks and have got myself to a position where I can officiate at the elite end of the sport. To be part of the Super League squad is a highlight in itself. Last year I refereed my first full international game when France played Scotland and also refereed the Northern Rail Cup Final in 2007 and the play-off final in 2009. I was also honoured to be named as Referee of the Year in 2009.

### **How do you balance two demanding careers?**

It can be difficult at times. For example, I meet and train with the other professional referees every fortnight at the Rugby Football League headquarters in Leeds. Sometimes this means finishing a shift at Sellafield before heading straight to Leeds to train, getting home late at night and then heading back into work the following morning. I think that if something is worth having then it is worth working hard for. I am lucky that I have two rewarding careers. ■

# Sellafield

NEXT ISSUE

Issue 05  
October 2016

## CALDER HALL 60th Anniversary Issue

### Did you know?

**The area** – we look at how the construction of Calder Hall transformed the local area

**The pioneers** – meet the scientists behind the station

**The progress** – decommissioning the world's first civil nuclear power station

Available  
October  
2016

# The Sellafield Story...

Hands-on activities and virtual reality tell the story of the most iconic nuclear site in the world. From its pioneering use of the atom to support national defence and building the world's first civil nuclear power station, to the clean-up challenges of today.

**Explore the Sellafield Story at the Beacon Museum:**  
Tuesday to Sunday 10am-4:30pm. Monday opening is restricted to Bank Holidays and school holidays.

# Future

Sellafield and Capeland have been the most significant developments in the half-century – from military nuclear power, to today's peaceful challenges. Their nuclear history...



The Beacon, West Strand,  
Whitehaven, Cumbria,  
CA28 7LY

[www.thebeacon-whitehaven.co.uk](http://www.thebeacon-whitehaven.co.uk)